THE

AMERICAN COAST PILOT;

CONTAINING

DIRECTIONS

FOR THE

PRINCIPAL HARBORS, CAPES, AND HEADLANDS,

ON THE

COAST OF NORTH AND PART OF SOUTH AMERICA;

DESCRIBING THE

SOUNDINGS, BEARINGS OF THE LIGHT-HOUSES AND BEACONS
FROM THE ROCKS, SHOALS, LEDGES, &c.

WITH THE

PREVAILING WINDS, SETTING OF THE CURRENTS, &c.

AND THE

LATITUDES AND LONGITUDES

OF THE

PRINCIPAL HARBORS AND CAPES;

TOGETHER WITH

TIDE TABLES AND VARIATION.

BY EDMUND M. BLUNT.

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THE INDEX WILL BE FOUND IN THE LATTER PART OF THE BOOK.

PLEASE READ APPENDIX AT END OF INDEX (P. 842) IN USING THIS BOOK.

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APPENDIX TO COAST-PILOT.

Twenty-First Edition.

FEBRUARY, 1867.

CULTIVATOR SHOAL, Page 223.—A shoal of twenty-eight feet, in long. 68° 17′ W., lat. 41° 41′ N., inside of the shoal ground of George's Shoals. The ship of that name, drawing 22½ feet, struck upon it.

YORK SPIT AND WINDMILL POINT LIGHT VESSELS, pages 342 and 344, have been discontinued.

HUNTING ISLAND, Page 365.—The directions were re-printed in the belief that the Light House would be re-built, but it has not been.

MOBILE POINT LIGHT, page 399, is twenty-five feet high.

SAND KEY LIGHT, page 399, is forty-eight feet high.

MARCH, 1867.

AMET ISLAND, Page 90.—There is a fixed light on Amet Island, forty-four feet above the level of the sea. The tower is square, thirty-two feet high, painted white.

GREEN ISLAND, Page 127.—The light on Green Island has been changed to a red light.

EGG ISLAND, Page 161.—The Light-House has been painted black and white, in vertical stripes.

EAST IRONBOUND ISLAND, Page 193.—There are two fixed lights, twenty-five feet apart, horizontally, on this island. The Light-House is a square wooden building, painted white.

WINDS.

WIND is a sensible current or movement of the atmosphere over the earth's surface. The winds are divided into Perennial, Periodical, and Variable. They are also divided into General and Particular. Perennial, or Constant Winds, are those which always blow the same way: such is that Easterly wind, between the tropics, commonly called the Trade Wind. Periodical Winds are those which constantly return at certain times: such are land and sea breezes, blowing alternately from land to sea, and from sea to land. Variable, or Erratic Winds, are such as blow now this way, now that, and are now up, now hushed, without regularity, either as to time or place: such are the winds prevalent to the Northward of 30° N. latitude.

PERENNIAL, or TRADE WIND.—Over extensive tracts of ocean, in the lower latitudes, or towards the equator, Perennial or Trade Winds are found to prevail, which follow the course of the sun: thus, on the Atlantic Ocean, at about 100 leagues from the African shore, between the latitudes of 10 and 26 degrees, a constant breeze prevails from the North-eastward. Upon approaching the American side, this N.E. wind becomes more Easterly, or seldom blows more than one point of the compass from the East, either to the Northward or Southward.

The Perennial, or Trade Wind, on the American side of the Atlantic, extends, at times, to 30 degrees of latitude, which is about 4 degrees further to the Northward than on the African side. Likewise on the South of the equator, the Perennial Wind, which is here from the S.E., extends 3 or 4 degrees further towards the coast of Brazil than on the opposite side of the ocean. The general cause of this wind is the motion of the earth, in its diurnal rotation, connected with its orbital movements.

HEAT increases evaporation, and renders the atmosphere capable of supporting a greater quantity of moisture than it would do in a cooler state: were the atmosphere of one continued warmth, and its motion uniform, there would be no rain; for it would not imbibe more moisture in exhalation than it could support. Heat often produces diversity in winds and weather; for near the land, when the sun has great influence, it occasions land and sea breezes near the shore; and, in particular situations, heavy gusts and squalls of wind.*

Small islands, lying at a great distance from the main-land, operate very little upon the Trade Wind. If elevated, these islands are more subject to rain than if low: this may be occasioned, principally, by the ascent given to the wind, or atmosphere, in rising over the tops of the hills, when, being cooled, it condenses into small drizzly rain. This is an effect peculiar to all mountains, even in the middle of continents, when the atmosphere is sufficiently charged with moisture. For the sun's rays, by heating the atmosphere, according to its density, renders it much warmer at the bottom than at the top of hills. Upon a mountain sloping from the sea towards the top, and about 700 yards in height, a pleasant breeze has been observed inshore, and fine clear weather; the air, in ascending, (being condensed by cold, at about half-way up,) had the appearance of fog, or thin light flying clouds; but at the top was a misling rain; and this may frequently be seen in any mountainous country.†

The clouds, in the higher regions of the air, are frequently seen to move in a direction contrary to the wind below. The N.E. Trade Wind has frequently a South-westerly wind above it; and a S.E. wind often prevails beneath one whose direction

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* The causes of tornadoes, hurricanes, and squalls, have been thus assigned by Dr. Hare, of Philadelphia: The air being a perfectly elastic fluid, its density is dependent on pressure, as well as on heat, and it does not follow that air which may be heated in consequence of its proximity to the earth, will give place to colder air from above. The pressure of the atmosphere varying with the elevation, one stratum of air may be as much rarer by the diminution of pressure consequent to its altitude, as denser by the cold consequent to its remoteness from the earth, and another may be as much denser by the increased pressure arising from its proximity to the earth, as rarer by being warmer. Hence, when unequally heated, different strata of the atmosphere do not always disturb each other. Yet, after a time, the rarefaction in the lower stratum, by greater heat, may so far exceed that in the upper stratum, attendant on an inferior degree of pressure, that this stratum may preponderate and begin to descend. Whenever such a movement commences, it must proceed with increasing velocity, for the pressure on the upper stratum, and, of course, its density and weight, increases as it falls: whilst on the contrary, the density and weight of the lower must lessen it as it rises, and hence the change is, at times, so much accelerated as to occasion the furious and suddenly varying currents of air which attend tornadoes, hurricanes, and squalls.—SILLIMAN'S JOURNAL, No. 19

† Oriental Navigator, or East India Directory.

is N.W. It is found, that just without the limits of the Trade Wind, the wind generally blows from the opposite quarter. The counter-current of air, above, is often seen in a fresh Trade Wind.

There are several heights of clouds on the coast of North America; the highest, and those which appear of the finest texture, (if I may be allowed the expression,) float highest in the atmosphere. Clouds of this description always come from the Westward; just before the appearance of an Easterly storm, they gather in the S.W. and S.S.W., and if a glim (as the sailors call it) in the N.E. and N.N.E., their appearance in the sky indicates a N.E. storm of snow or rain. All great storms which are met with above the latitude of 30°, whether snow or rain, begin to the Westward and advance gradually to the Eastward, along the coast of North America, in conformity with the general atmospheric current of the region. When a S.W. wind in the upper regions of the atmosphere, is attended with a N.E. or opposite wind below, the latter is commonly accompanied with low flying clouds, which drive before the wind, while the higher clouds go in a contrary direction.

Ship-masters and pilots, on leaving the coast, outward-bound, may notice that so long as these higher clouds do not gather and thicken in the W., or S.W., so long a heavy or long storm of snow or rain will not occur. Any rain or foul weather that proceeds from winds which rise from the Eastward, and drives before the wind to the Westward, without a fall of the barometer, is not attended with violent wind.

The space from latitude 25° to 28° or 29°, between the Variable and Trade Winds, is remarkable for a continual change of winds, with sudden gusts and calms, rain, thunder, and lightning. This space has been called the Horse Latitudes, because it has often been found necessary here to throw overboard the horses which were to be transported to the West Indies, &c. To the Northward of these latitudes, upon the American coast, and more than one-third over the Atlantic, Westerly winds prevail nearly 9 months in the year.

In the latitude above the Trade Winds, the wind from the W.S. Westward being replete with moisture, from the great exhalation between the tropics, as it approaches the cold and higher latitudes, becomes condensed into showers of hail, rain, or snow.

There is often an interval of calm between the Trade Winds and the opposite winds in high latitudes. This is not, however, always the case; for if the Trade Wind in its borders be much to the Eastward, it frequently changes gradually round without an interval of calm. There is generally also a calm in a certain space between the two prevailing winds blowing in opposite directions, as between the Trade Wind and the Westerly wind on the African coast. In the limits of the Trade Wind, a dead calm is generally the prelude to a storm, and it ought always to be considered as a prognostic thereof, though a storm often appears without this warning.

When the sun is at its greatest declination, North of the equator, the S.E. wind, particularly between Brazil and Africa, varying towards the course of the sun, changes a quarter or half a point more to the Southward, and the N.E. Trade Wind veers more to the Eastward. The contrary happens when the sun is near the Southern tropic; for then the S.E. wind, South of the line, gets more to the East, and the N.E. wind, on the Atlantic, veers more to the North.

On the African side of the S. Atlantic the winds are nearest to the South, and on the American side nearest the East. In these seas, Dr. Halley observed, that when the wind was Eastward, the weather was gloomy, dark, and rainy, with hard gales of wind; but when the wind veered to the Southward, the weather generally becomes serene, with gentle breezes next to a calm.

The Equatorial Limits of the N.E. or Perennial Trade Wind, between the meridians of 18 and 26 degrees West, have been found, upon the comparison of nearly 400 journals, English and French, to vary considerably even in the same months of the year. We have shown, by the annexed table, where the N.E. Trade, according to the probable mean, may be expected to cease in the different months; and it will be found to answer the purpose with sufficient precision.

In this table the columns of extremes show the uncertain termination of the Trade Winds, as experienced in different ships. The annexed columns show the probable mean; and the last column exhibits the mean breadth of the interval between the N.E. and S.E. winds.

Thus the table shows that, in the month of January, the N.E. Trade has been found sometimes to cease in the parallel of 10°, and sometimes in that of 3° N. That the probable mean of its limit is about 5° N.; that the S.E. Trade, at the same time, has been found to cease sometimes at only half a degree North of the line, and sometimes at 4 degrees; that the probable mean of its limit is, therefore, two degrees and a quarter; and that the interval between the assumed means of the N.E. and S.E. Trade Winds is equal to 2¼ degrees: and so of the rest.

PREFACE

TO THE

TWENTY-FIRST EDITION.

As this is probably the last edition of the American Coast Pilot that I shall supervise, a brief history of the book, and so much hydrographical statement as is connected with it, may be interesting to the reader.

The Coast Pilot was first prepared in 1796, at the suggestion of Mr. Edmund M. Blunt, the father of the writer of this, who was then living in the town of Newburyport, Mass., a printer by profession. Mr. Blunt engaged a shipmaster, of the name of Lawrence Furlong, to commence the book; but his manuscript was in so crude a form that it had to be revised and corrected by a lawyer. The book, when printed, consisted of 122 small octavo pages, and the paper was similar in appearance to that used by the rebels during the rebellion. The book gave great satisfaction; and the succeeding editions were much enlarged and corrected, until it is now a volume of 926 royal octavo pages. The name of Capt. Furlong as the author was continued until the year 1812. In the eighth edition, published in 1815, Mr. Blunt claimed the entire merit of the work, and assumed the title of author. In 1826, the subscriber took charge of the work, but his name, as compiler, did not appear until 1837.

Mr. Blunt, even in those early days when little hydrographical knowledge existed, had a passion for creating, collecting, and publishing accurate nautical information; prior to 1810, he had a survey made of the little port of Annis Squam, as a guide to our fishermen, to be used in N. E. gales, and in 1819 and 1820, he caused to be surveyed, at his own expense, the Great Bahama Bank route to the Gulf of Mexico, in which his two sons, Edmund and George W., were employed, also Nantucket and George's Shoals, assisted by his son Edmund, who, in the year 1816, surveyed New York Harbor; in 1824, the seacoast at the entrance from Fire Island to Barnegat; and, in 1828, 1829, and 1830, Long Island Sound—the first surveys made of those important lines of seacoast. In 1833, he was appointed First Assistant on the United States Coast Survey, which position he held until his death, this present year.

The charts of our seacoast were based on those of Des Barres, Romans, and Gauld, very imperfect, and entirely unreliable as to geographical positions, and it was only by private enterprise that improvement was made, as the United States government took no steps whatever to acquire and furnish hydrographical information until the organization of the Coast Survey in 1807, which was soon abandoned, but resumed again in 1832.

An idea may be formed of the unreliable character of the charts of the coast of America from the fact, that Galveston was placed in the Spanish and English Admiralty charts one hundred and five miles too far from, and Cape St. Blas twenty-eight miles too near the Balize, which are by no means the only cases.

The Light-houses of the United States coast, as a general rule, were miserable, and no reliable statement of a public character was published; all depended on private information until the organization of the Light House Board, in 1852. On the other side of the water the English Admiralty, under the direction of its accomplished hydrographer, Sir F. Beaufort, was creating a great magazine of correct nautical knowledge which was spread broadcast; his worthy successors, Capts. Washington and Richards, carrying out the good work begun by him.

France was also doing its part, but in our country nothing of importance was accomplished; the little that was done was withheld from the public. Again and again have the firm of which I am a member been refused information, on the ground that it would compromise the defences of the country.

England has created a great increase in her vast commerce by causing surveys to be made of all the seacoasts and ports where there is any trade. We, on the contrary, with the exception named on page v, have done nothing, and are dependent on foreign governments for information.

In 1832, the government awoke from its disregard of the necessities for nautical information, and passed a law authorizing the United States Coast Survey, under the direction of F. R. Hassler, a distinguished Swiss mathematician, who commenced the work by measuring a base line of nine miles on Fire Island Beach, from which a network of triangles was extended to the St. Croix in the North, and Cape Henry in the South. The details of the triangles were finished, and the seacoast was mapped and sounded; and on the Southern coast the work made great progress, until it was stopped by the rebellion.

This work trained a large body of naval officers as hydrographers of merit (not to speak of those living), one of whom was the late Capt. T. A. Craven, U. S. N., who perished in his ship during the attack on Mobile, who had high qualifications as a hydrographer, as well as those of a loyal, gallant naval officer.

Mr. Hassler died in 1843; and A. D. Bache, one of our most eminent men of science, was appointed chief of the work. Under him the work was prosecuted with great skill and activity, and the results have been most useful to the country, both in war and peace. The army, as well as the navy, owe much to the information furnished by the efficient corps of engineers under his directions. It is with a sincere feeling of regret that I write that the mind which has planned so much for the good of our country is now paralyzed by its excessive use in the public service.

I have stated that most of the Light-houses on our coast were miserable. In 1837, our firm addressed a letter to Levi Woodbury, the Secretary of the Treasury, stating the fact, and proposing as a remedy, the adoption of the Fresnel light at that time used in the Light-houses of France. Mr. Woodbury submitted our communication to the United States Senate; and a bill

was introduced in the House, by John Davis, then Senator from Massachusetts, authorizing the importation of two of these lights for trial, which were ordered by our old friend, Com. M. C. Perry, and, when received, were placed on the Highlands of Neversink.

This endeavor to alter the Light-house system subjected us to much abuse and to considerable pecuniary loss. The change was steadily opposed by those who had the control in Washington of the Light-houses, and by the government contractors; and until the establishment of the Light-house Board in 1852, the French system was not fully adopted, this improvement saving hundreds of thousands of dollars to the country, and the power of the lights was increased eight-fold. This statement I have had officially from the Light House Board. (See Admiral Shubrick's letter, page vi.)

The United States Government, since the year 1837, has caused a survey of George's Shoal by Lieutenant Charles Wilkes; an expedition into the Pacific, under the direction of the same officer, and another expedition under Captain Ringold, whose health failing, the work was completed by Lieut. John Rodgers. These were all the contributions made by the United States to the stock of foreign hydrographical knowledge, we at that time being the second commercial nation in the world. (Where we are now I do not know nor can I ascertain, as our Treasury reports are over a million of tons wrong.)

At the last session of Congress a law was passed creating an Hydrographic Bureau, to be attached to the Bureau of Navigation. Much good, it is to be hoped, may result from this measure. The furnishing of nautical information is the duty of the government, and ought to be performed as it is in other countries. Naval officers should be trained for that purpose.

In mentioning what our government has done towards nautical knowledge, I do not allude to the works of Lieutenant Maury, because I deem them worthless, although costing the country large sums of money. They have been suppressed since the rebellion by order of the proper authorities, Maury's loyalty and hydrography being alike in quality.

It may not be out of place here to state how legislation is accidentally influenced. Some years since there was an endeavor made to get a light-house placed on the Execution Rocks, a reef one short mile north of Sands Point, in Long Island Sound; but it did not succeed, although asked for by a large commercial interest, until the steamboat on which there was a member of Congress, on his way to Washington, struck on these rocks, immediately after which an appropriation was made for the building of a light-house at this place.

In 1852, the bill for creating the Light-house Board was pending in Congress, but being opposed by parties interested in keeping up our bad system, its passage was doubtful. The Baltic steamer was then at Washington, and sailed for New York. Off Sandy Hook, she was detained by a fog, and could not run for want of proper buoys. A meeting of the passengers, among whom were several members of Congress, was called on board, and their attention particularly directed to this defect, and, on their returning to Washington they caused the above-named bill to be passed. Punch says, to railroad travelling safe, put a director on the locomotive. To get a through Congress, let the members see the necessity practically.

hoped that the American Coast Pilot has been serviceable to a class

of men who are the active agents in our commerce; and whose patriotic efforts in suppressing the late rebellion was not surpassed by any other of our loyal countrymen, and of whom Quartermaster-General Meigs, on the sixth page of his report (for 1865) to the Secretary of War, says: "And here let me pay a tribute to those gallant seamen of the merchant shipping of the nation, who in war entered its transport fleet. No service has been so difficult or so tedious—none so dangerous as to discourage or to daunt them. No call for volunteers has ever failed to meet a ready response, whether to tempt the shoals and storms of a tempestuous coast, the hidden and mysterious dangers of the dark bayous of the South, strewn with torpedoes by the devilish ingenuity of deserters from our own military and naval service, or to run, in frail river steamboats, the batteries of the Potomac, the James, and the Pamlico, or the still more formidable works of Vicksburg. Urged by the spirit of adventure, supported by the patriotism of freemen, they have always stood ready, and have cheerfully obeyed every order, incurred every risk."

The subscriber places this work before the mariner with great improvements and additions, trusting it may continue to benefit him in the future as it has in the past.

January 1, 1867. GEO. W. BLUNT.

WASHINGTON, D. C., *October* 22, 1866.

MY DEAR SIR: I will now redeem my promise. In 1852, when the Board was established, we had in all three hundred and twenty Light-houses; with lenses, seven. We have now (1866) four hundred and thirty-one, all of which have lenses. We have a few reflector lights, but they are range lights, not included in the four hundred and thirty-one.

If the four hundred and thirty-one houses were fitted with reflectors, to correspond in power with the lenses, they would consume about one hundred and sixty thousand gallons of oil annually. The consumption of the lenses is sixty-five thousand gallons, with greatly increased light.

The number of light-stations *discontinued* by the rebels was one hundred and thirty-five; eighty of which have been restored. The work of restoration is going on.

Yours truly,

W. B. SHUBRICK.

GEORGE W. BLUNT, Esq.

In publishing the letter of the President of the Light-House Board, showing the important benefits it has conferred upon the country, it is proper to state that the establishment of this Board is partly due to the facts set forth in the report of Lieuts. R. Bache and T. A. Jenkins, U. S. N., who were sent to Europe, in 1845, by the government to examine and report upon the Light-Houses of Europe. Lieut. Jenkins took great pains to get the bill through Congress creating the Light-House Board, was its first secretary and had much to do in its organization; he resigned that position during the rebellion to do his part in putting down the rebels, is now a commodore and at the head of the Bureau of Navigation.

Table showing the Equinoctial Limits of the N.E. and S.E. Trade Winds between the Meridians of 18 and 26 Degrees West.

N. E. TRADE WIND.			S. E. TRADE WIND.		INTERVAL BETWEEN.
CEASES.	General Extremes.	Probable Mean.	General Extremes.	Probable Mean.	Mean Breadth.
In January at.	3° to 10° N.	5° N.	0½° to 4° N.	2¾° N.	2¼ degrees.
February..	2 to 10 —	4 —	0½ to 3 —	1¼ —	3½
March	2 to 8 —	4¾ —	0½ to 2½ —	1¼ —	3½
April	2½ to 9 —	5 —	0 to 2½ —	1¼ —	3¾
May	4 to 10 —	6½ —	0 to 4 —	2½ —	4
June.....	6½ to 13 —	8½ —	0 to 5 —	3 —	5½
July	8½ to 14 —	11 —	1 to 6 —	3¼ —	7½
August ...	11 to 15 —	13 —	1 to 5 —	3¼ —	9¾
September	9 to 14 —	11½ —	1 to 5 —	3 —	8½
October ...	7½ to 14 —	10 —	1 to 5 —	3 —	7
November.	6 to 11 —	8 —	1 to 5 —	3 —	4¼
December .	3 to 7 —	5½ —	1 to 4½ —	3½ —	2¾

In the space of variable winds between the trades, exhibited in the last column, it has been found that Southerly winds prevail more than any other; more particularly when the sun has great Northern declination. Homeward-bound East India ships are therefore enabled, at this season, to cross the space more quickly than those outward-bound; which they do, in some degree, at all other times. Yet calms and variable winds are experienced in every month in the year within this space; but the former, which are more generally in the vicinity of the North-east Trade, seldom continue long. These calms are frequently succeeded by sudden squalls, against which every precaution should be taken, as many ships have lost their topmasts, and have been otherwise damaged by them. Whirlwinds have sometimes accompanied these squalls.

On the Eastern coast of North America, and among its islands, the course of the general Easterly or Trade wind is uninterrupted, though subject to some modifications in direction and force. At a short distance from the land the sea-breeze calms at night, and is replaced by the land-breeze. This variation happens every day, unless a strong wind prevails from the Northward or Southward; the first of these being experienced from October to May, and the second in July, August, and September.

To the Southward of Newfoundland shifts of wind are very common, and it frequently happens that, after blowing a gale upon one point of the compass, the wind suddenly shifts to the opposite point, and blows equally strong. It has been known that while one vessel has been lying to, in a heavy gale of wind, another, not more than 30 leagues distant, has, at the very same time, been in another gale equally heavy, and lying to, with the wind in quite an opposite direction. This fact shows the whirlwind character of these gales, the opposite winds being on opposite sides of the circuit of the gale.

In the year 1782, at the time the Ville de Paris, Centaur, Ramillies, and several other ships of war, either foundered or were rendered unserviceable, on or near the banks, together with a whole fleet of West Indiamen, excepting five or six: they were all lying to with a hurricane from E.S.E., the wind shifted in an instant to N.W., and blew equally heavy, and every ship lying to, under a square course, foundered.

This disaster was owing to their being hove to on the wrong tack. We insert the following, as it has met the approval of some of our most experienced ship-masters.

"HEAVING TO."—The recent disasters which have occurred to American ships, such as the Dorchester, Medora, Ambassador, and many others, have caused some inquiry, and it has been suggested by experienced men, borne out by the facts, that the disasters may be traced to the "heaving of ships to" on the wrong tack; that is, that vessels bound to the Westward from Europe, instead of "heaving to" with their port tacks on board, in a South-west gale, as is too often the case, should "heave to" on the starboard tack.

It is well known that our heavy Westerly gales, in the winter season, often begin at the South or South-west, and as they increase in intensity, haul round gradually, but oftentimes suddenly, in a squall, to the North-west. Take, then, the case of a ship bound to the Westward, the wind commencing at the South or South-west, the ship on the port tack; the master, anxious to get to the Westward, carries his canvas as long as possible, and continues on that tack until he has his ship under a close-reefed main-topsail, mizen staysail or trysail—in fact, "hove to" on the port tack, the sea making heavy from the South-west, the wind keeps hauling to the Westward, and the ship falls off with it until she lays in the trough of the sea—the sea then having the control over, and breaking with its full force on the broadside, there is no canvas at this

time set that she can ware under with safety—the ship is then disabled, and sometimes founders—the fact is, over anxiety to get to the Westward has kept the ship too long upon this tack.

Now, what is the best course, as a general rule, to be adopted? We think that the rule should be laid down, that when it is blowing so hard as to make it necessary to furl the foresail, or head sails, previous to doing so, the ship should be wore round, and "hove to" on the starboard tack: and as the wind hauls, she comes up heading the sea more and more, until it is on the bow, and of course in the best position to avoid its shock.

Again, often the wind shifts so suddenly in a S.W. gale, that a ship is taken aback by being on the port tack, which is fearful at any time, and particularly so at such a time. Those who have experienced it on a winter's passage from Europe, with a crew worked down with hard weather, and on a dark night, can only imagine what a scene it is.

This cannot occur on being "hove to" on the starboard tack.

The winds within the gulf are not so liable to sudden shifts as on the outside, or to the Eastward of, Breton Island. The weather to the Southward of Magdalen Islands, between them and Prince Edward Island, is generally much clearer than on the North.

On the Winds, as influencing the tracks sailed by Bermuda vessels; and on the advantage which may be derived from sailing on Curved Courses when meeting with progressive Revolving Winds.

In high latitudes the prevailing atmospheric currents, when undisturbed, are Westerly, particularly in the winter season. As storms and gales revolve by a fixed law, and we are able by observation to distinguish revolving gales from steady-blowing winds, voyages may be shortened by taking advantage of them.

The indications of a Progressive Revolving Gale are, a descending barometer with a regularly veering wind, or with the wind changing suddenly to the opposite point.

In the Northern hemisphere storms revolve from right to left.

In the Southern hemisphere storms revolve from left to right.

The indications of a steady-blowing wind, which will not revolve, but blow in a straight-line direction, is a high barometer remaining stationary. When the steady wind blows from either pole, according to the side of the equator, the atmosphere will be both dry and cool. An increase of warmth and atmospheric moisture are indications of the approach of a Progressive Revolving Wind.

Sailing from Bermuda to New York.—The first half of a revolving gale is a fair wind from Bermuda to New York, because in it the wind blows from the *East;* but the last half is a fair wind from New York to Bermuda. During the winter season, most of the gales which pass along the coast of North America are Revolving Gales. Vessels from Bermuda bound to New York, should put to sea when the *North-west* wind, which is the conclusion of a passing gale, is becoming moderate, and the barometer is rising to its usual level. The probability is, more particularly in the winter season, that, after a short calm, the next succeeding wind will be *Easterly*, the first part of a fresh Revolving Wind coming up from the South-west quarter.

A ship at Bermuda bound to New York or the Chesapeake, might sail whilst the wind is still *West*, and blowing hard, provided the barometer indicate that this West wind is owing to a revolving gale, which will veer to the *Northward*. But as the usual track which gales follow in this hemisphere is Northerly and North-easterly, such a ship should be steered to the Southward. As the wind at *West* veers towards *North-west* and *North*, the vessel would come up, and at last make a course to the Westward, ready to take advantage of the East wind, at the setting in of the next revolving gale.

Sailing from New York to Bermuda.—A vessel at New York and bound to Bermuda, at the time when a revolving wind is passing along the North American coast, should not wait in port for the Westerly wind, but sail as soon as the first portion of the gale has passed by, and the North-east wind is veering towards *North*, provided it should not blow too hard. For the *North* wind will veer to the *Westward*, and become every hour fairer for the voyage to Bermuda.

Sailing between Halifax to Bermuda.—A great number of gales pass along the coast of North America, following nearly similar tracks, and in the winter season make the voyages between Bermuda and Halifax very boisterous. These gales, by revolving as extended whirlwinds, give a *Northerly* wind along the shore of the American continent, and a *Southerly* wind on the whirlwind's opposite side far out in the Atlantic. In sailing from Halifax to Bermuda, it is desirable for this reason to keep to the Westward, as affording a better chance of having a wind blowing at *North*, instead of one at *South;* as well as because the current of the Gulf Stream sets vessels to the Eastward.

From Barbadoes to Bermuda.—When vessels coming from Barbadoes or its neighboring West India Islands, sail to Bermuda on a direct course, they sometimes fall to the Eastward of it, and find it very difficult to make Bermuda when Westerly winds

prevail. They should therefore take advantage of the Trade Wind, to make the 68° or 70° of West longitude, before they leave the 25° of latitude.

Sailing from England to Bermuda.—On a ship leaving England for Bermuda, instead of steering a direct course for the destined port, or following the usual practice of seeking for the Trade Winds, it may be found a better course, on the setting in of an *Easterly* wind to steer *West*, and if the wind should veer by the *South*, towards the *West*, to continue on the port tack, until, by changing, the ship could lie its course. If the wind should continue to veer to *North*, as it sometimes does even to the *Eastward of North*, a ship upon the starboard tack might be allowed to come up with her head to the Westward of her direct course. On both tacks she would have sailed on *curved lines*, the object of which would be to carry her to the Westward against the prevailing wind and currents. There is reason for believing that many of the revolving winds of the winter season originate within the tropics: and that ships seeking the steady Trade Winds, even further South than the tropic at that period of the year, will frequently be disappointed. How near to the equator the revolving winds originate, in the winter season, is an important point not yet sufficiently observed. The quickest voyage from England to Bermuda, therefore, may, perhaps, be made by sailing on a course composed of many curved lines, which cannot be previously laid down, but which must be determined by the winds met with on the voyage. This principle of taking advantage of the changes of revolving winds, by sailing on curved lines, is applicable to high latitudes in both hemispheres, when ships are sailing Westerly.

GOVERNMENT HOUSE, BERMUDA, 21st March, 1846. W. R.

The above, by Colonel Reid, then Governor of Bermuda, exhibits the general character of the winds in both hemispheres, in high latitudes.

"The general Easterly wind of the tropical regions is felt on the coast of Guyana, and on the coasts of the Caribbean and Mexican Seas, but with variations which may be denominated diurnal and annual. The diurnal period is that which the sea-breeze causes, and which strikes the coast usually at an angle of two points, less or more, according to the locality and other circumstances; and then the land-wind, which, coming from the interior, always blows off shore. The sea-breeze comes on at about 9 or 10 in the forenoon, and continues while the sun is above the horizon, increasing its force as that luminary augments its altitude, and diminishing, in a similar proportion, as the sun's altitude decreases. Thus, when the sun is on the meridian, the sea-breeze is at the maximum of its strength; and at the time the sun reaches the horizon, this breeze has perceptibly ceased. The land-breeze commences before midnight, and continues until the rising of the sun, sometimes longer. A space of some hours intervenes between the land-breezes ceasing and sea-breezes coming on, during which there is a perfect calm.

"The annual period of the Trade Wind here is produced by the proximity or distance of the sun, which occasions the only two seasons known in the tropics—the rainy and the dry seasons. The first is when the sun is in the tropic of Cancer, and heavy rains with loud thunder are prevalent. In this season the wind is generally to the Southward of East, but interrupted by frequent calms, yet it occasionally blows with force and obscures the atmosphere.

"When the sun is in the tropic of Capricorn, the dry season commences, and then the Trade Wind, which is steady at N.E., is cool and agreeable. At this season, N. and N.W. winds are sometimes found blowing with much force, and, indeed, in some degree, they regularly alternate with the general wind, as they are more frequent in November and December than in February and March.

"In the change of the seasons there is a remarkable difference: for in April and May no change is experienced in the atmosphere, and the weather is, in general, beautifully fine; but in August, September, and October, there are usually calms, or very light winds; and dreadful hurricanes in these months sometimes render the navigation perilous. From these perils, however, are exempted the Island of Trinidad, the coasts of Colombia, (late Terra Firma,) the Gulfs or Bays of Darien and Honduras, and the Bight of Vera Cruz, to which the hurricanes do not reach.* In the space of sea between the Great Antilles and the coast of Colombia, the general N.E. or Trade Wind regularly prevails; but near the shore the following peculiarities are found:

"At the Greater Antilles, the sea-breeze constantly prevails by day, and the land-breeze by night. These land-breezes are the freshest which are known, and assist vessels much in getting to the Eastward, or remounting to windward, which without them would be almost impossible. At the Lesser Antilles, as Dominica, Martinique, and St. Lucia, &c., there are no land-breezes.

"On the coasts of Guyana there are no land-breezes, nor more wind than is generally experienced between the tropics. In January, February, and March, the winds here blow from N. to N.E., and the weather is clear. In April, May, and June, the

* Hurricanes have sometimes occurred in these regions.—W.C.R.

winds are from E. to S.E. In July, August, and September, there are calms, with tornadoes from S. to S.W.; and in October, November, and December, there are continual rains, while the sky is, in general, obscured by clouds. In the dry season, which is from January to June, the heat is very great; and in the wet season rains and thunders are constant and violent.

"On the coasts of Cumana and Caracas, to Cape la Vela, the breezé follows the regular course; but from that cape to Cape San Blas the general wind alters its direction: for it blows from N.E. to N.N.E., excepting in the months of March, April, May, and June, when it comes to E.N.E., and is then so uncommonly strong as to render it necessary for vessels to lie to. These gales, which are well known to mariners, extend from about mid-channel to within 2 or 3 leagues of the coast, where they become weak, especially at night. On this coast, about the Gulf of Nicaragua, are Westerly winds, which the pilots of that country call vendevales (rainy winds), in the months from July to December; but these winds never pass the parallel of 13° N., nor do they blow constantly, but alternate with the sea-breeze.

"Upon the Mosquito Shore, Honduras, and Eastern coast of Yucatan, the general winds or breezes prevail in February, March, April, and May; but during the first two of these months they are occasionally interrupted by Norths. In June, July, and August, the winds here are from the Eastward and Westward of South, with tornadoes and calms. In September, October, November, December, and January they are from the Northward or Southward of West, with frequent gales from W.S.W., W.N.W., and North.

"On the Northern and Western coasts of Yucatan, between Cape Catoche and Point Piedras, or Descondida, and thence to Campeche, there is no other than the N. E. or general wind, interrupted by hard Norths in the season of them; and about the end of April, tornadoes commence from N.E. to S.E. These tornadoes generally form in the afternoon, continue about an hour, and by nightfall the serenity of the atmosphere is re-established. The season of the tornadoes continues until September, and in all the time there are sea-breezes upon the coast, which blow from N.N.W. to N. E. It has been remarked that, as the sea-breeze is more fresh, the more fierce is the tornado, especially from June to September. The sea-breezes come on at about 11 of the day; and at night the wind gets round to E., E.S.E., or S.E., so that it may be in some degree considered as a land-breeze.

"On the coast of the Mexican Sea, from Vera Cruz to Tampico, the breeze from E.S.E. and E. prevails in April, May, June, and July; and at night the land-breeze comes off from S. to S.W., but if the land-breeze is from the N.W., with rain, the wind on the following day will be from N.N.E., or N.E., particularly in August and September: these winds are denominated in the country, 'vientos de cabeza, ó vendevales,' (head-winds, or rainy winds;) they are not strong, nor do they raise the sea; with them, therefore, a vessel may take anchorage as well as with the general breeze; but they impede getting out, for which the land-breeze is required. The vientos de cabeza, or head-winds, reach to about 20 or 30 leagues from the coast, at which distance are found those at E. and E.S.E.

"From the middle of September until the month of March, caution is necessary in making Vera Cruz for the Norths are then very heavy. The narrowness of this harbor, the obstruction formed by the shoals at its entrance, and the slender shelter it affords from the Norths, render an attempt to make it during one of them extremely dangerous, for it will be impossible to take the anchorage. The following description of the winds here has been written by Don Bernardo de Orta, a Captain in the Spanish navy, who has been captain of the port, and who surveyed it.:

"Although in the Gulf of Mexico we cannot see that there is any other constant wind than the general breeze of this region, notwithstanding that, from September to March, the North winds interrupt the general course, and, in some degree, divide the year into two seasons, wet and dry, or of the Breezes and Norths; the first, in which the Breezes are settled, is from March to September; and the second, in which the Norths blow, is from September to March. For greater clearness we shall explain each separately.

"The first of the Norths is regularly felt in the month of September; but in this month and the following one, October, the Norths do not blow with much force. Sometimes it happens that they do not appear, but, in that case, the breeze is interrupted by heavy rains and tornadoes. In November, the Norths are established, blow with much strength, and continue a length of time during December, January, and February. In these months, after they begin, they increase fast; and in four hours or a little more, attain their utmost strength, with which they continue blowing for 48 hours, but afterwards, though they do not cease for some days, they are moderate. In these months the Norths are obscure and North-westerly, and they come on so frequently that there is, in general, not more than 4 or 6 days between them. In March and April they are neither so frequent nor last so long, and are clearer; but yet they are

more fierce for the first 24 hours, and have less North-westing. In the interval before November, in which, as we have said, the Norths are established, the weather is beautiful, and the general breeze blows with great regularity by day; the land breeze as regular by night.

"There are various signs by which the coming on of a North may be foreseen: such are, the wind steady at South; the moisture of the walls, and of the pavements of the houses and streets; seeing clearly the peak of Orizaba and the mountains of Perote and Villa-Rica, with the cloud on those of St. Martin, having folds like a white sheet; the increase of heat and dew; and a thick fog or a low scud, flying with velocity to the Southward; but the most certain of all is the barometer: for this instrument in the time of the Norths at Vera Cruz, does not vary more, between its highest and lowest range, than eight-tenths; that is to say, it does not rise higher than 30 $\frac{6}{100}$ inches, nor fall lower than 29 $\frac{86}{100}$ inches. The descent of the mercury predicts the Norths; but they do not begin to blow the moment it sinks, which it always does a short time before the Norths come on; at these times lightnings appear on the horizon, especially from N.W. to N.E.; the sea sparkles, cobwebs are seen on the rigging, if by day; with such warnings trust not to the weather, for a North will infallibly come on.

"This wind generally moderates at the setting of the sun; that is, it does not retain the same strength which it had from 9 in the morning to 3 in the afternoon, unless it commences in the evening or at night, for then it may increase otherwise. Sometimes it happens that, after dark, or a little before midnight, it is found to be the land-wind, from the Northward and Westward; in which case, should it get round to the Southward or West, the North will be at an end, and the general breeze will, to a certainty, come on at its regular hour; but if it does not happen at the rising of the sun, or afterwards, and at the turn of the tide, it will return to blow from the North with the same violence as on the day before, and then it is called a Norte de Marea, or Tide-North.

"The Norths, also, sometimes, conclude by taking to the Northward and Eastward, which is more certain; for, if the wind in the evening gets to North-east, although the sky remained covered the day following, but by night the land-breeze has been from the Northward and Westward, the regular breeze will surely ensue in the evening, good weather succeeding and continuing for 4 or 6 days; the latter period being the longest that it will last to, in the season of the Norths; but, if the wind retrograde from N.E. to N.N.E. or N., the weather will be still unsettled.

"Examples are not wanting of Norths happening in May, June, July, and August, at which times they are most furious, and are called Nortes del Mueso Colorado; the more moderate are called Chocolateros, but these are rather uncommon.

"The wet season, or the season of the breezes, is from March to September; the breezes, at the end of March, and through the whole month of April, as already explained, are from time to time interrupted by Norths, and are from E.S.E. very fresh; the sky sometimes clear, at other times obscure. At times these touch from S. E., and continue all night, without giving place to the land-breeze, which prevails, in general, every night, excepting when the North wind is on. The land-breeze is freshest when the rains have begun.

"After the sun passes the zenith of Vera Cruz, and until he returns to it, that is, from the 16th of May to the 27th of July, the breezes are of the lightest description; almost calms, with much mist or haze, and slight tornadoes. After that time, the pleasant breezes from the N.W. to N.E. sometimes remain fixed.

"From the 27th of July to the middle of October, when the Norths become established, the tornadoes are fierce, with heavy rains, thunder, and lightning; those which bring the heaviest winds are from the East, but they are also of the shortest duration.

"In the season of the breezes, the total variation of the barometer is four-tenths; the greatest ascent of the mercury is to 30 inches thirty-five one-hundredths, and its greatest descent to 29 inches ninety-six one-hundredths. The thermometer in July rises to 87°, and does not fall to 83½°; in December it rises to 80½°, but never falls below 66½°. This, it must be understood, was ascertained in the shade, the instrument being placed in one of the coolest and best ventilated halls in the castle.

"In the months of August and September, rarely a year passes without hurricanes near Florida and the Northern Antilles; but to Vera Cruz, or any part of the coast thence to Campeche, they never arise: all that is felt being the heavy sea which has arisen in the higher latitudes. Hurricanes begin blowing from the Northward and Eastward; and although they do not always go round the same way, yet, in general, they next go to the Southward and Eastward, with thick squally weather and rain."

From Tampico to Bay of St. Bernard, the winds are continually from E. to S., and light from the month of April to August: the contrary is experienced in the other months. This coast is exposed on account of the hardness of gales from E. and E.S.E., which blow without intermission for two or three days before hauling to the Northward.

In latitude 26° 30′ N., there are land-breezes at night, which blow from midnight to nine A. M.

From Bay St. Bernard to the Mississippi there are land-breezes at daylight, and on the day's entering, the winds haul to S.E. and E.S.E., and in the afternoon it generally hauls S.W. In winter the Southerly winds are very tempestuous, and blow for the space of two or three days. The months most to be feared to navigate this sea are August, September, October, and November, in which there are hurricanes and winds on shore, so heavy that no canvas can stand them: upon the Mississippi, and all its mouths, there are very thick fogs very frequently, especially in February, March, and April, and in June and July.

From the Mississippi to latitude 28° N., in the month of April to July, the reigning winds are generally from N. to E. and from E. to S. in the morning, and in the afternoon they haul S.W. These S.W. winds are tempestuous in August, September, and October, an epoch in which are also experienced heavy Southers and hurricanes. From November to March the wind blows from the Northward, beginning first from S.E. and S., with heavy rain, when it hauls to S.W. and W., and blows very heavy, till it hauls to N.W. and N., when it clears the weather, and then to N.E., and is mild.

From latitude 28° N., to the Southernmost of the Florida Keys, the Trade Wind reigns in the morning, and at mid-day it hauls in from the sea. This happens in summer, but in winter, especially from November to March, the winds blow from S. to W. and raise a very heavy sea.

In the new channel of Bahama, the reigning wind is the Trade, interrupted in winter by Norths, and in summer by calms. Although the Northern limit of this channel is in 28° 30′ N., and consequently withinthe limits of the Trades, yet it is necessary to keep in mind that in winter, that is, from November to April, you will meet with the variables at or before you arrive to lat. 27°, which variables are from E. to S., and from S. to W., and in summer you have calms and light airs from S. to W. and from W. to N.

ON THE EASTERN COAST OF BRAZIL, between the months of September and March, the winds generally prevail from N. by E. to N.E. by E. Between March and September the prevailing winds are from E. by N. to E.S.E.

The former of these are generally termed the Northerly Monsoon, and the latter the Southerly one; although there appears, in fact, to be no direct and opposite change in them on or about the equinoxes, as is generally the case with the winds so called.

These winds are simply a continuation of the S.E. Trade, which changes its direction as above described, and is influenced by the land on its approach thereto. When the sun is to the Northward, no particular difference is observed in the S.E Trade, but it may be carried within sight of the coast, with scarcely any deviation; nevertheless, about both equinoxes, but more especially when the sun is advancing to the Northward, calms and very light winds, with apparently no settled quarter, will prevail near the coast; and this may be said to be more particularly the case on that part of it between the Abrolhos and Cape Frio. As the sun advances to the Southward, the Trade Wind will generally come round to the North-eastward, and will have its retrograde movement with the return of the sun to the equinox. At this latter season, ships, on approaching the coast, will begin to observe this Northerly inclination of the South-east Trade when within 4 or 5 degrees of it, and which they will find gradually to increase as they incline to the Westward.

Within a few miles of the coast, and in the different roadsteads and harbors, the wind generally blows directly upon it; and in the deep harbors, and upon the shore, this is generally superseded by a land-breeze, which sometimes lasts a greater part of the night. About Rio Janeiro this land-breeze sometimes extends as far seaward as Round Island, while at Pernambuco it rarely reaches the roadstead.

The preceding remarks are those of Lieut. Hewett. Pimentel, and, after him, M. D'Apres, has said that the winds of the Northerly Monsoons, between September and March, are from N.E. and E.N.E., or less Northerly than as above; and that those of the Southerly Monsoon are from E.S.E. to S.S.E., or more Southerly. It may, therefore, be admitted, that they do sometimes prevail more from the South, and that those near the North but seldom occur.

Mr. Lindley, in his narrative of a voyage to Brazil, having resided a considerable time on shore, at Bahia, &c., has described the inshore wind as follows: "From Cape St. Augustine, (Southward,) the wind blows, nine months in the year, chiefly North-easterly in the morning, and North-westerly during the evening and night. This continues gradually changing along the coast, till at Rio Janeiro and the Rio Plata, it becomes a regular land-breeze from evening to morning, and throughout the day the reverse. During the three stormy months, that is, from the latter end of February to that of May, the wind is generally Southerly, blowing very fresh and squally, at times, from the South-west.

Lieut. Hewett has observed, that the winds off Cape Frio are seldom found to the Southward of East; and in the Northern Monsoon they are generally to the Northward of North-east. Heavy and violent squalls are occasionally met with in rounding the cape, to obviate the effects of which every precaution is required.

The same officer adds, that at Rio de Janeiro the sea-breeze varies in its commencement from ten to one o'clock in the forenoon, and ceases in the evening between the hours of seven and eleven. At the full and change of the moon, violent squalls from the N.W., named by the Portuguese "Tere Altos," immediately supersede the sea-breeze, lasting from 4 to 6 hours.

The late Captain John McBride, of the Royal Navy, kept a regular journal of the winds and weather at the Falkland Islands, from the 1st of February, 1766, to 19th January, 1767, which was published in 1775, by Mr. Dalrymple. The journal concludes with the following general remarks:

"From going over the following journal of the winds, for the space of one year, they will be found to prevail in the Western quarter, and generally blow a close-reefed topsail gale, with a cool air. In November the winds begin to be more frequent in the N. W. quarter, generally hazy weather, and for the most part blow about 16 or 20 hours, when it begins to rain: the wind then regularly shifts into the Westward, and so on, till it gets to the S.W. by S. and S.S.W., when it blows fresh, and clears up. This S.S.W. wind continues for about 16 hours, then dies away, when the wind shifts again to the N.W. quarter; this continues during December, January, and February, and changes in the manner above mentioned every 3 or 4 days. As March comes on, you have these changes but seldom; and as the winter advances, they are seldom in the N.W. quarter, but rather incline to the E.N.E., which is generally accompanied with sleet and snow. There is not the least proportion in the gales between winter and summer. In summer, as I have before observed, as the winds are in the Westward, they blow in such heavy squalls off the tops of the mountains, that it is sometimes an hour before a cutter can row to the shore, although the water is smooth, and the distance of but one cable and half off. In the winter, the winds are pent up by a keen frosty air. The most lasting gales are those from S. by E. to S. by W., and are extremely cold."

Observations on the Winds, by Captain Frederick Chamier, R.N.

"The Trade Winds, in the West Indies, generally blow from N.E. to S.E., varying according to circumstances, which will be hereafter expressed. About Barbadoes and the Windward Islands, that is, from Tobago to Barbuda, the wind will be found to veer more to the Northward in the early part of the year, than in the months of June, July, and August. In the more Northern islands, such as Dominica, Montserrat, Antigua, Nevis, &c., the wind, in the evenings of January, February, and March, veers round to about North, or N.N.E., blows very fresh in squalls; and from the extensive space of ocean over which it travels, becomes cool and very refreshing. The thermometer, even in English Harbor, in the above months, at 8 o'clock, P. M., I never saw above 76°. In this season of the year, the sickness of the hot months is no longer experienced; the general lassitude of the mornings and noons of July and August seems forgotten: and no man who visited these islands during the first three months of the year, would believe that the change of 70 or 80 days could make such an amazing difference in the look, as well as in the energy, of the inhabitants of the Windward Islands. In the change of seasons (from wet to dry) a great difference is experienced in the winds. In April and May the atmosphere is, in general, clear, and fine weather prevails; but in August, September, and October, calms, or very high winds, are not uncommon. Strong hurricanes blow in these months.

"In speaking of hurricanes, they are well known to have been very rarely experienced in Trinidad. The main-land of Colobmia, the Gulfs of Darien and Honduras, and likewise Vera Cruz, are almost exempt from this scourge. In the 'Derrotero de las Antillas,' however, mention is made of a hurricane having been experienced on the morning of the 18th August, 1810.

"In the greater Antilles, such as Jamaica, Cuba, St. Domingo, (or Hayti,) and Porto Rico, the sea-breeze blows by day, and the land-wind by night; but in the lesser Antilles, such as Martinico, Dominica, St. Lucia, Antigua, &c., land-winds are very uncommon; and certainly, in all my cruizing in these seas, about these islands, I never experienced the land-wind.

"From the coast of Cumana to Punta Aguja, the common Trade Wind constantly blows at E.S.E. to E.N.E., the land-wind being uncommon, but still not unknown. At anchor, in La Guayra Road, in February, 1827, a very light cool land-wind from the S.S.W. occasionally reached the ship, but I doubt its ever extending more than 5 miles to sea. On the evening of the 20th October, 1816, a heavy squall came from the S.S.W. off Cape la Vela, and blew for some time with violence. I have merely mentioned the two above facts, because in the Derrotero it is asserted that land-winds are rarely known on this coast.

"The coast between Cape la Vela and Santa Martha seems more accustomed to changes of wind than any other part of the West Indies. Although the remarks of

some celebrated Spanish navigators would lead us to believe that the winds blow so fiercely from the E.N.E. that ships are obliged to lie to; yet I have in the month of August, by keeping close inshore between Punta Aguja and Cape la Vela, had the wind at West for two or three days together; and until we had passed Rio de la Hacha, and opened Cape la Vela, we neither had Easterly winds nor Westerly currents.

"In that part of the coast of Yucatan, between Cape Catoche and Punta Piedras, or Deconocida, and that coast which trends to the Southward to Campeche, the Trade Winds have generally been at E.N.E. In the evening towards September, the wind occasionally veers to the E.S.E., and this has been called a 'land-wind' by many authors.

"At all seasons of the year I have experienced land-winds on the coast of Cuba; that is, from Cape Corrientes to St. Jago de Cuba. If the sea-breeze, which in Cuba, as well as Jamaica and St. Domingo, (or Hayti,) generally begins about 9 o'clock in the morning, and freshens until noon, should in the evening about sunset dwindle to nearly a calm, you may be certain of a light air off the land: a mark to judge by, and which I never knew to fail, was the clouds hanging heavilyover the Blue Mountains of Jamaica, or Copper Hills of Cuba.

"The winds operate very little upon the thermometer. From May to October, in Jamaica, at day-dawn, 82° will be the average; it will be 88° at noon, and, again, 82° in the evening. To find the thermometer at 78° during the night, even in a place where the wind circulates freely, cooled also by the dew, is a luxury so rarely likely to occur, that in looking over my private journal for two years, I cannot discover one instance of it in the above months; yet, still, the land-wind, to those who have been long resident in the country, is a luxury most eagerly expected, and most welcomely received. It is of so different a kind from the sea-breeze, that respiration becomes easy; whereas, with the thermometer at 90° at Port Royal, and the sea-breeze blowing nearly a gale, I have found inhaling the hot wind very oppressive and relaxing.

"Between Jamaica and Maracaybo, and in the space between the latter and St. Domingo, I have always observed, that should the Trade Wind at daylight be at E.N.E., at noon it will generally be about E. by S., if the day is clear. The knowledge of this gives a great advantage in a windward beat; and by this means, watching the variation of the wind, you will be able to head the current for some hours—an advantage which every one must perceive."

U. S. S. MISSISSIPPI, *at Sea*, *Dec.* 31, 1846.

SIR—In compliance with your request, I have the honor to make the following remarks (the results of observations) on the manner in which the barometer is affected by the changes of weather in the Gulf of Mexico, and the indications it gives of such changes. I have kept a memorandum of the barometer since this ship left Boston, in August, 1845. I noted the height of the barometer at 8 A.M., 12 M., 4 P.M., and 8 P.M., and was also observant of the changes of weather that took place.

The general range of the barometer, for fair and pleasant weather, is from $30\frac{10}{100}$ to $30\frac{30}{100}$ inches; although I have often seen extremely unpleasant weather (mist, and what may be termed a double-reefed topsail breeze) when the barometer was at this range, particularly when on the coast of Yucatan; and I have, at such times, observed that the wind would be from the North and Northward and Eastward, whilst, on the Western coast, and at Vera Cruz, the wind was from the Northward and Westward; but previous to this, the barometer had fallen to 30, or even below 30 inches.

It is said that these are unfailing indications of the approach of what is called a "Norther"—those severe gales that prevail in the Gulf from the month of September to April. These indications are, the clearness of the atmosphere, known by the highlands being visible, particularly Mount Orizaba; heavy dews, and the falling of the barometer; but I have often noted the appearance of these indications when the Norther did not succeed. I have also known Northers to take place when not preceded by these indications, particularly when Mount Orizaba has not been visible for many days; but I have never known a Norther to happen without being preceded by a fall of the barometer—and its intensity may be determined by the degree of the change, and its rapidity. If the fall of the barometer be from $\frac{10}{100}$ to $\frac{20}{100}$, in three or four hours, you may look for a change of weather; and if it be during the season for Northers, you may expect one in a few hours: if in the tornado months, you may expect one of them, or a sudden violent squall.

I have also noticed that a change is indicated rather by the *rapidity* than by the *extent* of the fall of the mercury in the barometer. The barometer falls before a Norther, and then rises as it comes on, and continues rising as the intensity of the gale increases. When the barometer again commences falling, it is an indication that the gale is at its greatest height, and that it is about abating.

I have also noticed that the barometer falls when the wind is Southerly, particularly when from the Southward and Eastward, and that it rises when the winds are from the Northward.

I have already noticed that the winds seldom blow from the Northward and Westward

on the coast of Yucatan. During the Northers, vessels bound North, and those at anchor off Tampico, make for the Campeche Banks, where the Northers are not felt, but a moderate N.E. wind prevails.

I would suggest the supposition, that these violent Northers are met by the N.E Trades, which prevent the Northers from blowing home on the Campeche Banks, and render these Banks a safe retreat for vessels in cases of violent Northers.

I am, Sir, with sentiments of respect, your obedient servant,

M. H. BEECHER, *Prof. Math.*

Com. M. C. PERRY, *U. S. S. Mississippi.*

CURSORY REMARKS AND SUGGESTIONS ON VARIOUS TOPICS IN METEOROLOGY.

BY AN AMATEUR OBSERVER.

THE science of Meterology is not only interesting to the philosophic observer, but the natural phenomena of which it takes cognizance are such as daily affect the interest and comfort of every member of the human family. But to no class of persons are these phenomena, as exhibited in various parts of the world, of so much practical importance as to the members of the nautical profession. A competent knowledge of these exhibitions, or of geographical meteorology, is therefore an important element of that varied knowledge which is acquired by the skilful navigator.

In the preceding pages of the American Coast Pilot, will be found a valuable collection of observations on the winds which have been found to prevail in the Atlantic Ocean, and on different portions of the American coast. We now proceed to exhibit a more general and cursory view of the atmosphere and winds, and of various atmospheric phenomena which occur in these regions.

General View of the Atmosphere.

The transparent aërial fluid which surrounds our globe, and which we denominate *the atmosphere*, forms a comparatively thin stratum or envelope, which in the immediate vicinity of the earth is greatly compressed by its own weight, and which in its most expanded and tenuous state is supposed to extend itself to the height of only 45 or 50 miles from the earth's surface. Its superincumbent pressure or weight, is ascertained by means of the barometer, and is equal to a column of mercury about 30 inches in height. By means of this instrument we learn that one-half its weight or actual quantity is within 3½ miles of the surface of the ocean; and it is within this limit that nearly all the visible or important phenomena of the atmosphere are apparently developed. The lower surface of the atmosphere is equal to about 200,000,000 square miles; and as a compression of the whole mass to the common density which it exhibits at the sea-level, would reduce its entire height to about 5 miles, it follows that by this standard of comparison the height or thickness of the atmosphere is to its superficial extent in the proportion of only 1 to 40,000,000.

These several facts are too important to be lost sight of in our general reasonings upon the phenomena of the atmosphere; and the more so, as we are prone to give too much *altitude* to our conceptions on these subjects. If we even consider the proper height or thickness of the atmosphere as equal to 50 miles, still, as compared with its entire surface, this is only equal to one five-hundreth of the proportion which the thickness of a common sheet of paper, of the foolscap size, bears to its surface dimensions; and if we view the atmosphere either as condensed to the mean of the surface pressure, or in relation to the actual limit of all its tangible phenomena, it will only be equal to one five-thousandth part of the proportional thickness above mentioned. We may hence perceive the inapplicability of analogical reasonings that are founded on the movements which occur in a chimney, or in an inclosed apartment, as attempted to be applied in explanation of the general movements of the atmosphere.

Two instruments of modern invention, the *barometer* and *thermometer*, are truly invaluable as testing the condition of the atmosphere, and their use should be familiar to every navigator. By the first, as we have seen, the amount or weight of the superincumbent atmosphere, at any place, may always be accurately known, and by the indications of the other, the temperature of the air, as well as of the ocean, may be ascertained with equal precision.

Among the most striking peculiarities of the atmosphere, are its rapid and almost constant movements of progression or circulation, which, with some unimportant exceptions, appear to prevail throughout the globe. These movements evidently show the continued operation of some powerful impulse, which, to the writer at least, does not appear to have been satisfactorily explained. It is estimated from the average

rate of sailing of ships during long voyages, through different seas, and from other data, that the average velocity of the wind near the surface of the ocean is equal to 18 miles an hour throughout the year, and in the common region of the clouds the velocity must be much greater.

Temperature of Elevation.

Elevation above the level of the sea, or the general level of a country, causes a regular variation in temperature. The first 300 feet usually causes a difference of about one degree of Fahrenheit's thermometer. After ascending 300 feet, it is estimated that the thermometer falls a degree in 295 feet, then at 277, 252, 223, and 192 feet; but 300 feet to a degree is a common rule. On these principles the limit of perpetual frost has been calculated. It is made a little more than 15,000 feet at the equator, and from that to 13,000 between the tropics, and from 9,000 to 4,000 feet between latitudes 40° and 50°.

It has been found, however, that the above rule is subject to great variations, owing probably to the course, temperature, and super-position of the atmospheric currents which prevail in different regions at different altitudes. Colder currents are often found resting upon, or interposed between, those of a higher temperature, and *vice versa*. On the Himalaya mountains, in Asia, between the latitudes of 28° and 34° North, the region of vegetation has been found to extend several thousand feet above the supposed line of congelation in those latitudes. It is also remarkable, that the line of perpetual snow is found at a much greater altitude on the *Northern* side of these mountains than on the Southern side in a lower latitude. From this it may be inferred that the temperature in high regions, as well as in lower situations, is greatly affected by the geographical course and physical condition of the currents of atmosphere which prevail in these regions.

Stratification and Elevation of the Currents of the Atmosphere.

It is obvious, from the courses of the clouds and other light bodies which sometimes float in the atmosphere, that the movements of the latter are mainly horizontal, or parallel to the earth's surface. Notwithstanding this, the common theory of winds supposes a constant rising of the atmosphere in the equatorial regions, connected with a flow in the higher atmosphere towards the polar regions, and a counter flow at the surface towards the equator, to supply the ascending current. This ascending movement, however, has never yet been discovered, and it is easy to perceive that if it existed in the manner supposed, its magnitude and velocity must be altogether too great to have eluded observation.

It is apparent, however, that different currents often prevail at different altitudes, superimposed one upon another, and moving at the same time in different directions These currents are often of different temperatures and hygrometrical conditions, and are found moving with different degrees of velocity. It is by the influence of these currents that volcanic ashes, and other light substances, which are elevated by means of whirlwinds to the higher regions of the atmosphere, are conveyed to great distances, and in directions which are often contrary to the prevailing wind at the surface. On the eruption in St. Vincent, in 1812, ashes were thus deposited at Barbadoes, which is 60 or 70 miles to the windward, and also on the decks of vessels still further Eastward, while the Trade Wind was blowing in its usual direction. On the great eruption of the volcano of Cosiguina, on the shores of the Pacific, in Guatemala, in January, 1835, the volcanic ashes fell upon the Island of Jamaica, at the distance of 800 miles in a direct line from the volcano. Facts like these ought to put at rest the common theory of the Trade Winds, according to which, these ashes would sooner have fallen upon the Northern shores of the Gulf of Mexico, or the peninsula of Florida. On the same occasion the volcanic ashes were also carried Westward in the direction contrary to the Trade Wind on that coast, and fell upon H. M. ship Conway, in the Pacific, in lat. 7° N., long. 105° W., more than 1,200 miles distant from the volcano, in the direction which is nearly opposite from Jamaica. These phenomena were doubtless the effect of two different currents prevailing at different elevations; but we shall seek in vain, in these developments, for proof of the commonly received but imaginary system of the Trade Winds.

The occasional interposition of a warmer current of atmosphere between the lower current and the higher regions has been proved by the observations of æronauts. In countries situated like the United States, where the surface is often occupied in winter, for long periods, by an intensely cold stratum of air from the interior elevations, the warm currents from lower latitudes appear to find their way at a superior elevation; and their presence in this position is often demonstrated by the phenomena which they induce.

Clouds, Fogs, and Rain.

The atmosphere is always pervaded by water in the form of transparent or invisible vapor, and the process of evaporation is continually carried on, except in cases where the thermometer is below what is called the dew point, or when the vapor is being condensed in the form of clouds, fogs, or rain. "Clouds and fogs are the same thing, being an assemblage of small vesicles of water floating in the atmosphere. At a distance in the atmosphere we see the whole as a cloud; but when the vapor sinks to the earth, or will not rise, and we are immersed in it, we call it a fog. Dew fogs, which hang over fields, are *stratus* clouds; and fogs which involve elevated objects, are *cumulous* clouds." It is to circumstances of distribution, light, shade, distance, and perspective that the great variety in the *appearance* of the clouds is owing; and on this variety of appearance the following classification has been founded, by which the clouds have been considered as pertaining to seven classes:

1. Like a lock of hair, or a feather, called *cirrus*.
2. A cloud in conical or rounded heaps, called *cumulus*.
3. A horizontal sheet, called *stratus*.
4. A system of small, fleecy, or rounded clouds, called *cirro-cumulus*.
5. The wavy, or undulating stratus, called *cirro-stratus*.
6. The cumulus and cirro-stratus mixed, called *cumulo-stratus*.
7. A cumulus spreading out in cirrus, and raining beneath, called *nimbus*.

The cirrus is usually the most elevated—sometimes as a gauze veil, or parallel threads. Its height is apparently from one to four miles.

Dew is the condensation of aqueous vapor upon the surface of a condensing body or substance. Clouds and fogs are watery particles condensed from aqueous vapor while floating in the atmosphere, where they continue to float till precipitated, or again dissolved. If by the concentration of these particles, or by any additional condensation, their weight be increased beyond that which the extent of their surface can sustain, they then descend in the form of rain; and as the condensation ordinarily increases as the drops increase in magnitude, it is common to have more rain fall on the surface of the ground than on an equal space upon the top of a house or church. Clouds, fogs, and rain are, therefore, essentially the same, the latter being the continuation or extension of the same process which produced the former.

Owing to the evaporating qualities of the atmosphere in the higher regions, as well as to the intensity of cold which there uniformly prevails, distinct clouds are seldom, if ever, found at a greater elevation than the summits of the highest mountains, which is about five miles. At an intermediate region, however, the clouds are often at a temperature above freezing, while the air at the surface is much below the freezing point, and the earth covered with snow. This condition of the clouds seems not unfrequently evident, by their appearance to the eye of an observer. Snowy or frozen clouds are usually dim and undefined in their aspect or appearance; and a fall of snow may not unaptly be termed the fall of a frozen cloud.

Of Hail.

Hail of a small size, as it falls in wintry storms, appears as frozen rain-drops. From the occurrence of this phenomenon in a freezing state of weather, we find evidence that a stratum of air in the region of clouds is at a temperature above the freezing point, or warmer than that which is found at the surface at the same time. A heavy fall of snow affords, perhaps, the same indication.

Summer hail of large size, which is deposited in a definite bath or vein, or in a locality of limited extent, is usually accompanied by heavy thunder and vivid or continued lightnings, or a heavy rumbling sound or rapid concussions, high winds, &c., and is believed to be the production of a vortex or whirlwind in the atmosphere, which is connected at its upper extremity with an overlaying stratum of unusually cold air. A portion of this cold stratum probably descends on the exterior of the vortex, and reaching the earth's surface, is pressed into the vortex, and there entwined or laminated with the layer of warm and humid air of the surface, which is drawn in at the same time. A rapid condensation, as is known, thus commences at the lower extremity of the whirling mass or column, and the condensed drops, alternately in a freezing and unfrozen layer of air, are carried upward by the powerful whirling and ascending action of the vortex, till, with the successive coatings of condensation received, they are finally discharged into the cold stratum at the upward extremity of the vortex, owing to the reduced temperature of which, they are prepared to receive a renewed accession during their fall to the earth; or, perhaps, by their accumulated weight they are sometimes thrown through the sides of the vortex before reaching its higher extremity. By this violent gyratory and elevating action, some of the hailstones are thrown against each

other and broken; and each successive layer of congelation may be often seen in the fractured sections of the hail. In all vorticular condensations of this character, when the cold is not sufficiently intense to produce hail, drops of rain are produced of a much greater size than are ever found in a common and direct fall of rain.

Hail-storms of this character are less frequent in the tropical regions than in the temperate latitudes; for the reason, probably, that a stratum of sufficient cold to produce the hail is seldom found so near the inferior stratum, that a vorticular communication can be established with the former, by means of an ordinary gust, spout, or whirlwind. Nor does this ordinarily happen in the temperate latitudes; but only when the lower warm stratum becomes overlaid, in close proximity, by a stratum from a colder region; an event which is not unfrequent in most countries within the temperate latitudes. It commonly happens, therefore, that several hail-storms, of greater or less magnitude and violence, occur on the same day, or about the same period.

Of Thunder-storms and Gusts.

When a cold stratum or current of the upper atmosphere moves or rests upon a warm one which is next the earth, neither stratum, as such, can penetrate or displace the other. Nor can a sudden interchange or commingling take place between the masses or particles of which these strata are composed, except by the slow and tedious process of the successive action and convolution of single particles, or small groups of particles, upon or around each other: but if a communication or interchange between the two strata becomes established by means of the action of a gradually excited whirlwind or water-spout; or if, owing to any inequality of surface, or other accident, a depression is made upon the lower stratum, so as to enable the colder air to descend at this point, then an immediate gyration or convolution will take place in the two masses at this point, the warm air rising as it becomes displaced, and copious condensation will immediately follow. It is movements of this character which produce the dense and convoluted appearance known as a thunder-cloud, and the thunder and lightning, rain, and perhaps hail, follow as necessary results.

The precipitation of the colder stratum thus commenced, is regularly continued and enlarged till an equilibrium is produced, and the thunder-storm thus engendered, assumes, of course, the direction of the upper current to which it is appended, and which, in the temperate latitudes, is commonly from the Western quarter. The warm surface-air, which is thus displaced at the commencement of the process, rises immediately in front of the colder intruding mass, and by the gyratory action thus commenced becomes convoluted in detached masses or layers with the colder surrounding air, and by the reduction of temperature thus produced, furnishes the large supply of aqueous vapor which is first condensed in the heavy thunder-cloud, and then precipitated in a heavy fall of rain; and the electric phenomena which are induced by this sudden contact or intermingling of masses of air of different temperatures and hygrometric conditions, becomes highly vivid, and too often destructive. The active gyration which is commonly produced within the body of the thunder-storm or gust, is in the direction of the advance of the storm, and of the rising warm air which is forced upward, or in the direction of forward and upward at the lower front of the storm.

In consequence of this gyratory action, a storm which advances at the rate of fifteen or twenty miles an hour, is often known to exhibit a velocity of wind during the period of its greatest violence, of sixty or eighty miles an hour. If the axis of this gyration in a thunder-storm assumes, from any cause, a vertical position, we then have a perfect whirlwind or tornado, which, if it be so situated as not to reach the earth by its direct action, will exhibit to us the phenomena of a heavy thunder-storm accompanied by rumbling sounds and concussion, and a fall of hail in or near some portion of its path. But if the regular action of the whirlwind should reach the earth, and continue for some time, great destruction may be expected to follow. The path of these destructive whirlwinds is generally narrow, and often but a few hundred yards in width.

From the nature of the causes which we have set forth as being favorable to the occurrence of a thunder-storm, it follows that many of these storms will be likely to occur on the same day, in different parts of the same country, as has been already remarked in the case of hail-storms, with which they are often identical; and the writer has often found this to be true to a remarkable extent. The fatal accidents by lightning, in different parts of the country, have often happened on the same days; and we have reason to believe that scores of tornadoes, hail-storms, and thunder-storms, have sometimes occurred on the same afternoon. It usually happens that the precipitations of colder atmosphere at these numerous points of disturbance, is sufficient to produce a marked change in the temperature of the surface-stratum within a period of 12 hours thereafter.

Atmospheric disturbances of this kind, which do not produce violent thunder or hail, are usually denominated *squalls;* and it appears highly probable that the presence of air of a temperature considerably above the freezing point, is necessary to the production of

thunder and lightning. In the Strait of Magellan in Patagonia, where the air of the surface is neither warm nor yet very cold, the squalls, called by the sailors williwaws, are very frequent, and tremendously severe; but, according to the observations of Captain P. P. King, lightning and thunder are seldom known.

The heavy condensation presented in a thunder-cloud is often spoken of in a manner which implies that the cloud possesses some mechanical or other energy, by means of which the violent wind is sent forth; but nothing can be more unreal than such a supposition. The cloud may indeed be the means of electric development, and furnish also the watery depositions for the hail or rain, but all the particles of the cloud are passively inert, like those of a common fog or mist, and the violent winds and disturbing forces which may be present, operate to produce the cloud, but do not, in any important sense, result from its action.

Water-spouts and Whirlwinds.

The character of these meteors has already been described, in a measure, in our account of hail and thunder storms. The identity of whirlwinds and water-spouts was maintained by Franklin, and although at a later period this has been called in question, it appears to have been done without sufficient reason.

From the equal distribution of the atmosphere as the oceanic envelope of our earth, it results that no movement of great violence can take place in any of its parts, except by means of a direct circuit of rotation in the form of a vortex or active whirlwind.

A vortex will not be regularly formed, nor continue itself in action, without the aid of an external propelling force, and a constant spiral discharge from that extremity of its axis towards which is the tendency of motion. Both these conditions, it is believed, are fulfilled to the letter in the case of a common whirlwind or water-spout. The air at the upper extremity of the whirling column, owing to its elevation, is rarer than at the base, and the column itself, particularly in its central portions, is mechanically rarefied by the centrifugal effect of its own whirling motion. We have thus a sort of rarefied chimney into which the denser air at the base of the column is continually forced by the pressure of the surrounding atmosphere; not to ascend in a separate current, as in the common chimney, but entering into the organization of the whirling vortex, to supply the place of the preceding portions of air which are winding inwards and upwards to be again discharged at the upper extremity. The condition of force by which the propulsion is maintained, is found in the pressure of the surrounding atmosphere upon all sides of the mechanically rarefied column, and if the expansive whirling motion be sufficiently active to produce nearly a vacuum at the centre, the external propelling force will be nearly fifteen pounds to the square inch; and as the whirling column turns within its own compass, like a top or any other rotative body, this force is quite sufficient to account for all the violence that is ever produced.

Were there no vorticular or whirling action already excited, and no discharge from the upper extremity of the vortex, the external pressure, it is true, could not produce rotation; but this movement and upward discharge having once commenced, from any cause, the particles near the exterior of the column, like those of water in a funnel, yield at a little more than a right angle, to the external pressure, in their spirally approximating course towards the rarefied centre. By the slowness of this central approximation as compared with the whirling action, the intensity or magnitude of the external pressure becomes merged in the velocity of the rotative action. As the area of the spiral circuit decreases rapidly as we approach the centre, it follows that the velocity of the whirling movement must be proportionably increased, as we perceive it to be in the funnel and in all regular-formed vortices. Thus, if the rotative velocity near the exterior of a column be at the rate of but ten miles an hour, at one-third nearer the centre the velocity must be more than doubled, and at two-thirds of the distance from the first-named point to the centre, the absolute whirling velocity must be increased ninefold, which in this case is equal to ninety miles an hour; and in consequence of the reduced diameter of the circuit of gyration, at the last point, the number of revolutions must here be as four hundred, to one of the point first mentioned. The increased ascending velocity, however, is not here taken into account, which may perhaps reduce the number of comparative revolutions in the central portions of the column. The condensing and electric effects which often attend or follow these active whirlwinds, have been cursorily noticed under the head of thunder-storms.

It is not intended to dwell here upon the causes by which whirlwinds and spouts are excited or first set in motion, but the local disturbance of heat is probably the chief exciting cause as in thunder-storms. The agency of heat may also be effective in continuing the upward discharge and vorticular organization, in cases where there is great disparity in the temperatures of the air at the upper and lower extremities of the whirling mass or column; but it is to the mechanical expansion of the centrifugal action and the powerful impulse of the atmospheric pressure, that the increase and powerful activity of the whirlwind is chiefly to be referred.

The term *water-spout* is undoubtedly a misnomer, as there is no effect produced of which this term is probably descriptive, although the term air-spout would not be greatly inappropriate. The visible column of condensed vapor which often appears in the rarefied centre of the vortex when the latter is not enveloped in cloud, has probably given name to this meteor. But the water of the sea is not taken up by the spout or whirlwind, except in a slight degree and in the form of fine spray, like other light matter which is swept from the surface. This cloudy stem or column frequently appears and disappears, while the action of the whirlwind continues without any important change. Owing to this fact, observers sometimes believe that they witness the commencement of a water-spout, or tornado, when the same has previously been in action for one or more hours, and when the cloudy pipe or pillar happens to disappear, the spout is supposed to have "burst," while, often, it has undergone no important change, except, perhaps, a slight decrease in its activity. The active and violent portion of the whirlwind surrounds the spout invisibly, and is probably of much greater diameter at a distance from the surface of the earth than at the base of the spout. Thus, when a spout or whirlwind has passed near a ship, the upper spars have been converted into a wreck while no violence of wind was felt on the deck.

Water-spouts follow the course either of the surface wind or of the higher current with which they may communicate, or their course may be modified by both these influences without being absolutely determined by either. They abound most, however, in those calm regions which are found at the external limits of the Trade Winds, and in the regions near the equator.

It has been common to ascribe whirlwinds and water-spouts, as well as larger whirlwind storms, to an impulse produced by the meeting of contrary currents, but the laws of distribution and of motion in an oceanic body, are such as do not permit the movements of its different currents and gyrations to meet in conflict with each other; besides, any conflicting movement in the air would necessarily produce a rise in the barometer, whereas it is generally known to fall at the commencement of a storm, either of large or small extent. We may observe, also, that whirlwinds and spouts appear to commence gradually, and to acquire their full activity without the aid of foreign causes; besides, it is well known that they are most frequent in those calm regions where, apparently, there are no active currents to meet each other, and they are least frequent where currents are in full activity.

Of Trade Winds and the Circuitous Character of the Atmospheric Currents.

It is found that in almost every country, and in every sea, the wind is more or less predominant in a particular direction. In open sea, between the equator and the 30th parallel of North and South latitudes, the wind, for the most part, blows from the Eastward; but near the Eastern borders of any ocean, below these latitudes, the wind blows in a direction more towards the equator than in its central or Western portions.

In the higher latitudes North of 30°, the Westerly winds are found greatly to predominate, although the eddying or rotative action which is acquired by large portions of the lower stratum of air in these latitudes, causes much diversity and frequent changes in the initial direction of the wind. But in the common region of clouds where this eddying movement is less frequent, the main atmospheric current, at least in the United States, is fully as constant from the Westward as is the Trade Wind from the Eastward in any tropical region.

At New York, in four successive years, the Westerly winds have been found to be to the Easterly, as nearly two to one. Observations on the courses of the clouds for the same period show the prevalence of an atmospheric current from the Westward at that elevation to be, as compared with those from the Eastward, nearly as fourteen to one; the prevailing wind being South-westerly. At Montreal, in Lower Canada, as appears by the observations of J. M'Cord, Esq., the Westerly surface winds also appear to exceed the Easterly, in the proportion of more than four to one. In consequence of the general prevalence of Westerly winds and currents in these latitudes, the passages of the fastest ships, from Europe to America, are found to occupy a much longer period than from America to Europe.

The first movement of the Trade Winds towards the equator and Westward, necessarily occasions an equal movement from the higher latitude to supply their place; and as the Trade Winds in their progress Westward are opposed by the American and Asiatic continents, across which these winds do not pass, it follows that these winds become deflected or thrown off towards the poles in order to support an equal distribution of the atmosphere in the higher latitudes; but the air thus transferred to these latitudes carries with it the rotative impulse which it acquired in the tropical latitudes, and by reason of the slower rotative motion which here prevails, is thrown to the Eastward in the form of Westerly winds.

An entire circuit of atmospheric currents is thus maintained on both sides of the equator, the most equable and determinate portion of which is to be found in the region of the Trade Winds; and this appears to be the general outline of the great system of circulation in our atmosphere, as well as in the ocean itself. It is to the geographical course pursued by the winds in different portions of these great circuits, that the peculiarities of temperature and climate pertaining to different countries lying in the same latitudes, are chiefly to be referred, as also the remarkable absence or predominance of *rain*, which is peculiar to certain regions.

The Monsoons of the Indian Seas are but a modification of the same system of circulation; the regular Trade Wind, instead of turning towards the higher latitudes, being here deflected across the equator, where it returns to the Eastward in the form of the *Westerly* Monsoons; the *Easterly* Monsoons being the regular Trade Wind. The Monsoons have, indeed, been ascribed to local refraction in Asia and New Holland, but the North-westerly Monsoon, regardless of this hypothesis, sometimes sweeps over half the breadth of the great Pacific in its Eastwardly progress.

The foregoing generalization may also be expressed in the following form:

I. Between the two parallels of 30° N. and S. the atmosphere at the earth's surface, for the most part, revolves around the axis of the earth with a slower motion than the earth's crust, or is constantly being left behind in the movement of rotation.

II. The space previously occupied by the atmosphere so left behind is, by the centrifugal action of the earth's rotation, constantly supplied from the higher latitudes.

III. That portion of the atmosphere which is left behind in the tropical latitudes, and passes Westward by the earth's rotation, as above described, is, by the force of direct gravitation, constantly transferred to the higher latitudes; thus preserving the equilibrium of distribution, so far as the same is ever maintained in these latitudes.

IV. That portion of the atmosphere which is so transferred to the higher latitudes, after having acquired the high rotative velocity of the equatorial regions, is, by this previously acquired impulse, thrown rapidly Eastward in the form of Westerly winds, thus completing the great circuit of perpetual gravitation, which is developed in each of the oceanic basins on both sides of the equator.

It is by the currents of these natural circuits of gravitation that hurricanes and storms are found to be transported from one region or locality to another; and the track of these storms affords demonstrative evidence of the predominating course which these currents pursue. The currents themselves often become modified in their apparent courses from various causes, and being often stratified, or as it were *shingled* upon each other, they exhibit, in their crossings, initial movements in different directions, and frequent changes at the surface, while still performing with no little regularity the systematic courses which have been summarily pointed out. One obvious cause of the irregularity and superposition of these currents is found in the retardation to which the lowest portions are subject, owing to the resistance of the earth's surface.

The rotative motion of the atmosphere and the earth's surface in the latitudes between the Trade Winds and the returning Westerly winds being nearly equal, this region is necessarily subject to calms, and to those sudden gusts and squalls which are usually excited in warm regions in the absence of a prevailing wind. This region, in the North Atlantic is known to navigators as the *horse latitudes*, because the traders between New England and the West Indies, in consequence of the lack of sustenance occasioned by these calms, were sometimes under the necessity of throwing overboard the whole or a part of their deck-loads of horses. The great circuits of winds intersect and cross these latitudes in both directions on almost every meridian, but with little sensible effect at the surface, except towards the Eastern margin of the Atlantic, where the Northerly winds decidedly prevail; and towards the Western margin of the Atlantic and in the Gulf of Mexico the Southerly winds are usually prevalent.

Similar results are found in nearly all the regions which separate the great natural circuit of winds from each other, and these tracks of ocean are known by the designation of the *calms*, and sometimes are called the *rains* or the *variables*. Such is the region about the equator which separates the Northern from the Southern Trade Winds, and the Easterly from the Westerly Monsoons. The Easterly Monsoons, in approaching the equator, where they run into the Westerly Monsoons, necessarily acquire the same velocity of rotation as the earth's crust, which of course produces calms; the Northerly or Southerly tendency of the Monsoons being here too small to produce a leading-breeze at the surface.

Land and Sea Breezes.

Near the shores of an island or country it is often found that the wind, during different hours of the day and night, blows alternately to and from the land; or in the case of a general or Trade Wind which is parallel to the coast, its course becomes alternately

modified by an approximation to the above result. This effect has probably been ascribed to the influence of diurnal heat and cold. Not that any vacuum is created by the heat into which the surrounding air rushes, as has sometimes been supposed; for, aside from the general error of this notion, a flat, low, and strongly heated island or coast, has less effect in producing these breezes than a high sloping country of more even temperature.

The truth appears to be, that when the stratum which lies upon the inclined surface of a coast becomes warmed and rarefied by the daily heat, it is forced by the increment of pressure at its lowest margin to move along the inclined surface in the direction of greatest elevation, or as near that direction as the prevailing tendency of the lower current will allow. Owing to the cooling process which goes on during the night, the specific gravity of the inclined stratum becomes predominant, and the reverse movement then commences and continues into the following morning. We find, too, that on the slopes of certain coasts and islands where there is sufficient elevation, the higher margin of this stratum, at certain seasons, will daily reach an altitude at which it is brought in contact with a higher stratum sufficiently cold to set in operation a squall or thunder-storm, at a certain hour; after which the equilibrium is restored, and the usual counter-movement again follows in its turn.

Some diurnal effect of this kind upon the wind is observed at times in almost every region; and, taken altogether, it is probably the most extensive agency which is exercised by heat in the production of winds.

OBSERVATIONS

ON THE

HURRICANES AND STORMS OF THE WEST INDIES AND THE COAST OF THE UNITED STATES.

BY W. C. REDFIELD.

From a careful attention to the progress and phenomena of some of the more violent storms which have visited the Western Atlantic, I have found that they exhibit certain characteristics of great uniformity. This appears, not only in the terminate course which these storms are found to pursue, but in the direction of wind and succession of changes which they exhibit while they continue in action. The same general characteristics appear also to pertain, in some degree, to many of the more common variations and vicissitudes of winds and weather, at least in the temperate latitudes. The following points I consider as established:

1. The storms of greatest severity often originate in the tropical latitudes, and, not unfrequently, to the Eastward of the West India Islands; in the tropical regions they are distinguished by the name of *hurricanes*.

2. These storms cover, at the same moment of time, an extent of contiguous surface, the diameter of which may vary, in different storms, from one hundred to five hundred miles, and in some cases they have been much more extensive. They act with diminished violence towards the exterior, and with increased energy towards the interior, of the space which they occupy.

3. While in the tropical latitudes, or South of the parallel of 30°, these storms pursue their course, or are *drifted* by the natural atmospheric current of the region towards the West, on a track which inclines gradually to the Northward, till it approaches the latitude of 30°. In the vicinity of this parallel, their course is changed somewhat abruptly to the Northward and Eastward, and the track continues to incline gradually to the East, towards which point, after leaving the lower latitudes, they are found to progress with an accelerated velocity.

The rate at which these storms are found thus to advance in their course, varies in different cases, but may be estimated at from 12 to 30 miles an hour. The extent to which their course is finally pursued, remains unknown: but it is probable that, as they proceed, they become gradually extended in their dimensions, and weakened in their action, till they cease to command any peculiar notice. One of the hurricanes of Aug., 1830, has been traced in its daily progress, from near the Caribbee Islands to the coast of Florida and the Carolinas, and from thence to the banks of Newfoundland, a distance of more than 3000 miles, which was passed over by the storm in about 6 days. The duration of the most violent portion of this gale, at the different points over which it passed, was about 12 hours, but its entire duration was, in many places, more than twice that period. Another hurricane which occurred in the same month, passed from near the Windward Islands, on a more Eastern but similar route, and has also been traced in its

daily stages by means of the journals and reports of voyages, near two thousand five hundred miles. It was in this storm that the Russian corvette, Kensington, Captain Ramsey, suffered so severely. The hurricane of August, 1831, which desolated the Island of Barbadoes on the 10th of that month, the daily progress of which has also been ascertained, passed in nearly a direct course to the Northern shores of the Gulf of Mexico and New Orleans, where it arrived on the 16th of the same month, having passed over a distance of twenty-three hundred statute miles in six days after leaving Barbadoes.* Many cases of like character might be adduced.

4. The duration of the storm, at any place within its track, depends upon its extent and the rate of its progressive velocity, as these circumstances are found to determine the time which is required for the storm to pass over any given locality falling within its route. Storms of smaller extent or dimensions are usually found to move from one place to another with greater rapidity than larger storms.

5. The course thus pursued by the storm, is found to be entirely independent of the direction of wind which it may exhibit at the different points over which it passes—the wind in all such storms being found to blow after the manner of a whirlwind, around a common centre or vortex, during their entire progress, and in a determinate direction or course of rotation, which is from *right to left* (or in the direction from West to South) horizontally. The direction of the wind, therefore, for the most part, does not coincide with the course of the storm.

6. In the lower latitudes, while drifting to the Westward, the direction of the wind at the commencement, or under the most advanced portion of these storms, is from a *Northern* quarter, usually at some point from North-east to North-west, and during the latter part of the gale, it blows from a Southern quarter of the horizon, at all places where the whole effect of the gale is experienced.

7. After reaching the more Northern latitudes, and while pursuing their course to the Northward and Eastward, these storms commence with the wind from an Eastern or Southern quarter, and terminate with the wind from a Western quarter, as will appear more distinctly under the three following heads, the latter portion of the storm being usually attended with broken or clear weather.

8. On the outer portion of the track, North of the parallel of 30°, or within that portion of it which lies *furthest* from the American coast, these storms exhibit at their commencement a *Southerly* wind, which as the storm comes over, *veers gradually to the Westward*, in which quarter it is found to terminate.

9. In the same latitudes, but along the *central portion of the track*, the first force of the wind is from a point near to *South-east*, but after blowing for a certain period it *changes suddenly*, and usually after a short intermission, to a point nearly or directly opposite to that from which it has previously been blowing, from which opposite quarter it blows with equal violence till the storm has passed over, or has abated. This sudden change of a South-easterly wind to an opposite direction, *does not occur towards either margin of the storm's track*, but only on its more central portion, and takes effect in regular progression along this central part of the route, from the *South-west* towards the *North-east*, in an order of time which is exactly coincident with the progress of the storm in the same direction. It is under this portion of the storm that we notice the greatest fall of the barometer, and the mercury usually begins to rise a short time previous to the change of wind. In this part of the track the storm is known as a *South-easter*, and is usually attended with rain previous to the change of wind, and perhaps for a short time after.

10. On that portion of the track which is *nearest* the American coast, or which is farthest inland if the storm reaches the continent, the wind commences from a more Eastern or North-eastern point of the horizon, and afterwards veers more or less gradually, by North, to a North-western or Westerly quarter, where it finally terminates. Here also the first part of the storm is usually, but not always, attended with rain, and its latter or Western portion with fair weather. The first or foul-weather portion of the storm is, on this part of its track, recognized as a *North-easter*.

It should be noted, however, that near the latitude of 30°, and on the shores of Carolina, where the storm enters obliquely upon the coast, while its track is rapidly changing from a Northwardly to an Eastwardly direction, the wind on the central track of the storm will commence from an Eastern or North-eastern point of the compass, and will gradually become South-easterly as the storm approaches its height.

11. A full and just consideration of the facts which have been stated, will show conclusively that the portion of the atmosphere which composes for the time being the great body of the storm, whirls or blows as above stated, in a horizontal circuit, around a vertical or somewhat inclined axis of rotation which is carried onward with the storm; that the course or direction of this circuit of rotation is from *right to left*; and that the storm operates nearly in the same manner as a tornado or whirlwind of smaller dimensions;

* The tracks of these and other hurricanes appear on the annexed chart.

the chief difference being in the more disk-like form of the whirling body and the magnitude of the scale of operation.* This view of the subject, when fully comprehended, affords a satisfactory solution of the otherwise inexplicable phenomena of storms, and will also be found to accord entirely with the fact which appears in the above statement, that in the phases or changes which pertain to a storm, the wind, on one margin of its track, veers *with the sun*, or from *left to right;* while under the opposite margin of the same storm it veers *against the sun*, or from *right to left;* for this peculiarity necessarily attends the progressive action of any whirlwind which operates horizontally.

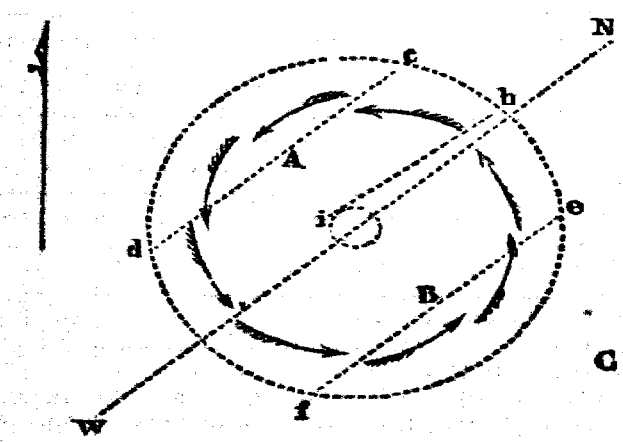
12. Owing to the centrifugal action of these rotative storms, the barometer, whether in the higher or lower latitudes, always sinks while under the first portion or moiety of the storm on every part of its track, excepting, perhaps, its extreme outward margin, and commonly affords us the earliest and surest indication of the approaching tempest. The mercury in the barometer always rises again during the passage of the last portion of the gale, and commonly attains the maximum of its elevations on the entire departure of the storm.

The great value of the barometer to navigators is becoming well understood, and its practical utility might be greatly increased by hourly entries of the precise height of the mercurial column, in a table prepared for the purpose. Its movements, unless carefully recorded, often escape notice or recollection; which may easily happen at those times when a distinct knowledge of its latest variations might prove to be of the greatest importance.

In the foregoing statements our design has been to designate in a summary manner the principal movements which, in these regions at least, constitute a storm; and we do not attempt to notice the various irregularities, and subordinate or incidental movements and phenomena of the atmosphere with which a storm may chance to be connected, or which may necessarily result from such violent movements in a fluid which is so tenuous and elastic in its character. It may be remarked in general, that the most active or violent storms are usually the most regular and uniform in the development of those characteristic movements which we have already described. It is also probable that the vortex or rotative axis of a violent gale or hurricane, oscillates in its course with considerable rapidity, in a moving circuit of moderate extent, near the centre of the hurricane; and such an eccentric movement of the vortex may, for aught we know, be essential to the continued activity or force of the hurricane. Such a movement will fully account for the violent *flaws* or *gusts* of wind, and the intervening *lulls* or remissions, which are so often experienced towards the heart of a storm or hurricane, when in open sea; but of its existence we have no positive evidence.

In Purdy's Memoir of the Atlantic Ocean, it is stated, "that while one vessel has been lying to in a heavy gale of wind, another, not more than 30 leagues distant, has at the very same time been in another gale equally heavy, and lying to with the wind in quite an opposite direction."

This statement is obviously to be understood as applicable to two vessels falling under the two opposite sides or portions of the same storm, where the wind in its regular circuit of rotation must, of course, blow from the opposite quarters of the horizon. We will suppose one of the vessels to be at A and the other at B, in the annexed figure.



The storm, in pursuing its course from W. towards N., will strike the first-mentioned vessel in the direction which is shown by the wind-arrows at the point *c*, which, if the position be in the temperate latitudes, North of 30°, will be from Eastward. Now, it is obvious, that as the storm advances in its course North-eastward, this vessel, if nearly stationary, will intersect the body of the gale on the line *c* A *d*. As the storm advances, the wind must also veer to the Northward, as shown by the arrows, being at N.E. when the vessel is brought under the point A; and near the close or departure of the storm by its further progress Eastward, the wind will have further veered to the direction shown at *d*, which, with due allowance for the

* It is to be understood that the diameter of the whirlwind which constitutes the storm is commensurate with the width of the track over which the storm passes. The main body of the storm is supposed to move in the form of an extensive disk, whirling around its own centre as it advances in its regular track—with this difference, that the rotative movement is far more rapid in the interior portions of the whirling body, than towards its exterior limits.

progressive motion of the storm, we will set down at N.N.W. The other vessel, as is equally obvious, will first take the wind from the Southward, as shown at *e*, in which quarter it will blow, with no great variation, till, by the advance of the storm, the ship is brought under the point B. The barometer, which had previously been falling, will now commence rising, and the wind, veering more Westerly, will, at the departure of the storm, be found in the direction shown at *f*, which, after the allowance already referred to, may be stated at W.N.W. Such, substantially, are the facts commonly reported by vessels which fall under the lateral portions of the Atlantic storms; and it is readily seen, that the opposite winds which are exhibited on the two different intersections of the storm, as above described, will very naturally be mistaken for two separate and distinct gales.

The phases of the wind in these gales are, however, in all cases modified more or less by the course or changing position of the vessel exposed to its action. For example: a ship on taking the gale, say at E.S.E., at the point *h* on the figure, and lying to with her head to the Northward, may by that means be brought to intersect the storm on the line *h i*, and at the point *i* would suddenly be taken aback, with the wind, say at N.N.W., as in the case of the Jamaica homeward-bound fleet in 1782; and the barometer, which reaches its lowest depression under the central portion of the storm, would about this period be found to have commenced rising with some degree of rapidity.

A further reference to the figure will show that a ship, which may be at the point G during the passage of the gale, would be exposed to a heavy swell from the Southward and Westward; but, being beyond the organized limits of the storm, may remain entirely unaffected by the violence of the wind, which at the same time may be raging with destructive fury at the distance of a few leagues. The writer has knowledge of many such examples.

It has been suggested that the "port tack is the proper one to lie to on, as the wind will then be found to draw aft;" but this will frequently prove erroneous, as the wind may draw either way, on either tack, according to the position and course of the ship, in the storm, and the extent and rate of progress of the latter. In the case of the fleet which encountered the gale of 1782, it was probably the best course to carry sail to the Northward at the very commencement of the gale, and as far and as long as possible. By this means the fleet might, perhaps, have been drawn as far Northward as the point A on the figure, and the change of wind to the Northward and Westward would have been rendered more gradual. The chief difficulty and danger is, when the direction of the wind, at the first setting in of the gale, is found to be nearly at right angles with the known course of the storms in the region where the gale is encountered, and it is then desirable to pursue such a course as to avoid, if possible, falling into the heart of the storm.

It frequently happens that a storm, during the first part of its progress over a given point, fails to take effect upon the surface, while it exhibits its full activity at a greater altitude. This commonly happens when this portion of the storm arrives from, or has recently blown over a more elevated country, or is passing or blowing from the land to the sea. On land, the most violent effects are usually felt from those storms which enter and blow from the open ocean upon the shores of an island or continent. Upon the latter, under such circumstances, the *first* part of the gale is usually the most severe, and that coast of an island upon which a storm first enters, or blows, also suffers most from the early part of the gale; but its later, or receding part, often acts with the greatest fury upon the opposite side of the island, which had previously derived some degree of shelter from the intermediate elevations and other obstacles opposed to the force of the wind, the benefit of which is now lost by its counter-direction from the open ocean. Owing to similar causes, the force of the storm is sometimes very unequal at different places, situated in nearly the same part of its track, and such inequality as we have before intimated, necessarily pertains to two places, one of which is near the centre and the other towards the margin of the route.

Of the multitude of facts by which these views might be illustrated, we will only state, that in the late hurricane at Barbadoes, (that of August, 1831,) the trees near the Northern coast of that island lay from N.N.W. to S.S.E., having been prostrated by a Northerly wind in the earlier part of the storm, while in the interior and some other parts of the island, they were found to lay from South to North, having fallen in the later period of the gale. That after the same hurricane, advices that were received from the islands of St. Croix and Porto Rico, (which lay near the Northern margin of its track,) stated that no hurricane had been experienced at these islands; but it afterwards appeared that some portions of these islands had suffered damage from this hurricane in the night of the 12th to 13th of August, two days after it passed over the island of Barbadoes. That the sea-islands which border the coast of Georgia and the Carolinas, are known to suffer greatly from these tempests, while little or no injury is sustained in the interior at a distance of a few miles from the coast. One of the most striking characteristics of these storms, is the *heavy swell* which in open sea is often

known to extend itself on both sides of the track, entirely beyond the range of the gale by which it was produced. The last hurricane to which we have alluded, threw its swell with tremendous force upon the Northern shores of Jamaica, having passed to the Northward of that island.

So strong is the influence of our established modes of thinking on this subject, that it seems to be difficult, even for those who admit the rotative character of these hurricanes, to understand correctly the true bearing and relations of the different phases of the wind which are presented at two or more points or places visited by the same storm, unless the subject has been thoroughly and carefully studied. Speculative opinions, also, upon a course of a storm, are usually, if not always, founded upon the erroneous notion of a rectilinear course in the wind. In the accounts received of the hurricane at Barbadoes, on the 3d September, 1835, which raged for a few hours from E.N.E., fears were expressed for the safety of the islands to the Northward; but subsequent intelligence from Guadaloupe and Martinico showed that the gale had not extended to these islands. Had the direction and changes of the wind in this storm been viewed in their true relations, it would have been perceived that the heart of the gale must have passed to the Southward of Barbadoes; and, as a general rule in the West India latitudes, where the onset of the storm is found to be in the general direction of the trade wind, or more Eastward, the observer may consider himself as under the Northern verge of the gale; but if the onset of the gale be from the North-westward, veering afterwards by West to the Southern quarter, the heart of the storm will be found to have passed to the Northward of the point of observation, the latter being under the Southern margin of the gale.

In order to illustrate the foregoing statements, I annex a chart of the Western Atlantic, on which is delineated the route of several hurricanes and storms, as derived from numerous accounts which are in my possession, by which their progress is specifically identified from day to day, during that part of their route which appears on the chart.

The route designated as No. I, is that of the hurricane which visited the islands of Trinidad, Tobago, and Grenada, on the 23d June, 1831. Pursuing its course through the Caribbean Sea, it was subsequently encountered by H. M. schooner Minx, and other vessels, and its swell was thrown with great force upon the South-eastern shores of Jamaica, on the 25th, while passing that island, where the wind, at this time, was light from the Northward. After sweeping through the Caribbean Sea, this hurricane entered upon the coast of Yucatan, on the night of Juue 27, having moved over the entire route from Trinidad to the Western shore of the Bay of Honduras, in a little more than a hundred hours, a distance of about seventeen hundred nautical miles, which is equal to nearly seventeen miles an hour. I have no account of this storm after it crossed the peninsula of Yucatan, and it is probable that it did not again act with violence upon the ocean level. Its course of track to Honduras was N. 74° W.

Track No. II. is that of the memorable hurricane which desolated Barbadoes on the night of August 10, 1831, and which passed Porto Rico on the 12th, Aux Cayes and St. Jago de Cuba on the 13th, Matanzas on the 14th; was encountered off the Tortugas on the 15th, in the Gulf of Mexico on the 16th, and was at Mobile, Pensacola, and New Orleans on the 17th; a distance of 2000 nautical miles in about 150 hours, equal to something more than 13⅓ miles an hour.* Its course, until it crossed the tropic of Cancer, was N. 64° W., or W. N.W., nearly. In pursuing its Northern course, after leaving the ocean level, it must have encountered the mountain region of the Alleganies, and was perhaps disorganized by the resistance opposed by these elevations. It appears, however, to have caused heavy rains in a large extent of country lying North-eastward of the Gulf of Mexico.

Track No. III. is that of the destructive hurricane which swept over the Windward Islands on the 17th of August, 1827; visited St. Martin's and St. Thomas' on the 18th; passed the North-east coast of Hayti on the 19th; Turk's Island on the 20th; the Bahamas on the 21st and 22d; was encountered off the coast of Florida and South Carolina on the 23d and 24th; off Cape Hatteras on the 25th; off the Delaware on the 26th; off Nantucket on the 27th; and off Sable Island and the Porpoise Bank on the 28th. Its ascertained course and progress is nearly 3000 miles,† in about eleven days; or at the average rate of about eleven miles an hour. The direction of its route, before crossing the tropic, may be set down at N. 61° W.; and in latitude 40°, while moving Eastward, at N. 58° E.

Track No. IV. is that of the extensive hurricane of September, 1804. It swept over the Windward Islands on the 3d of that month; the Virgin Islands and Porto Rico on the 4th; Turk's Island on the 5th; the Bahamas and Gulf of Florida on the 6th; the coast of Georgia and the Carolinas on the 7th; the great bays of Chesapeake and Delaware, and the contiguous portions of Virginia, Maryland, and New Jersey, on the 8th; and the states of Massachusetts, New Hampshire, and Maine, on the 9th; being on the highlands of New-Hampshire a violent snow-storm. The destructive action of

* Mr. Purdy states that this gale was felt at Natchez, 300 miles up the Mississippi.
† All distances are expressed in nautical miles.

this storm was widely extended on both sides the track indicated upon the chart, and the same fact pertains, in a greater or less degree, to the other storms herein mentioned. It appears to have passed from Martinico, and the other Windward Islands, to Boston, in Massachusetts, by the usual curvilinear route, in about 6 days; a distance of more than 2200 miles, at an average progress of about 15½ miles per hour.

Track No. V. represents the route of the hurricane which ravaged the Islands of Antigua, Nevis, and St. Kitt's, on the night and afternoon of August 12th, 1835; St. Thomas, St. Croix, and Porto Rico, on the 13th; Hayti and Turk's Island on the 14th; the vicinity of Matanzas and Havana on the 15th; was encountered off the Tortugas, in the Gulf of Mexico, on the 16th; in lat. 27° 21′, long. 94°, and other points, on the 17th and 18th; and also at Matamoras, on the coast of Mexico (lat. 26° 4′,) on the 18th, where it was most violent during the succeeding night.* This storm is remarkable, as moving more directly, and further to the West, than is usual for storms which pass near the West India Islands, it having reached the shores of Mexico before commencing its sweep to the Northward. Its course, so far as known, is N. 73° W. Its progress more than 2200 miles in 6 days, which is nearly equal to 15½ miles per hour.

Track No. VI. is that of the memorable gale of August, 1830, which, passing close by the Windward Islands, visited St. Thomas on the 12th; was near Turk's Island on the 13th; at the Bahamas on the 14th; on the gulf and coast of Florida on the 15th; along the coast of Georgia and the Carolinas on the 16th; off Virginia, Maryland, New Jersey, and New York on the 17th; off George's Bank and Cape Sable on the 18th; and over the Porpoise and Newfoundland Banks on the 19th of the same month; having occupied about 7 days in its ascertained course from near the Windward Islands, a distance of more than 3000 miles—the rate of its progress being equal to 18 miles an hour.† If we suppose the actual velocity of the wind, in its rotary movement, to be five times greater than this rate of progress, which is not beyond the known velocity of such winds, it will be found equal, in this period, to a rectilinear course of 15,000 miles. The same remark applies, in substance, to all the storms which are passing under our review. What stronger evidence of the rotative action can be required than is afforded by this single consideration?

Route No. VII. is that of an extensive gale, or hurricane, which swept over the Western Atlantic in 1830, and which was encountered to the Northward of the West India Islands on the 29th of September. It passed on a more Eastern route than any which we have occasion to describe, to the vicinity of the Grand Bank of Newfoundland, where it was found on the 2d of October, having caused great damage and destruction on its widely extended track, to the many vessels which fell in its way. Its course is quite analogous to that which we have considered as having been probably pursued by the hurricane of October 3d, 1780. The ascertained route may be estimated at 1800 miles, and the average progress of the storm at 25 miles an hour.

Route No. VIII. is that of a much smaller, but extremely violent hurricane which was encountered off Turk's Island on the 1st of September, 1821; to the Northward of the Bahamas, and near the lat. of 30°, on the 2d; and on the coast of the Carolinas early in the morning of the 3d; and from thence, in the course of that day, along the seacoast to New York and Long Island; and which, on the night following, continued its course across the States of Connecticut, Massachusetts, New Hampshire, and Maine. We are not in possession of accounts by which its further progress can be successfully traced.‡ The diameter of this storm appears not to have greatly exceeded 100 miles; its ascertained route and progress is about 1800 miles in 60 hours—equal to 30 miles an hour.

The last-mentioned route may also be considered to be nearly the same as that of a similar, but less violent storm, which swept along the same portion of the coast of the United States on the 28th of April, 1835.

No. IX. represents the route of a violent and extensive hurricane, which was encountered to the Northward of Turk's Island on the 22d of August, 1830; Northward of the Bahamas on the 23d; and off the coast of the United States on the 24th, 25th, and 26th of the same month.

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* Since the above was written, it is ascertained that this storm also passed over Galveston Bay, on the coast of Texas, where the hurricane blew with violence from the N.E., while at the mouth of the Mississippi, and along the Northern shores of the gulf, the gale was not felt. Such facts appear quite sufficient to overthrow the hypothesis of Franklin relating to North-east storms, and are equally fatal to the more common theories. At Galveston, this storm, in passing over, veered by East to the South-east: the rationale of which may be made evident by drawing a line through the Northern side of the figure on the chart, parallel to the track of the storm. A little further attention to the figure will also illustrate the general character of the Northers, which are so common on the coast of Mexico during a considerable portion of the year.

† For a more extended notice of this storm, see American Journal of Science, vol. xx. pp. 34–38.

‡ The phenomena and progress of this storm have been more fully noticed in Silliman's Journal, vol. xx. pp. 24–27.

Much damage was done on the ocean by this storm; but it scarcely reached the American shores. Its duration off this coast was about 40 hours, and its progress appears to have been more tardy than that of some other storms.

No. X. represents the track of a violent hurricane and snow-storm, which swept along the American coast, from the latitude of 30° N., on the 5th and 6th December, 1830.

The last-mentioned track also corresponds to that of another storm, of like character, which swept along the sea-coast on the 13th, 14th, and 15th of January, 1831. These violent winter-storms exhibit nearly the same phases of wind and general characteristics as those which appear in the summer and autumn.

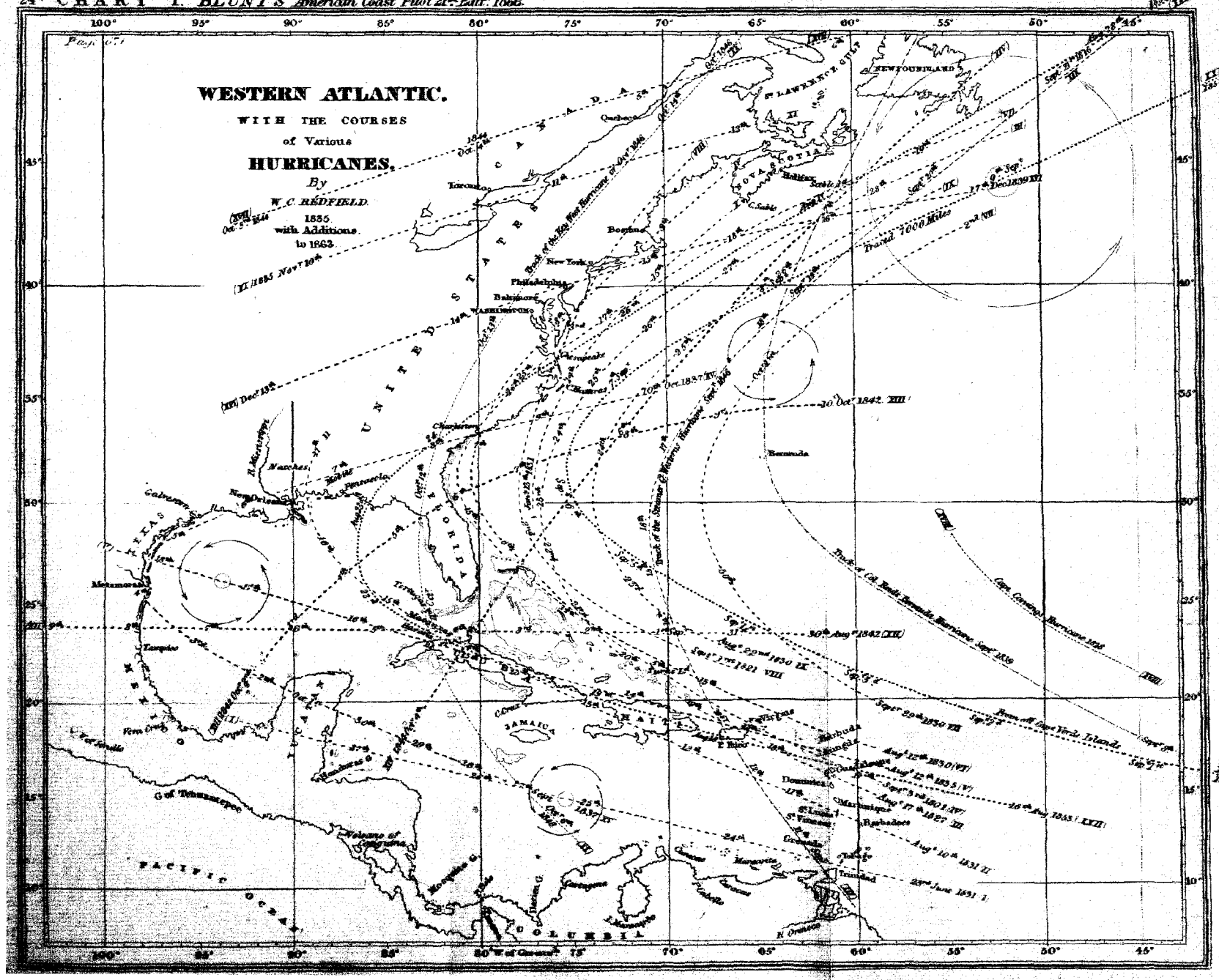
Track No. XI. represents a portion of the general route of the violent inland storm which swept over the Lakes Erie and Ontario, on the 13th of November, 1835. This storm was very extensive, spreading from the sea-coast of Virginia into the Canadas, to a limit at present unknown. The anterior portion of this gale was but moderately felt, and its access was noted, chiefly by the direction of the wind, and the great fall of the barometer; the violence of the storm being chiefly exhibited by the posterior and colder portion of the gale, as is common with extensive overland storms. The regular progression of this storm in an Easterly direction is clearly established by facts, collected by the writer, from the borders of Lake Michigan to the Gulf of St. Lawrence, and the sea-coasts of New England and Nova Scotia.

We have thus given a summary description of the route of 12 storms or hurricanes, which have visited the American coasts and seas at various periods, and at different seasons of the year. The lines on the chart, which represent the routes, are but approximations to the centre of the track, or course, of the several storms; and the gales are to be considered as extending their rotative circuit from 50 to 300 miles, or more on each side of the delineations; the superficial extent of the storm being estimated both by actual information and by its duration at any point near the central portion of its route, as compared with its average rate of progress. The figure which appears upon the chart, on Tracks Nos. I., V., and VII., will serve, in some degree, to illustrate the course of the wind in the various portions of the superficies covered by the storm, and also to explain the changes in the direction of the wind which occur successively at various points, during the regular progress of the gale. The dimensions of the several storms appear also to have gradually expanded during their course.

Storms of this character do not often act with great violence on any considerable extent of interior country to which they may arrive. Even upon the coasts on which they enter, such violence is not often experienced under the posterior limb of the gale which sweeps back from its circuit over the land, the usual woodlands and elevations being a sufficient protection. Often, indeed, the interior elevations afford such a shelter as entirely to neutralize the effect of the wind at and near the surface, and the presence and passage of the hurricane is, in such cases, to be noted chiefly by the unusual depression which the great whirling movement of the incumbent stratum of air produces in the mercury of the barometer, which thus indicates the presence or passage of the hurricanes in positions where the force of the wind is not felt at all, or only with a moderate degree of violence. The action of these storms appears indeed, to be at first confined to the stratum or current of air moving next to the earth's surface, and they seldom, while in this position, appear to exceed a mile or so in altitude; and the course of the next highest or overlaying stratum does not, in these cases, seem to be at all affected by the action of the storm below. During the progress, however, by the influence of high land and other causes, the storms often become transferred, in whole or in part, to the next higher stratum of current. Thus we sometimes see a stratum of clouds moving with the full velocity of a violent storm, while the stratum of surface wind is nearly at rest, or moves with its ordinary velocity; and thus, also, it happens that balloons, ascending under such circumstances, are carried forward with a velocity of from 60 to 100 miles an hour. The foregoing remarks are by no means hypothetical, but are the result of long-continued observation and inquiry.

It will hardly escape notice, that the track of most of the hurricanes, as presented on the chart, appears to form part of an elliptical or parabolic circuit, and this will be more obvious if we make correction, in each case, for the slight distortion of the apparent course in the higher latitudes, which is produced by the plane projection. We are also struck with the fact that the vertex of the curve is uniformly found on or near the 30th degree of latitude. In connection with this fact it may also be noted, that the latitude of 30° marks the external limit of the Trade Winds, on both sides of the equator: and perhaps it may not prove irrelevant to notice, even further, that by the parallel of 30° the surface area, as well as the atmosphere, of each hemisphere, is equally divided; the area between this latitude and the equator being about equal to that of the entire surface between the same latitude and the pole. It is not intended, however, to make these facts the basis of any theoretical inductions on the present occasion.

A variety of deductions may be drawn from the general facts which we have stated, some of which, though deeply interesting to the philosopher and votary of science, might


WESTERN ATLANTIC.
WITH THE COURSES
of Various
HURRICANES.
By
W. C. REDFIELD.
1835.
with Additions
to 1863.
CANADA
UNITED STATES
NOVA SCOTIA
NEWFOUNDLAND
ST LAWRENCE GULF
Quebec
Toronto
Boston
New York
Philadelphia
Baltimore
WASHINGTON
Charleston
Savannah
Pensacola
New Orleans
Galveston
Matamoras
Tampico
Vera Cruz
FLORIDA
CUBA
JAMAICA
HAITI
Bermuda
Barbados
Dominica
Martinique
St Lucia
St Vincent
Grenada
Trinidad
Tobago
Caracas
Maracaibo
Carthagena
Panama
COLUMBIA
Gulf of Tehuantepec
PACIFIC OCEAN
Track of the Great West Hurricane of Oct 1846
Track of the Storm of Waterville Harbour Sept 1846
Track of Col Reid's Bermuda Hurricane Sept 1839
Cape Cenesing Hurricane 1838
Track off Cape Verde Islands
Travel 1000 Miles
Oct 1842 XIII
Aug 1842 XIII
Aug 1850 IX
Sept 1851 VIII
Sept 1850 VII
Aug 1850 VII
Aug 1853 XII
Aug 1831 II
June 1831 I
Nov 1835 XI
Dec 1835 XII
Dec 1837 XIV
Oct 1846 XV
Sept 1839 IX
Sept 1839 XII
Sept 1839 XIII
Sept 1839 XIV
Sept 1839 XVII
Sept 1839 XVIII
Sept 1839 XIX
Sept 1839 XXIII
Sept 1839 XXIV
Sept 1839 XXIII
Sept 1839 XXIII
Sept 1839 XXIII

be out of place in a nautical work of this description. For ourselves we disclaim any bondage to existing theories in meteorology; and shall on the present occasion only proceed to notice a few of the more practical inferences which, to navigators and others, may, perhaps, be of no doubtful utility.

1. A vessel bound to the Eastward between the latitudes of 32° and 45° in the Western part of the Atlantic, on being overtaken by a gale which commences blowing from any point to the Eastward of S.E. or E.S.E., may avoid some portion of its violence by putting her head to the Northward, and when the gale has veered sufficiently in the same direction, may safely resume her course. But by standing to the Southward, under like circumstances, she will probably fall into the heart of the storm.

2. In the same region, vessels, on taking a gale from S.E., or points near thereto, will probably soon find themselves in the heart of the storm, and after its first fury is spent, may expect its recurrence from the opposite quarter. The most promising mode of mitigating its violence, and at the same time shortening its duration, is to stand to the Southward upon the wind, as long as may be necessary or possible; and if the movement succeeds, the wind will gradually head you off in the same direction. If it becomes necessary to heave to, and the wind does not veer, be prepared for a blast from the North-west.

3. In the same latitudes a vessel scudding in a gale, with the wind at East or North-east, shortens its duration. On the contrary, a vessel scudding before a South-westerly or Westerly gale, will thereby increase its duration.

4. A vessel which is pursuing her course to the Westward or South-westward, in this part of the Atlantic, meets the storms in their course, and thereby shortens the periods of their occurrence; and will encounter more gales in an equal number of days than if stationary, or sailing in a different direction.

5. On the other hand, vessels while sailing to the Eastward or North-eastward, or in the course of the storms, will lengthen the periods between their occurrence, and consequently experience them less frequently than vessels sailing on a different course. The difference of exposure which results from these opposite courses, on the American coast, may in most cases be estimated as nearly two to one.

6. The hazard from casualties, and of consequence the value of insurance, is enhanced or diminished by the direction of the passage, as shown under the two last heads.

7. As the ordinary routine of the winds and weather in these latitudes often corresponds to the phases which are exhibited by the storms as before described, a correct opinion, founded upon this resemblance, can often be formed of the approaching changes of wind and weather, which may be highly useful to the observing navigator.

8. It will be perceived, from the foregoing facts, that the occurrence of a storm at a particular locality, has no immediate connection with astronomical periods, such as the changes of the moon, or the time of the equinoxes.

9. A due consideration of the facts which have been stated, particularly those under our twelfth head, will inspire additional confidence in the indications of the *barometer*, and these ought not to be neglected, even should the fall of the mercury be unattended by any appearances of violence in the weather, as the other side of the gale will be pretty sure to take effect, and often in a manner so sudden and violent as to more than compensate for its previous forbearance. Not the least reliance, however, should be placed upon the prognostics which are usually attached to the scale of the barometer, such as Set Fair, Fair, Change, Rain, &c., as in this region at least they serve no other purpose than to bring this valuable instrument into discredit. It is the mere rising and falling of the mercury which chiefly deserves attention, and not its conformity to a particular point in the scale of elevation.

10. These practical inferences apply, in terms, chiefly to storms which have passed to the Northward of the 30th degree of latitude on the American coast, but with the necessary modification as to the point of the compass, which results from the Westerly course pursued by the storm while in the lower latitudes, are, for the most part, equally applicable to the storms and hurricanes which occur in the West Indies, and South of the parallel of 30°. As the marked occurrence of tempestuous weather is here less frequent, it may be sufficient to notice, that the direction of the winds of the West Indian seas is from 8 to 11 points of the compass *more to the left* than on the coast of the United States in the latitude of New York.

Vicissitudes of wind and weather on this coast which do not conform to the foregoing specifications, are more frequent in April, May, and June, than in other months. At this season it is not uncommon to find a regular current of Easterly wind prevailing for many days, producing sometimes heavy rains, and always an elevated state of the barometer. Easterly or Southerly winds under which the barometer rises, or maintains its elevation, are not of a gyratory or stormy character; but such winds frequently terminate in the falling of the barometer and the usual phenomena of an Easterly storm.

The typhoons and storms of the China sea and Eastern coast of Asia, appear to be similar in character to the hurricanes of the West Indies and the storms of this coast,

when prevailing in the same latitudes. There is reason to believe that the great circuits of wind, of which the Trade Winds form an integral part, are nearly uniform in all the great oceanic basins; and that the *course* of these circuits and of the stormy gyrations which they may contain, is in the Southern hemisphere, in a *counter-direction* to those North of the equator, producing a corresponding difference in the general phases of storms and winds in the two hemispheres.

From the foregoing results we infer the value and importance of correct marine reports relating to violent gales. Those reports should always comprise the *date*, the *latitude and longitude*, and the *principal direction and changes of the wind.* *

CURRENTS.

A Current is at present to be understood as a stream on, or a *particular set* in the direction of, the surface of the sea, occasioned by winds and other impulses, exclusive of (but which may be influenced by) the causes of the tides. It is an observation of Dampier, that currents are scarcely ever felt but at sea, and tides but upon the coasts; and it is certainly an established fact, that currents prevail mostly in those parts where the tides are weak, and scarcely perceptible, or where the sea, apparently little influenced by the causes of the tide, is disposed to a quiescent state. This will be obvious by an attentive consideration of the following descriptions. The necessity of attention to the silent, imperceptible, and therefore dangerous operation of currents, will be equally apparent.

The currents of the Atlantic are often of a local and temporary nature; yet experience has shown where and how they predominate, and reason will inform the mariner where he is to expect and allow for their operation.

With the greatest velocity of the equinoctial current we cannot pretend to be accurately acquainted. Its central direction, when in full force, is W.N.W., and generally, it is imagined, about one mile and a half in the hour, but increasing to the Westward; so that off the coast of Guyana it commonly sets at the rate of 2 or 3 miles.

At any considerable distance from the coast of America, the Easterly current caused by the action of violent W. or N.W. winds, is seldom felt to the Southward of lat. 36°; consequently the sea about the Bermudas, and thence to Southward, is free from the influence of this current. The currents here, though slow, are produced in the direction of the wind, particularly when it is of long continuance. These currents are found stronger near the islands and rocks of Bermudas than at a distance. In a brisk gale, the current here has been experienced from 12 to 18 miles in 24 hours, in the direction of the wind; at other times, when the wind was not settled, no current has been found.

To continued Westerly winds are to be attributed the common occurrence of a passage from Halifax to the English Channel in 16 or 18 days, with such currents as those which carried the bowsprit of the Little Belt, sloop of war, lost near Halifax, in 18 months, to the entrance of Basque Roads. The currents of the Atlantic have sent to the shores of the Hebrides the products of Jamaica and Cuba, and of the Southern parts of North America.

The Easterly and South-easterly currents are blended in their Southern regions with the Florida or Gulf Stream, hereafter described, and they do not seem to prevail to the S.W. of the Azores. On the contrary, to the W.S.W. and S.W. of these islands, the currents appear to follow the course of the Trade Winds towards the Caribbean Sea; and to the Southward of the tropic they blend with the equatorial current, which sets from E.S.E. to W.N.W. and W. Towards the West, they occasionally extend to the Northward of the Bermudas, and even unite with the Southern edge or reflow of the Gulf Stream. The existence of these currents has long been known, but a further examination and more precise information are still desiderata. The recent examples of them which we have to adduce are not numerous, but they are satisfactory; they also accord with natural facts, and are in unison with that theory which derives its currents from the rotary movement of the earth, and the operation of the Trade Winds.

"The currents of the Caribbean Sea are probably varied by the influence of the moon, and combine, in some degree, with the tides, especially about Cuba, Jamaica, and St. Domingo."

The Derrotero adds, "this idea is confirmed by what Don Torquato Pedrola, the captain of a frigate, has communicated to the Hydrographic Board. 'Although, generally,' says this officer, 'the currents between the Spanish Main and the West India Islands set towards the fourth quadrant, (that is, North-westerly,) yet it sometimes, though seldom, happens that they are found setting to the first quadrant, or N.E.;' in proof of which he states that he perfectly remembers, though he cannot give the elements, in

* For further remarks on winds, see pp. 70* to 74*.

consequence of having lost his journals, that in July, 1795, or 1796, when sailing with a fresh breeze from Santa Martha to Jamaica, in a schooner, he steered for Morant Point; but considering that by keeping as close hauled as that course required, he must be unable to make it before the day was spent, he preferred keeping away, to make the land to leeward of it, and did so at 8 A. M., thus augmenting the rate of the vessel's sailing. At noon he observed the latitude, in conjunction with the pilot, Don Miguel Patina, and found that they were some minutes to the Northward of Morant Point; and keeping away W. by S., they saw it at 2 P. M. Although they calculated the direction and velocity of the current, he remembers only that it was to the N.E., and that they were three days crossing from Santa Martha to Jamaica.

"On leaving the parallel of the Bago del Comby (15° 30′) the first time that the Spanish surveying vessels went in search of it, and being to leeward of the meridian under which the charts placed it, by 12 leagues, they made sail so that, at the rate of sailing, they expected to join the brig Alerta next evening, as they knew she was waiting for them at her anchorage at the Southernmost of the Pedro Keys. At 8 A. M., next day, a vessel was seen ahead, which at first they mistook for a rock, but soon made out that it was a vessel at anchor; and by 9 A. M. they saw not only the Alerta at anchor, but also the Pedro Key, towards which the current carried them with much strength; and in spite of having to make several tacks, in order to fetch the proper channel, they were anchored beside the Alerta by mid-day. The commander does not recollect the longitude he observed that morning, but remembers that the current had carried them to the Northward. In the next year, when surveying the West end of the Pedro Shoals, they found the current nearly the same; and this ought to be a warning to navigators not to make too free with the Southern edge of the Pedro Shoals during the night.

"Much current has also been found near the Baxo Nuevo, lat. 15° 50′, and long. 78° 40′, as was remarked by the brig Alerta, when near its Northern extremity. The same s the case on its Southern side; for in prior years, the schooner St. Gregorio, bound from Carthagena to Trinidad, saw the South end of the shoal at 4 P. M. At 5 she was three miles from it; but noticing that the current set strongly towards the shoal, they set sail and ran to the South until they considered the vessel nine miles from the Southern point; and the following morning tacked to sight it, which she did not effect, having doubtless passed to leeward of it."

"In more than thirty voyages made by Captain Pedrola, from the Spanish Main to Porto Rico, St. Domingo, and Cuba, sometimes with chronometers, and others without them, he remarked that between the last two islands and the coast of the main, sixteen miles daily might be counted on for a Westerly current, but not so much for the former."

In the Memoir, 3d edition, pp. 68–9, was this passage:—"The Trade Wind blows with strong and continued vigor at certain seasons, particularly in the winter months, and rolls the waves over a great extent of sea, into the great bay Westward of Carthagena, which we have called the Bay of Guatemala. This may cause, at times, an outset, but no constant current is to be found." To this is added, in the Derrotero, "among the original papers possessed by the Deposito Hydrografica, the following observations, by different officers, have been found, which may tend to throw some light upon the matter:

"In the examination of the coast between Porto Vello (Porto Bello) and the Bocas del Toro, made in 1717, by Don Fabian Abances, he found on that coast, in the month of April, strong currents setting to the E.N.E., at the rate of two miles an hour; so that, heaving to at night, off Cocle Point, he found himself in the morning up at Chagre. The winds at the time were either calm or squally from the South-westward. Don Fabian proceeded to the Northward, to the parallel of 10°, and then met with winds from N. and N.N.E., with which he steered W. and W.N.W., until he considered himself 10 leagues to the West of the Bocas del Toro; but the current had carried him to the E.S.E., so that, when he expected to make the Bocas, he found himself at the point of Miguel de Borda, about 5 leagues to the Westward of Chagre. During the whole time, from leaving Porto Vello, he never gained an observation, the weather being adverse. On the 11th May he noticed that the waters of the Lagoon of Chiriqui ran out through the Bocas with violence, and formed, at a short distance from the coast, an angle bending to the E.S.E."

Again, "The captain of the ship of the line Don Pedro de Obregon, in the month of July, was bound from the Rio Tinto (Black River) to the Havana, and he experienced currents to the North-westward, with winds from the N.E., E.N.E., squalls and calms, and in such a manner that he made the Tortugas Bank of Florida without having been able to sight Cape Antonio or West end of Cuba."

"Don Joaquin de Asunsola and La Azuela, in July, found strong currents to the S.W. of Cape Gracias a Dios, after having strong winds from the E.N.E. and E.S.E., with squalls; and from the said cape to the Westward he found, also, that the current took the same course; and he concludes that, after he had made Providence Island, and until he arrived at Black River, the currents were strong to the W. and S.W.

"The captain of a frigate, Don Gonzalo Vallejo, when at anchor on the Mosquito coast, near Barrancas, or Bragman's Bluff, observed that the current set to the North, at the rate of rather more than half a mile in the hour."

Finally, "Don Ignacio Sanjust, commanding the frigate Flora, on a voyage from Havana to the Gulf of Honduras, and being off Cavallos Point, noticed that the current ran with much force to the N.E. in the month of December; and he adds that, in this gulf, the currents followed no known rule; that near the keys they run with violence, and into the channels between them; so that by them a vessel, during a calm, may soon be carried on the reefs. In the channel between the keys and coast of Honduras, to the South, the water was found setting to the N.E., and near the coast to the East."

Near the parallel of 10° N., the currents produced by the N.E. and S.E. Trade Winds may be imagined to unite; and this united stream, being divided by the Island of Trinidad and the Southern Antilles, thence passes into the Caribbean Sea.

From the mouths of the Amazon, Oronoco, and other rivers, a vast efflux of water falls into the Equatorial Sea, more particularly in the wet season: what effect this water may have on the current is at present unknown. But we learn from the Derrotero de las Antillas, that "off the coast of Guyana there are two currents: 1st. The general or equinoctial current, and another caused by the tides: the boundary of the first is 12 leagues from shore, or in the depth of 9 fathoms of water, from which towards the shore that of the tide is experienced. The ebb sets to the N.E., and the flood towards the shore. In the Gulf of Paria, also, the tide influences the currents.

"In the Southern straits or channels of the Antilles, the velocity of the current inward is seldom under a mile an hour; but its changes are so great that it is impossible to point out its exact direction, or to establish any general rule for its velocity."

"On the Colombian coast, from Trinidad to Cape la Vela, the current sweeps the frontier islands, inclining something to the South, according to the straits which it comes from, and running about 1½ mile an hour with little difference. Between the islands and the coast, and particularly in the proximity of the latter, it has been remarked that the current, at times, runs to the West, and at others to the East. From Cape la Vela, the principal part of the current runs W.N.W., and as it spreads its velocity diminishes; there is, however, a branch which runs with the velocity of about a mile an hour, directing itself towards the coast about Carthagena; from this point and in the space of sea comprehended between 14 degrees of latitude and the coast, it has, however, been observed that. in a dry season, the current runs to the Westward, and in the season of the rains to the Eastward.

"On the Mosquito Shore, and in the Bay of Honduras, no rule can be given for the alterations of the current. All that can be said is, at a good distance from land it has generally been found setting towards the N.W.

"In crossing from the coast, or from Carthagena, to the Islands, it has been observed that from Laguayra to the Eastern part of St. Domingo, on a voyage made in December, a difference of 106 miles to the Westward was found during the seven days the voyage lasted."—*Derrotero de las Antillas.*

Mr. Town, in his Directions for the Colombian Coast, has said, "although between the Island of Jamaica and the Spanish Main, Westerly currents are most frequent, yet they do not always prevail; for ships have been known to be driven by the current from 50 to 60 miles to the Eastward in 4 or 5 days. From the beginning of May till November, (the rainy season,) the sea-breeze seldom or never blows home to the main; and ships going there should never go to the Southward of the latitude of 11°, until they are, at least, 40 or 50 miles to the Westward of their intended port: after which they may make a South course, as the land-breeze, which is generally from the S.W., and the strong Easterly current, will set you to the Eastward of your intended port, if great care be not taken. When to the Eastward, if light winds prevail, you must stand to the Northward until you meet the sea-breeze, which will be between the latitudes of 10 and 11 degrees, and then run to the Westward.

"Being off Porto Bello, in his Majesty's ship Salisbury, on or about the 12th of August, 1816, and being a little to the Eastward of that port, with light variable winds for several days, the ship was set to the Eastward at the rate of 50 miles per day; and, having been afterwards placed in the same situation, I found it necessary to make the land well to the Westward, and to keep close to it. From November until May, (the dry season,) you should endeavor to make the land well to the Eastward, and run along shore, as the sea-breezes generally blow very strongly, and the current sets to the Westward at the rate of about 2 or 3 miles in an hour.

"Between Chagre and Porto Bello, during the rainy season, there is generally a Northerly current, at the rate of from 1½ to 2½ miles an hour. After the end of the rainy season the current sets to the Southward and Westward, and strong Southerly and Easterly winds prevail here. From November until May, (the dry season,) the Southerly and Westerly are very light winds, except in squalls, which end with very heavy rain. In sudden squalls you will often have the winds from all points of the compass.

If at Chagre, at any time during the rainy season, (May till November,) and bound to the Eastward, endeavor to get 4 or 5 leagues from the land so soon as you can; for the winds are, in general, very light, and the current very strong. The latter sets from Chagre directly on the rocks of Porto Bello, and thence along the land from E. by N., E.N.E., E.S.E., and according as the land lies; its general rate being from 1½ to 2½ miles in an hour. Great care should be taken when near the land, if a heavy squall and rain appear to be coming on. During this you will have the wind from all points of the compass, and often so strong that all sail must be taken in.

"In crossing the Gulf of Darien, little or no current will be found; whenever there is any, it sets about South, S. by W., or S. by E., up the Gulf.

"Near Carthagena the current generally goes by the wind; but off the islands of Rosario it sets to the N.W. and N.N.W., from one to two miles an hour.

"Between Carthagena and the Magdalena, in the rainy season, you cannot put any dependence on the winds or currents; but from November to May the Trade Wind blows home.

"I should recommend, if turning to windward, with strong Trade Winds, to keep the shore close to; whereas, by going off from the land, you will not only have a heavy sea, but also a strong N.W. current. If you have light variable winds, approach no nearer to the land than 4 or 5 leagues, as you may be certain of an easterly current."

Captain Livingston says, "During five weeks in which I remained at Carthagena, in June and July, 1817, the current inshore set constantly and strongly to the Northward, at a rate, I am convinced, of not less than 1½ mile an hour, or nearly as strong as the Mississippi at New Orleans. I have seen the Esk, sloop of war, current-rode against a very fresh sea-breeze, when at anchor, nearly W. from the city, distant about 1 mile."

Upon the current between the Grand Cayman and Cape Antonio, Captain Monteath has said, "In the months of May, 1814 and 1815, (two voyages in which I was chief mate of the ship Prince Regent, from Kingston;) in June, 1817, in the ship Fame; and in April and December, 1820, in the ship Mary, between Grand Cayman Island and Cape Antonio, I invariably found the current setting strong to the Eastward, or E.S.E.; and I have heard it generally remarked, that vessels shaping a course from the Caymans for Cape Antonio, have found themselves off, or even to the Eastward of Cape Corrientes; this has, in the above cases, invariably happened to myself."

Further on, "In my passage from Kingston, towards Campeche, in the ship Fame, June, 1817, between Cape Antonio and Cape Catoche, I found the current to set due North 27 miles in a run of 18 hours."

We have already given, in the preceding page, the remarks of the Spanish navigators on the currents of the Mosquito Shore and Bay of Honduras. We now add those of Captains W. J. Capes, of London, and John Burnett, of Port Glasgow.

Captain Capes says, "Between Jamaica and Bonacca the current generally sets to the Northward and Westward. Here, in May, 1816, I was set 60 miles to the Westward by the current, and found that it set rather Northerly, from one quarter to half a mile an hour. Between Jamaica and Bonacca are the islands called the Swan Islands, in latitude 17° 22′, longitude 83° 36′. I would not advise any one bound to the Bay to make these islands, for it cannot be of service, and the current is so very irregular about them, that the attempt serves only to bewilder the navigator; and by falling in with them in a dark night, a ship would be in danger of running on shore, as the land is very low.

"About the Southern Four Keys the currents are very uncertain. I have known three ships to be lost on these Keys by lying to for the night, after they have made them; for at all times the current sets strongly on them; and in two of the cases the ships were every two hours, with an intention to keep their station. In one voyage I took my departure from Bonacca at four, P. M., with a strong breeze from the East, which continued till midnight it then died away, (no uncommon circumstance in this part,) so that I did not lift the Southern Four Keys before four, P. M., the next day, from the fore-yard. I then made all snug, and plied to windward, under single-reefed topsails, and top-gallant sails over them; tacked ship every three hours during night, and, to my surprise, in the morning, we were not more than one or two miles to windward of them; so, if I had hove the ship to, I have no doubt but she would have been driven on shore by the current.

"If a ship be lying to under Rattan, it will not be amiss to try the current. It is my opinion that the current about Bonacca takes two different directions; one part setting to the N. W. and the other part branching to the S.S.W. I have found it so on several trials, which is the reason that I prefer taking a departure (for the Bay) from the middle or East end of Rattan; for if a ship take her departure from the West end, her course will be N.N.W.; but it very frequently happens that ships get down on those reefs when they take their departure from the W. end. The reason is this: a ship steering N.W. from the West end has more of the current on her beam, which sweeps round the West end of Rattan very strong at times; consequently, ships that take their departure from the East or middle part, do not feel so much of the current.

Captain Burnett, in his directions for sailing from the Bay of Honduras, says: "When the Trade Wind prevails, a current, often very strong, sets down between Mauger Key and the Northern Triangle; there, dividing itself, it sets to the Southward, between Turneff and the Main Reef, and to the Northward between the Triangle Reef and Ambergris Key. It is most advisable, with the wind from the East to the E.S.E., to sail to leeward of the Triangle, as you will have a strong current in your favor so soon as you bring it to the Eastward of you.

"In the channel between the island Cozumel and the shore, the current along shore runs at the rate of nearly 2½ miles an hour, till lost in the Mexican Sea."

MEXICAN STREAM, &c.—It is, we believe, a well-established, although a controverted fact, that there is a constant indraught on the *Western* side of the channel of Yucatan, into the Mexican Sea; and that there is commonly a reflow on the *Eastern* side of the same channel around Cape Antonio, &c.

With the former in its favor, his Majesty's ship Resistance, Captain Adam, off the Bank of Yucatan, made a course W.N.W. ½ W., nearly 80 leagues, in the 24 hours, December 16 and 17, 1806;* and we have no doubt that many instances may be found to prove the same effect; on the Cuba side only, it appears that vessels have been set to the Southward; and Captain Manderson has stated, that, when a strong Easterly wind has been blowing between Cuba and Florida, vessels heaving to off the South side of Cape Antonio, at about two leagues from shore, have, in the course of one night, been carried against a strong sea-breeze, nearly as high as Cape Corrientes, being a distance of 10 leagues.†

From Cape Antonio the current sets, *at times*, to the E.S.E., past the Isle of Pines. Captain Livingston has informed us, that in March, 1818, he found the current between the Great Cayman and Isle of Pines to set in that direction, at the rate of full two miles and a half an hour, or 60 miles in the 24 hours. In August, 1817, he found the set nearly the same, but the current not half so strong. The Spanish Directory says, "From Cape de Cruz, on the South side of Cuba, it is noticed that there is a constant current to the Westward, with some inclination to the Southward or Northward, and which has been known sometimes to set 20 miles in a single day." In opposition to this, the exact words of Captain Livingston are, "I have twice experienced a strong current setting about E.S.E. between the Caymans and Isle of Pines; and on the latter of these occasions, both my mate and myself separately calculated it to set about 60 miles per day, or 2½ per hour. This, however, I incline to think a very particular case, such as may but seldom occur. The winds at this time were light and Westerly. On the other occasion, so far as I recollect, it set about 12 or 14 miles per day only. All my papers on these subjects have been lost; but the first instance was too remarkable to be forgotten."

On the Northern coast of St. Domingo, and in the windward passages, there does not appear to be any general current. On the North side of Cuba the case is nearly the same: but in the channel there is a regular tide throughout the year, subject, however, to certain variations.

The currents of the Caribbean Sea are probably varied by the influence of the moon and change of seasons, and combine, in some degree, with the tides; especially about Cuba, Jamaica, and St. Domingo.‡

In an old book, (Kelly's Navigation, vol. i., 1733,) is an abstract from a journal, which contains the following passage:—"Between the West end of Hispaniola and the Island of Jamaica, if I took my departure upon a full or change of the moon, I found that I made many leagues more than I did at the quarters of the moon. At the full and change, I was looking out for the land long before I saw it; and, at the quarters, I was down upon it long before I looked for it. The reasons, as I found afterwards, were, that the full and change made a strong windward current, and the contrary on the quarters. This has been exemplified in many instances."

On this subject Captain Livingston says: "It is a prevailing opinion with many, that the moon governs entirely the currents among the West India Islands. No doubt the moon has some effect on them, but I am of opinion that the winds have a still more powerful influence.

"It is rarely, indeed, on the North side of the Island of Jamaica, that there is a Westerly current when the North and N.W. winds prevail; the current then always, or almost always, setting to the Eastward.

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* The Northernmost part of the track extends to 24° 50′ N., longitude 90° 39′ W.

† Captain Rowland Bourke, when once lying to for the night, off Cape Antonio, found himself next morning off Cape Corrientes.

‡ Captain Colter, of the ship Robert, from the Clyde, some years since threw a bottle overboard to the Eastward of Alto Vela, on the South coast of Hayti, and about thirteen months afterwards he saw a Charleston newspaper at Kingston, Jamaica, which stated that the bottle had been picked up on the shore, near St. Mary's, in Florida.

"On the South side of Cuba, when the wind is Westerly, which it often is, you are always certain of a reflowing current round Cape Antonio. This is easily accounted for. as, when the fresh Trade Wind ceases, and the Westerly winds set in, the barrier is, in some degree, removed, which confined the waters in the Gulf of Mexico, and they seek to regain their level as well by the Channel of Yucatan as by the Strait of Florida."

In the windward channel of Jamaica, the current generally sets with the wind to leeward, or S.W., yet both here and at Jamaica it is variable. Some have affirmed that when a current runs to leeward, on the South side of Jamaica, there is frequently one setting Eastward on the North side; and, at other times, no current is to be perceived; also, that when a lee current runs on the North shore, the same circumstances may be perceived on the South shore as were before observed on the North.

But between the Mona Passage and the Caymans, South of the islands, the tendency of the currents towards shore is most commonly found to the North-westward.

In the Bahama Passages the currents are devious: both weather and lee currents having been found. These also appear to be influenced by the tidal causes; for the tides are operative on the banks, and sometimes set strongly.

The following is an additional detail of the best information we have been able to collect, of the currents in the Caribbean and Mexican Seas, from the Derrotero de las Antillas, &c.

In the channel between Trinidad and Grenada the current has been found to set nearly West; on the South side half a point Southerly, and on the North side half a point Northerly. Its velocity from a mile to a mile and a half per hour.

Between Grenada and St. Vincent's, among the Grenadians, the currents are devious, but the general inset appears to be W. by N.

Between St. Vincent's and St. Lucia, the current, from the Eastward, sets in more Northerly; and within, on the West, it has been found setting to the N.W. Between these islands it seems to be as strong as in any other part of the range.

Between St. Lucia and Martinique it has been found nearly North. Very variable on the Western side of the latter.

The current sets nearly in the same manner between Martinique and Dominica; but to the North-westward of the latter, it has been found nearly S.W. three-quarters of a mile hourly. Northward of Guadaloupe it sets W. ½ S., and between Montserrat and Antigua N.W.

Between Redonda and Nevis it has been found W.S.W. half a mile hourly.

Without Barbuda and the Northern isles, it has set about W. by N., and to the Northward of the Virgin Isles and Porto Rico about W.S.W.

At the distance of about one degree, within the range of the Caribbee Islands, and to the Virgin Islands, the current has been found setting, in general, to the W.N.W. from one mile to one mile and a half an hour.

In the Mona Passage, between Porto Rico and Hayti, the current has been marked as frequently setting to the N.W., and we have instances of a set through to the S.W., but Captain Monteath, in February, 1816, when proceeding Southward towards Porto Rico, in from latitude 23½° to 22°, and longitude 64° to 65°, found the current setting N.N.E., at the rate of 20 miles in the 24 hours; and he says that off the N.W. end of Porto Rico, it invariably set from the Caribbean Sea to the North and N.N.E. On the Western side of the passage it set North 2 miles an hour.

From Trinidad, Westward, and off the North side of the Spanish Leeward Isles, the current has been found setting West and S.W. to the Gulf of Maracaybo; thence S.W. also to Carthagena; but it varies, as has been already noticed.

From Carthagena towards the channel of Yucatan, it has been found N.N.W., N.W., W.N.W., and N.W. by N., from one to nearly two miles, and then decreasing to 1½ mile per hour. It has also been found setting to the Eastward, as shown in the preceding pages.

At about 40 miles Northward of Cape Catoche, the current has been found N.W. by W.; changing thence to S.S.W. off the N.W. point of Yucatan, nearly at the same distance from the coast. Rate something less than half a mile an hour. Between this and Vera Cruz the current ceases.

The action of the S.E. Trade Wind, in the equatorial regions, and the apparent disposition of the waters in these regions to retire Westward, which has been attributed to the rotary motion of the earth, are considered as the causes of a current which is known to flow, during a great part of the year, from the Ethiopic ocean to the Caribbean Sea, and which has frequently carried ships considerably to the West and W.N.W. of their reckonings, when off the N.W. part of Brazil.

On the East coast of Brazil the currents generally partake of the direction of the monsoons, as before explained, but vary in velocity according to the advance and decline of them, as well as the part of the coast.

Lieutenant Hewett says, during the Southerly monsoon, the currents to the Southward of Cape St. Augustin are not so powerful as to the Northward, where they in

crease in strength until the months of June and July, and then gradually decline. On the contrary, in the Northerly monsoon, they are generally very strong to the Southward of Cape St. Augustin, when they are weak to the Northward, as they have some difficulty in detaching themselves from the stream, which runs from the S.E. Trade around Cape St. Roque.

Mr. Lindley also notices that, "a strong current runs Southward from Cape St. Augustin, commencing about the middle of October, and continuing until January, after which there is no particular current till the middle of April, when a powerful one sets in Northerly till July, and then subsides in like manner."

The currents of the River Plata, and other local currents near the shores, have been before noticed, in the Descriptions and Sailing Directions.

The following facts establish the existence of a combined current; and they show, in some degree, its force and direction towards the Brazilian coast:

1. In June and July, 1795, the Bombay Castle, East Indiaman, between the Isle of Palma (of the Canaries) and the coast of Brazil, experienced a Westerly current, amounting to 6½°.

2. On May 20, 1802, the Cuffnels, East Indiaman, lost the N.E. Trade in 8½° North, long. 22°; gained the S.E. Trade, June 4, in 5° N., long. 21°. From the equator the current was found to set W. and W. by N., from 30 to 52 miles daily, till the coast of Brazil was in sight on the 14th in 8° S.

3. May 23, 1802, the Sir Edward Hughes lost the N.E. Trade in 6° N., long. 23°, and the wind was from S.S.E. on the 25th, in 5° N., and 23° 30′ W. The Trade kept far at Southward, and the current set strongly to the West.

4. October 16, 1805, the European fleet lost the N.E. Trade in 11° N., long. 28°, and gained the S.E. Trade on the 26th, in 4° N., long. 29°. On the 4th of November, the land of Brazil was seen in lat. 6° S.; the wind near the land was at E. by S. and E. S.E. By proceeding too far to the Westward, two ships of the fleet were wrecked in the morning of the 1st of November, on the Roccas, or Low Keys, in lat. 3° 52′ S. and 33½ W., and several others had nearly shared the same fate. This catastrophe had probably been avoided by a due knowledge of, and attention to, the effects of the current, which was subsequently ascertained to set 2½ miles per hour to the Westward near the Roccas.

5. On the 1st of June, 1793, the King George, East Indiaman, crossed the line in 30° W., and from the 2d to the 5th experienced a Westerly current of 1° 33′. On the 5th Cape St. Roque was in sight, and the ship was kept working until the 10th, endeavoring ineffectually to weather it. She then stood to the North-eastward, closely hauled, to lat. 1° N., in order to regain the variable winds in North latitude, and then proceeded to cross the equator, which was at length effected.

6. In May and June, 1807, the transports laden with ordnance stores for the army at Montevideo, by crossing the equator too far to the Westward, were carried so far in this direction by the current, that they could not get to the Southward of Cape Augustin, (lat. 8° 23′ S.,) and were twice obliged to stand to the Northward, into variable winds, to regain Easting, after having attempted ineffectually to gain the regular South-east Trade Wind.

7. It is a well-known fact, that several ships have made the Isle of Fernando Noronha, on their outward-bound passage to India, by currents having set them to the Westward, after the failure of the N.E. Trade Wind. The current runs strongly about this island.

GULF STREAM AND STRAIT OF FLORIDA.

That immense current which continually sets from the Gulfs of Mexico and Florida to the Northward and North-eastward, should be well understood, as all who navigate the coast of North America experience more or less of its influence.

Three degrees to the N.N.E. of Vera Cruz, the current has been found setting to the N.E. one mile an hour. Then N.N.E. and N. by E., and again N.E., nearly to the parallel of 32½°, long. 91½°. Here it changes more to the East, and becomes in lat. 26° E. by S., changing Southward to S.E. by S. In the direction of the River Mississippi, and lat. 25° 30′ N., the current sets variously to the South-eastward. Its extent and exact direction are here unknown, but it is certain, that setting towards the N.W. part of Cuba, and striking on the banks of Isabella and Colorados, a small portion of it winds round Cape Antonio to the Eastward, while the great body of it sets Eastward, to the Northward of Cuba, winding to E.N.E., N.E., and N., through the Strait of Florida, into the Atlantic Ocean.

The Derrotero de las Antillas says, "By the Strait of Florida, we understand the space included between the meridian of the Dry Tortugas and the parallel of Cape Canaveral. The simple inspection of the chart will show this to be a bed or course, which, like a river, conducts the water to the Northward. This river, or general current, flows first to the E.N.E. as far as the meridian of the Western part of the Double Shot Keys, by which keys the stream is diverted from E.N.E. to N. by E., the direction which it pursues on the parallel of Cape Florida: thence to Cape Canaveral it runs North, inclining a little to the East.

"On the meridian of the Havana, stripes of current are at times found setting to the E.S.E. and S.E. from the Tortugas soundings. Care should be taken not to confuse the Southern differences, caused by this branch of the current, with those caused by the eddy current near the Colorados—the one giving Eastern departure the other West. The distinction is very clear, and can admit of no doubt, because the eddy current is met only from the meridians of Cavanas and Bay Honda to Cape Antonio, and not further out from the coast than the parallel of 23 degrees.

"As the velocity of the current varies, it is requisite for every navigator to ascertain its strength as frequently as possible, while within the stream. Every one who enters this channel, having marked well either the lands of Cuba or the Florida Reef, so as accurately to establish this point of departure, ought to determine, in his first day's work, the velocity of the current by the difference of latitude, by account and observation. We say during the first day's work, because the generality of common navigators make use of meridian altitudes and the sun alone, to find the latitude: but it is very clear, that *altitudes of the planets and fixed stars ought not to be neglected; not only because by this you cannot be in doubt of your real latitude, but also because they may be more exact than latitudes deduced from meridian altitudes of the sun, when that luminary passes in the proximity of the zenith, and because these repeated observations during the night assume, as much as possible, the situation of the ship.* Thus you may go on with a clear idea of the operation of the current, and the way that the ship is making. Having ascertained the velocity of the current, use can be made of it to find the ship's departure, and this knowledge will be most important when you fail in obtaining observations for latitude; because, in such a case, wanting a knowledge of the difference of latitude given by the current, you will be in want of everything; but if you know the velocity of the current, and with it the course which it follows, you may find the difference of latitude and departure which the current gives, and which, though it will not give the position of the ship with that precision with which it might be obtained by latitude observed, will still approximate sufficiently to the truth to enable one to avoid danger, if prudence and seamanlike conduct are combined."

For those who have little experience in the art of navigation, we add—

1. That it is most convenient to direct your course in mid-channel, not only because it is the furthest from danger, but because you will there have the strongest current, which is desirable. (See Remarks of Mr. Romans on the Gulf Stream.)

2. That, as you cannot ascertain with all necessary certainty the position of the ship, notwithstanding the rules given to diminish the errors occasioned by the currents, you ought, with the utmost care, to shun the Eastern coast of Florida, as being very dangerous, the Trade Wind blowing upon it, while there is not the least risk in running along the Salt Key Bank, and the edge of the Great Bank of Bahama. Upon the latter, also, you meet with good anchorages, very fit to lie in during the hard Northerly gales experienced between November and March, and which do not fail to cause much damage, and sometimes even force vessels to bear away, which is always dangerous, for the weather is generally thick with such winds, and the greatest danger will be to run, in one of them, ashore upon the coast of Cuba, when hoping to have made Havana or Matanzas. Therefore, so soon as there is an appearance of a Northerly gale, the best way is, if near the Salt Key Bank, to anchor on it; and if near the Great Bank, to approach the edge of it, in order to be able to anchor when it may be necessary; for, although you may have a hard Norther, so long as you can lie to in it, you ought to pursue your voyage, as the current will certainly carry the ship through the strait.

3. It is very necessary to sight the keys on the bank, even though you have no fear of a Norther, and there may be occasions in which every exertion should be made to see them, especially if, from want of observations, the situation of the ship is not well known.

4. When, owing to calms or light winds, a vessel not bound to the Northward is in danger of being carried through the strait by the current, she ought immediately to approach the edge of the Salt Key Bank, or of the Great Bahama Bank, and return from thence by the Santaren Channel to the coast of Cuba, without trying to beat back the lost ground; for by doing this, she would only render the chance of being carried through more certain.

5. Should you involuntarily approach the coast of Florida, you should take extraordinary care to examine whether you have advanced out of the general current, and

into the eddy. That you may know this, observe the eddy forms a remarkable and visible line between it and the general current, which line of division is, in many places, out of sight of land; that in general you have no soundings on it, and that it shows, not only by the change in the color of the water, but that also in it, during the greatest calms, there is a kind of boiling or overfalling of the water. From this line of division the water gradually changes color, so that near the Florida Keys it is a beautiful sea-green, and at last it becomes almost as white as milk.

6. When in the eddy, you have to make the correction of currents on courses entirely different from those in the stream. This is the more necessary to be attended to, because from ignorance of this circumstance, many have been shipwrecked.

7. When you enter the channel, or strait, from the Tortugas Bank, with the intention of passing through, take care to become certain of the land of Cuba, or some part of the Reef of Florida, in order to have a good departure; for although the latitudes and soundings on the Tortugas Bank are more than sufficient to ascertain the place of the ship, yet the variable set of the current towards the Havana may produce a serious error, if not properly attended to. The meridian of the Havana is, in a word, the best point of departure for ships bound to the North-eastward.

At about 3½ degrees North of Cape Antonio, the current has at times been found setting to the S.W., winding towards the Northern edge of the Yucatan Bank; but at a degree thence Eastward, setting nearly S.E. Off the West end of Cuba. at 10 leagues N.W. from Cape St. Antonio, it has been found setting S.W. by W. one mile an hour But these cannot be considered as its "general directions."

The stream in mid-channel, on the meridian of Havana, acquires the direction of E. N.E., and velocity of about 2½ miles an hour. On the meridian of the Southernmost point of Florida, its velocity, at about one-third over from the Florida Reefs, is commonly 2½ to 3½ miles. Between the Bemini Isles and Cape Florida, its direction is about N. by E., and velocity the same.

On the Cuba side the stream is weak, and it sets to the Eastward. On the opposite side, along the Florida Reefs and Keys, there is a re-flow or counter-current, setting to the S.W. and W. By the assistance of the latter, many small vessels have navigated through the strait from the Northward; but this navigation is too dangerous to be attempted by strangers. The tides set strong among these reefs, and are more particularly described in this work.

The winds are found to affect the position of the stream considerably. Between Cuba and Florida Northerly winds press it Southward towards the shore of the former; Southerly winds have a contrary effect. When turned to the North, Easterly winds press it to the Florida side, and Westerly winds nearer to the Bahamas. Southerly winds cause it to spread, and so may those from the North.

In the Strait of Florida, within the Bahamas, when a Northerly gale increases to a storm, it opposes the stream in its course, and its adverse power causes it to fill all the channels and openings among the isles and reefs, and to overflow all the low coast. Shipping have even been carried over the low keys, and left dry on shore.* The water is supposed at times to have risen to the height of 30 feet, and to have been running against the fury of the winds at the rate of 7 miles an hour. During these times the Strait of Florida exhibits a scene terrific beyond description.

Remarks on the Stream, &c., by Captain J. Steele Park.

"Sailed from Jamaica for London, on the 20th May, 1824. At noon, on the 27th, was off the S.W. side of Cuba, in latitude 21° 26′, longitude by chronometers and lunars 84° 47′ W. Here was discovered a current setting to the N.W. at the rate of 2 miles an hour. At 7h. 30m. Cape Antonio bore N.W., 5 or 6 miles. The current to the N.W.," says Capt. Park, "swept us into the Gulf of Mexico, and there we were beating about three or four days, making Northing and Westing in spite of our teeth. All this time the wind was Easterly, and we might have cruised about there till Christmas, had the wind not got a little to the Southward of East, which enabled us to get over to the N.E. side, where we found the current running directly opposite to the former, being now in the Florida Stream.

"After rounding Cape Antonio the land of Cuba was not seen. At this time, (the latter days of May, 1824,) the stream along the Florida side, and even in the strait, was by no means so strong as it is generally found. In the narrowest part, where, of course, we had a right to expect the greatest velocity, it was running at the rate of

* In the month of September, 1769, there happened an inundation, which covered the tops of the highest trees on the Cayo Largo, &c., and during which the Ludbury Snow, John Lorain, master, was carried over the reef by the N.W. current of the stream, caused by a gale from N.E. The vessel bilged in shallow water, but an anchor was thrown out, and the next day the vessel was found to have grounded on Elliot's Key with his anchor among the trees.—(De Braham's Atlantic Pilot.)

only 2½ miles in the hour. This was correctly ascertained by meridian altitudes of sun and moon, and an excellent chronometer.

"When we cleared the Gulf (Strait,") Capt. Park adds, "I was anxious to keep in the influence of the stream, and pass near the tail of the Bank of Newfoundland, but it came on to blow hard from the Northward, in lat. 34° 35′, and long. 72° 20′ (E. by S. from Cape Hatteras.)* This, of course, drove us away to the Eastward, out of the favorite track, and we passed about 300 miles to the Northward of the Bermudas. During this gale, for several days a current was found to proceed from the Eastward to the W.S.W., but in lat. 38°, and long. about 59°, the ship was in the Gulf Stream, setting finally to the N.E.

"On June 23d, at noon, lat. 37° 51′, long. 61° 54′; June 24th, lat. 39° 56′, long. 57° 26′ (by altitudes and chronometer.) Here the ship really made 4° 28′ of Easting in the 24 hours' run, and the log gave only 3° 16′. In the same time Northing was made. The true difference of latitude was 125 minutes, but the log gave about 80 only. The vessel had been running all the time E. by N., by compass, and went through the water 173 miles. Allowing half a point of variation gives the true course N.E. by E. ½ E. Subsequently, on making Scilly, there was not an error in the watch of a single mile.

"After the gale from the Northward subsided, the winds became variable between N.W. and S.W. The ship passed near the tail of the Great Bank, and continued to carry a fine North-easterly current, at the rate of 30, 25, and 20 miles a day, until she reached lat. 43° 35′ and long. 36° 50′, where it ceased."

Currents from the Bay of Honduras, and thence through the Strait of Florida, as observed by Capt. W. J. Capes, in January, 1824.

Jan. 16	Lat. 17°	55′	Long. 87°	30′	Current 16	miles	Southerly in the 24 hours.
" 17	18	24	87	8	14	do.	do.
" 18	18	14	86	35	18	do.	do.
" 19	19	31	85	58	5	do.	Northward.
" 20	20	6	85	17	6	do.	do.
" 21	20	47	85	39	5	do.	do. and 20 Eastward.
" 22	22	9	85	44	29	do.	Northward.
" 23	23	13	84	8	11	do.	do.
" 24	23	22	82	42			no current.
" 25	24	47	80	10	9	miles	Northward, and 55 Eastward
" 26	26	52	79	54	49	do.	Northward.
" 27	28	22	79	50	29	do.	do.
" 28	30	0	78	34	37	do.	do.
" 29	30	31	76	7	24	do.	do.

From the S.W. corner of the Tortugas Bank, the current has, at times, been found to set S.S W. directly over to the Colorados. But between the Tortugas and Bahia Honda, or Port Cavanas, it takes its regular set to the Eastward.

The boisterous East, N.E., and N. winds, which affect the Gulf Stream, generally begin in September, and continue until March.

On the Southern edge of the Tortugas Soundings, lat. 24° 30′, long. 83° 30′, the current sets about E. by S. 20 miles in the 24 hours; and in lat. 24°, long. 82° 20′, it sets about E. by N., 42 miles.

Remarks on the Stream, by Capt. W. J. Monteath.

Between lat. 25° 40′ and 28° 20′, Capt. Monteath found the current in the Strait had set 80 miles in the 24 hours of June 27, 1820. On the Southern border of the stream, (Northward of the parallel of Cape Hatteras,) 6th July, 1820, lat. 35° 20′ to 36° 30′, long. 72° 30′ to 71° 3′, Capt. M. found the current setting N.E. 75 miles in the 24 hours. Next day, July 7, to lat 37° 40′, long. 69°, he found it N. 53° E. 86 miles in 24 hours. On the following day, July 8, to lat. 38°, long. 67°, it ran N. 58° E. 30 miles. July 9, to lat. 39° 10′, long. 66° 10′, Westward, only 10 miles. The observations were continued each day by chronometer, which agreed within a few miles.

The stream, from lat. 26° to 28°, generally sets North, rather Easterly; from 28° to about 31°, it appears to run North, inclining a little in the direction of the coast, rather Westerly; it thence suddenly turns to the N.E. by E., or a little more Easterly, to latitude 35°, or about the parallel of Cape Hatteras, where it runs within about 18 miles of the cape.

The stream in the neighborhood of the coast at Cape Hatteras, inclines more to the Eastward, at the rate of about 2½ knots; then the shoals of Nantucket appear to front it,

* A scientific navigator says, "When in the Gulf, Eastward of Hatteras, I generally endeavor to get out of it as early as possible, especially with a strong N.E. wind, for I think the advantage of the current will not compensate for the effects of the destructive sea and squally weather, which generally attend that part of the ocean."

and to throw it off to the E.N.E. and E. by N. Northerly. In about the parallel of 34½°, long. 63½°, *it has been found to run at the rate of* 2 knots between E. by N. and E.N.E.

Col. Williams, in his "Thermometrical Navigation," states that the whirlpools on the Northern edge of the stream, have been seen in *lat. 41° 57′, long. 65° 1′*. He also observed great quantities of weed, supposed to be on the Northern edge of the stream, in lat. 41° 53′, long. 65° 33′. It has subsequently been ascertained by Lieut Charles Hare, R. N., that on *the meridian of* 57° W., *in the summer season*, the Northern edge of the stream ranges up to 42¾° N., and even in the winter months to above 42° N. This has been confirmed by 25 voyages across the Atlantic, assisted by chronometer, thermometer, &c., the last of which was made in the fall of the year 1824.

It is, however, to be considered, that a North, N.E., or East wind forces the stream towards the coast, contracts its breadth, and *thus increases its rapidity*. On the contrary, S.W., West, and N.W. winds, force the stream further into the ocean, and diminish its strength.* It is clear, then, that the stream fluctuates in *its direction and force, according to circumstances*, and no absolute rule can be given for ascertaining its more ordinary boundaries; it therefore follows, that a description of the indications by which it may be known, is of more importance. *These are, the* appearance and temperature of the water; the stream, in its lower latitudes, and usual course in fair weather, where it flows uninterruptedly, may be known by its smooth and clear surface, and blue color. *The margin of the stream is marked by a ripple on its edge*; the water in some places appears like boiling water, and in other places it foams like the waters of a cataract, even in dead calms, and in places which are fathomless, *and during strong N.E winds, that part from Cape Roman to the North and East breaks violently, so much so that it has been mistaken for shoals during the night.*

On the outer edge of the stream, especially *in fair weather, there are great ripplings*, which are very perceptible; and it has been observed, by many navigators, that in the Gulf the water does not sparkle in the night, *but with South-easterly winds it does as much as in other parts of the ocean. The appearance of the weed called Gulf-weed* is also an indication of being in or near the stream, as it is never seen far North of it.

By the advantage of knowing how near to the coast a ship may venture, and how to distinguish the Gulf Stream from the water between it and the coast, we can be sure of a favorable current either way; and a small vessel might make a short voyage from Halifax to Georgia, which is thought by *some a longer one than to Europe*. Suppose you had the wind ahead all the way; take your departure and stand for the stream; so soon as you find the water to increase in heat about half as much as you know it would when *in the stream, heave about and stand for the coast*; you will infallibly discover the edge of soundings by the cooling of the water; then stand off again, and so on to the end of the voyage; when it is almost certain, that the distance would be run in a shorter time than if there were no stream, for you would have a favorable inside current. On the return passage, take your departure, and run off till you get into the warmest water, which will be *the middle of the stream, and take the advantage of its currents.*

The following fact may serve to illustrate the propriety of these directions. In June, 1798, the mail-packet for Charleston had 25 days' passage in going, but returned in 7. The *captain accounted for this* by having calms, or very light airs and a Northerly current. This was the true cause. He was in the middle of the stream, where there generally are calms or light winds; the edges only, which come in contact with colder regions, being tempestuous. After being in the latitude of Cape Hatteras, he found himself in that of Cape Henry, (100 miles to the Northward.) The vessel, however, arrived at *last; and on the return voyage, the captain steered* the same course back again; and, with the same light airs, he performed the voyage in 7 days. Had this captain known the use of the thermometer, need he to have been much longer in going than in coming?

The thermometer is not only useful for ascertaining when in the Gulf Stream, but it is likewise advantageous in discovering the approach to soundings on the coast of North America, between Cape Canaveral and the Island of Newfoundland.

We believe the thermometer only indicates the difference of temperature caused by *going into or leaving the Gulf Stream, on the principle that its temperature* is influenced and governed entirely by the fact that it comes from the tropical regions, where the

* An experienced navigator, before quoted, says: "It is always found that the strongest current is in the warmest water. I have observed the greatest degree of heat of the Gulf between the *meridian of Cape Hatteras and that of Nantucket, to vary* at different times from 75 to 67 degrees of Fahrenheit, and the strongest current to differ from 3 to 1½ miles per hour; that the breadth of the stream-current is much less than is generally supposed, and that the winds cause great effect on the Gulf: for instance, a wind that would produce a current of one knot, would retard one of 3 knots to 2 knots if opposed to it, and would accelerate the same to 4 knots, if in the same direction; and that a wind crossing a current obliquely, would affect it as the sine of the angle at which it is opposed. The direction of a current cannot, however, be materially changed, when forced against an opposing barrier."

mean temperature is 82°, and it requires a long time before so large a body of water loses or changes its temperature in a very great degree.

At the edge of the Great Bank of Newfoundland, the water has been found 5 degrees colder than the deep ocean to the Eastward. The highest part of the bank is 10 degrees colder still, or 15 degrees colder than the ocean Eastward.

On the coast of New England, near Cape Cod,* the water out of soundings is 8 or 10 degrees warmer than in soundings, in the winter; and in the stream it is about 8 degrees warmer still; so that, in coming from the Eastward, a fall of 8 degrees will indicate your leaving the stream; and a further fall of 8 degrees will indicate your being on soundings.

On the coast from Cape Henlopen to Cape Henry, the water out of soundings is 5 degrees warmer than in soundings in the winter; and in the stream about 5 degrees warmer still; so that, in coming from the Eastward, a fall of 5 degrees will indicate your leaving the stream, and a further fall of 5 degrees will give notice of soundings.

Mr. Williams recommends to seamen to take three thermometers. "Let them," he says, "be kept in one place some days previous to sailing, in order to try their uniformity. The plate should be made of ivory or metal, for wood will swell at sea; and as the glass tube will not yield, it is from this reason very liable to break; bell metal is the best. Let the instrument be fixed in a square metal box, the bottom of which as high as the mark 30°, should be water-tight; so that, in examining the degree of heat, the ball may be kept in the water; the remainder of the length should be open in the front, with only two or three cross-bars to ward off any accidental blow, like the thermometer used by brewers. Fix one instrument in some part of the ship, in the shade, and in open air, but as much out of the wind, and in as dry a place, as possible. The after part of one of the after stanchions, under the quarter rail, may answer, if no better place can be found.

"Let the second instrument be neatly slung, with a sufficiency of line to allow it to tow in the dead-water of the wake.

"Put the other away safely, to be ready to supply the place of either of the others in case of accident."

About the edges of the stream there is generally a current running in a contrary direction, which is accelerated by the wind in proportion to its strength, blowing contrary to the stream, and retarded, or perhaps altogether obstructed, by the wind blowing in the direction of the stream. In the latter case, the limits of the stream will be extended.

In the winter, heavy and continued gales very frequently prevail, which commonly proceed from betweeen the North and West, across the course of the Gulf Stream, from Cape Hatteras until past George's Bank, and bend its direction more to the Eastward; being aided, at the same time, by the discharge of the great bays and rivers, increased by the force of the wind blowing down upon them, and the constant supply of stream that passes along the coast of the Carolinas, the whole produces so strong a current to the Eastward as to render it impossible for a ship to approach the coast until there is a change of wind.

During the prevalence of a Southerly or South-easterly wind, it has been found that the current is forced close to the shore. This proves the Gulf is influenced by winds. Being thus pent in between the wind and the shoal grounds near the shore, the breadth is greatly diminished, and the velocity proportionally increased. This circumstance has been, in particular, observed from about the longitude of Block Island, along the edges of Nantucket Shoal, thence beyond George's Bank; it has the same effect along the coast of Georgia and part of South Carolina. In the first place, the Southerly winds forced the current to the edge of the soundings, where it then ran from 1½ to 2 knots; and, in the latter place, that the Easterly wind forced the current upon soundings.

With W. and N.W. winds, the stream would be removed some leagues further off.

These remarks are sufficient to show the uncertainty of the boundaries or edges of the stream. The eddies on the inner edge are inconsiderable; but on the outer one, in fine weather, they are strong, and of considerable extent.

By an ingenious work, entitled "Thermometrical Navigation," written by Mr. John Williams, and published at Philadelphia, in 1799, we are informed that Commodore Truxton has often ascertained the velocity of the Gulf Stream to the Northward of Cape Hatteras, and found it to be seldom less than one knot, and never more than two knots, an hour. The temperature of the air and water without the stream was generally the same; that is, the difference seldom exceeded 2 or 3 degrees; the air being sometimes the warmest, at other times the water.

Captain Livingston says, "It set me off Cape Hatteras one degree and eight miles,

* The bank, from Cape Cod, extends almost as far as Cape Sable, where it joins the banks of Nova Scotia, deepening gradually from 20 to 50 or 55 fathoms, which depth there is in latitude 43°. In crossing the bank between lat. 40° 41′ and lat. 43′, the bottom is very remarkable. On the outside it is fine sand, shoaling gradually for several leagues. On the middle of the bank, it is coarse sand, or shingle, with pebble-stones. On the inside it is muddy, with pieces of shells, and deepens suddenly from 45 or 48 to 150 or 160 fathoms.

by sidereal and solar observations, to the Northward, in 16 hours, by dead reckoning; and Capt. J. Coltast, of Philadelphia, informed me that it set occasionally with greater velocity."

Mr. Williams observes, "In the stream the water is much warmer than the air; indeed, I have known it 10 degrees warmer; but so soon as you get within the stream, (that is, between it and the coast,) the water becomes colder than the air; and the more as you get on soundings and approach the shore.* If mariners, who have not the opportunity of determining their longitude by celestial observations, will only *carry with them a good thermometer*, and try the temperature of the water, and compare it with that of the air every two hours, they may always know when they come into or go out of the Gulf Stream. Indeed, I have always made a practice, when at sea, of comparing the temperature of the air and water daily; and often very frequently during the day throughout my voyage: whereby I immediately discovered anything of a current that way going, and afterwards found its strength and direction by observations for the latitude and longitude. It is of the utmost consequence, in making a passage to and from Europe, to be acquainted with this Gulf Stream; as by keeping it when bound Eastward, you shorten your voyage, and by avoiding it when returning to the Westward, you facilitate it inconceivably; so much so, that I have frequently, when bound from Europe to America, spoken European ships, unacquainted with the strength and extent of it, off the Banks of Newfoundland, and been in port a very considerable time before them, by keeping out of the stream; whereas they lengthened their passage by keeping in it. The general course of the Gulf Stream is marked on the chart published by E. & G. W. Blunt, in 1847; and I would advise those who make the Northern passage from Europe, never to come nearer the inner line of it, by choice, than 10 or 15 leagues; and then the probability will be, that their passage will be assisted by the help of a counter-current which often runs within it. In coming off a voyage from the Southward, be sure to steer N.W. when approaching the stream, if the wind will permit you; and continue that course till you are within it, which may be easily known by the temperature of the water, as before mentioned. I have always considered it of the utmost consequence, when bound in, to cross the stream as speedily as possible, lest I should be visited by calms or adverse winds, and by these means drove far out of my way, which would prolong the voyage considerably, especially in the winter season."

The course of ships bound from Europe to the ports of the United States is controlled, in a great degree, by the operation of the Florida Stream. Little, therefore, requires to be added to the subject here. Those bound to the Northern and middle ports, when passing the shoal grounds on George's Bank, should take care to pass between these shoals and the stream. Also, in passing the Nantucket Shoals, to keep between them and the stream.

Ships crossing the stream, when bound to the Westward, must get over as quickly as possible; or it is clear they will be carried far out of their course.

It has been remarked, that "ships from sea, approaching any part of the American coast between Long Island and Cape Hatteras, if in doubt about their reckoning, should take notice of what is commonly called the gulf-weed," which is in greater plenty, and in larger clusters, to the Eastward of the Gulf Stream than in it, where the sprigs are but small and few. Within the stream there is no weed, unless in rare instances, and there the color of the water changes to a still darker and muddy color.

The outer edge of the bank off this part of the coast appears to be very steep; for it has been frequently found, that, while the lead has been kept going, there have been found 45 fathoms, soon after 35, and a mile nearer the shore, only 25 or 20 fathoms; from these depths the shoaling to the shore varies in different directions.

Sir Charles Blagden, M.D. & F.R.S., in the transactions of the Philosophical Society, says, "During a voyage to America, in the spring of the year 1776, I used frequently to examine the heat of sea-water newly drawn, in order to compare it with that of the air. We made our passage far to the Southward. In this situation, the greatest

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* By the journals of Capt. W. Billings, of Philadelphia, it appears that in June, 1791, the water on the coast of America was at the temperature of 61°, and in the Gulf Stream at 77°. By those of Mr J. Williams, it appears that in November, 1789, the water on the coast was 47°, and in the Gulf Stream at 70°, viz.:

1791, June, Coast	61°	1789, Nov. Coast	47°	Difference between June and Nov. Coast	14°
Stream	77	Stream	70	Stream	7
Stream warmer	16	Stream warmer	23		

The difference of heat is therefore greater in winter than in summer.

Captain A. Livingston says: "On my voyage from Philadelphia to Kingston, Jamaica, October, 1817, I particularly attended to the thermometer. Close off the mouth of the Delaware in about 16 fathoms, it stood at 60°; on the inner edge of the Gulf Stream it rose pretty rapidly to 66°, and in the course of an hour to 76°; next morning 78°, which heat continued till we were to the Southward of Bermuda, whence it gradually increased until between Cuba and St. Domingo, and at Jamaica it was 82°, which appears to me to be the mean temperature of the sea-water about Jamaica."

heat of the water, which I observed, was such as raised the quicksilver in Fahrenheit's thermometer to 77½°. This happened twice; the first time on the 10th of April, in lat 21° 10′ N., and long., by reckoning, 52° W., and the second time, three days afterwards, in lat. 22° 7′, and long. 55°; but in general, the heat of the sea, near the tropic of Cancer, about the middle of April, was from 76° to 77°.

"The rendezvous appointed for the fleet being off Cape Fear, our course, on approaching the American coast, became North-westward. On the 23d of April the heat of the sea was 74°, our latitude, at noon, 28° 7′ N. Next day the heat was only 71°; we were then in latitude 29° 12′; the heat of the water, therefore, was now lessening very fast, in proportion to the change of latitude. The 25th, our latitude was 31° 3′; but though we had thus gone almost 2° further to the Northward, the heat of the sea was this day increased, it being 72° in the morning, and 72½° in the evening. Next day, 26th of April, at half past 8 in the morning, I again plunged the thermometer into sea-water, and was greatly surprised to see the quicksilver rise to 78°, higher than I had ever observed it even within the tropic. As the difference was too great to be imputed to any accidental variation, I immediately conceived that we must have come into the Gulf Stream, the water of which still retained great part of the heat that it had acquired in the torrid zone. This idea was confirmed by the subsequent regular and quick diminution of the heat; the ship's run for a quarter of an hour had lessened it 2°, the thermometer, at three-quarters after 8, being raised by sea-water, fresh drawn, only to 76°; by 9, the heat was reduced to 73°; and in a quarter of an hour more, to 71° nearly; all this time the wind blew fresh, and we were going 7 knots an hour on a North-western course. The water now began to lose the fine transparent blue color of the ocean, and to assume something of a greenish olive tinge, a well-known indication of soundings. Accordingly, between 4 and 5 in the afternoon, ground was struck with the lead, at the depth of 80 fathoms, the heat of the sea being then reduced to 69°. In the course of the following night and next day, as we came into shallower water, and nearer the land, the temperature of the sea gradually fell to 65°, which was nearly that of the air at the time.

"Unfortunately, bad weather on the 26th prevented us from taking an observation of the sun; but on the 27th, though it was then cloudy at noon, we calculated the latitude from two altitudes, and found it to be 33° 26′ N. The difference of this latitude from that which we had observed on the 25th, being 2° 23′, was so much greater than could be deduced from the ship's run, marked in the log-book, as to convince the seamen that we had been set many miles to the Northward by the current.

"On the 25th, at noon, the longitude by our reckoning was 74° W., and I believe the computation to have been pretty just; but the soundings, together with the latitude, will determine the spot where these observations were made, better than any reckoning from the Eastward. The ship's run on the 26th, from 9 in the forenoon to 4 in the afternoon, was about 10 leagues on a N.W. by N. course; soon afterwards we hove to in order to sound, and finding bottom, we went very slowly all night till noon the next day.

"From these observations I think it may be concluded that the Gulf Stream, about the 33d degree of North latitude, and the 76th degree of longitude West of Greenwich, is, in the month of April, at least 6 degrees hotter than the water of the sea through which it runs. As the heat of the sea-water evidently began to increase in the evening of the 25th, and as the observations show that we were getting out of the current when I first tried the heat in the morning of the 26th; it is most probable that the ship's run during the night is nearly the breadth of the stream, measured obliquely across: that, as it blew a fresh breeze, could not be less than 25 leagues in 15 hours, the distance of time between the two observations of the heat, and hence the breadth of the stream may be estimated at 20 leagues. The breadth of the Gulf of Florida, which evidently bounds the stream of its origin, appears by the charts to be 2 or 3 miles less than this, excluding the rocks and sand-banks which surround the Bahama Islands, and the shallow water that extends to a considerable distance from the coast of Florida; and the correspondence of these measures is very remarkable, since the stream, from well-known principles of hydraulics, must gradually become wider as it gets to a greater distance from the channel by which it issues.

"If the heat of the Gulf of Mexico were known, many curious calculations might be formed by comparing it with that of the current. The mean heat of Spanish Town and Kingston, in Jamaica, seems not to exceed 81°;* that of St. Domingo, on the sea-coast, may be estimated at the same, from Mons. Godin's observations;† but as the coast

* History of Jamaica, London, 1754, vol. iii. pp. 652, 653. The different observations of the heat recorded in that work, do not agree together, but those adopted here are taken from that series which appeared to me most correct.

† Monsieur Godin's experiments upon the pendulum were made at the petit grove. They continued from the 24th of Aug. to the 4th of Sept., and the average heat during that time was such as is indicated by 25° of M. de Reaumer's thermometer, (see Mem. Acad. Science, 1735, pp. 5, 7.) According to M. de Luc's calculation, (see Modifications de l'Atmosphère, vol. i. p. 378,) the 25th

of the continent, which bounds the gulf to the Westward and Southward, is probably warmer, perhaps a degree or two may be allowed for the mean temperature of the climate over the whole bay; let it be stated at 82 or 83 degrees. Now there seems to be great probability in the supposition that the sea, at a certain comparatively small distance below its surface, agrees in heat pretty nearly with the average temperature of the air, during the whole year, in that part; and hence it may be conjectured that the greatest heat of the water, as it issues out of the bay to form the stream, is about 82°,* the small variation of temperature on the surface not being sufficient to affect materially that of the general mass. At the tropic of Cancer, I found the heat to be 77°; the stream, therefore, in its whole course from the Gulf of Florida, may be supposed to have been constantly running through water from 4 to 6 degrees colder than itself, and yet it had lost only 4° of heat, though the surrounding water, where I observed it, was 10° below the supposed original temperature of the water which forms the current. From this small diminution of the heat, in a distance of probably 300 miles, some idea may be acquired of the vast body of fluid which sets out from the Gulf of Mexico, and of the great velocity of its motion. Numerous observations of the temperature of this stream, in every part of it, and at different seasons of the year, compared with the heat of the water in the surrounding seas, both within and without the tropic, would, I apprehend, be the best means of ascertaining its nature, and determining every material circumstance of its movement, especially if the effect of the current, in pushing ships to the Northward, is carefully attended to, at the same time with the observations upon its heat."

On the 25th September, 1777, as the ships which had transported Sir William Howe's army up Chesapeake Bay were returning towards the Delaware, with the sick and stores, they were overtaken, between Cape Charles and Cape Henlopen, by a violent gale of wind, which, after some variation, fixed ultimately at N.N.E., and continued five days without intermission. It blew so hard that they were constantly losing ground, and driven to the Southward. We also purposely made some Easting, to keep clear of the dangerous shoals which lie off Cape Hatteras.

On the 28th, at noon, our latitude was 36° 40′ N., and the heat of the sea, all day, about 65°. On the 29th our latitude was 36° 2′. We had, therefore, in the course of these 24 hours, been driven by the wind 38 nautical miles to the Southward. The temperature of the sea continued nearly at 65°. Next day, the 30th, our latitude, at noon, was 35° 44, only 18 miles further to the Southward, though in the opinion of the seamen aboard, as well as my own, it had blown at least as hard on this as on any of the preceding days, and we had not been able to carry more sail; consequently it may be concluded that some current had set the ship 20 miles to the Northward. To know whether this was the Gulf Stream, let us consult the thermometer. At half-past nine in the forenoon of this day, the heat of the water was 76°, no less than 11° above the temperature of the sea, before we came into the current.

Towards evening the wind fell, and we stood N.W. by N., close hauled. As the sea still ran very high, and the ship scarcely went above two knots an hour, we did not make less than three points of leeway on this tack. The course we made good, therefore, was W.N.W., which, on the distance run by noon next day, gave us about 16 miles of Northing; but that day, the first of October, our latitude was 36° 22′, 38 miles further to the North than we had been the day before; the difference, 22 miles, must be attributed to the Gulf Stream. This, however, is only part of the effect which the current would have produced upon the ship, if we had continued in it the whole 24 hours; for though we were still in the stream at five in the afternoon of the 30th, as appeared by the heat of the water, being then above 75°, and at eight in the evening the heat being still 74°, yet by seven the next morning we had certainly got clear of it, the heat of the sea being then reduced to its former standard of 65°. On this occasion, therefore, we did not cross the stream, but having fallen in with it obliquely on the western side, we pushed out again on the same side, as soon as the gale abated.

These observations having been made 3° to the Northward of my former ones, it is curious to observe that the heat of the Gulf Stream was 2° less. The seasons of the year, indeed, were very different; but perhaps, under such circumstances, that their effects were nearly balanced. In the latter observations, the meridian altitude of the sun was less, but then a hot summer preceded them; whereas, in the former, though the sun's

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degree of Reaumer's TRUE thermometer answers to about the 85th of Fahrenheit's, but the average heat in Jamaica, during the months of Aug. and Sept., is also 85°: hence we may conclude that the mean heat for the whole year is nearly the same on the sea-coasts of both islands.

* The lowest calculation of the mean temperature of the gulf is preferred on this occasion because of the constant influx of new water from the Atlantic Ocean, produced by the Trade Winds, which water, not having been near any land, must, I think, be sensibly colder than that which has remained some time inclosed in the bay. On this subject, the observations made by Alexander Dalrymple, Esq., relative to the heat of the sea, near the coast of Guinea, ought to be consulted.—See Phil. Trans. vol. lxviii., p. 394, &c.

power was become very great, yet the winter has been passed but a short time. Calculating upon this proportion, we may be led to suspect that about the 27th degree of latitude, which is as soon as the stream has got clear of the Gulf of Florida, it begins sensibly to lose its heat from 82°, the supposed temperature of the Gulf of Mexico, and continues to lose it at the rate of about 2° of Fahrenheit's scale to every 3° of latitude, with some variation, probably, as the surrounding sea and the air are warmer or colder at different seasons of the year.

The preceding facts had made me very desirous of observing the heat of the Gulf Stream on my passage homeward, but a violent gale of wind, which came on two days after we had sailed from Sandy Hook, disabled every person on board, who knew how to handle a thermometer, from keeping the deck. The master of the ship, however, an intelligent man, to whom I had communicated my views, assured me, that on the second day of the gale the water felt to him remarkably warm; we were then near the 70th degree of West longitude. This agrees very well with the common remark of seamen, who alledge that they are frequently sensible of the Gulf Stream off Nantucket Shoals, a distance of more than 1000 miles from the Gulf of Florida. According to the calculation I have before adopted, of the loss of 2° of heat to every 3° of latitude, the temperature of the Gulf Stream here would be nearly 73°, the difference of which from 59°, the heat that I observed in the sea-water both before and after the gale, might easily be perceived by the master of the vessel. This was in the winter season, at the end of December.

An opinion prevails among seamen, that there is something peculiar in the weather about the Gulf Stream. As far as I could judge, the heat of the air was considerably increased by it, as might be expected, but whether to a degree or extent sufficient for producing any material changes in the atmosphere, must be determined by future observations.

Perhaps other currents may be found, which, issuing from places warmer or colder than the surrounding sea, differ from it in their temperature so much as to be discovered by the thermometer. Should there be many such, this instrument will come to be ranked amongst the most valuable at sea, as the difficulty of ascertaining currents is well known to be one of the greatest defects in the present art of navigation.

In the mean time, I hope the observations which have been here related are sufficient to prove that, in crossing the Gulf Stream, very essential advantages may be derived from the use of the thermometer; for if a master of a ship bound to any of the Southern provinces of North America, will be careful to try the heat of the sea frequently, he must discover very accurately his entrance into the Gulf Stream by the sudden increase of the heat; and a continuance of the same experiments will show him with equal exactness how long he remains in it. Hence he will always be able to make a proper allowance for the number of miles a ship is set to the Northward, by multiplying the time into the velocity of the current. Though this velocity is hitherto very imperfectly known, from want of some method of determining how long the current acted upon the ship, yet all uncertainty arising from thence must soon cease, as a few experiments upon the heat of the stream, compared with the ship's run, checked by observations of the latitude, will ascertain its motion with sufficient precision. From differences in the wind, and perhaps other circumstances, it is probable that there may be some variations in the velocity of the current; and it will be curious to observe whether these variations may not frequently be pointed out by a difference in its temperature, as the quicker the current moves the less heat is likely to be lost, and consequently the hotter will the water be. In this observation, however, the season of the year must always be considered, partly because it may perhaps in some degree affect the original temperature of the water in the Gulf of Mexico, but principally because the actual heat of the stream must be greater or less in proportion as the track of the sea through which it has flown was warmer or colder. In winter I shall suppose that the heat of the stream itself would be rather less than in summer, but that the difference between it and the surrounding sea would be much greater; and I conceive that in the middle of summer, though the stream had lost very little of its original heat, yet the sea might, in some parts, acquire nearly the same temperature, so as to render it scarcely possible to distinguish by the thermometer when a ship entered into the current.

Vessels may with safety avoid the eddy of the gulf, or make allowance for it in their calculations; that is, if they cannot help falling into them, after they have taken all the precautions by soundings in blue water, and when they had bottom, stood off, they will naturally subtract what longitude they make in the eddy from what they had made in the stream, and begin a new departure, being at the same time very precise in their morning and meridian observations. Many ships bound through the Strait of Florida, unacquainted with the stream's eddy, and ignorant also of the soundings being under blue water, have been lost in fair weather. They were swept insensibly by the eddy to the Westward, and when they found by their calculations that they had

a sufficient offing East of Cape Florida, they stood North, and instead of entering the strait, ran directly upon a reef.

If, with adverse Northerly, Easterly, or N.E. winds, vessels happen to be in the mouth of the Gulf of Mexico, that is, between the Havana and Cape Florida, they had best endeavor to make the Bahama Islands, or at least the soundings of them, and proceed under the lee side; but when they are to the North of them it is best to keep in the Eastern extent of the stream, or else they will not be able to clear their way through the strait, nor along the coast of East Florida, and may get on shore upon the reefs either of Cape Florida or Cape Canaveral, if not upon the beach between the two capes, which is the least evil of the two; for thus the crew and cargo may be saved; and some vessels may also be brought off, provided the storm ceases before the vessel is made a wreck of. But if at any time of the South sun, or at any other time, the winds are Westwardly, then the Atlantic coast affords the most eligible lee for navigators who do not choose to take the stream; but if the current in the gulf is well understood, it will greatly facilitate the progress, when bound to the Northward.

Speaking of the GULF STREAM, Mr. Romans,* whose surveys of the coast of Florida reflected great credit on him, says: "The All-gracious Ruler of the Universe, has so disposed the several shores of this mazy labyrinth, as to cause this current to run in a direction N.E., and at the rate of 3 and 3½ miles in an hour; by which means we are enabled better to avoid the imminent dangers of the reef, where it becomes a lee shore; for the violence of the Easterly gales beats the gulf-water over the reefs, so as to destroy the effect of flood-tides, by causing a constant reverberating current from the shore over the reef, insomuch that a vessel riding under the reef will lay with her stern to windward.

"I once came out from Matacumbe, and was scarcely clear of the reef before I was overtaken by a gale from the Eastward, which was very violent. It was 5 o'clock in the evening, and it being dark, to attempt a re-entrance of the reef, I was forced to heave the vessel to, which I did under the balanced mainsail; she was a heavy schooner of about 70 tons, and a dull sailer. The succeeding night I passed in the deepest distress of mind, seeing the breaking of the breakers in constant succession on the reef, till past one o'clock; the storm continued till ten the next morning, when I made sail to the Northward, and at noon, to my utter astonishment, I had an observation of the sun's altitude, which proved me to be in 26° 50' latitude, by which I had made a difference of latitude of 118 miles, in the short space of 19 hours, 17 of which I lay to.

"I am an utter enemy (continues Mr. Romans) to all theoretic and systematic positions, which has caused in me an indefatigable thirst for finding, in my experience, causes for all extraordinary appearances, be they what they may. And my experimental position of the cause of the increase of the velocity of this current, during the gales that blow contrary to its direction, is no other than the reverberating current occasioned by the swelling of the water within the reef, which in the memorable gale of October, 1769, when the Ledbury was lost, was no less than 30 feet above its ordinary level."

Besides the convenience of correcting a ship's course, by knowing how to make a proper allowance for the distance she is set to the Northward by the current, a method of determining with certainty when she enters into the Gulf Stream, is attended with the further inestimable advantage of showing her place upon the ocean in the most critical situation; for, as the current sets along the coast of America, at places on soundings, the mariner, when he finds this sudden increase of heat in the sea, will be warned of his approach to the coast, and will thus have timely notice to take the necessary precautions for the safety of his vessel. As the course of the Gulf Stream comes to be more accurately known, from repeated observations of the heat and latitudes, this method of deter-

* Mr. Romans observes, "If, by keeping to the Northward, the current of the Mexican Gulf has set you on soundings on Tortugas Shoal, these soundings, in foggy weather, may be a guide, being properly laid down in the chart. You do not change the color of your water till you get well in with the shoal, but there is generally an eddy-current so soon as you are on soundings: therefore, if you stand over to the Florida shore, so soon as you are up to the latitude of 23° 25', keep as much to the Eastward as N.N.E. or N.E. by N., till you get soundings. And, whatever terrible idea people may have of that shore, if the wind will allow you, keep it on board, especially in the autumn and winter seasons, when the N. and N.W. winds are frequent, and the current often runs to leeward. In those seasons, you may take an advantage of the tides on soundings, by carefully observing their times: and this conduct will tend to shorten your passage. When, however, you are got as far windward as the South of Matacumbe Reef, endeavor to get all the Easting you can possibly acquire, in order to get the Bahama shore on board, which is the most eligible in going Northward. The proximity of the Reef of Florida will manifest itself clearly in daylight by the white color of the water, and thus there may be no danger in approaching it—but this is far from being the case at night, when it ought to be carefully avoided, and the lead kept constantly going: because, having soundings to the distance of 2 miles without the steep part of it, they will show the proximity of danger."

mining the ship's place will be proportionably more applicable to use. And it derives additional importance from the peculiar circumstances of the American coast, which, from the mouth of the Delaware to the Southernmost point of Florida, is everywhere low, and beset with frequent shoals, running out far into the sea. The Gulf Stream, therefore, which has hitherto served only to increase the perplexities of seamen, will now, if these observations are found to be just in practice, become one of the chief means of their preservation upon this dangerous coast.

Off-set from the Gulf Stream.

From the superior elevation of the Gulf Stream, its water, about the Bahamas, appears to have a declivity, or tendency to the Eastward; and there is reason to believe that an off-set of the stream, from without the Maternillo Bank, sets, if not generally, very frequently, to the Eastward and S.E. With the usual set of the currents along the Eastern range of the Bahama Islands, we are not accurately acquainted; but, with a N.W. wind, we have no doubt that it is in a S.E. direction. The Europa, a ship of war, returning to Jamaica by this passage, from a cruise off Havana, in 1787, steered East on the parallel of 30° N., with a Westerly wind, until the run was supposed to have brought her on the meridian of Turks Islands, by which it was intended to pass Southward, but an *Easterly* current had swept her along as high as that of the Mona Passage. Captain Manderson, of the Royal Navy, who first noticed this event, observes, "If it were once ascertained that a current was common in that part of the ocean, might it not be favorable for vessels bound from Jamaica to the Caribbee Islands, especially in the summer months, during the prevalence of the sea-breezes?"

"The ship Fame, Captain J. W. Monteath, a good lunarian, assures me," says Captain Livingston, "that he had been carried three degrees and upwards to the Eastward, between the time of his departure from the American coast and making the Windward Passages; but this may have been partly occasioned by the Gulf Stream, which he may have crossed too obliquely in proceeding from Norfolk." The Fame above mentioned was bound from Norfolk, in Virginia, to Kingston, Jamaica, in May, 1816; and in a run of thirteen days, until in the latitude of 29°, and longitude 61°, it was found that the current had set the vessel 3° 10′ E.

"Captain Hall, in the brig Lowland Lass, passed to windward of Porto Rico, when he thought that he had run through the Mona Passage. Captain Patterson, of the brig Clyde, as I am informed, passed down the Anegada Passage, when he intended to have made the Mona."

Captain Romans, before quoted, says, "Within the edge of the stream is a smooth eddy, gradually changing, as it approaches Hawke Channel and its islands, from the stream's deep blue to a beautiful sea-green, and at last into a milk white. The soundings, under the blue-colored water, are generally on a fine white marl; under the sea-green, on the said marl, you meet with sponge, white coral, sea-feathers, turtle-grass, and sometimes banks of rocks; and under the white-colored water the soundings are on white marl, with banks of rocks, or white sand. The eddy takes its current in an opposite direction from that of the contiguous stream, viz., South-westerly."

The soundings of the eddy, provided no reef be in the way between the stream and the Hawke Channel, run from 20 fathoms to 2½; and when the reef divides the stream and the Hawke Channel, the soundings, in some places, are from bottomless at once to 12 or 11 fathoms. Hawke Channel is the channel between Florida Reef and Keys.

"In addition to the above notices, I have been assured, by an intelligent Spanish navigator, that, about thirty years since, vessels bound from Havana to Europe, used generally to cut off three degrees of longitude from their reckoning, on account of this set, which, he said, was considered then as certainly existing. At that time the charts were about a degree wrong, which would reduce the Spaniard's allowance to two degrees, or thereabout.

"These notices tend to prove that an Easterly off-set from the Gulf Stream sets to the Northward of the Bahamas; of this I am so firmly convinced, that if in charge of a ship from the Havana, or even New Orleans, bound to Jamaica, I should, if allowed to follow my own plan, run out the Strait of Florida, and attempt making my passage with the aid of this off-set. This is to be understood in case I should not have Westerly winds in the Southern parallels; for such winds are, I am told, more frequent than formerly; and I know that they are by no means of rare occurrence on the S.W. of Cuba."*

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* Captain Thomas Hamlin, in the brig Recovery, then in the Gulf Stream, was set to the Northward 104 miles in the 24 hours of the 20th of March, 1820. The ship's place at noon, 23° 4′ N., 79° 50′ W. To the North-eastward, on the next day, without the stream, in lat. 29°

It has been found that inside and outside of the Gulf Stream there is a current setting to the S.S.W., from 18 to 20 miles a day, and that this current is accelerated or diminished by the winds. This current (which is a continuation of the Labrador current) sets, more or less, to the S.S.W., according to the figure of the coast.

Upon Soundings, along the coasts of Georgia, Carolina, Virginia, New Jersey, and New York, the current runs, in general, parallel to the shore. It is probable the tides may have some influence on these currents, particularly near the entrance of the great bays and inlets. The flood on this coast comes from the S.E. In the months of April and May, I have observed, on crossing the Gulf Stream in the latitude of Cape Henry, that, when near the inside of the stream, the water begins to color of a deeper green; and thence to the edge of soundings there is a strong current from the Eastward. The color of the water from green turns to muddy when on soundings, the current still continuing until within the influence of the tide; this Eastern current is, no doubt, occasioned by the discharge of water out of the Chesapeake, by the floods from the snow melting in the country; and it prevails, in some degree, throughout the year, but its effect is greater at this time. It is probable that a similar current prevails off the mouth of the Delaware.

Round the East end of Long Island, and thence to the Eastward round Nantucket Shoals, across George's Bank, to Cape Sable, a strong tide runs; the flood setting to the North and West, in order to fill up the bays, rivers, and inlets, and the ebb the contrary. The tides that set across George's Bank into the Bay of Fundy, are very much influenced by the winds, particularly if, after a strong S. or S.E. wind, it should suddenly change to W. or N.W. (circumstances that often happen;) ships will then find themselves drifted by the outset 50 or 60 miles in the 24 hours, or more, to the S.E. The indraught is also great with S. or S.E. winds, which ought to be paid particular attention to.

Upon the Nova Scotia coast the currents run parallel to the shore, but more frequent from the Eastward than from the Westward, particularly in the spring: the Southerly winds force them upon the shore by the water running in to fill up the bays and inlets, and N. and N.W. winds have the same effect in forcing them off shore. A regular tide here runs along shore; the flood from E.N.E.

Remarks on the General Character of the Currents near the Coast of the United States, by W. C. Redfield.

It appears from observations found on the pages of the Coast Pilot, that immediately contiguous to the borders of the Gulf Stream, on the coast of the United States, a moderate current is generally found setting to the Southward and Westward, or in the direction which is opposite to the stream, and parallel to the American coast. By a familiar association, this is usually called *an eddy-current;* but we shall probably find, on more particular inquiry, that it has little or no claim to this character. An eddy, as is well known, is usually caused by some fixed obstacle opposed to a stream, and exhibits a rotary movement. It also derives its waters from the parent stream, and necessarily partakes of the same temperature. I must, therefore, dissent from the views of those persons who refer this current to the eddying action of the Gulf Stream, for the following reasons:

35′, long. 77° 25′, the current was found to have set only 11 miles North, but considerably more to the Eastward.

On the 16th of February, 1818, the ship Mars, under the same commander, was at the back of the Maternillo Bank, and no Northerly current was found; and nearly two degrees further Eastward, in 28° 7′ N., and 76° 53′ W., the current, in 24 hours, had set 3′ S. and 14′ E. The ship was, therefore, evidently in the off-set of the Gulf Stream.

In proceeding onward towards Ireland, in March, Capt. Hamlin passed about four degrees to the Northward of the Azores, and was favored by an Easterly current from the parallel of 35½°, and meridian of 57°, until he reached the Salters, on the S.E. coast, where his differences amounted to 30° 36′ E.

Captain Hamlin, in the Recovery, on his passage outward to Halifax, September, 1819, found the current Westerly, from 45′ to 30′ per day, between the parallels of 51° and 46°, long. 29° to 37°. A gale from the 28th to the 30th of September disturbed the ship's course in about 43° N. and 41° W.; after which, to the Eastward of the Newfoundland Bank, the current was found to set strongly to the Eastward. The ship passed over the bank in the parallel of 43°, the current still strong to the Eastward: apparently the Gulf Stream. The Recovery thence proceeded to the Southern edge of Banquereau, still finding a strong Easterly current, but with diminished strength, which continued thence to the Bank off Sable Island.

The brig afterwards proceeded from Halifax to Jamaica, and on the 22d of November, 1819, in 40° N., 62° West, found a slight current to the Southward, which in the parallel of 26° to 23°, near the meridian of 64°, had changed to the Eastward; but on approaching the Silver Key passage, a slight current to the Westward appeared to prevail.

1st. Because, in open sea, it nowhere assumes the *form* of an eddy; but, when unobstructed by violent winds, pursues its course towards the South-west, parallel to the general direction of the coast.

2d. Because, on the edge of the Gulf Stream on this coast, there are no obstacles presented which could divert the progress of a portion of the stream, or circumscribe the same in eddies.

3d. Because, if this current was derived from the Gulf Stream, it must necessarily partake of its temperature, as above suggested; but the sudden reduction of temperature on leaving the margin of the Gulf Stream is most remarkable, and is almost unparalleled, except in the immediate vicinity of ice.

We shall in vain attempt to explain this extraordinary change of temperature by the proximity of shallows or soundings, for this cannot avail if the water itself be derived from the Gulf current, to say nothing here of the general unsoundness of this explanation.

I have long since become satisfied that the current in question is neither more nor less than a direct continuation of the polar or Labrador current, which bears Southward the great stream of drift ice from Davis' Strait, and which, in its progress to the lower latitudes, is kept in constant proximity to the American coast by the same dynamical law or influence which, in the Northern hemispheres, causes all currents which pass in a Southerly direction to incline to the Westward, in consequence of the increasing rotative velocity of the earth's surface in the opposite direction, as in the case of the Trade Winds in the lower latitudes.

In collating the observations of various navigators, we find reason to conclude, that, in ordinary states of weather, this current may be traced from the coast of Newfoundland to Cape Hatteras, and perhaps to Florida, the reflux influence which sometimes follows a violent gale being of short duration.

According to this view of the case, the Gulf Stream, in its course from Florida to the Bank of Newfoundland, is in part imbedded upon a colder current which is setting in the opposite direction, in its progress from the polar regions. The impulses by which these opposite currents are maintained, being as permanent and unchanging as the diurnal rotation of our planet, their opposite courses on this coast, while in contact with each other, are no more surprising or inexplicable than those of two opposite currents of atmosphere moving in the same manner, and the latter are often known to maintain opposite courses for a long period and at high velocities.

From the fact that these great currents have their origin, one in the tropical and the other in the polar seas, their presence can be determined, in most cases, by means of the thermometer; and with the aid of good chronometers, their position and extent may be ascertained with greater certainty than has yet been done, particularly in the latitudes between Nantucket and Florida. In this department of hydrology every navigator may contribute something of value to his profession and to science, for which no other qualifications are required than frequent observations and proper attention to the ship's place. It is desirable, therefore, that every shipmaster who traverses this region should make and record his observations hourly upon these currents.

The drift ice from the polar basin is all found in the Western portion of the Arctic and North Atlantic oceans, notwithstanding the influence of violent Westerly winds. A writer in the London Nautical Magazine * supposes that a portion of the polar current, after bearing the ice along the Eastern edge of the Grand Bank into the Atlantic, there becomes exhausted, or joins the Florida Stream. By its action, the great stream of ice is undoubtedly thus brought within the dissolving influence of the Gulf Stream, and the Grand Bank itself, perhaps, owes its origin to the deposits which have resulted from this process during a long course of ages. But this portion of the polar current probably "joins" the Gulf Stream in no other manner than by intruding upon and passing under the same, the order of super-position being determined by the diversity of temperature, or by the deeper position of the polar stream.† The icebergs being thus carried Southward by the deeper polar current, their rapid destruction is here effected by the water of the Gulf Stream, and we are thus relieved from these dangerous obstructions, which would otherwise be found in the lower latitudes of the Atlantic. These two streams of current, therefore, do not coalesce in any proper sense, but like other currents, both atmospheric and aqueous, pursue each its determinate course, the Gulf Stream being thrown Eastward by the greater rotative velocity which it acquired in latitudes nearer the equator, and the polar current being thrown West-

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* Nautical Magazine for March, 1837, p. 139. He states that between 42° and 43° West is the furthest Easterly position in which floating masses of ice have been found; but we have shown that they sometimes extend to longitude 39°.

† For an account of the ice of the North Atlantic, see Blunt's Memoir of the Dangers of the North Atlantic.

ward along the shoals and soundings of the American continent, and its contiguous ocean depths, by the slower rotation which it derived in higher latitudes.

The writer above alluded to, supposes the natural course of the polar current from Davis' Strait to be towards the coast of Morocco, in North Africa; but a little attention to the effect of the earth's rotation on this current will show that both it and the ice drifts that are borne on its surface must be turned Westward, as here described, in spite of the powerful Westerly gales which prevail in these latitudes. Light articles, however, like bottles, which are set afloat to determine the drift of currents, will not only yield greatly to the influence of these winds, but on falling into the surface current of the Gulf Stream will, of course, accompany that current in its progress to the coast of Europe, where a leading branch of this stream is found penetrating the polar sea along the coast of Norway, and appears to be ultimately resolved into the polar current. The South-easterly branch of the warm stream assumes the shorter and more direct circuit of gravitation, by the coast of North Africa to the tropical latitudes, from whence it again merges in the Florida Stream. It is by this system or compensation, aided by various subordinate circuits, such for instance as Rennel's current, that the great mechanical system of oceanic circulation is apparently maintained; and were the influence of winds wholly unfelt upon the ocean, it is probable that the same system would still be maintained, in all its essential features, by the mechanical influences of the earth's rotation, combined with the tides and a state of unstable equilibrium.

From the temperature of the sea upon the North American banks and soundings, and in some other positions which are analogous, it has been assumed that the mean temperature of the sea is lower on shoals than in deep water, but it seems difficult to account satisfactorily for such a result, unless upon the ground already mentioned. It has, indeed, been ascribed to increased radiation from the bottom, and again it has been denied that such radiation can be carried on through water from a non-luminous body; and, as the colder particles can have no tendency to rise towards the surface, it does not appear how the supposed reduction in the temperature of the bottom can materially affect the temperature of a current of 50 or 60 fathoms in depth, which is derived from a foreign source; for on none of these shoals or soundings is the water permanently quiescent. Were it otherwise, we might reasonably expect a diminution of temperature on shoals in winter, and an increase of temperature in summer, with a permanent increase if in tropical latitudes. I am informed by Mr. Geo. W. Blunt, one of the proprietors of this work, who has kept a thermometrical journal while crossing the Atlantic, that on entering upon soundings in the English Channel, he has found an increase of temperature in the water of 2° Fahrenheit. Those who differ from our views in regard to these currents, ought therefore to propose some more rational hypothesis to account for the great reduction of temperature in the waters which lave the Atlantic coast of the United States. Were these waters derived as an eddy current from the Gulf Stream, it is probable that they would no longer serve for the myriads of codfish which now frequent our shores, and which are known to inhabit the coldest waters.

Many experiments upon the drift of currents have been made with bottles containing memorandums of the date and locality in which they were committed to the sea. These experiments are not without their value, although it is obvious that a circuitous course is liable to be construed into a direct one, and that storms and the common drift caused by the prevailing winds may greatly affect the course of such objects upon the surface of the ocean, while an important diversion may result from a mere superficial cross-current, as we have noticed in the case of the Gulf Stream. Perhaps the suspension of a light weight to these floats, with a line from five to twenty fathoms in length, would afford results of a more satisfactory character, although the duration of such pendulous fixtures can hardly be relied on. If fitted in this manner the fact should be noted upon the memorandum inclosed, which should specify also the length of line which may be attached.

NOTES ON THE GULF STREAM.

BY A. D. BACHE,

Superintendent of the U. S. Coast Survey.

(*Revised to* 1854, *and communicated by authority of the Treasury Department.*)

THE developments made by the Coast Survey in the summer of 1853, in relation to the Gulf Stream, requiring a revision of the notes to bring them up to date, I have at the request of Mr. Blunt, and by authority of the Treasury Department, embodied the new results with the former ones and communicated them for publication, that navigators may be benefited by the extensive circulation which they will receive in this form.

The Gulf Stream and the approaches to it have been explored in the progress of the survey of the Coast between the limits of a line perpendicularly across it from Cape Cod, to another from Cape Canaveral, the observations generally extending from about 42° N. Latitude to about 28½°, and from about 65½° W. Longitude to 80½°. The observations were made under detailed instructions from the Superintendent, by the following-named Officers of the Navy, Assistants in the Coast Survey:—

By Lieut. Com'g C. H. Davis, who examined in 1845 the Section from Cape Cod, and positions to the southward and westward of it; by Lieut. Com'g Geo. M. Bache, who in 1846 explored the Sections perpendicular to the Stream from Sandy Hook, from Cape May, and from Cape Charles; by Lieut. Com'g S. P. Lee, in 1847, who explored the Cape Charles Section; by Lieut. Com'g Richard Bache, in 1848, who repeated the observations on the Cape Charles Section, and explored the Hatteras Section; by Lieut. Com'g J. N. Maffit, in 1853, who went over the Hatteras observations, and examined the Sections from Cape Fear, and from Charleston; and by Lieut. Com'g T. A. Craven, during the same season, who explored the Charleston, St. Simon's, St. Augustine, and Cape Canaveral Sections, and several other positions towards Cape Florida.

The different sections of the Stream were designed to be perpendicular to its axis from prominent points of the Coast, at such distances from each other as would insure a thorough knowledge of its whole course. It was foreseen that the surface observations would be of comparatively little value, from the varied character of the circumstances to which the surface water is exposed, and the observations were accordingly carried to considerable depths. I propose to give the general distribution of the temperatures shown by the several sections, and to connect with this, remarks on other points developed by the examinations.

1st. The Ocean within the region of the Gulf Stream is divided into several bands of higher and lower temperature, of which the axis of the Gulf Stream is the hottest, the temperature falling rapidly in-shore, and more slowly outside. This is not only the case at the surface, but with modifications, easily understood, at considerable depths. It is represented in the annexed Diagram (No. 1), showing the distribution of temperature on the Sandy Hook Section at the depth of fifteen fathoms, from the observations of Lieut. Geo. M. Bache. The scale of nautical miles on top shows how far the several points are from Sandy Hook. The scale at the side shows what the thermometer, with Fahrenheit's scale, would read if let down fifteen fathoms at the several positions marked at the top. The thermometer say at Position I, 100 miles from Sandy Hook, let down fifteen fathoms would mark 63°; at III, 150 miles would mark 67°; at 240 miles 63½°; and at 280 miles 80½°. When the curve rises, the thermometer would rise, and vice versa. Three points, b, d, and f, decidedly warmer than those on either side of them are seen; the warmest is at the axis of the main Gulf Stream. There are four points of low temperature, lower than those either inside or outside of them. The changes on the Cape May Section are even more strongly marked, the curve of fifteen fathoms being dotted on the same diagram, and including a fourth point of high temperature, h. The curve of one hundred and fifty fathoms on the Cape May Section is added, as showing how boldly these features come out at considerable depths.

The curve of twenty fathoms on the Charleston Section in the Diagram (No. 2), shows the same thing. The curves deduced from the mean of observations at two hundred and three hundred fathoms give a similar result. These cases are mere illustrations of the general fact.

These bands are also shown in the sketch A, where the dark shades correspond to the warm bands, and the light spaces to the cold ones.

2d. Among the cold bands is one so much colder than the rest as to be very remarkable; it is that next inside of the axis of the main stream, and the change of temperature between it and the stream is so abrupt that Lieut. G. M. Bache called the space the "cold wall," the cold water appearing to confine the hot water as by a wall on the in-shore side. The Sandy Hook Diagram (No. 1), shows it between 230 and 280 miles from the shore, the Cape May between 132 and 178 miles from the shore; the rise in the first curve is from 62½° to 80½°, eighteen degrees in fifty miles; in the second from 62° to 83½°, or 21½° in forty-six miles. At Charleston the rise in the twenty fathom curve is from 67½° to 79° in fifteen miles; at St. Simon's from 70° to 76°, in twelve miles. The rate is between four-tenths and eight-tenths of a degree to the mile.

Of the cold band inside of this I shall speak again. The two outside ones, though characterized by much smaller differences of temperature than between the axis and the cold wall band, are sufficiently marked, and should be known, because in crossing the stream after warm water is met with to find cold, then again warm, then cold, would baffle the navigator who was looking for no such alternations, and would greatly instruct him if he knew what to expect.

3d. The alternate cold and warm bands are represented on the chart A from a first discussion of the Coast Survey observations. Their positions may be somewhat changed by a more complete discussion. The line which crosses the Sandy Hook Section at A is the axis of the Gulf Stream, taking the general directions of the bends of the coast, rather of those below than above water, and thrown quite eastward by the shoals off the Southern Coast of New-England. We have not yet traced it further than is shown in the diagram, but of course propose to do so. We know, however, that one branch reaches the shores of Ireland, parting with its heat as it goes, but retaining enough to reproduce there, as Prof. Harvey, of Dublin, has remarked, the algæ of the Florida Coast. The shading upon the map is intended to represent the higher temperatures by the deeper shades.

The axis of the next warm band, which is well made out in the observations, crosses the Sandy Hook Section at C. It is not certain whether G, on the Charleston Section, connects with it or not: the more probable supposition is shown on the Chart, leaving to future observations to settle the point; the bands M and L are perfectly well defined from St. Augustine to Charleston. There was another pair of cold and warm bands noted on the Cape Henry Section, and shown on the diagram, between the hot water of the Gulf Stream, and the band which, north of this, is the first cold band outside.

There is an axis of warm water distinctly shown on the Cape May and Hatteras Sections, beyond the last ones inserted on the Chart, but its position is not well determined. Warm water was found on the Cape Henry and Hatteras Sections, as far E. and S. as shown on the diagram.

Inside of the Gulf Stream, marked by E, a band of warmer water than the surrounding ocean, shows itself before striking soundings to the north, but afterwards on the southern coast. This is well marked by the observations on all the Sections, though its position is not so well determined as the others.

The axis of the most marked cold band, the minimum of temperature which forms the "Cold Wall," follows the shore and shoals in its bendings, even more closely than the axis of the Gulf Stream. This is traced from our observations beyond the range of the other lines, with considerable probability, to longitude 66°.

The two axes of cold water outside are marked, where they cross the Sandy Hook Section, by the letters D and F. Beyond the last of these many of the Sections show a line of minimum temperature, on striking soundings, but its position is not well determined.

North of Hatteras, the Sections show another line of minimum temperature, on striking soundings of from one hundred and fifty to seventy-five fathoms.

4th. To understand this distribution of temperature, it must be remembered that the warm water of the Gulf Stream rests on a cold current from the north, flowing towards Cape Florida, the coldest water keeping near the Atlantic Coast, below the surface, if not at it. The following table will prove this, though it contains but a few of the very numerous observations.

TABLE,

SHOWING THE TEMPERATURE BELOW THE SURFACE AXIS OF THE GULF STREAM, AT FOUR HUNDRED FATHOMS, FROM SANDY HOOK TO CAPE FLORIDA. THE TEMPERATURE OF THE SURFACE CORRESPONDING TO THESE TEMPERATURES BELOW, EXCEEDED 80°.

			Fahr.°
Sandy Hook,	July,	1846,	51.
Cape May,	August,	"	51.
Cape Henry,	"	"	54½.
" "	"	1848,	52½.
Cape Hatteras,	July,	1853,	51.
Cape Fear,	June,	"	51.
Charleston,	June,	"	55.

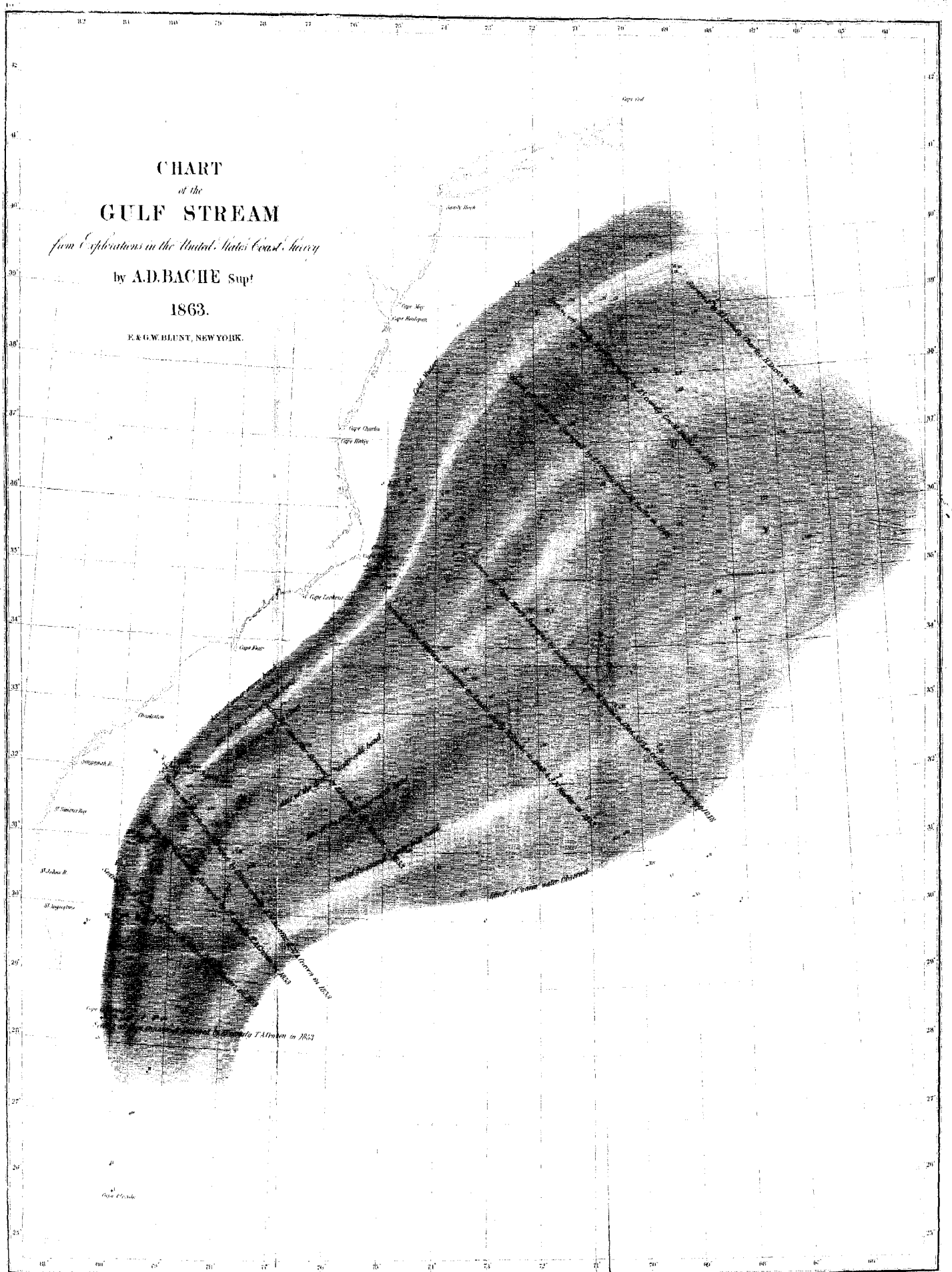


CHART
of the
GULF STREAM
from Explorations in the United States Coast Survey
by A.D.BACHE Supt
1863.
E.& G.W.BLUNT, NEW YORK.
Cape Cod
Sandy Hook
Cape May
Cape Henlopen
Cape Charles
Cape Henry
Cape Lookout
Cape Fear
Charleston
Savannah R.
St. Simons Bay
St. Johns R.
St. Augustine
Cape Canaveral
Cape Florida
Gulf of Mexico
Gulf Stream
Gulf Stream water (Blanford)
Gulf Stream Observed by Lieut. T.A.Craven in 1853
Gulf Stream Observed by Lieut. T.A.Craven in 1853
Gulf Stream Observed by Lieut. T.A.Craven in 1853

			Fahr.°
St. Simon's,	June,	1853,	54.
St. Augustine,	"	"	51.
Cape Canaveral,	"	"	46½.
Fort Jupiter,	"	"	46.
Hillsboro' Inlet,	"	"	51.
Cape Florida,	"	"	51.

At 1000 fathoms off Cape Hatteras, the temperature was but 40

The warm water of the Gulf Stream is of very different depths at different points of its course, and in different parts of any one of the Sections across it. From the deepest portion in the cross-sections, the warmer water flows off towards the shore and outwards, overlaying the cold. The way in which it thins off is seen in the annexed Diagram (No. 3), from the Sandy Hook Section, where the curves of 80°, 75° and 70° of temperature are shown. All the water above the curve a b c d e, is above the temperature of 80°, so between it and curve f g h i k, is between 75° and 80°. This thins out as it approaches the shore; the cold water which lies on the bottom coming up in the northern Sections, but the warm water prevailing to the very shore, and at considerable depths, in the southern. When the cold water is forced up by a bank or shoal, or when it comes to the surface from the thinning out of the warm, there is of course a considerable change of temperature. This cold water from the north prevails on the inside of the cold axis at moderate depths, as far south as Hatteras. At thirty fathoms, twenty nautical miles from Hatteras Light, in August, 1853, the temperature was 60°, bottom being found at thirty-three fathoms. At twelve miles it was 74° at the surface, and in five and ten fathoms, the bottom being at eighteen fathoms. The highest temperature in that Section, and at that time, in the axis of the Gulf Stream, was 78°. One hundred and eight miles from Sandy Hook, in August, 1846, the temperature of the axis of the Gulf Stream being 84°, the surface temperature was 71¼°, at five fathoms, 67°, at ten fathoms, 66°, at fifteen fathoms, 65°, at twenty, 58°, and at thirty fathoms, 52½°, diminishing in the first fifteen fathoms 6¼°, and in the second 12½°. This is the cold counter-current which gives character as well as motion to the water near the shore north of Hatteras. We have seen that the cold wall is not cut off at Hatteras, and it is altogether probable, from the observations of Lieut. Com'g Maffit's party this year, that the counter-current still prevails south of Hatteras. Acting-Master Jones found it about fifty miles S. E. of Charleston Light, running to the S. W., or along the shore, the surface water being 75°, and that at twenty fathoms, 68°, and in the axis of the Gulf Stream, 82°. The distance from this point to the axis was about twenty-three miles, so that moderately warm water extends to the very bottom.

As it was found desirable, if not absolutely essential, to direct special attention to the solution of one problem at a time, our results for currents are not numerous, but they are sufficient to show a general tendency near the surface from the axis of the Gulf Stream outwards, besides the onward current.

The direction of the axis of the Stream shows, therefore, the set of the current in that band. To the right and left of it, the current is outward and onward, and to the left, as far as the cold wall, is inward and onward. Inside of the cold wall, north of Hatteras, and probably south of it, the current is to the southward, or along the coast. The rate of the current in the axis of the Stream, on the Cape Canaveral Section, is about three nautical miles per hour, on the Cape Fear Section about two miles, and on the Sandy Hook Section about one mile per hour.

5th. The observations of this year have fully proved that in the Charleston Section, and those south of it, the bands of cold and warm water are produced by the shape of the bottom of the sea. The Diagram (No. 4) shows this shape on the Charleston Section. The party of Lieut. Maffit carried soundings 68 miles from Charleston Light, and after losing them at 600 fathoms for 32 miles, sounded in three hundred fathoms, then in 550 fathoms, and so on to the limits of the Section, 210 miles. This gives a section of the bottom, as shown on the Diagram, sloping gradually to twenty fathoms, then more rapidly to one hundred fathoms, and falling off suddenly. The next sounding, thirty miles from the one hundred fathoms, was on an elevation sloping rapidly on the in-shore side, less steep on the off-shore, but rising three hundred fathoms above the bottom eleven miles southward and eastward, then another elevation, and then onward as if tracing some of the hills and valleys far inland. This ridge was discovered independently by Lieut. Craven, within two days and a half of Lieut. Maffit's first finding it on the Canaveral Section, struck again by him on the next two Sections, and again, just north of this, on the Charleston Section, without being aware of the previous discovery.

The curve of temperature of 57°, traced on this Diagram (No. 4), follows with great precision the shape of the bottom, which is the more remarkable that every observation involved in it is entirely independent of every other, and that the results of many positions and many depths at the same position are concerned in the tracing of that curve. The curve of 62° has but a single irregularity. These elevations force up the cold water into the warm, and cause the cold streaks and the division into warm and cold bands. There is

one narrow band on the Charleston Section which does not extend below a certain depth and which shows that other causes may produce them, as indeed we know must be the case; but with two exceptions, the distribution of temperature of the water in this Section, and all south of it, are proved to be connected with the form of the bottom. Just on the crest of the steep slope in-shore, a cold band is formed by the forcing of the cold water upwards, and very remarkably, on part of the St. Simon's Section, which is drawn on the Diagram No. 5, to show the fact.

I remarked while noticing the bands on the Northern Section, that one of low temperature occurred first when soundings of about one hundred and fifty to seventy fathoms were struck. This is a similar case to the one we are now considering, as the sections on the Coast Survey Chart, from Cape May to Gay Head, made without any reference whatever to this subject, fully show. It is, in fact, only an extension of the principle of the forcing up of the cold water on shoals. If the strata of water were parallel to the bottom, the cold water would come nearer the surface, but it rises even higher than this as the current flows along these steep slopes.

Is the figure of the bottom the cause of the distribution of temperatures in the northern sections? It seems almost irresistible to generalize, but as the question is one which we can answer by observation, it is better to let speculation wait upon the facts.

6th. In regard to the permanence of these bands of temperature, and the possibility of determining their position with reasonable precision, it may be proper to make some remarks. The Cape Henry Section was run over three times, the Hatteras twice, the Charleston twice, for the very purpose of making such comparisons as would connect together the observations of different years. The comparisons thus made, show that the differences are of the same class as those which affect the position of the Gulf Stream, in different years, at different seasons, and under different circumstances, as wind and the like. The distances of the positions at which observations were taken, varied with the character of the changes, being less distant as the changes were greater. This will affect the degree of accuracy of the result. The southern Sections presented all the phenomena on so small a scale, comparatively, that there the positions succeeded each other at small intervals. The most marked changes would of course, even were the observations but equally numerous, be best determined.

Another mode of ascertaining how far the results may be depended on, is to determine the discrepancies which they show at the different depths. The whole of the results showed as a general rule, to which the exceptions were readily understood, that the points of highest and lowest temperature were sensibly in the same perpendicular line, except those of the axis of the "cold water" and of the Gulf Stream, which are forced by the action of the cold water further from the shore, according to a law which the observations make out. The discrepancies from the mean positions, agreed well with the determinations from the observations above referred to, and the liability to error computed numerically, was always considerably less than the half of the average distance between the positions. As far as I have as yet been able to examine the results, this is the general conclusion.

7th. The variations of temperature in different years and at different seasons, is considerable. In the observations made during the same season, the more southwardly Sections gave in general the highest temperatures. Not to complicate the examinations with surface irregularities, if we compare the maximum temperatures at twelve or fifteen fathoms below the surface of the different Sections in the same year, we shall find as a general rule, an increase of temperature in passing southward, as 81°, 83°, 82°, from the Sandy Hook to the Cape Henry Section in 1846, 75½°, 76°, 77½°, 79½°, from the Charleston Section to Cape Canaveral. But in the successive years we have found the highest temperatures at twelve fathoms, on the Cape Henry Section higher than that of Hatteras; and the temperatures in July, 1846, on the axis of the Gulf Stream, higher at Sandy Hook than in June, 1853, at Canaveral, by a degree and a half, and higher than at Charleston by five and a half degrees.

8th. The law of change of temperature with depth which has been developed, is that of the conduction of heat through a liquid. The low temperatures reached, showed that the Gulf Stream is comparatively a superficial current, and is underlaid by a vast ocean of cold water—so cold as not only to compensate for the increased warmth of the earth in descending, but to carry to the southern regions the temperature of the far north.

This underlaying water, where it "crops out" on shoals at the shore, shows a sudden decrease of temperature in the surface of the ocean.

9th. In exploring the Gulf Stream, it was crossed, as already stated, in sections, as nearly in right angles to its axis as practicable, continuing the section until the general ocean on the opposite side of the stream from the coast was reached.

The temperatures were observed from the surface to the depth nearly of 500 fathoms, varying, at first, by depths of ten fathoms, and afterwards, as the difference of temperature in descending became less considerable, by greater difference of depth. In a few cases the depth reached was 13 and 1500 fathoms—one mile and three-quarters nearly.

At great depths, the pressure to which the instruments are exposed is such as to re-

quire special ones for measuring the temperatures. Many trials were made of different kinds of instruments, but the most successful was Saxton's metallic thermometer, which has been described in the "Memoir on the Dangers and Ice of the North Atlantic," fourth edition, 1852, and which continues to be used in our work with satisfactory results.

Such a thermometer, with a scale showing every two degrees of Fahrenheit, would not be an expensive instrument; and as it takes the temperature of the sea very rapidly, and registers it almost infallibly, much time would be saved to the navigator by its use.

9th. The investigations from which the foregoing results were deduced having been made at considerable depths, it may be objected to them that they were not strictly confined to obtaining results desirable in practice.

A sufficient reply to this objection would be, that the laws sought to be ascertained were best displayed in the deep-sea temperatures; and that, unless the exploration embraced the whole of the scientific connections of the problem, it would be sure, in the end, to fail in the developments necessary for practice. Besides, why should not the navigator be provided with a suitable thermometer, and take temperatures at just such depths as are best suited to guide him as to his position? In the progress of the art of navigation, I have no doubt that observations of this kind will become common.

The surface of the Stream, changed in its motion and temperature by winds and rain, is not the portion where the laws which govern either are to be expected to display themselves with regularity.

The temperature observations at the surface, ten and fifteen fathoms, have been found irregular, especially the former. Below twenty fathoms to the considerable depths of about one hundred and twenty fathoms, when the change in the phenomena becomes marked, there is much more constancy in the results. The depth of twenty, and even thirty fathoms, can be explored by a common Six's self-registering thermometer, an inexpensive instrument, without appreciable error, and even by a common thermometer enveloped in cotton, or other bad conducting material, allowed to remain below the surface a sufficient time to take the temperature, and then drawn rapidly up and observed promptly.

The depth of twenty fathoms is recommended to navigators for their observations.

A common thermometer surrounded by a copper case, say three inches in diameter, stuffed near the bulb of the instrument with cotton, will answer a good purpose. Six's self-registering thermometer, which may be had at any of the instrument makers, will be still better.

The most prominent phenomena only are moderately permanent at the surface.

DEPTHS OF OBSERVATIONS FOR TEMPERATURE IN THE GULF STREAM.

(*In fathoms.*)

Section off Block Island, by Lieut. Chas. A. Davis, in 1845.		Section off Sandy Hook, by Lieut. Geo. M. Bache, in 1846.		Section off Cape May, by Lieut. Geo. M. Bache, in 1846.		Section off Cape Henry, by Lieut. Geo. M. Bache, in 1846.		Section off Cape Henry, by Lieut. S. P. Lee, in 1847.		Section off Cape Henry, by Lieut. Richard Bache, in 1848.		Section off Cape Hatteras, by Lieut. Richard Bache, in 1848.		Section off Cape Hatteras, by Lieut. J. N. Maffitt, in 1853.		Section off Cape Fear, by Lieut. J. N. Maffitt, in 1853.		Section off Charleston, by Lieut. J. N. Maffitt, in 1853.		Section off Charleston, by Lieut. T. A. Craven, in 1853.		Section off St. Simon's Bay, by Lieut. T. A. Craven, in 1853.		Section off St. Augustine, by Lieut. T. A. Craven, in 1853.		Section off Cape Canaveral, by Lieut. T. A. Craven, in 1853.		Irregular Observations, by Lieut. T. A. Craven, in 1853.	
Position.	Depth.	Position.	Depth.	Position.	Depth.	Position.	Depth.	Position.	Depth.	Position.	Depth.	Position.	Depth.	Position.	Depth.	Position.	Depth.	Position.	Depth.	Position.	Depth.	Position.	Depth.	Position.	Depth.	Position.	Depth.	Position.	Depth.	Position.	Depth.
...	...	I	170	I	33	X	20	XIII	47	I	18½	XII	17	I	10	XI	73?	a	10	XXXIV	80	XXV	28	XV	19	VI	20	I	550
...	...	...	...	...	...	XI	50	...	...	II	24	XIII	60	II	12	X	70?	b	20	XXXV	215	XXVI	100	XVI	135	VII	30	II	500
...	...	...	...	...	...	...	...	...	...	...	...	XI	25	III	33	...	...	d	20	XXXVI	250	XXVII	150	XVII	300	VIII	150	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	IV	75	...	...	e	30	XXXVII	480	XXX	500	XX	560	XII	400	IV	600
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	g	30	XXXIX	600	XXXII	520	XXI	450	XI	460	V	15
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	f	50	...	...	...	...	...	...	...	...	XIV	150
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	I	100	...	...	...	...	...	...	...	...	XXIV	20
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	IV	550	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	V	300 to 400	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	VI	450	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	VII	500	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	VIII	470	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	IX	460	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	X	400	...	...	...	...	...	...	...	...	...	...

ADDITIONAL REMARKS.

In addition to the foregoing, the following general facts may be stated :—

1. That in the summer, the temperature of the Gulf-water, South of Hatteras, is about the same as the water on soundings. In the months of July and August, 1845, the temperature of the water from the Mississippi to Cape Hatteras, both in and out of the stream, even to the very mouth of the Atlantic rivers, was 84° to 82°. This fact was ascertained by journals kept for the editor.

2. That the temperature of the Gulf South of Hatteras to Savannah, in the winter months, is from 72° to 75°; and that on soundings within the same limit, at the same time, 59° to 68°, and North of Hatteras, 48° to 64° : showing a difference of from 11 to 5 degrees higher to the South of the cape.

3. The general direction of the Gulf Stream, from Key Biscayno until it gets to the lat. of 31° 10′, is North, velocity 3 to 3½ knots ; from thence it turns to the N.N.E., and as it progresses to the North, it turns more to the N.E. On the Western edge of the Stream the Gulf-weed is mixed with the river-sedge ; on the Eastern edge it is clean as when first torn from the rocks. It appears from a notice in the Nautical Magazine, that some of the weed grows on the shores of the Andros Islands.

4. The Western edge, from Key Biscayno to lat. 31° 10′ N., is generally on the meridian of 80° ; the Eastern edge, after passing the Little Bahama Bank, is about 79°, until in the latitude 30° 30′, when it is turned more to the Eastward. This, however, is in moderate weather. During heavy gales from the N.E. to the S.E., the stream is forced immediately on and over the shoals of the capes of North Carolina ; and with N.W. and Westerly gales, the stream is driven from the shore, and no limit within 30 miles can be fixed to it ; and under such circumstances the warm water of the Gulf is displaced, so that at times there will be no current in the warm water, and current in the cold water.

5. The edges, in moderate weather, are shown by the ripplings in the low latitudes, and in the high latitudes, during the winter, with Northerly weather, by the evaporation from the surface.

6. The precise part where the stream begins to form is not known. It is shown before, under the general article of "Currents," that the current sets to the W.N.W. and N.W., over the Campeche Bank ; and that at a short distance West of the Tortugas, the current sets to the S.S.E. ; but where the proper head of the current is, is yet to be found.

7. On the Western side of the Gulf Stream, from Sandy Hook to Hatteras, the current sets South, a little Westerly, about 20 miles in 24 hours.

8. On the Eastern side of the Gulf Stream, nearly down to Matanilla Reef, the current sets to the South and West, almost opposite to the flow of the Gulf, at an average of 20 miles in 24 hours : the New Orleans steamers take advantage of it by crossing the Gulf stream near Hatteras, and from about 33° 30′ N. lat., 74° 30′ W. long., steering directly for Matanilla Reef.

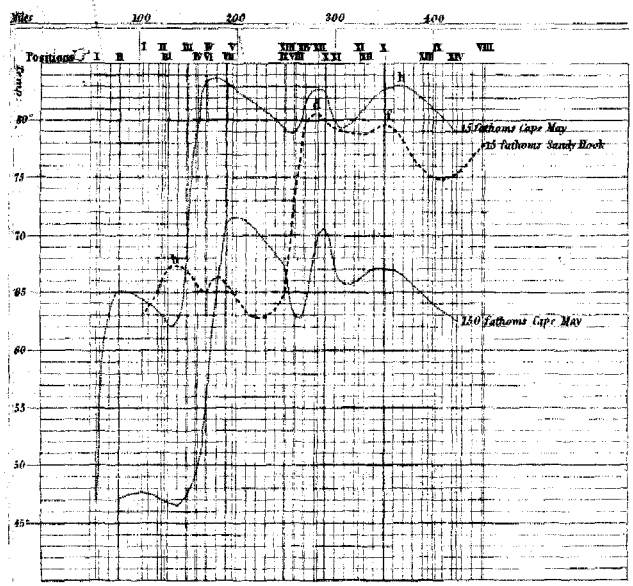
Of the Stream to the Eastward of the Coast Survey examination we want definite information. The following is the most accurate observation we have :

Ship Trade Wind, on the 26th of June, at 11h. 30m. P. M., came in contact with the ship Olympus, and both vessels went down in lat 41° 30′, long. 57°. On the 1st of July, 2h. 30m. P. M., the ship Empire took a sailor from the foremast of the Trade Wind, in lat. 42°, long. 55° 30′, showing that the mast had drifted 72 miles on a N. 66° E. true course, in 101 hours, making $\frac{72}{100}$ of a knot, nearly, an hour.

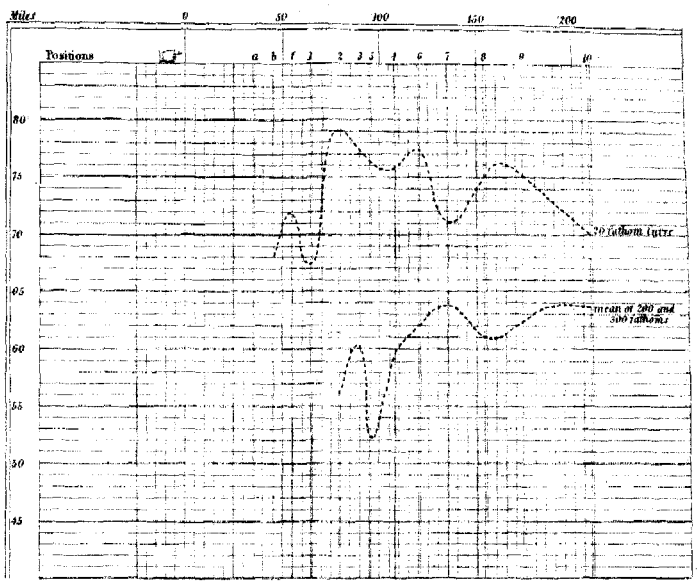
G. W. BLUNT.

May, 1854.

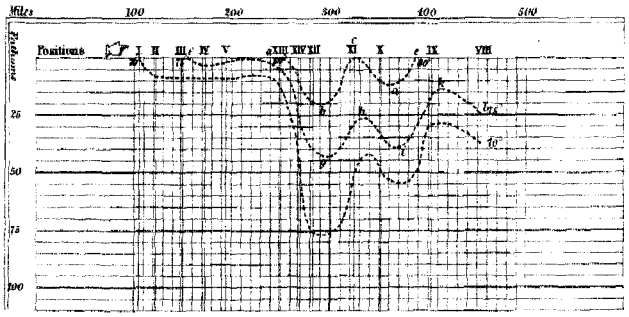
Nº 1. Sandy Hook ... and Cape May ..... Sections. Curves showing the temperatures at the same depth. Distances from Sandy Hook and Cape May ..... in nautical miles at the top. Temp: by Fahr.t Thermometer at the side.



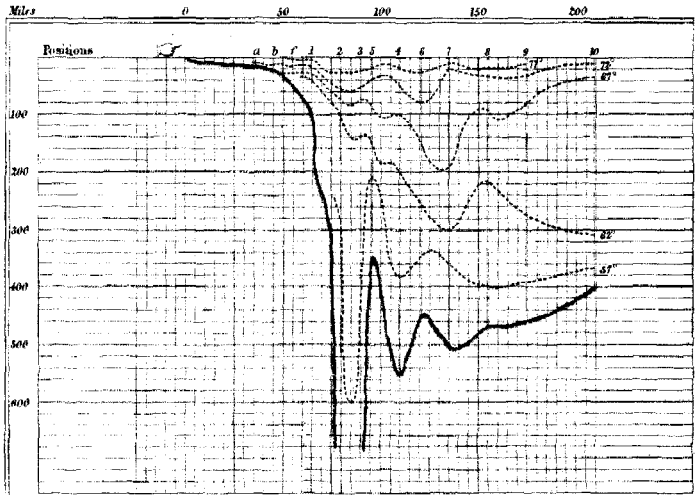
Nº 2. Charleston Section. Curves showing the temperatures at the same depth. Distances from the Charleston shore in nautical miles at the top and Temp: by Fahr.t at the side.



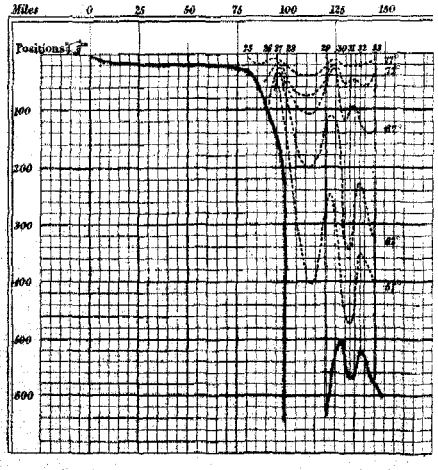
Nº 3. Sandy Hook Section. Curves showing the depth at the same temperature. Distance from Sandy Hook in nautical miles at the top & Depth in fathoms at the side.



Nº 4. Charleston Section. Curves showing the depths at the same temperatures and the outline of the bottom. Distances from Charleston shore in nautical miles at the top and Depth in fathoms at the side.



Nº 5. St Simon's Section. Curves showing the depth at the same temperatures & the outline of the bottom. Distances from shore at top in nautical miles. Depth in fathoms at the side.



Blunt's American Coast Pilot 21st Edition 1866

TIDE TABLES,

For the use of Navigators; prepared from the Coast Survey Observations by A. D. Bache, Superintendent.

[Furnished by authority of the Treasury Department, to E. & G. W. Blunt, New York, and revised Jan., 1857.]

THE following Tables will enable navigators to ascertain the time and height of high and low water in some of the principal ports of the United States. The results are approximate, the observations being still in progress, but they may safely be used for practical purposes. The number of places of observation, and the time during which many of them have been made, are steadily on the increase as the coast survey advances.

The tides of the coast of the United States, on the Atlantic, Gulf of Mexico, and Pacific, are of three different classes. Those of the Atlantic are of the most ordinary type, ebbing and flowing twice in twenty-four hours, and having but moderate differences in height between the two successive high waters, or low waters; one occurring before noon, and the other after noon. Those of the Pacific coast also ebb and flow twice during twenty-four hours; but the morning and afternoon tides differ very considerably in height—so much so, that at certain periods a rock which has three feet and a half water upon it at low tide, may be awash on the next succeeding low water. The intervals, too, between successive high and successive low waters may be very unequal. The tides of ports in the Gulf of Mexico west of Cape St. George, ebb and flow, as a rule, but once in twenty-four hours, or are single-day tides. At particular parts of the month there are two small tides in the twenty-four hours. The rise and fall in all these ports is small. East of Cape St. George the rise and fall increases: there are two tides, as a rule, during the twenty-four hours, and the daily inequality, referred to in the Pacific tides, is large.

These peculiarities require a different way of treating the cases, and in some of them separate tables.

I propose to enable the navigator to find, from the Nautical Almanac and the following tables, the time and height of high and low water at any date within the ordinary range of difference produced by winds and other variable circumstances. I will endeavor to divest the matter of unfamiliar technical expressions as far as practicable, though, for shortness' sake, some such terms may be employed after defining them. The discussion of the Gulf tides has not been carried so far as to enable me to present the results in as definite a form as the others.

As is well known, the interval between the time of the moon's crossing the meridian (moon's transit) and the time of high water at a given place is nearly constant; that is, this interval varies between moderate limits, which can be assigned. The interval at full and change of the moon is known as the establishment of the port, and is ordinarily marked on the charts. As it is not generally the average of the intervals during a month's tide, it is a less convenient and less accurate quantity for the use of the navigator than the average interval which is used on the Coast Survey charts, and is sometimes called the "mean" or "corrected establishment."*

The following Table gives the principal tidal quantities for the different ports named in the first column, where they are arranged under specific heads. The third column of the table gives the mean interval, in hours and minutes, between the moon's transit and the time of high water next after the transit; the fourth, the difference between the greatest and least interval, occurring in different parts of the month, (lunar.) A simple inspection of this column will show how important it is to determine these changes in many of the ports where they amount to more than half an hour, or to more than fifteen minutes, for the average interval.

The fifth, sixth, and seventh columns refer to the height of the tide. The fifth gives in feet the average rise and fall, or average difference between high and low water. The sixth gives the greatest difference, commonly known as the rise and fall of spring tides; and the seventh the least difference, known as the rise and fall of the neap tides.

The average duration of the flood, or rising tide, is given in the eighth column; of the ebb or falling tide, in the ninth; and of the period during which the tide neither rises nor falls, or the "stand," in the tenth. The duration of flood is measured from the middle of the stand at low water to the middle of the stand at high water, so that the whole duration from one high water to the next, or from one low water to the next, should be given by the sum of the numbers in the eighth and ninth colums.

* This term was introduced by the Rev. Mr. Whewell, who has done so much for the investigation of the laws of the tides

At most of these places given in the list, a mark of reference has been established for the height of the tide. I have omitted the description of these marks, (except in the following localities,) as of no particular interest in this connexion.

BENCH-MARKS.

Boston.—The top of the wall or quay, at the entrance to the dry dock in the Charlestown navy yard, is fourteen feet $\frac{76}{100}$ (14.76 feet) above mean low water.

New York.—The lower edge of a straight line cut in a stone wall, at the head of the wooden wharf on Governor's island, is fourteen feet $\frac{51}{100}$ (14.51 feet) above mean low water. The letters U. S. C. S. are cut in the same stone.

Old Point Comfort, Va.—A line cut in the wall of the light-house, one foot from the ground, on the S.W. side, is eleven feet (11 feet) above mean low water.

Charleston, S. C.—The outer and lower edge of embrasure of gun No. 3, at Castle Pinckney, is ten feet $\frac{13}{100}$ (10.13 feet) above mean low water.

TABLE I.

Tide Table for the Coast of the United States.

PORT	STATE	Interval between time of ☽'s trans. & time high wt'r.		Rise and fall.			Mean duration.		
		Mean interval.	Diff. betw'en greatest and least inter'ls	Mean.	Spring tides.	Neap tides.	Flood tide.	Ebb tide.	Stand.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
		h. m.	h. m.	feet.	feet.	feet.	h. m.	h. m.	h.m.
Coast from Portland to N. Y.									
Portland	Maine	11 25	44	8.8	10.0	7.6	6 14	6 12	20
Portsmouth	N.H.	11 23	53	8.6	9.8	7.2	6 22	6 07	21
Newburyport	Mass.	11 22	50	7.8	9.1	6.6	5 16	7 09	24
Salem	Mass.	11 13	50	9.2	10.6	7.6	6 19	6 06	06
Boston Light	Mass.	11 12	35	9.3	10.9	8.1	6 20	6 06	15
Boston	Mass.	11 27	44	10.0	11.3	8.5	6 13	6 13	09
Nantucket	Mass.	12 24	37	3.1	3.6	2.6	6 23	5 44	09
Edgartown	Mass.	12 16	.....	2.0	2.5	1.6	6 51	5 29	24
Holmes' Hole	Mass.	11 43	31	1.7	1.8	1.3	6 41	5 21	12
Tarpaulin Cove	Mass.	8 04	49	2.4	2.6	2.0	6 09	6 17	34
Wood's Hole, N. side	Mass.	8 06	.....	3.9	....	....	6 31	5 51	.....
Wood's Hole, S. side	Mass.	8 56	.....	1.5	....	....	6 03	6 22	.....
Bird Island Light	Mass.	7 59	45	4.4	5.3	3.5	6 51	5 58	.....
New Bedford entrance, (Dumpling Rock)	Mass.	7 57	41	3.8	4.6	2.8	6 50	5 33	42
Newport	R. I.	7 45	24	3 9	4.6	3.1	6 21	6 03	23
Point Judith	R. I.	7 32	46	3.1	3.7	2.6	6 12	6 10	1 0
Block Island	R. I.	7 36	41	2.8	3.5	2.0	6 23	6 2	5
Montauk Point, L. I.	N. Y.	8 20	1 11	1.9	2.4	1.8	6 17	6 7	31
Sandy Hook	N. Y.	7 29	47	4.8	5.6	4.0	6 10	6 15	16
New York	N. Y.	8 13	46	4.3	5.4	3.4	6 0	6 25	28
Tarrytown	N. Y.	9 57	58	3.5	4.0	2.7	6 06	6 20	43
Long Island Sound.									
Watch Hill	R. I.	9 00	23	2.7	3.1	2.4	6 35	5 56	14
Stonington	Ct.	9 07	30	2.3	3.4	2.1	6 15	6 10	25
Little Gull Island	N. Y.	9 38	1 07	2.5	2.9	2.3	6 01	6 21	37
New London	Ct.	9 28	52	2.6	3.1	2.1	5 56	6 26	22
New Haven	Ct.	11 16	1 08	5.8	6.6	5.1	6 24	6 05	.....
Bridgeport	Ct.	11 11	1 03	6.5	8.0	4.7	6 01	6 07	.....
Oyster Bay, L. I.	N. Y.	11 07	51	7.3	9.2	5.4	6 08	6 24	.....
Sands' Point, L. I.	N. Y.	11 13	31	7.7	8.9	6.4	5 55	6 30	14
New Rochelle	N. Y.	11 22	32	7.6	8.6	6.6	5 51	6 35	12
Throg's Neck	N. Y.	11 20	39	7.3	9.2	6.1	5 50	6 33	43
Coast of New Jersey.									
Cold Spring Inlet	N. J.	7 32	51	4.4	5.4	3.6	6 08	6 18	.....
Cape May Landing	N. J.	8 19	47	4.8	6.0	4.3	6 11	6 15	20

TABLE I.—Continued.

PORT.	STATE	Interval between time of ☽'s trans. & time high wt'r.		Rise and fall.			Mean duration.		
		Mean interval.	Diff. betw'en greatest and least inter'ls	Mean.	Spring tides.	Neap tides.	Flood tide.	Ebb tide.	Stand.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Delaware Bay and River.		*h. m.*	*h. m.*	*feet.*	*feet.*	*feet.*	*h. m.*	*h. m.*	*h. m.*
Delaware Breakwater	Del.	8 00	50	3.5	4.5	3.0	6 15	6 6	26
Higbee's, Cape May	N. J.	8 33	43	4.9	6.2	3.9	6 26	6 0	.....
Egg Island Light	N. J.	9 04	51	6.0	7.0	5.1	5 52	6 27	.....
Mahon's River	Del.	9 52	48	5.9	6.9	5 0	6 11	6 11	.....
New Castle	Del.	11 53	.....	6.5	6.9	6.6	5 06	6 43	47
Philadelphia	Pa.	13 18	48	6.0	6.8	5.1	4 52	7 6	.....
Chesapeake Bay & Rivers.									
Old Point Comfort	Va.	8 17	50	2.5	3.0	2.0	6 01	6 25	.....
Point Lookout	Md.	12 58	45	1.4	1.9	0.7	5 59	6 19	35
Annapolis	Md.	16 38	40	0.9	1.0	0.8	6 11	6 15	32
Bodkin Light	Md.	17 42	48	1.0	1.3	0.8	5 23	7 8	.....
Baltimore	Md.	18 33	43	1.3	1.5	0.9	5 54	6 33	.....
James River, (City Point)	Va.	14 14	.....	2.6	....	....	5 28	6 52	40
Richmond	Va.	16 28	.....	2.9	....	....	4 52	7 34	.....
Coast of N. and S. Carolina, Georgia, and Florida.									
Hatteras Inlet	N. C.	7 4	57	2.0	2.2	1.8	6 7	6 7	50
Beaufort	N. C.	7 26	50	2.8	3.3	2.2	6 11	6 10	42
Bald Head	N. C.	7 26	34	4.3	5.0	3.4	6 18	6 17	31
Smithville, (Cape Fear)	N. C.	7 19	47	4.5	5.5	3.8	6 1	6 26	26
Charleston, (Cas. Pinckney)	S. C.	7 13	36	5.3	6.3	4.6	6 36	6 9	33
Fort Pulaski, (Sav. entr.)	Ga.	7 20	41	7.0	8.0	5.9	5 49	6 35	26
Savannah, (Dry dock wh'f)	Ga.	8 13	51	6.5	7 6	5.5	5 4	7 22	14
Doboy Light-house	Ga.	7 33	55	6.6	7.8	5.4	6 2	6 20	.....
St. Simon's	Ga.	7 23	44	6.1	7.3	5.0	4 57	7 36	19
Fort Clinch	Fla.	7 53	1 06	5.9	6.7	5.3	6 9	6 17	.....
St. John's River	Fla.	7 31	48	4.6	5.5	3.2	5 59	6 26	15
St. Augustine	Fla.	8 32	43	4.2	4.7	3.5	6 7	6 19	35
Cape Florida	Fla.	8 16	51	1.5	1.7	1.2	6 0	6 25	45
Indian Key	Fla.	8 18	49	1.8	2.4	1.2	6 36	5 48	19
Sand Key	Fla.	8 40	.....	1.2	2.0	0.6	6 31	5 55	13
Key West	Fla.	9 22	1 12	1.4	2.3	0.7	6 59	5 25	12
Tortugas	Fla.	9 56	1 32	1.2	1.5	0.6	6 43	5 40	.....
Tampa Bay, (Egmont Key)	Fla.	11 21	1 33	1.4	1.8	1.0	6 36	6 11	43
Cedar Keys, (Depot Key)	Fla.	13 15	1 55	2.5	2.8	1.8	6 12	6 13	.....
St. Mark's	Fla.	13 33	2 0	2.2	2.9	1.2	6 16	6 9	.....
Western Coast.									
San Diego	Cal.	9 50	1 45	3.7	5.0	2.3	6 22	6 0	30
San Pedro	Cal.	9 45	1 48	3.9	4.7	2.2	6 18	6 5	30
Cuyler's Harbor	Cal.	9 25	1 2	3.7	5.1	2.8	6 13	6 5	.....
San Luis Obispo	Cal.	10 14	1 52	3.6	4.8	2.4	6 37	5 50	.....
Monterey	Cal.	10 28	49	3.4	4.3	2.5	6 31	6 2	35
South Farallon	Cal.	10 37	1 16	3.6	4.4	2.8	6 18	6 9	.....
San Francisco, (N. beach)	Cal.	12 6	1 4	3.6	4.3	2.8	6 39	5 51	34
Bodega	Cal.	11 17	1 54	3.6	4.7	2.7	6 19	5 59	.....
Humboldt Bay	Cal.	12 02	1 11	4.4	5.5	3.5	6 19	6 0	.....
Port Orford	O. T.	11 26	1 6	5.1	6.8	3.7	6 19	6 7	39
Astoria	O. T.	12 48	1 13	6.1	7.3	4.5	6 3	6 28	33
Neé-ah Harbor	W. T.	12 33	1 28	5.6	7.4	4.8	6 20	6 6	.....
Port Townshend	W. T.	3 49	1 3	4.6	5.5	4.0	6 34	5 52	.....
Fort Steilacoom	W. T.	4 46	1 6	9.2	11.1	7.2	6 3	6 25	28

NOTE.—The mean interval in column 3 has been increased by 12 hours for some of the ports in Delaware river and Chesapeake bay, so as to show the succession of times from the mouth. Therefore 12 hours ought to be subtracted from the establishments which are greater than 12 hours, before using them.

The foregoing Table I. gives the means of determining roughly the time and height of high water at the several ports named. The hour of transit of the moon preceding the time of high water is to be taken from the Almanac, and the mean establishment being added, the time of high water results. Thus:

Example I.—It is required to find the time of high water at New York on the 5th of November, 1854. The American Almanac gives $0^h\ 0^m$ as the time of transit of the moon on that day. The mean interval for New York, from Table I, column 3, is $8^h\ 13^m$, which, as the transit was at 0^h, is roughly the time of high water.

The moon being full, the height is that of spring tides of column 6, namely, 4.5 feet. If the soundings on the chart are reduced to low water spring tides, 5.4 feet is to be added to them to give the depth at high water. If the soundings are reduced to mean low water, the rise and fall for mean tides being 1.1 foot less than for springs, the rise or increase of depth will be half of this, or 0.6 of a foot less than 5.4 feet, which is 4.8 feet, or nearly 4 feet 10 inches.

Example II.—Required the time of high water at Boston on the 23d of January, 1851. From the American Almanac we find the time of the moon's southing, or transit, on that day, $5^h\ 18^m$ a. m., and from Table I the mean interval at Boston dry dock is $11^h\ 27^m$.

We have then $5^h\ 18^m$ time of transit; to which add

11	27	mean interval from Table I.
16	45	time of high water, or $4^h\ 45^m$ p. m.

If the Greenwich Nautical Almanac is used, add 2^m to the time of transit of Greenwich for every hour of west longitude, and its proportional part for less than an hour. It will suffice to take the half hour which may be over any number of hours, as the correction for less than this would be less than one minute, and need not be taken into account. Thus Boston is $4^h\ 44^m$ W. of Greenwich. The correction to be applied to the time of transit of the moon at Greenwich is, for the four hours, eight minutes, and for the 44^m one minute. The time of transit on the date assumed in the preceding example is $17^h\ 9^m$ of the 22d, or $5^h\ 9^m$ a. m. of the 23d; to which add nine minutes, the correction just found gives $5^h\ 18^m$, as before ascertained from the American Almanac.

In using the United States Nautical Almanac, in the astronomical part of which the transits of the moon are given for the meridian of Washington, the corrections required may, in this first approximation for the Atlantic coast, be neglected.

To find the time of the next following low water, add from Table I the duration of ebb tide; this gives $4^h\ 45^m$ p. m., time of high water.

6	13	duration of ebb tide, from Table I.
10	58	p. m.

By subtracting the duration of flood tide, we obtain the time of the preceding low water, $10^h\ 32^m$ a. m., recollecting that $4^h\ 45^m$ p. m. is the same as $16^h\ 45^m$ reckoned from midnight.

The height of this tide corresponding to the transit of 5^h will bring it nearly to a neap tide, and the rise and fall, obtained from column 7, Table I, is 8.5 feet.

The next following high water may be had by adding to the time of low water the duration of flood, from Table I, thus: $10^h\ 58^m$ p. m., time of low water 23d of January.

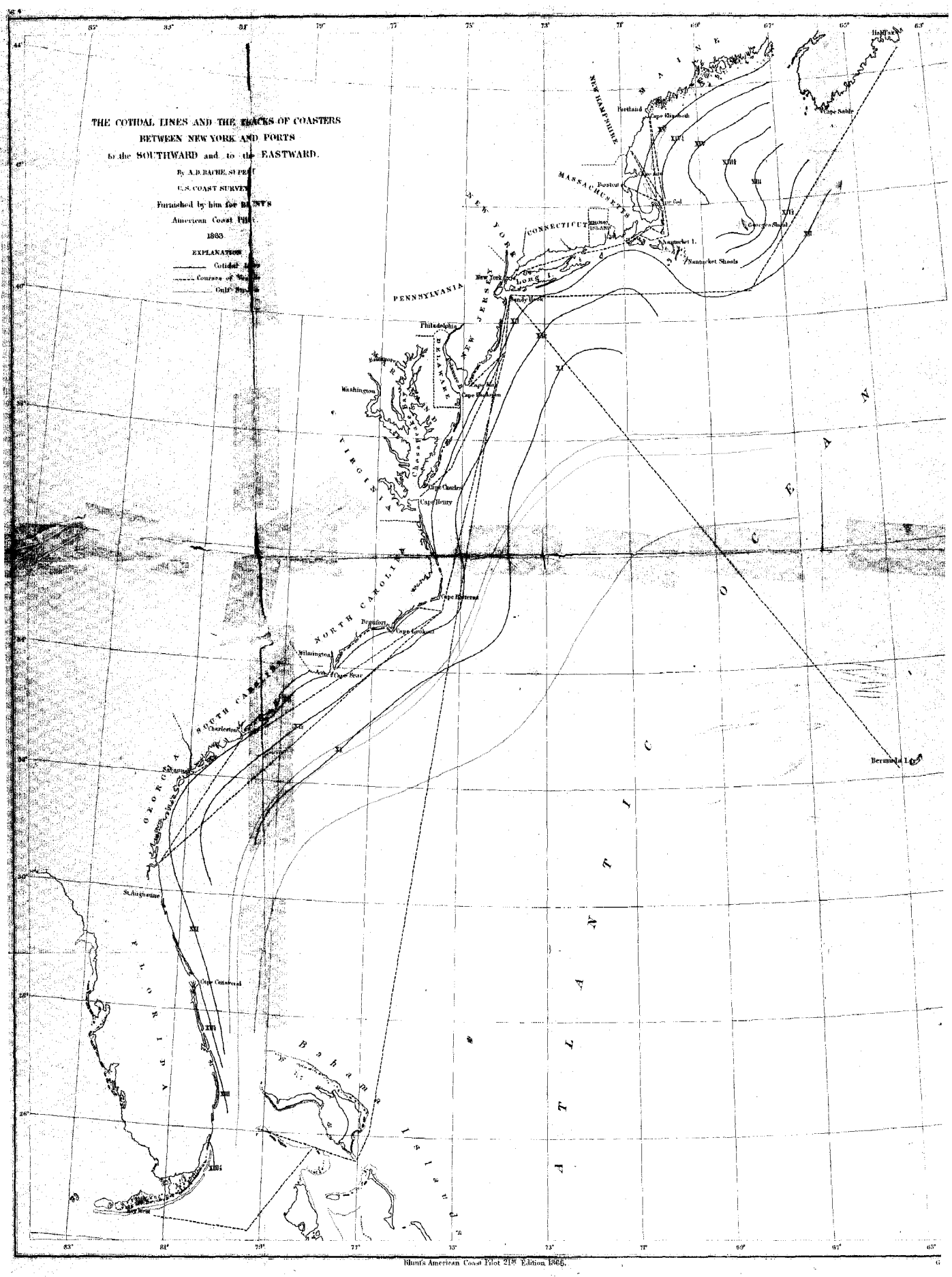
	6	13	duration of flood from Table I.
Sum	17	11	or $5^h\ 11^m$ a. m. on the 24th of January.

Or, having found the time of high water, the time of the next following high water may be found by adding the duration of flood and of ebb together, and their sum to the time of high water found. Thus:

6^h	13^m	duration of ebb tide from Table I.
6	13	duration of flood.
12	26	duration of whole tide.
4	45	p. m., January 23, time of high water.
17	11	or $5^h\ 11^m$ a. m., 24th January, time of the next succeeding high water.

Subtracting the same quantity, will give the time of the preceding high water. Thus:

$4^h\ 45^m$ p. m., or $16^h\ 45^m$ from midnight, is the time of high water.		
12	26	the duration of flood and ebb.
4	19	a. m. of the 23d for the preceding high


THE COTIDAL LINES AND THE TRACKS OF COASTERS
BETWEEN NEW YORK AND PORTS
to the SOUTHWARD and to the EASTWARD.
By A.D. BACHE, SUPT
U.S. COAST SURVEY
Furnished by him for BLUNT'S
American Coast Pilot
1863
EXPLANATION
Cotidal Lines
Courses of Vessels
Gulf Stream
Halifax
Cape Sable
Portland
Cape Elizabeth
Boston
Cape Ann
Cape Cod
Nantucket I.
Nantucket Shoals
Georges Shoal
New York
Long I.
Sandy Hook
Philadelphia
Delaware
Cape May
Cape Henlopen
Baltimore
Washington
Chesapeake Bay
Cape Charles
Cape Henry
Cape Hatteras
Beaufort
Cape Lookout
Wilmington
Cape Fear
Charleston
Savannah
St. Augustine
Cape Canaveral
Key West
Bahama Islands
Bermuda I.
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CONNECTICUT
RHODE ISLAND
NEW YORK
NEW JERSEY
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XI

water. The duration of the flood and ebb being reckoned from the middle of one stand or slack water to the middle of the next, the time of beginning of stand of ebb or flood will be found by subtracting half the duration of stand or slack water given by column 10, Table I, from the time of high or low water, and the time of the end of stand of ebb or flood by adding the same. A nearer approximation to the times and heights of high water may be obtained by the use of Tables II and III.

TABLE II.

Interval between the time of moon's transit and the time of high water, for different hours of transit, and for several different ports.

Time of moon's transit.	Boston, Mass.	New York, N. Y.	Philadelphia, Penn.	Old Point Comfort, Va.	Baltimore, Md.	Smithville, N. C.	Charleston, S. C.	Ft. Pulaski, Savannah R., Ga.	Key West, Fla.	San Francisco, Cal.
h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.
0 0	11 38	8 20	1 31	8 33	6 47	7 26	7 38	7 30	9 26	12 5
0 30	11 33	8 18	1 28	8 27	6 42	7 21	7 34	7 25	9 19	11 59
1 0	11 28	8 15	1 25	8 21	6 37	7 16	7 28	7 19	9 12	11 53
1 30	11 24	8 10	1 21	8 15	6 31	7 13	7 22	7 15	9 6	11 47
2 0	11 20	8 6	1 18	8 9	6 26	7 9	7 16	7 11	9 0	11 41
2 30	11 16	8 0	1 14	8 4	6 21	7 6	7 11	7 8	8 55	11 36
3 0	11 13	7 55	1 11	8 0	6 17	7 4	7 7	7 6	8 51	11 33
3 30	11 10	7 52	1 8	7 56	6 13	7 3	7 3	7 5	8 50	11 33
4 0	11 7	7 52	1 6	7 52	6 11	7 2	7 0	7 4	8 49	11 38
4 30	11 6	7 52	1 3	7 49	6 10	7 3	6 58	7 3	8 53	11 46
5 0	11 6	7 53	1 0	7 48	6 10	7 4	6 58	7 4	8 57	11 55
5 30	11 9	7 56	0 59	7 50	6 13	7 6	6 59	7 6	9 7	12 3
6 0	11 13	7 59	0 59	7 53	6 19	7 9	7 1	7 8	9 17	12 11
6 30	11 19	8 5	1 1	8 0	6 25	7 13	7 4	7 12	9 28	12 16
7 0	11 25	8 11	1 7	8 7	6 32	7 17	7 10	7 16	9 39	12 23
7 30	11 32	8 17	1 15	8 15	6 39	7 23	7 19	7 22	9 45	12 29
8 0	11 38	8 23	1 23	8 24	6 44	7 28	7 28	7 28	9 52	12 34
8 30	11 43	8 27	1 29	8 33	6 49	7 33	7 36	7 34	9 54	12 37
9 0	11 47	8 32	1 34	8 40	6 52	7 37	7 42	7 39	9 56	12 36
9 30	11 48	8 34	1 39	8 45	6 54	7 39	7 45	7 42	9 53	12 34
10 0	11 49	8 35	1 42	8 48	6 53	7 40	7 48	7 43	9 51	12 30
10 30	11 48	8 34	1 43	8 48	6 52	7 40	7 48	7 41	9 45	12 24
11 0	11 47	8 31	1 41	8 46	6 50	7 36	7 46	7 37	9 39	12 17
11 30	11 43	8 25	1 37	8 40	6 48	7 30	7 42	7 34	9 32	12 9

TABLE III.

Showing the rise and fall of tides, and corrections to be applied to determine the height of high water soundings on charts referring to mean low water, and to low water spring tides.

Time of ☽'s transit.	Boston, Mass.			New-York, N. Y.			Philadelphia, Pa.			Old Pt. Comf't, Va.			Baltimore, Md.			Time of ☽'s transit
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	
Hour.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Hour
0	11.2	10.6	11.3	4.9	4.5	4.9	6.3	6.2	6.3	2.9	2.6	2.9	1.5	1.4	1.6	0
1	11.3	10.6	11.3	4.9	4.5	4.9	6.4	6.4	6.5	3.0	2.7	3.0	1.5	1.4	1.6	1
2	11.2	10.5	11.2	4.7	4.4	4.8	6.6	6.5	6.6	2.9	2.7	2.9	1.5	1.3	1.5	2
3	10.6	10.3	11.0	4.3	4.2	4.6	6.6	6.5	6.6	2.6	2.6	2.8	1.4	1.3	1.5	3
4	10.0	10.0	10.7	3.8	4.0	4.4	6.4	6.4	6.5	2.3	2.4	2.7	1.3	1.2	1.4	4
5	9.2	9.7	10.4	3.5	3.8	4.2	6.1	6.2	6.3	2.1	2.3	2.6	1.1	1.1	1.3	5
6	8.8	9.4	10.1	3.3	3.7	4.1	5.7	5.9	6.0	2.0	2.2	2.5	0.9	1.1	1.3	6
7	8.6	9.3	10.0	3.3	3.7	4.1	5.4	5.6	5.7	2.0	2.3	2.5	0.9	1.1	1.3	7
8	8.9	9.5	10.2	3.6	3.8	4.2	5.2	5.3	5.4	2.2	2.4	2.6	1.0	1.2	1.4	8
9	9.4	9.7	10.4	4.0	4.0	4.4	5.4	5.4	5.5	2.1	2.5	2.8	1.1	1.3	1.5	9
10	10.1	10.0	10.7	4.5	4.3	4.7	5.7	5.7	5.8	2.8	2.7	2.9	1.3	1.4	1.6	10
11	10.7	10.3	11.0	4.8	4.5	4.9	6.0	6.0	6.1	3.0	2.8	3.0	1.4	1.4	1.6	11

TABLE III.—Continued.

Time of ☽'s transit.	Smithville, N. C.			Charleston, S. C.			Tybee Entr., Ga.			Key West, Fla.			San Francisco, Cal.			Time of ☽'s transit.
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	
Hour	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Hour.*
0	5.2	4.8	5.1	5.7	5.4	5.7	7.8	7.4	7.8	1.6	1.4	1.6	4.5	4.0	4.4	0
1	5.1	4.8	5.1	5.8	5.4	5.7	7.9	7.4	7.9	1.6	1.4	1.6	3.9	3.7	4.1	1
2	5.0	4.7	5.0	5.6	5.4	5.7	7.6	7.3	7.7	1.5	1.4	1.5	3.7	3.6	4.1	2
3	4.6	4.5	4.8	5.5	5.3	5.6	7.1	7.0	7.5	1.4	1.3	1.5	3.5	3.5	4.0	3
4	4.3	4.4	4.7	5.2	5.2	5.5	6.5	6.7	7.2	1.2	1.2	1.4	3.1	3.3	3.8	4
5	4.0	4.3	4.6	4.9	5.1	5.4	6.1	6.5	7.0	1.0	1.1	1.3	2.8	3.1	3.6	5
6	3.8	4.2	4.5	4.8	5.0	5.3	5.8	6.4	6.8	1.0	1.1	1.3	2.7	3.1	3.6	6
7	3.8	4.1	4.4	4.7	4.9	5.2	6.0	6.5	6.9	1.0	1.1	1.3	3.0	3.3	3.7	7
8	4.0	4.2	4.5	4.8	5.0	5.3	6.4	6.7	7.1	1.1	1.2	1.3	3.4	3.5	3.9	8
9	4.3	4.3	4.6	4.9	5.1	5.4	6.9	6.9	7.4	1.3	1.3	1.4	3.8	3.6	4.1	9
10	4.7	4.6	4.9	5.2	5.3	5.6	7.4	7.0	7.6	1.4	1.3	1.5	4.0	3.8	4.2	10
11	5.0	4.7	5.0	5.5	5.4	5.8	7.8	7.2	7.8	1.6	1.4	1.6	4.2	3.8	4.3	11

In these, the variations in the interval between the moon's transit and high water are shown for some of the principal ports contained in Table I. These variations of interval depend upon the age of the moon, and as they go through their values in half a lunar month, are known as the half-monthly inequality of interval. The table extends from 0^h of transit, midnight of the calendar day, or full of the moon, to $11\frac{1}{2}$ hours. The numbers for "change" of the moon correspond to those for 0 hours, and for 13 hours (or 1 p. m. of the calendar day) to 1 hour, and so on, up to 23 hours. The ports for which the numbers are given are designated by the heading of the columns.

The mean interval, it will be seen, does not occur at full and change, but nearly two days afterwards, on the Atlantic coast. At Key West it occurs more nearly at full and change, and at San Francisco still more nearly.

The same remark applies to the heights; spring tides occur about two days after the full and change of the moon, and neaps two days after the first and last quarter.

The use of this table of nearer approximation is quite as simple as that of Table I.

Rule to find the time of high water.—Look in the Almanac for the time of moon's transit (or southing) for the date required. In the table corresponding to that time will be found the number to be added to the time of transit.

Example III.—Required the time of high water at New York, October 1, 1856. Using the United States Nautical Almanac, we find the time of moon's transit $1^h\ 24^m$, astronomical reckoning, or $1^h\ 24^m$ p. m. calendar time. From Table II, we have under the heading of New York, for $1^h\ 30^m$, (the nearest number to $1^h\ 24^m$ in the table,) $8^h\ 10^m$.

Thus to $1^h\ 24^m$, time of moon's transit,
Add 8 10 interval found from Table II.

The sum, 9 34 p. m., is the time of high water on the 1st of October, 1856

If the sum of these numbers had exceeded twelve, the tide would have belonged to October 2d, and we must have gone back to the transit of the day before, and computed with it, to obtain the tide for October 1st.

Rule to find the height of high water.—Enter Table III, column 1, with the time of moon's transit. In the column headed with the name of the place, and marked A, will be found the rise and fall corresponding to the time of transit; in column B, the number to be added to soundings on the chart, where the soundings are given for mean low water; in column C, the number to be added to charts of which the soundings are given for low water, spring tides.

In the foregoing example (III) the time of transit being between 1 and 2 hours, we find, from Table III, the rise and fall of the tide on the 1st October, 1856, between 4.9 and 4.7; the number to be added to soundings given for mean low water 4.5 feet, (column B,) and for low water spring tides, (column C,) 4.9 feet.

Having found the time of high water, that of low water may be obtained nearly by adding the duration of the ebb from column 9, Table I. The time of the next preceding low water may be found by subtracting the duration of flood from column 8, Table I. The time of the next following high water may be found by adding the duration of both flood and ebb, and of the next preceding high water, by subtracting the same duration of the whole tide.

Example IV.—To find the next high water following that of Example III.

The duration of flood, column 8, Table I, for New York, is $6^h\ 0^m$; and of ebb from column 9, is $6^h\ 25^m$; the sum is $12^h\ 25^m$.

To $9^h\ 34^m$ p. m., October 1, the time of high water found,
Add 12 25 duration of flood and ebb.

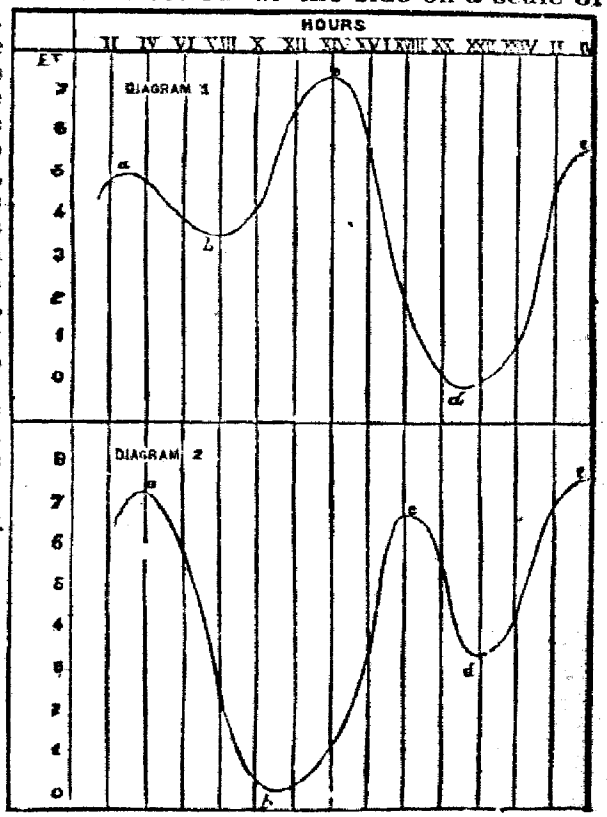
Sum, 21 59, or 9^h 59, a m. of October 2, the time of the next high water.

TIDES OF THE PACIFIC COAST.

On the Pacific coast there is, as a general rule, one large and one small tide during each day, the heights of two successive high waters occurring one a. m. and the other p. m. of the same twenty-four hours, and the intervals from the next preceding transit of the moon are very different. These inequalities depend upon the moon's declination. When the moon's declination is nothing, they disappear, and when it is the greatest, either north or south, they are greatest. The inequalities for low water are not the same as for high, though they disappear and have the greatest value at nearly the same times.

When the moon's declination is north, the highest of the two high tides of the twenty-four hours occurs at San Francisco about eleven and a half hours after the moon's southing, (transit;) and when the declination is south, the lowest of the two high tides occurs at about that interval.

The lowest of the two low waters of the day, is the one which follows next the highest high water. The nature of these tides will probably appear more plainly from the annexed diagrams. In them the height of the tide is set off at the side on a scale of feet, and the hours of the day are at the top. At XII, noon, for example, the tide-gauge marked 6.7 feet. Joining all the heights observed in the twenty-four hours, we have a curve like that marked in the figure. The two high waters are *a* and *c*, and the two low waters *b* and *d*. If *a* is the high water, which occurs about twelve hours after the transit of the moon, when the declination is *south*, the ebb *a b* is quite small, and the high water *a* is much lower than the next high water *c*. If the moon's declination is *north*, it is the large high water *a* of the second diagram, which occurs next after the transit, and about twelve hours from it.



Tables IV and V give the number to be added to the time of moon's transit, to find the time of high water almost as readily as in the former case. It is one of double entry, the time of transit being, as before, placed in the first column. The number of days from the day at which the moon has had the greatest declination, are arranged at the top of the table. Entering the first column with the time of transit, until we come under the column containing the days from the greatest declination, we find the number to be added to the time of transit to give the time of high water. If the moon's declination is *south*, Table IV is to be used; if *north*, Table V.

Number to be added to the time of moon's transit at San Francisco, to give the time of high water for different times of moon's transit, and declination of the moon.

TABLE IV.									TABLE V.								
Time of Moon's transit.	South Declination—Days from greatest Declination.								North Declination—Days from greatest Declination.								Time of moon's transit.
	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7	
h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.
0 0	13 05	13 02	12 57	12 50	12 42	12 32	12 19	12 05	11 05	11 08	11 13	11 20	11 28	11 38	11 51	12 05	0 0
0 30	12 59	12 56	12 51	12 44	12 36	12 26	12 13	11 59	10 59	11 02	11 07	11 14	11 22	11 32	11 45	11 59	0 30
1 0	12 53	12 50	12 45	12 38	12 30	12 20	12 07	11 53	10 53	10 56	11 01	11 08	11 16	11 26	11 39	11 53	1 0
1 30	12 47	12 44	12 39	12 32	12 24	12 14	12 01	11 47	10 47	10 50	10 55	11 02	11 10	11 20	11 33	11 47	1 30
2 0	12 41	12 38	12 33	12 26	12 18	12 08	11 55	11 41	10 41	10 44	10 49	10 56	11 04	11 14	11 27	11 41	2 0
2 30	12 36	12 33	12 28	12 21	12 13	12 03	11 50	11 36	10 36	10 39	10 44	10 51	10 59	11 09	11 22	11 36	2 30
3 0	12 33	12 30	12 25	12 18	12 10	12 00	11 47	11 33	10 33	10 36	10 41	10 48	10 56	11 06	11 19	11 33	3 0
3 30	12 33	12 30	12 25	12 18	12 10	12 00	11 47	11 33	10 33	10 36	10 41	10 48	10 56	11 06	11 19	11 33	3 30
4 0	12 38	12 35	12 30	12 23	12 15	12 05	11 52	11 38	10 38	10 41	10 46	10 53	11 01	11 11	11 24	11 38	4 0
4 30	12 46	12 43	12 38	12 31	12 23	12 13	12 00	11 46	10 46	10 49	10 54	11 01	11 09	11 19	11 32	11 46	4 30
5 0	12 55	12 52	12 47	12 40	12 32	12 22	12 09	11 55	10 55	10 58	11 03	11 10	11 18	11 28	11 41	11 55	5 0
5 30	13 03	13 0	12 55	12 48	12 40	12 30	12 17	12 03	11 03	11 06	11 11	11 18	11 26	11 36	11 49	12 03	5 30
6 0	13 11	13 08	13 03	12 56	12 48	12 38	12 25	12 11	11 11	11 14	11 19	11 26	11 34	11 44	11 57	12 11	6 0
6 30	13 16	13 13	13 08	13 01	12 53	12 43	12 30	12 16	11 16	11 19	11 24	11 31	11 39	11 49	12 02	12 16	6 30
7 0	13 23	13 20	13 15	13 08	13 00	12 50	12 37	12 23	11 23	11 26	11 31	11 38	11 46	11 56	12 09	12 23	7 0
7 30	13 29	13 26	13 21	13 14	13 06	12 56	12 43	12 29	11 29	11 32	11 37	11 44	11 52	12 02	12 15	12 29	7 30
8 0	13 34	13 31	13 26	13 19	13 11	13 01	12 48	12 34	11 34	11 37	11 42	11 49	11 57	12 07	12 20	12 34	8 0
8 30	13 37	13 34	13 29	13 22	13 14	13 04	12 51	12 37	11 37	11 40	11 45	11 52	12 00	12 10	12 23	12 37	8 30
9 0	13 36	13 33	13 28	13 21	13 13	13 03	12 50	12 36	11 36	11 39	11 44	11 51	11 59	12 09	12 22	12 36	9 0
9 30	13 34	13 31	13 26	13 19	13 11	13 01	12 48	12 34	11 34	11 37	11 42	11 49	11 57	12 07	12 20	12 34	9 30
10 0	13 30	13 27	13 22	13 15	13 07	12 57	12 44	12 30	11 30	11 33	11 38	11 45	11 53	12 03	12 16	12 30	10 0
10 30	13 24	13 21	13 16	13 09	13 01	12 51	12 38	12 24	11 24	11 27	11 32	11 39	11 47	11 57	12 10	12 24	10 30
11 0	13 17	13 14	13 09	13 02	12 54	12 44	12 31	12 17	11 17	11 20	11 25	11 32	11 40	11 50	12 03	12 17	11 0
11 30	13 09	13 06	13 01	12 54	12 46	12 36	12 23	12 09	11 09	11 12	11 17	11 24	11 32	11 42	11 55	12 09	11 30

If we disregard the daily inequality, the column headed San Francisco, in Table II, would give us, as in the examples on the Atlantic coast, the means of determining the time of high water. With this, the column for seven days in the present table agrees, as in between six and seven days from the maximum the declination becomes nothing, and the diurnal inequality also nothing.

Example V.—Required the time of high water at North Beach, San Francisco, California, on the 7th of February, 1853.

1st. The time of the moon's transit at Greenwich, from the Nautical Almanac, is $11^h\ 41^m$; the longitude of San Francisco $8^h\ 10^m$; requiring a correction of 16^m to the time of transit for San Francisco, which is thus found to be $11^h\ 57^m$.

2d. The moon's declination is south, and at the time of transit about two days from the greatest. Entering Table IV, we find 12^h (or 0^h) of transit, the nearest number to $11^h\ 57^m$, which the table gives; and following the line horizontally until we come to two days from the greatest declination, we find $12^h\ 57^m$.

To $11^h\ 57^m$, time of transit of moon, February 7, San Francisco,
Add 12 57 from column 0^h transit, and two days from greatest declination.

The sum is 24 54 or $0^h\ 54^m$, February 8th, is the time of high water, corresponding to the transit which we took of February 7. If we desire the tide of February 7, we must go back to the moon's transit of the 6th. The example was purposely assumed to show this case.

11^h 1^m time of transit February 6, 1853.
13 14 number for 11^h transit, and one day from greatest declination.

Sum 24 15 time of high water $0^h\ 15^m$, a. m., February 7.

The height of high water.—The height of high water is obtained in a similar manner, by the use of Tables VI and VII, entering these in the same way with the time of transit and days from the greatest declination. Table VI is for south declination, and Table VII for north.

Tables showing the numbers to be added to the soundings on charts, referred to the mean lowest low waters of day, to give the depth at high water at San Francisco.

TABLE VI.

Time of moon's transit.	SOUTH DECLINATION. Days from greatest Declination. 0	1	2	3	4	5	6	7
H.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.
0	4.0	4.1	4.1	4.2	4.3	4.5	4.8	5.0
1	3.9	4.0	4.0	4.1	4.2	4.4	4.7	4.9
2	3.8	3.9	3.9	4.0	4.1	4.3	4.6	4.8
3	3.6	3.7	3.7	3.8	3.9	4.1	4·4	4.6
4	3.4	3.5	3.5	3.6	3.7	3.9	4.2	4.4
5	3.3	3.4	3.4	3·5	3.6	3.8	4.1	4.3
6	3.3	3.4	3.4	3·5	3.6	3.8	4.1	4.3
7	3.4	3.5	3.5	3.6	3.7	3.9	4.2	4.4
8	3.5	3.6	3.6	3.7	3.8	4.0	4.3	4.5
9	3.7	3.8	3.8	3.9	4.0	4.2	4.5	4.7
10	3.9	4.0	4.0	4.1	4.2	4.4	4.7	4.9
11	4.1	4.2	4.2	4.3	4.4	4.6	4.9	5.1

TABLE VII.

Time of moon's transit.	NORTH DECLINATION. Days from greatest Declination. 0	1	2	3	4	5	6	7
H.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.
0	6.0	5.9	5.9	5.8	5.7	5.5	5.2	5.0
1	5.9	5.8	5.8	5.7	5.6	5.4	5.1	4.9
2	5.8	5.7	5.7	5.6	5.5	5.3	5.0	4.8
3	5.6	5.5	5.5	5.4	5.3	5.1	4.8	4.6
4	5.4	5.3	5.3	5.2	5.1	4.9	4.6	4.4
5	5.3	5.2	5.2	5.1	5.0	4.8	4.5	4.3
6	5.3	5.2	5.2	5.1	5.0	4.8	4.5	4.3
7	5.4	5.3	5.3	5.2	5.1	4.9	4.6	4.4
8	5.5	5.4	5.4	5.3	5.2	5.0	4.7	4.5
9	5.7	5.6	5.6	5.5	5.4	5.2	4.9	4.7
10	5.9	5.8	5.8	5.7	5.6	5.4	5.1	4.9
11	6.1	6.0	6.0	5.9	5.8	5.6	5.3	5.1

NOTE.—To use these Tables with a chart on which the soundings are referred to mean low water, subtract one foot from the numbers in the tables.

Example VI.—In Example V, to obtain the height of the tide on February 7, the declination being south, we enter Table VI with 0^h of transit, and two days from greatest declination, and find that the tide will be 4.1 feet above the mean of lowest low water, or that 4.1 feet are to be added to the soundings of a chart reduced to the mean of the lowest low waters of each day. If the soundings of the chart were given for mean low water, then 1.0 foot ought to be subtracted from the numbers in Tables VI and VII; thus, in this example it would be 3.1 feet.

The approximate time of the successive low and high waters of the day will be found by adding the numbers in Table VIII to the time of the first high water already determined. The table gives the numbers for the different days from the greatest declination.

TABLE VIII.

Containing numbers to be added to the time of high water found from Table III, to obtain the successive low and high waters.

Days from greatest declination.	SOUTH DECLINATION.			NORTH DECLINATION.			Days from greatest declination.
	Low water. (Small.)	High water. (Large.)	Low water. (Large.)	Low water. (Large.)	High water. (Small.)	Low water. (Small.)	
	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	
0	4 11	10 24	17 52	7 28	14 26	18 37	0
1	4 17	10 31	17 55	7 24	14 19	18 36	1
2	4 23	10 41	17 58	7 17	14 09	18 32	2
3	4 33	10 55	18 02	7 07	13 55	18 28	3
4	4 45	11 11	18 06	6 55	13 39	18 24	4
5	5 03	11 31	18 08	6 37	13 19	18 22	5
6	5 23	11 58	18 13	6 15	12 52	18 15	6
7	5 49	12 25	18 14	5 49	12 25	18 14	7

The days from greatest declination are written in the first and last columns of the table. The second, third, and fourth columns refer to south declination, and the fifth, sixth, and seventh, to north. The second column gives the number which is to be added, according to the declination, to the time of high water obtained by means of Tables IV and V, to give the next low water, which is the small low water *b* of Diagram I. The third contains the numbers to be added to the same, to give the second or large high water *c* of Diagram I. The fourth, the numbers to be added to to the same, to give the second or large low water *d* of Diagram I. The succeeding columns give the numbers to be used in the same way for north declinations, to obtain the low water *b* (large) of Diagram II, the high water *c*, (small,) and the low water *d*, (small,) of the same diagram.

The rise and fall of the same successive tides may be obtained by inspection, from Table IX, in which the first column, at the side, contains the time of transit, and the successive columns the numbers corresponding to that time, and to the number of days from greatest declination. The arrangement of this table is like that already given.

The numbers for the small ebb tide *a b* of Diagram I, or *c d* of Diagram II, are first given; then those for small low and large high water *b c* of Diagram I, and *d e* of Diagram II; next, the large ebb tide *c d* of Diagram I, or *a b* of Diagram II; and lastly from the large low water to the small high water *d e* of Diagram I, or *b c* of Diagram II.

TABLE IX.

Showing the rise and fall of the several tides corresponding to different hours of transit and days from greatest declination of moon at San Francisco.

Hours of moon's transit.	Small ebb tide, or from small high water to small low water. Days from maximum declination.								From small low water to large high water. Days from maximum declination.								Large ebb tide, or from large high water to large low water. Days from maximum declination.								From large low water to small high water. Days from maximum declination.								Hours of moon's transit.
	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7	
H.	Feet.	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet	H.
0	1.4	1.6	1.7	2.1	2.5	3.0	3.7	4.3	3.4	3.4	3.5	3.7	3.9	4.0	4.1	4.3	7.2	7.0	6.9	6.5	6.1	5.6	4.9	4.3	5.2	5.2	5.1	4.9	4.7	4.6	4.5	4.3	0
1	1.2	1.4	1.5	1.9	2.3	2.8	3.5	4.1	3.2	3.2	3.3	3.5	3.7	3.8	3.9	4.1	7.0	6.8	6.7	6.3	5.9	5.4	4.7	4.1	5.0	5.0	4.9	4.7	4.5	4.4	4.3	4.1	1
2	1.0	1.2	1.3	1.7	2.1	2.6	3.3	3.9	3.0	3.0	3.1	3.3	3.5	3.6	3.7	3.9	6.8	6.6	6.5	6.1	5.7	5.2	4.5	3.9	4.8	4.8	4.7	4.5	4.3	4.2	4.1	3.9	2
3	0.7	0.9	1.0	1.4	1.8	2.3	3.0	3.6	2.7	2.7	2.8	3.0	3.2	3.3	3.4	3.6	6.5	6.3	6.2	5.8	5.4	4.9	4.2	3.6	4.5	4.5	4.4	4.2	4.0	3.9	3.8	3.6	3
4	0.2	0.4	0.5	0.9	1.3	1.8	2.5	3.1	2.2	2.2	2.3	2.5	2.7	2.8	2.9	3.1	6.0	5.8	5.7	5.3	4.9	4.4	3.7	3.1	4.0	4.0	3.9	3.7	3.5	3.4	3.3	3.1	4
5	0.0	0.2	0.3	0.7	1.1	1.6	2.3	2.9	2.0	2.0	2.1	2.3	2.5	2.6	2.7	2.9	5.8	5.6	5.5	5.1	4.7	4.2	3.5	2.9	3.8	3.8	3.7	3.5	3.3	3.2	3.1	2.9	5
6	0.1	0.3	0.4	0.8	1.2	1.7	2.4	3.0	1.9	1.9	2.0	2.2	2.4	2.5	2.6	2.8	5.7	5.5	5.4	5.0	4.6	4.1	3.4	2.8	3.7	3.7	3.6	3.4	3.2	3.1	3.0	2.8	6
7	0.2	0.4	0.5	0.9	1.3	1.8	2.5	3.1	2.2	2.2	2.3	2.5	2.7	2.8	2.9	3.1	6.0	5.8	5.7	5.3	4.9	4.4	3.7	3.1	4.0	4.0	3.9	3.7	3.5	3.4	3.3	3.1	7
8	0.5	0.7	0.8	1.2	1.6	2.1	2.8	3.4	2.5	2.5	2.6	2.8	3.0	3.1	3.2	3.4	6.3	6.1	6.0	5.6	5.2	4.7	4.0	3.4	4.3	4.3	4.2	4.0	3.8	3.7	3.6	3.4	8
9	0.9	1.1	1.2	1.6	2.0	2.5	3.2	3.8	2.9	2.9	3.0	3.2	3.4	3.5	3.6	3.8	6.7	6.5	6.4	6.0	5.6	5.1	4.4	3.8	4.7	4.7	4.6	4.4	4.2	4.1	4.0	3.8	9
10	1.2	1.4	1.5	1.9	2.3	2.8	3.5	4.1	3.2	3.2	3.3	3.5	3.7	3.8	3.9	4.1	7.0	6.8	6.7	6.3	5.9	5.4	4.7	4.1	5.0	5.0	4.9	4.7	4.5	4.4	4.3	4.1	10
11	1.5	1.7	1.8	2.2	2.6	3.1	3.8	4.4	3.5	3.5	3.6	3.8	4.0	4.1	4.2	4.4	7.3	7.1	7.0	6.6	6.2	5.7	5.0	4.4	5.3	5.3	5.2	5.0	4.8	4.7	4.6	4.4	11
	From.....*a* to *b*, Diagram I. And from....*c* to *d*, " II.								From.....*b* to *c*, Diagram I. And from....*d* to *e*, " II.								From.....*c* to *d*, Diagram I. And from....*a* to *b*, " II.								From.....*d* to *e*, Diagram I. And from....*b* to *c*, " II.								

Example VII.—Thus in Example VI, the high water of February 7th was found to be 3.1 feet above mean low water. The declination being south, Diagram I applies, and this high water is the small one. To obtain the fall of the next low water, or small low water, we enter Table IX with 0^h of moon's transit, and two days from greatest declination in the first part of the table, and find 1.7 feet, which will be the difference in height of this high and low water. Entering with the same transit and day in the second part, we find 3.5 feet, which is the rise of the large high water above the small low water; the difference between 1.7 foot and 3.5 feet, or 1.8 foot, is the difference of height of the two successive high waters.

It is easy to see how, in this way, the soundings of a chart can be reduced to what they would be approximately at all the successive high and low waters. A similar set of tables is in preparation for Key West, and some of the other ports on the Gulf of Mexico, where the tides are of the same character.

The tidal observations now in progress on the Pacific will give the means of extending the tables to all the principal ports there.

TIDES OF THE GULF OF MEXICO.

On the coast of Florida, from Cape Florida round the Peninsula to St. Marks, the tides are of the ordinary kind, but with a daily inequality, which, small at Cape Florida, goes increasing as we proceed westward to the Tortugas.

From the Tortugas to St. Marks, the daily inequality is large and sensibly the same, giving the tides a great resemblance to those of the Pacific coast, though the rise and fall is much smaller. Between St. Marks and St. George's Island, Apalachicola entrance, the tides change to the single-day class, ebbing and flowing but once in the twenty-four (lunar) hours. At St. George's Island there are two tides a day, for three or four days, about the time of the moon's declination being zero. At other times there is but one tide a day, with a long stand at high water of from 6 to 9 hours. From Cape St. Blas to, and including, the mouth of the Mississippi, the single-day tides are very regular; and the small and irregular double tides appear only for two or three days, (and frequently even not at all,) about the time of zero declination of the moon. The stand at high and low water is comparatively short, seldom exceeding an hour.

To the west of the mouth of the Mississippi the double tides reappear. At Isle Dermère they are distinct, though a little irregular, for three or four days, near the time of the moon's zero declination. At all other times the single-day type prevails, the double tides modifying it, however, in the shape of a long stand of from 6 to 10 hours at high water. This stand is shortest at the time of moon's greatest declination, sometimes being reduced to but one hour. At Calcasieu the tides are distinctly double, but with a large daily inequality. The rise and fall being small, they would often present to the ordinary observer the same appearance as at Isle Dernière. At Galveston the double tides are plainly perceptible, though small for five or six days, at the time of moon's zero declination. At other times they present the single-day type, with the peculiarity that after standing at high water for a short time, the water falls a small distance and stands again at that height for several hours, then continues to fall to low water. Sometimes it falls very slowly for nine or ten hours following high water, and then acquires a more rapid rate to low water. At Aransas Pass and Brazos Santiago the single-day tides prevail. Small, irregular double tides are only perceived for two or three days at moon's zero of declination. At other times there is but one high water in the day, with a long stand of from six to nine hours, during which there are often small irregular fluctuations or a very slow fall.

In the following table the mean rise and fall of tides at the above stations is given.

The highest high, and the lowest low, waters occur when the greatest declination of the moon happens at full or change; the least tide, when the moon's declination is nothing at the first or last quarter.

The rise and fall being so small, the times and heights are both much influenced by the winds, and are thus often rendered quite irregular.

TABLE X.

Rise and fall of tides at several stations on the Gulf of Mexico.

STATIONS.	MEAN RISE AND FALL OF TIDES.		
	Mean.	At Moon's greatest declination.	At moon's least declination.
	Feet.	*Feet.*	*Feet.*
St. George's Island, Florida	1.1	1.8	0.6
Pensacola, Florida,	1.0	1.5	0.4
Fort Morgan, Mobile Bay, Alabama	1.0	1.5	0.4
Cat Island, Mississippi	1.3	1.9	0.6
South-west Pass, Louisiana	1.1	1.4	0.5
Isle Dernière, Louisiana	1.4	2.2	0.7
Entrance to Lake Calcasieu, Louisiana	1.9	2.4	1.7
Galveston, Texas	1.1	1.6	0.8
Aransas Pass, Texas	1.1	1.8	0.6
Brazos Santiago, Texas	0.9	1.2	0.5

TO DETERMINE THE RISE AND FALL OF THE TIDE FOR ANY GIVEN TIME FROM HIGH OR LOW WATER.

It is sometimes desirable to know how far the tide will rise in a given time from low water, or fall in a given time from high water, or to approximate to the time which has elapsed from low or high water, by knowing the rise or fall of the tide in the interval.

If the proportion of the rise and fall in a given time were the same in the different ports, this would easily be shown in a single table, giving the proportional rise and fall, which by referring to Table I, showing the rise and fall of the tide at the port, would give the rise and fall in feet and decimals. The proportion, however, is not the same in different ports, nor in the same ports for tides of different heights. The following, Table XI, shows the relation between the heights above low water for each half hour, for New York and for Old Point Comfort, and for spring and neap tides at each place. Units express the total rise of high water above low water, and the figures opposite to each half hour denote the proportional fall of the tide from high water onward to low water. For example, at New York, three hours after high water, a spring tide has fallen six-tenths (sixty hundredths) of the whole fall. Suppose the whole rise and fall of that day to be 5.4 feet, (Table I,) then three hours after high water the tide will have fallen 3.24 feet, or three feet three inches nearly. Conversely, if we have observed that a spring tide has fallen three feet three inches, we may know that high water has passed about three hours.

TABLE XI.

Giving the height of the tide above low water for every half hour before or after high water, the total range being taken as equal to 1.

Time before or after high water.	NEW YORK.		OLD POINT COMFORT.	
	Spring tide.	Neap tide.	Spirng tide.	Neap tide.
h. m.				
0 0	1.00	1.00	1.00	1.00
0 30	0.98	0.98	0.98	0.98
1 0	0.94	0.93	0.95	0.94
1 30	0.89	0.86	0.88	0.87
2 0	0.80	0.72	0.80	0.78
2 30	0.72	0.59	0.70	0.68
3 0	0.60	0.45	0.59	0.57
3 30	0.49	0.31	0.49	0.44
4 0	0.39	0.19	0.37	0.34
4 30	0.28	0.10	0.26	0.22
5 0	0.18	0.02	0.17	0.13
5 30	0.09	0.00	0.08	0.05
6 0	0.05	....	0.03	0.01
6 30	0.00	....	0.00	0.00

TIDES IN COASTING.

By observing the times of high and low water along the coast, we find the places at which they are the same. The map shows that it is high water nearly at the same hour all along our coast from Sandy Hook to Cape Canaveral; of course not in the bays and harbors and up the rivers, but on the outer coast. It is high water exactly at the same hour all along the line marked XII seen on the chart near Sandy Hook, and north and south of Hatteras, and, with small interruptions, at Cape Lookout and Cape Fear, all the way to near Cape Canaveral. This same line extends eastward to near Block Island and south of Nantucket, and then passes away from our coast. At full and change of the moon, along this line (approximately) it is high water at XII o'clock Greenwich time, the local time of high water depending upon the longitude of the place; or, to speak more correctly, in the average of a lunar month, it is high water so many hours after the time of the moon's passing the meridian of Greenwich.

By these lines, called cotidal lines, we can determine what tidal currents the navigator must expect to meet in coasting, and for this purpose we divide the ports of the coast into two sets, those south and those north of New York.

The sailing lines of coasters bound to southern ports this side of the Straits of Florida are marked upon the map, and also of those bound through the sounds to eastern ports and outside to Halifax and European ports.

Vessels to and from ports South of New York.

South of Sandy Hook, New York, the line of XII hours is nowhere more than 18 miles from the coast, that of XI¾ nowhere more than 35 miles, that of XI½ nowhere more than 48, and of XI nowhere more than 110 miles. The distances of these lines of XII to XI hours (corresponding, within four minutes, to VII and VI of New York time) from different parts of the coast is shown in Table A, where the first column gives the name of the place, and the second, third, fourth, and fifth, respectively, the distances of the cotidal lines of XII, XI¾, XI½, XI hours. The distances are measured from the ports on perpendiculars to the cotidal lines. They may be taken as if measured on the parallel of latitude at all the points for the line of XII hours, and at all between Sandy Hook and Cape Hatteras, for the lines of XI¾ and XI½ hours.

(A)

NAMES OF LOCATIONS.	DISTANCE FROM COAST, MEASURED ON PERPENDICULAR TO COTIDAL LINES.			
	At XII hours.	At XI¾ hours	At XI½ hours.	At XI hours.
	Naut. miles.	Naut. miles.	Naut. miles.	Naut. miles.
Sandy Hook	12	32	53	100
Barnegat	2	29	39	78
Cape May	15	30	46	92
Cape Henlopen	18	33	47	92
Assateague	7	22	36	82
Cape Henry	12	28	43	100
Cape Hatteras	.....	8	20	63
Ocracoke Inlet	.....	11	26	71
Cape Lookout	.....	7	18	56
Beaufort Entrance	6	15	24	63
Cape Fear	.....	6	16	55
Cape Roman	.....	10	21	67
Charleston Light	3	15	27	70
Port Royal Entrance	5	17	29	78
Tybee Entrance	6	17	31	82
St. Mary's Entrance	12	25	40	110
St. John's Entrance	17	35	48	
Cape Canaveral	16			
Cape Florida				

The cotidal lines are in such directions that at 10, 20, and 30 miles from the coast, between Sandy Hook and the St. John's, there is but a variation of seven minutes, and even to Cape Canaveral only of eight minutes. Keeping ten miles from the shore, the coaster would pass from XII hours at Sandy Hook to XI hours 45 minutes at Hatteras, and increase again irregularly to XII hours 7 minutes at the St. Johns, as shown more explicitly in the Table B. These three tracks of 10, 20, and 30 miles are inside of the cold wall of the Gulf Stream, and generally in the cold current, except at Cape Canaveral.

(B)

NAMES OF STATIONS.	COTIDAL HOUR AT 10, 20, AND 30 NAUTICAL MILES FROM THE COAST, PERPENDICULAR TO THE COAST.					
	10 miles off.		20 miles off.		30 miles off.	
	Hours.		Hours.		Hours.	
Sandy Hook	12	0	11	52	11	45
Barnegat	11	52	11	44	11	35
Cape May	12	5	11	53	11	45
Cape Henlopen	12	7	11	57	11	48
Assateague	12	0	11	48	11	37
Cape Henry	12	5	11	48	11	42
Cape Hatteras	11	45	11	30	11	22
Ocracoke Inlet	11	47	11	36	11	25
Cape Lookout	11	45	11	30	11	20
Beaufort Entrance	11	55	11	38	11	25
Cape Fear	11	38	11	25	11	18
Cape Roman	11	45	11	33	11	24
Charleston Light	11	52	11	38	11	25
Port Royal Entrance	11	57	11	45	11	32
Tybee Entrance	11	55	11	43	11	30
St. Mary's Entrance	12	8	11	57	11	47
St. John's Entrance	12	7	11	57	11	50
Cape Canaveral	12	8				
Cape Florida	12	10				

It follows, then, as a general thing, from these two tables, that the coaster, in passing from Sandy Hook to the St. John's, would have the tides the same within some fifteen minutes as if he remained at Sandy Hook. So that leaving, for example, at high water, he would, according to the elapsed time, have the ebb and flood alternating every six hours and a quarter nearly, as if he had remained near Sandy Hook. As the flood tide sets in generally to the northward and on shore and the ebb tide to the southward and off shore, he would know by the time that elapsed from his departure and the period of the tide at which he started, what tidal currents he might expect to meet as he passed along the coast. This of course is not peculiar to Sandy Hook as a point of departure, but would be true for any of the entrances given in the table, taking care not to mistake the times of tides within for that at the entrance.

By referring to George W. Blunt, Esq., I have obtained the tracks of sailing and steam vessels passing from New York to ports to the south of it, as shown by the lines on the chart accompanying this paper. Tracing these on the map of cotidal lines, I have determined how the navigator would find the tides as he passes from port to port. The results are shown in the annexed Table, (C) in which the port between which and Sandy Hook the mariner passes is at the head of the table, and at the side the place off which the cotidal hours will be found, as stated in the table.

(C)

OFF	COTIDAL HOURS ON SAILING LINES BETWEEN NEW YORK AND (*Measured on parallel of latitude of the places named in first column.*)							
	Delaware Bay.	Chesapeake Bay.	Ocracoke Inlet.	Cape Fear.	Charleston.	Savannah.	St. John's.	Cape Florida.
	Hours.	Hours.	Hours.	Hours.	Hours.	Hours.	Hours.	Hours.
Sandy Hook	12 5	12 5	12 5	12 5	12 5	12 5	12 5	12 5
Barnegat	11 57	11 57	11 57	11 57	11 57	11 57	11 57	11 57
Cape May	12 10	11 52	11 45	11 45	11 45	11 45	11 45	11 45
Cape Henlopen	.....	11 51	11 43	11 43	11 43	11 43	11 43	11 43
Assateague	.....	11 55	11 33	11 33	11 33	11 33	11 33	11 33
Cape Henry	.....	12 13	11 24	11 24	11 24	11 24	11 24	11 24
Cape Hatteras	.....	.....	11 48	11 48	11 48	11 48	11 48	11 48
Ocracoke Inlet	.....	.....	.....	11 42	11 42	11 42	11 42	11 42
Cape Lookout	.....	.....	.....	11 39	11 39	11 39	11 32	11 24
Beaufort Entrance	.....	.....	.....	11 39	11 39	11 39	11 32	11 24
Cape Fear	.....	.....	.....	.....	11 36	11 36	11 24	11 0
Cape Roman	.....	.....	.....	.....	11 46	11 46	11 19	
Charleston Light	.....	.....	.....	.....	.....	11 52	11 18	
Port Royal Entrance	.....	.....	.....	.....	.....	12 3	11 18	
Tybee Entrance	.....	.....	.....	.....	.....	.....	11 16	
St. Mary's Entrance	.....	.....	.....	.....	.....	.....	11 55	
St. John's Entrance	.....	.....	.....	.....	.....	.....	12 10	
Cape Canaveral								
Cape Florida								

Thus from Sandy Hook to Delaware Bay, starting with XII hours 5 minutes, off Barnegat there would be at the same instant XI hours 57 minutes, and off Cape May XII hours 10 minutes; so the navigator would have the same succession of tides whether he remained at Sandy Hook or passed onward to Delaware Bay, or whether he came from Delaware Bay to Sandy Hook. So from Sandy Hook to Charleston, he would find, *at the same instant*, XII hours 5 minutes at Sandy Hook, XI hours 57 minutes off Barnegat, XI hours 45 minutes off Cape May, and so onward upon the parallels of latitude for the several points. *For all practical purposes, then, of coasting, the succession of the tides, and of course of the tidal currents of flood and ebb, will be the same as if the navigator remained stationary.* Leaving at low water, he will meet the flood for 6 hours and 15 minutes, and then the ebb for another 6 hours and 15 minutes, and so on. It is the simplest of all rules that has thus come out of this investigation.

That remarkable change of temperature between the waters of the in shore cold current and of the warm waters of the Gulf Stream, (occurring in so short a distance that Lieut. Bache called it the "cold wall,") takes place at distances off the coast of from 170 to 29 miles, (see Table D,) between Sandy Hook and Cape Canaveral, mea-

sured from the several points named in the table at right angles to the direction of the course, or measured along the parallels of latitude of the points at distances from 195 to 28 miles betweed Assateague and Cape Canaveral. (Table D.) The points where the parallels north of Assateague meet this division line have not been accurately determined.

The annexed table (D) shows these distances measured at right angles and on the parallel.

(D)

Distance from coast to "cold wall" of Gulf Stream off	Measured at right angles to coast.	Measured on parallel of latitude.
	Naut. Miles.	Naut. Miles.
Sandy Hook	170	
Barnegat	135	
Cape May	137	
Cape Henlopen	137	
Assateague	95	195
Cape Henry	92	107
Cape Hatteras	30	31
Ocracoke Inlet	53	52
Cape Lookout	53	65
Beaufort Entrance	62	
Cape Fear	54	97
Cape Roman	57	103
Charleston Light	61	95
Port Royal Entrance	79	97
Tybee Entrance	79	95
St. Mary's	90	87
St. John's	85	82
Cape Canaveral	29	28
Cape Florida		

The coasting line of thirty miles keeps inside of the cold wall all the way to Canaveral, and all the routes traced on the chart from Sandy Hook to southern ports are inside of it.

The Gulf Stream lines drawn on the chart show how the route to Bermuda and to the Bahamas cuts the alternate bands of warm and cold water of the Gulf Stream.

Vessels to and from ports East of New York.

The Plate shows the sailing lines of vessels bound from New York to eastern ports and to Halifax, outside. The annexed table (E) gives the Greenwich times of high water off the several points named in the first column on the routes to and from the places named in the heading of the table. The distances are measured at right angles to the cotidal curves.

(E)

OFF	COTIDAL HOURS ON SAILING LINES BETWEEN NEW YORK AND						
	Newport.	N. Bedford.	Nantucket.	Boston.	Portsm'th.	Portland.	Halifax.
	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.
Sandy Hook	.....	.....	.....	.....	.....	.....	12 5
Throg's Point	16 16	16 16	16 16	16 16	16 16	16 16	
Fisher's Island	13 48	13 48	13 48	13 48	13 48	13 48	
Block Island	12 16	12 16	12 16	12 16	12 16	12 16	11 30
Monomoy	.....	.....	.....	16 10	16 10	16 10	
Cape Cod	.....	.....	.....	14 35	14 35	14 35	12 15
Cape Ann	.....	.....	.....	.....	15 0	14 40	
Portland	.....	.....	.....	.....	.....	15 30	

In passing from New York to an eastern port, the first great change in the tides and tidal currents is between the East River and Long Island Sound; the difference between Governor's Island and Negro Point, on Ward's Island, at the eastern entrance to Hell Gate, is 2 hours and 45 minutes. Between this point and Throg's Point the change is small. The mariner is now in the full tide of the Sound, and between Throg's Point and Fisher's Island there is a difference of time of but 2 hours and 20 minutes, the greatest part of which is at the head of the Sound and at its entrance, that is, near Throg's Point and Fisher's Island. From off New London to off Sands' Point, the difference is but 1 hour and 40 minutes. So that if the mariner, instead of remaining at Throg's Point, passed onward to Fisher's Island, he would lose but half a tide in the whole passage. In other words, he would have the same succession of rise and fall, according to the time elapsed, whether stationary or passing onward within two hours and a half, or less than half a tide. The tidal current lines show that even a less allowance is to be made for the change of current than for the change of tide, the difference in the change of currrent between Throg's Point and Fisher's Island along the middle of the Sound being of no practical significance. Passing out of Long Island Sound, the tidal hours grow earlier, until off Block Island that of Sandy Hook is again reached.

The cotidal line of Sandy Hook and Block Island being the same, it is the struggle of the same tide through New York Bay and the narrow East River and obstructed Hell Gate, and through Fisher's Island and Long Island Sounds and to Throg's Point. The tidal currents meet near Throg's Point.

The lower part of Narragansett Bay has the cotidal hour XII hours nearly. Buzzard's Bay has nearly the same cotidal hour, the tide-wave reaching the shores at nearly the same time all around the bay. It would be impossible to give, in a small compass, a minute account of the tides of Martha's Vineyard and Nantucket Sounds. In general, it may be said that as far as Holmes' Hole and Wood's Hole, they resemble those of Block Island Sound, and afterwards those of Monomoy, at the Eastern entrance; but this generalization is unsatisfactory without more details than there is space here to give. In these Sounds takes place the remarkable change of between three and four hours, the great change of our coast, dislocating, as it were, the times of high water at places south and west and east and north of Nantucket. The whole of this change takes place between the eastern entrance of Nantucket Sound and the western of Martha's Vineyard, giving rise to quite a complex condition of both tides and currents, which it has occupied much time to unravel.

The dominant cotidal line of our coast, from Block Island to Cape Canaveral, is that of XII hours of Greenwich time; that of our eastern coast, from Nantucket to Passamaquoddy, is in general XV hours. Passing out of Nantucket Sound, coasters carry nearly the same cotidal hour to Cape Cod, and thence vary their time about half an hour in passing to Boston, to Portsmouth, to Portland, or to Passamaquoddy. It has long been known that the tidal almanac for Boston might practically be used for eastern ports. Vessels from New York to Halifax, (and New York to Europe,) which keep outside, and should keep well off the Nantucket Shoals, and off George's, as shown by the track on the chart, vary their cotidal hour but little, keeping between the lines of XII and of XI½ until quite well on their course and beyond Cape Sable. The same rule will apply to their case as has been given for vessels between New York and a southern port.

REVOLVING STORMS IN THE NORTHERN HEMISPHERE.*

Gyratory Movements.—The space over which these circular storms have been known to expand themselves, varies from twenty or thirty to some hundreds of miles; blowing continually round and round a centre or vortex, but with ever-varying force, now lulling into little more than a strong breeze, and then suddenly swelling up into a blast of uncontrolable fury. But the peculiar characteristic of their revolving action is, that in each hemisphere of the world the gyration invariably takes place in one direction, and that direction contrary to the apparent course of the sun; so that in N. latitudes these storms revolve from right to left. The knowledge of this law is the more especially important, as it not only supplies the seamen with direct means of distinguishing them from common gales, but it reveals to him the actual position of the centre or vortex, with respect to the place of his vessel, and therefore points out with unerring certainty the way to escape from them.

Progressive Movements.—But besides the above circular motion of the wind round a centre, these storms have a bodily progressive movement, rolling onwards, if it may be so expressed, along their desolating tracks, sometimes with great velocity, and some-

* Extracted from the pamphlet, Remarks on Revolving Storms, published by order of the Lords Commissioners of the Admiralty, 1853.

times appearing to pause or scarcely to advance more than a few miles in the hour, although the impetuosity of the wind itself round the circle may continue undiminished.

Regions Where Prevalent.—These storms occur commonly in the three great oceans, the Atlantic, Indian, and Pacific, but they are seldom found within less than 5° or 6° of the equator, and have not yet been traced into very high latitudes. They appear to be most frequent and most severe in the West India, Madagascar, and China seas; and the season in which they are most prevalent is during the sun's return from the summer solstice; or, in other words, from July to October, in the Northern hemisphere; and in the Southern regions, from January to April.

Direction of Movement.—Though these storms in traversing the ocean do not always adopt the same path, nor ever travel with any uniform velocity, yet there is so much apparent similarity in their movements as to show that they are ruled by one general law. To endeavor to trace this law, the log books of a great number of vessels in all parts of the sea, have been examined, as well as the meteorologic registers of numerous places on shore; and from them the movements of these storms have been reduced into comparative tables, their separate tracks graphically represented on charts, and their several characteristics analyzed with great labor and zeal by the before-mentioned authors.

The general result may thus be briefly stated: In all cases within the tropics, they commence to the Eastward; for some days they travel along a path not exactly W., but inclining a point or two towards the pole of that hemisphere which they are crossing; their rate of movement, though very variable, may be averaged at from ten to thirty miles in the hour; and as they advance they seem to be the more inclined to curve away from the equator. Occasionally they are found to cross the line of the shore, and to sweep over the land that opposes their progress; but by far the greater number seem to be repelled by any continental coast, and to be deflected back to the N. E. in the Northern hemisphere, and to the S. E. in the Southern hemisphere.

Vortex.—Another remarkable feature of these storms is their increasing violence in the neighborhood of their centre or vortex; and yet there, they are so much the more fitful and uncertain as to render a vessel absolutely helpless and unmanageable. Besides which, as she approaches the vortex (unless on the direct line of its own progressive motion), the more rapid become the changes of the wind, till at length, instead of its veering point by point, as she had found when entering the storm-field, it now flies round at once to the opposite point—the vessel is taken aback, or brought by the lee, in an irresistible squall—and forced into sternway against an overpowering sea, the destructive consequences of which need not be enlarged upon here.

Those who have dearly bought this experience, by having passed through the centre of one of these storms, describe the cross confused sea there as being tremendous—raised by gusts from every point of the compass into pyramidal heaps, which strike the vessel on either side, and with a force similar to that of a heavy surf beating over a reef. And yet, on the other hand, there are instances on record of the wind suddenly failing in the very vortex, and the clouds dispersing for a short and delusive interval, though soon, as if the wind had acquired fresh power from the transient calm, resuming its violence with tenfold fury. It may be added, that few vessels ever went through the ordeal of the vortex without losing either masts or rudder, or meeting with some worse disaster; and, therefore, at whatever cost of time, trouble, or loss of ground, the central part of the storm-field will be avoided by every man in his senses.

Prognostics.—Enough has been premised to convey a general idea of these singular storms, as well as of the danger of lingering within their baneful influence; and we shall now, therefore, endeavor to give a few succinct and simple rules by which they may be either wholly avoided, or by which, if the vessel be already too near to prevent the collision altogether, she may place herself so as to receive them in the least disadvantageous position, and extricate herself the most speedily from their grasp.

With that threatening aspect of the sky which generally precedes all storms—such as the greasy halo round the sun or moon, the rolled and tufted forms of the clouds, with their lurid streaks of light and extraordinary colors, the heavy bank clinging to the horizon with its darting forks and threads of pale lightning—every seaman is acquainted.

The best and surest of all warnings will, however, be found in that invaluable and seldom failing monitor, the barometer; the language of which, in the torrid zone, is unmistakable, because there it is usually so tranquil and undisturbed. When any such warning symptoms are observed in *any* quarter of the world, it may be supposed that no time will be lost in making all due preparation, and especially if to such menacing appearances be added the confused and troubled agitation of the sea which often precedes these revolving storms, and always shows that they are at no great distance. But if these combined prognostics should occur within the limits of those regions which have been already pointed out, let the seaman immediately consider the possibility at

least of his being about to encounter a storm of that revolving type of which we have been treating.

Relative Position of Storm.—Acting under this anticipation, his first care should be to discover the position of the storm with respect to the vessel, or, in other words, to ascertain its bearing. Fortunately this is a problem of extreme facility, for, as we have already stated, it is one of the remarkable laws of these storms that in the opposite hemispheres they revolve in opposite directions—in N. latitudes against the course of the sun, that is to say, from right to left, or in a direction contrary to the movement of the hands of a watch, and in S. latitude from left to right; and secondly, it is known that, no matter how great or how little may be the size of the storm-field, the wind continually blows in a circular course round and round a centre or vortex.

Position of Vortex.—It therefore necessarily and demonstratively follows that this centre must always be at right angles to that circular course; or, in other words, that the bearing of the centre lies eight points of the compass from the direction of the wind. Now, these two considerations are quite enough for our purpose, for they enable us to answer the question instantly and certainly by the following general rule:

Look to the wind's eye—set its bearing by the compass—take the eighth point to the *right* thereof—and that will be the bearing of the centre of the storm in N. latitude. For example: suppose the vessel to be in 14° N. latitude, the wind from E. S. E., and the barometer and sky indicating a coming gale—then, look at the compass, take the eighth point to the *right* of E. S. E., and S. S. W. will infallibly be the bearing of the brewing storm, *if it be* of a revolving type. In this case, the vessel will be on the Northern edge of the storm-field.

Nothing can be more definite and unambiguous than the above rule, requiring no diagrams nor any puzzling considerations to lead to a distinct and immediate conclusion; nevertheless, as the mind, when somewhat excited by the approach of such an unwelcome visitor as one of these storms, might possibly apply the eight points on the wrong side, we have added a table, for N. latitude, in which the seaman will at once see the question solved without the trouble of any reflection whatever

BEARING OF VORTEX IN NORTH LATITUDE.

If the Wind be,	The Vortex of the Storm will bear from the Ship,	If the Wind be,	The Vortex of the Storm will bear from the Ship,
North.	East.	South.	West.
N. by E.	E. by S.	S. by W.	W. by N.
N. N. E.	E. S. E.	S. S. W.	W. N. W.
N. E. by N.	S. E. by E.	S W. by S.	N. W. by W.
N. E.	S. E.	S. W.	N. W.
N. E. by E.	S. E. by S	S. W. by W.	N. W. by N.
E. N. E.	S. S. E.	W. S. W.	N. N. W.
E. by N.	S. by E.	W. by S.	N. by W.
East.	South.	West.	North.
E. by S.	S. by W.	W. by N.	N. by E.
E. S. E.	S. S. W.	W. N. W.	N. N. E.
S. E. by E.	S. W. by S.	N. W. by W.	N. E. by N.
S. E.	S. W.	N. W.	N. E.
S. E. by S.	S. W. by W.	N. W. by N.	N. E. by E.
S. S. E.	W. S. W.	N. N. W.	E. N. E.
S. by E.	W. by S.	N. by W.	E. by N.

Distance of Vortex.—The bearing of the storm from the vessel having thus been determined, it would no doubt be very desirable to ascertain, at the same time, its distance from her; but for this no very clear rules have yet been suggested. A good guess may, however, be made from the quickness or slowness with which the storm appears to develop itself—from the increasing severity of its squalls—from the faster veering of the wind—from the rising confusion of a cross swell—and especially from the sudden fluctuations of the barometer, which should be carefully noted every half hour whenever there is reason to suspect that a revolving storm is in the neighborhood.

How to compute it.—Some attempt may be even made to compute the distance of the vortex by its change of bearing from the vessel, assuming for that purpose some probable direction for its track, according to the general principle before-mentioned. For

instance, let us place a vessel in 14° N. latitude and 40° W. longitude. She meets there with strong indications of a gathering storm, and as the wind is E., she knows that if it be a revolving one, its vortex must bear S. In an hour's time she finds that the vortex has advanced so far to the Westward as to bear S. S. W., the wind having come gradually round to E. S. E.

Now, in the supposed position of the vessel, the path of the storm may be reasonably assumed to be W. N. W., and for our first trial we will take its rate of moving to be ten miles within that hour. With these data, enter the Traverse Table, with the change of wind, two points, as the course, and the advance or the vortex, ten miles, as the departure, and the corresponding distance, twenty-six miles, will be that of the vortex from the ship at the time of the first bearing, and twenty-four miles at that of the second bearing. If the storm has not yet reached abreast of the ship, so that one of its bearings may form a right angle with its path, the observer must be at the trouble of working out the result in an oblique triangle; and if, instead of lying to (as we have supposed her, in order to simplify the problem), she be herself in motion, the process will be somewhat more complicated.

Apparent Anomaly.—There is, however, so much of supposition and guess-work in either estimating or computing the direct distance of the storm, that no very precise result can be expected; but its discussion here will have helped to give a more distinct view of the nature of these storms, and to show in what sense they are said to be revolving. For, in the above example, the reader will have perceived that in the hour the wind had veered from E. to E. S. E.; and at first sight, therefore, he might be inclined to exclaim, that this change having been made *with* the sun, was in direct contradiction to the law, which has been so distinctly asserted in these pages, viz., that the wind in N. latitudes always blows round the axis or vortex in a *contrary* direction to the motion of the sun, and moreover, that it always preserves that direction in the whole series of concentric circles throughout the entire space over which the storm extends its influence. In reiterating that law, it may be added as one of its necessary consequences, that in all parts of the quarter of the circle contained between E. and N. the wind is and will continue to be from between S. and E., and in the N. W. quarter from between E. and N., &c.; and on any one radius, from the centre to the circumference, the wind will be always the same; so that if four vessels were involved in the same storm, one being on each of the four cardinal points of the compass, and on the same tack, they would all have their heads at right angles to each other.

If the vessel in the example, instead of lying to, had steered W., that is to say, on a parallel course to that of the storm and at the same progressive rate, her wind would not have changed, it would have continued at E., and the vortex would have continued to bear S., though in very dangerous and increasing proximity. Or, if the wind had much freshened, and the captain, being in ignorance of its revolving nature, had persevered in the Westerly course, with the idea of running away from the gale, that course, by its convergence towards the W. N. W. path of the storm, would have rapidly led her towards its centre, where she would either have suffered in proportion to its intensity or if she persisted in keeping right before the wind, she would have soon found herself in the ridiculous predicament of the *Charles Heddle.*

This brig sailed from the Mauritius in February, 1845, and falling in with a revolving gale from the Eastward, she at once put her helm up in order, as it is commonly said, "to run out of it," or let it "exhaust itself;" but the wind drew round and round, according to the now known laws of these circular storms, and she, with a perseverance that might have been more wisely employed, continued to scud "right before it" for four successive days and nights, by which time she had actually circumnavigated the storm-field five times. In performing this singular exploit she had kept at the end of a radius of about forty miles, and had run through the water upwards of thirteen hundred miles, though her real change of place (the joint result of the onward movement of the vortex and of the current) did not much exceed three hundred miles.

In the case before us, as the vessel was lying to, the storm *moved away from her* till it bore S. S. W., when, of course, the wind came to E. S. E.; and if she had made sail on the port tack, so as to cross the outer part of the field, she would have fallen off point after point, as the wind would have continued to change to S. E., S. S. E., and S.; and all these changes the reader will perceive were in the order of the sun's motion although each of those winds was duly continuing its course against the sun.

We have dwelt the longer on this part of the subject, because it is necessary that the seaman should clearly perceive that the changes of wind which occur to him in any part of the storm-field entirely depend on the relative position of his ship to the vortex; and moreover, that they may be correctly foreseen, and ought to be well considered before he determines on what measures to adopt—whether to lie to, or to fly from the danger—whether to avoid further entanglement with its vicious circles, or to endeavor to render them subservient to the progress of her voyage.

General Rule for Avoidance.—Few words will now be sufficient to give expression to

the one great general rule for all vessels, in all cases, except when controlled by land or shoals. Let them immediately steer in that direction which will most quickly increase their distance from the vortex, or centre of the storm-field. But then let it be remembered that the whole storm-field is itself in motion; that it is travelling with certainty to the Westward while within the tropics, though with very uncertain velocity; and that it has a tendency to curve round to the Northward in *Northern* latitudes, being repelled by the distant interference of a Western continent.

The situation of the vessel must therefore be considered, not only with respect to the present position of the vortex, but also with respect to the place to which it will have advanced by the time she may have executed any projected run; for otherwise, though going at her best speed, she might be overtaken by a following, and probably an expanding storm. When the progressive velocity of a storm is slow, a vessel may overtake and plunge into it; in which case the cross sea that follows in the "wake" of the storm may serve as a warning.

In the example that we have been discussing, the storm was nearly abreast of the vessel when first discovered, and seemed to be passing away innocuously to the Westward; but as the latter half of a storm-field is often pregnant with far greater mischief than the preceding half, and as it is generally attended by a much more turbulent sea, so a prudent commander would have led her off to the Northward, on the starboard tack, although perhaps she were bound to the Southward Or if the wind or sea were not quite intolerable, he might possibly have continued lying to on the starboard tack, being certain that as the vortex was going off to the W. N. W. it would bear from him more and more Westerly, and consequently that his vessel would keep coming up to the wind without any danger of being taken aback in some of its sudden changes; this being a very material consideration in dealing with these changeful storms.

Example.—Let us now suppose a homeward-bound vessel, in a low Northern latitude, meeting a revolving storm in its progress to the Westward. The first of its winds that would reach her must be one of those belonging to the Western half of its circumference; let it be from N. N. E.; the vortex therefore would bear E. S. E., and she would thus be nearly in the direct line of its advance, the most critical of all positions. To lie to would only be waiting for the sure approach of the whole body of the storm; if put on the starboard tack, and lying N. W., she could scarcely widen her departure from its path soon enough to escape the tumultuous cross sea and terrific gusts which might pervade a large zone on either side of its path; besides which, the path itself might be already curving to the N. W. To cross the path to the N. W would, therefore, be very dangerous, if not impracticable; and the only available resource will be to bear round up and steer between S. W. and S., according as there may be sea-room; and if no valuable time is lost in coming to that decision, there are few cases in which this manœuvre may not be executed with impunity before the vortex comes so near as to develop its fury.

The exact course to be steered must be chosen according to circumstances; and the distance to be run off may be determined by the appearance of the sea, by the state of the barometer, and by the general feature of the storm, along with its changes of bearing to E. and N. E. as the wind veers to N. and N. W., which it will assuredly do in due time; but before this takes place the vessel will probably have been safely hauled to the wind on the port tack, and ready to proceed on her voyage when the barometer rises, and the sea becomes less turbulent.

Anomalies.—We have thus given a sketch of the general laws by which revolving storms appear to be guided, as well as of the general principles on which they may be avoided; and we have endeavored to do this with the utmost brevity, because our great object has been to awaken the seaman to the extreme importance of the subject, and to show the nature of the resources which prudence and foresight will place in his hands. But it is our duty to warn him that he must acquire a much more efficient knowledge than can be gathered from this little abstract of the leading phenomena which distinguish these storms; and he must also study their various anomalies and exceptions, for they have been known suddenly to intermit, and even to back round again in a contrary direction to their usual course; and sometimes they have been followed by a second storm, leaving a narrow intermediate space between the two circular areas, where a vessel has been alternately affected by each of them.

In conclusion, we earnestly call upon every mariner to keep a full register of the circumstances attendant on any of these storms with which he may come in contact; stating in detail the premonitory appearances—the quarter-hourly fluctuations of the barometer—the time of every change of wind—the conditions of the sea, the swell, and the weather—the measures to which he has had recourse, such as shortening or setting sail, altering the course, &c., as well as the reasons for their adoption; and finally, we would urge him to publish those accounts, or to transmit them to some proper quarter, for the information of others.

THE WEATHER.

FAMILIAR as the practical use of weather-glasses is, at sea, as well as on land, only those who have long watched their indications, and compared them carefully, are really able to conclude more than that the rising glass* usually foretells less wind or rain; a falling barometer more rain or wind, or both; a high one fine weather, and a low one the contrary. But, useful as these general conclusions are, in most cases, they are sometimes erroneous, and then remarks may be rather hastily made, tending to discourage the inexperienced.

By attention to the following observations (the results of many years' practice and many years' experience), any one, not accustomed to use a barometer, may do so without difficulty.

The barometer shows whether the air is getting lighter or heavier, or is remaining in the same state. The quicksilver falls as the air becomes lighter, rises as it becomes heavier, and remains at rest in the glass tube while the air is unchanged in weight. Air presses on everything within about forty miles of the world's surface, like a much lighter ocean, at the bottom of which we live, not feeling its weight because our bodies are full of air,† but feeling its currents, the winds. Toward any place from which the air has been drawn by suction,‡ air presses with a force or weight of nearly 15lbs. on a square inch of surface. Such a pressure holds the limpet to the rock when, by contracting itself, the fish has made a place without air‖ under its shell. Another familiar instance is that of the fly, which walks on the ceiling with its feet. The barometer tube, emptied of air, and filled with pure mercury, is turned down into a cup or cistern containing the same fluid, which, feeling the weight of air, is so pressed by it as to balance a column of about thirty inches (more or less) in the tube, where no air presses on the top of the column.

If a long pipe, closed at one end only, were emptied of air, filled with water, the open end kept in water and the pipe held upright, the water would rise in it more than thirty feet. In this way water barometers have been made. A proof of this effect is shown by any well with a pump, up which, as is commonly known, the water will rise nearly thirty feet, which is, in fact, the pressure of air.

It is not from the point at which the mercury may stand that we are alone to form a judgment of the state of the weather, but from its rising or falling, and from the movements of immediately preceding days as well as hours, keeping in mind effects of change of direction, and dryness or moisture, as well as alteration of force or strength of wind.

In this part of the world, toward the higher latitudes, the quicksilver ranges, or rises and falls, nearly three inches—namely, between about thirty inches and nine tenths (30.9) and less than twenty-eight inches (28.0), on extraordinary occasions; but the usual range is from about thirty inches and a half (30.5) to about twenty-nine inches (29.0). Near the line, or in equatorial places, the range is but a few tenths, except in storms, when it sometimes falls to twenty-seven inches.

The sliding scale (vernier) divided the tenths into ten parts each, or hundredths of an inch. The number of divisions on the vernier exceeds that in an equal space of the fixed scale by one.

By a thermometer the weight of air is not shown. No air is within the tube—none can get in—but the bulb of the tube is full of mercury, which contracts by cold and swells by heat, according to which effect the thread of metal in the small tube is drawn down or pushed up so many degrees, and thus shows the temperature.§

If a thermometer have a piece of linen round the bulb, wetted enough to keep it damp, by a thread or wick, dipping into a cup of water, it will show less heat than a dry one, in proportion to the dryness of the air and quickness of drying.¶ In very damp weather, with or before rain, fog, or dew, two such thermometers will be nearly alike.

For ascertaining the dryness or moisture of air, the readiest and surest method is the comparison of two thermometers, one dry, the other just moistened and kept so. Cooled by evaporation as much as the state of the air admits, the moist (or wet) bulb thermometer shows a temperature nearly equal to that of the other one, when the atmosphere is extremely damp or moist; but lower at other times, in proportion to the dryness of air, and consequent evaporation—as far as twelve or fifteen degrees in this

* Glass, barometer, column, mercury, quicksilver, or hand.
† Or atmosphere, or the atmospheric fluid which we breathe.
‡ Or exhaustion.
‖ A vacuum.
§ Thirty-two degrees is the point at which water begins to freeze, or ice to thaw.
¶ Evaporation.

climate, twenty, or even more, elsewhere. From four to eight degrees of difference is usual in England, and about seven is considered healthy for inhabited rooms.

The thermometer fixed to a barometer, intended to be used only as a weather-glass, shows the temperature of air about it nearly, but does not show the temperature of mercury within exactly. It does so, however, near enough for ordinary practical purposes, provided that no sun, nor fire, nor lamp heat, is allowed to act on the instrument partially.

The mercury in the cistern and tube, being affected by cold or heat, makes it advisable to consider this when endeavoring to foretell coming weather by the length of the column.

Briefly, the barometer shows weight or pressure of the air; the thermometer, heat and cold, or temperature; and the wet thermometer, compared with a dry one, the degree of moisture or dampness.*

It should always be remembered that the state of the air foretells coming weather, rather than shows the weather that is present—an invaluable fact, too often overlooked, that the longer the time between the signs and the change foretold by them, the longer such altered weather will last; and, on the contrary, the less the time between a warning and a change, the shorter will be the continuance of such foretold weather.

To know the state of the air, not only barometers and thermometers should be watched, but the appearances of the sky should be vigilantly noticed.

If the barometer has been about its ordinary height, say near thirty inches (at the sea level),† and is steady, or rising, while the thermometer falls, and dampness becomes less, Northwesterly, Northerly, or Northeasterly wind, or less wind, less rain, or snow, may be expected.

On the contrary, if a fall takes place with a rising thermometer and increased dampness, wind and rain may be expected from the Southeastward, Southward, or Southwestward.

A fall with a low thermometer foretells snow.

Exceptions to these rules occur when a Northeasterly wind, with wet (rain, hail, or snow) is impending, before which the barometer often rises (on account of the direction of the coming wind alone) and deceives persons who, from that sign only (the rising), expect fair weather.

When the barometer is rather below its ordinary height, say down to near twenty-nine and one half inches (at the sea level), a rise foretells less wind, or a change in its direction toward the Northward, or less wet; but when it has been very low, about twenty-nine inches, the first rising usually precedes or indicates strong wind; at times heavy squalls from the Northwestward, Northward, or Northeastward—after which violence a gradually rising glass foretells improving weather if the thermometer falls; but, if the warmth continue, probably the wind will back (shift against the sun's course), and more Southerly or Southwesterly wind will follow, especially if the barometer rise is sudden.

The most dangerous shifts of wind, or the heaviest Northerly gales, happen soon after the barometer first rises from a very low point; or, if the wind veers gradually at some time afterward.

Indications of approaching changes of weather, and the direction and force of winds, are shown less by the height of the barometer than by its falling or rising. Nevertheless, a height of more than thirty (30.0) inches (at the level of the sea) is indicative of fine weather and moderate winds, except from E. to N. occasionally.

The barometer is said to be falling when the mercury in the tube is sinking, at which time its upper surface is sometimes concave or hollow; or when the hand (see note on next page) moves to the left. The barometer is rising when the mercurial column is lengthening, its upper surface being convex or rounded, or when the hand moves to the right (see note on next page).

A rapid rise of the barometer indicates unsettled weather; a slow movement the contrary; as likewise a steady barometer, which, when continued, and with dryness, foretells very fine weather.

A rapid and considerable fall is a sign of stormy weather and rain (or snow). Alternate rising and sinking indicate unsettled and threatening weather.

The greatest depressions of the barometer are with gales from S. E., S., or S. W.; the greatest elevations, with wind from N. W., N., or N. E., or with calm.

Though the barometer generally falls with a Southerly and rises with a Northerly wind

* The two thus combined make an hygrometer; for which some kinds of hair, grass, or seaweed, may be a makeshift.

† It differs, or stands lower, about a tenth of an inch for each hundred feet of height directly upward, or vertically, above the sea; its average height being 29.94 inches at the mean sea level in England. Allowances must, therefore, be made for barometers on high land or in buildings.

the contrary sometimes occurs; in which cases the Southerly wind is usually dry, with fine weather, or the Northerly wind is violent and accompanied by rain, snow, or hail; perhaps with lightning.

When the barometer sinks considerably, much wind, rain (perhaps with hail), or snow, will follow, with or without lightning. The wind will be from the Northward, if the thermometer is low (for the season)—from the Southward, when the thermometer is high. Occasionally a low glass is followed or attended by lightning only, while a storm is beyond the horizon.

A sudden fall of the barometer, with a Westerly wind, is sometimes followed by a violent storm from N. W., or N., or N. E.

If a gale sets in from the E. or S. E., and the wind veers by the S., the barometer will continue falling until the wind is near a marked change, when a lull *may* occur; after which the gale will soon be renewed, perhaps suddenly and violently, and the veering of the wind toward the N. W., N., or N. E., will be indicated by the rising of the barometer with a fall of the thermometer.

Three causes (at least)* appear to affect a barometer:

1. The direction of the wind—the N. E. wind tending to raise it most—the S. W. to lower it the most; and winds from points of the compass between them proportionally as they are nearer one or the other extreme point.

N. E. and S. W. may therefore be called the wind's extreme bearings (rather than poles).

The range, or difference of height shown, due to change of direction only, from one of those bearings to the other (supposing strength or force, and moisture remain the same), amounts, in these latitudes, to about half an inch (as read off).

2. The amount—taken by itself—of vapor, moisture, wet, rain, or snow, in the wind, or current of air (direction and strength of wind remaining the same), seems to cause a change amounting, in an extreme case, to about half an inch.

3. The strength or force alone of wind, from any quarter (moisture and direction being unchanged), is preceded or foretold by a fall or rise, according as the strength will be greater or less, ranging, in an extreme case, to more than two inches.

Hence, supposing the three causes to act together—in extreme cases—the height would vary from near thirty-one inches (30.9) to about twenty-seven inches (27.0), which has happened, though rarely (and even in tropical latitudes).

In general, the three causes act much less strongly, and are less in accord; so that ordinary varieties of weather occur much more frequently than extreme changes.

Another general rule requires attention: which is, that the wind usually appears to veer, shift, or go round with the sun (right-handed, or from left to right),† and that when it does not do so, or backs, more wind or bad weather may be expected instead of improvement.

It is not by any means intended to discourage attention to what is called "weather wisdom." On the contrary, every prudent person will combine observation of the elements with such indications as he may obtain from instruments; and will find that the more accurately the two sources of foreknowledge are compared and combined, the more satisfactory their results will prove.

A barometer begins to rise considerably before the conclusion of a gale, sometimes even at its commencement. Although it falls lowest before high winds, it frequently sinks very much before heavy rain. The barometer falls, but not always, on the approach of thunder and lightning.‡ Before and during the early part of settled weather it usually stands high and is stationary, the air being dry.

Instances of fine weather with a low glass occur, however, rarely, but they are always preludes to a duration of wind or rain, if not both.

After very warm or calm weather, a storm or squall with rain, may follow; likewise at any time when the atmosphere is heated much above the usual temperature of the season.

Allowance should invariably be made for the previous state of the glasses during some days, as well as some hours, because their indications may be affected by distant causes, or by changes close at hand. Some of these changes may occur at a greater or less distance, influencing neighboring regions, but not visible to each observer whose barometer feels their effect.

There may be heavy rains or violent winds beyond the horizon and the view of an observer, by which his instruments may be affected considerably, though no particular change of weather occurs in his immediate locality.

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* Electrical effects are yet uncertain.

† With watch-hands in the Northern hemisphere, but the contrary in South latitude. This, however, is only apparent; the wind is actually circulating in a contrary direction.

‡ Thunder-clouds rising from Northeastward, against the wind, do not usually cause a fall of the barometer.

It may be repeated that the longer a change of wind or weather is foretold before it takes place, the longer the presaged weather will last, and, conversely, the shorter the warning, the less time whatever causes the warning, whether wind or a fall of rain or snow, will continue.

Sometimes severe weather from the Southward, not lasting long, may cause no great fall, because followed by a duration of wind from the Northward, and, at times, the barometer may fall with Northerly winds and fine weather, apparently against these rules, because a continuance of Southerly wind is about to follow. By such changes as these one may be misled, and calamity may be the consequence if not duly forewarned.

A few of the more marked signs of weather, useful alike to seamen, farmer, and gardener, are the following:—

Whether clear or cloudy, a rosy sky at sunset presages fine weather; a red sky in the morning, bad weather or much wind (perhaps rain); a gray sky in the morning, fine weather; a high dawn, wind; a low dawn, fair weather.*

Soft-looking or delicate clouds foretell fine weather, with moderate or light breezes; hard-edged, oily-looking clouds, wind. A dark, gloomy blue sky is windy; but a light, bright blue sky indicates fine weather. Generally, the softer clouds look, the less wind (but perhaps more rain) may be expected; and the harder, more "greasy," rolled, tufted, or ragged, the stronger the coming wind will prove. Also, a bright yellow sky at sunset presages wind; a pale yellow, wet; and thus, by the prevalence of the red, yellow, or gray tints, the coming weather may be foretold very nearly; indeed, if aided by instruments, almost exactly.

Small, inky-looking clouds foretell rain; light scud clouds, driving across heavy masses, show wind and rain; but, if alone, may indicate wind only.

High upper clouds, crossing the sun, moon, or stars, in a direction different from that of the lower clouds, or the wind then felt below, foretell a change of wind.†

After fine, clear weather, the first signs in the sky of a coming change are usually light streaks, curls, wisps, or mottled patches of white distant cloud, which increase, and are followed by an overcasting of murky vapor, that grows into cloudiness. This appearance, more or less oily, or watery, as wind or rain will prevail, is an infallible sign.

Usually, the higher and more distant such clouds seem to be, the more gradual, but general, the coming change of weather will prove.

Light, delicate, quiet tints or colors, with soft, undefined forms of clouds, indicate and accompany fine weather; but gaudy or unusual hues, with hard, definitely-outlined clouds, foretell rain, and probably strong wind.

Misty clouds, forming or hanging on heights, show wind or rain coming if they remain, increase, or descend. If they rise or disperse, the weather will improve or become fine.

Dew is an indication of fine weather; so is fog. Neither of these two formations occurs under an overcast sky, or when there is much wind. One sees fog occasionally rolled away, as it were, by wind, but seldom or never formed while it is blowing.

Remarkable clearness of atmosphere near the horizon, distant objects, such as hills, unusually visible, or raised (by refraction),‡ and what is called "a good hearing day," may be mentioned among the signs of wet, if not wind, to be expected.

More than usual twinkling of the stars, indistinctness or apparent multiplication of the moon's horns, haloes, "wind dogs,"‖ and the rainbow, are more or less significant of increasing wind, if not approaching rain, with or without wind.

Near land, in sheltered harbors, in valleys or over low ground, there is usually a marked diminution of wind during part of the night, and a dispersion of clouds. At such times, an eye on an overlooking height may see an extended body of vapor below (rendered visible by the cooling of night), which seems to check the wind.

Lastly, the dryness or dampness of the air, and its temperature (for the season), should always be considered, with other indications of change or continuance of wind and weather.

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* A "high dawn" is when the first indications of daylight are seen above a bank of clouds. A "low dawn" is when the day breaks on or near the horizon, the first streaks of light being very low down.

† In the tropics, or regions of trade-winds, there is generally an upper or counter current of air, with very light clouds, which is not an indication of any approaching change. In middle latitudes such upper currents are *not so* frequent (or evident?) except before a change of weather.

‡ Much refraction is a sign of Easterly wind.

‖ Fragments or pieces (as it were) of rainbows (sometimes called "wind-galls") seen on detached clouds.

GENERAL DESCRIPTION OF THE ISLAND AND BANKS OF NEWFOUNDLAND.*

The Island of Newfoundland.

THE ISLAND OF NEWFOUNDLAND is situated on the Eastern side, and directly in front of the Gulf and River St. Lawrence, its Northern part being separated from the coast of Labrador by the Straits of Belle Isle; and its Southwestern extremity from Breton Island and Nova Scotia, by the great entrance into the Gulf. Its length, from Cape Race to Cape Norman, is nearly five and a half degrees; and its breadth from Cape Spear to Cape Anguille, about five degrees thirteen miles; being very narrow at the Northward, but becoming wide as you approach Southerly; its extremes lie between the latitudes of 46° 40′ and 51° 40′, and the longitudes of 52° 25′ and 59° 23′ W. The whole circuit of the island is indented with inlets and bays, many of which are extensive, commodious, and well-sheltered, where vessels ride in perfect security. Into these bays and harbors numerous rivulets continually run, which, besides the fine purity of their water, afford abundance of trout and other fish. Most of their harbors have complete anchorages, with clear and good channels into them, so that they can be navigated at all times without the assistance of a pilot; they are frequently situated so near to one another, that in many places they form a succession of harbors, but they are not all inhabited. The towns and villages are in general to be found in the larger branches only, where the situation and soil are most convenient; the inhabitants, therefore, are not numerous, and the settlements but small.

Great Bank of Newfoundland.

THE GREAT BANK OF NEWFOUNDLAND is to the Eastward of the island, and extends from about the latitude of 42° N. to 50° or upward, but recent observations seem to prove that its Southern extent does not exceed the parallel of 42° 50′ N. Its form, like those of the other banks, is irregular and not easily ascertained or defined; but about the latitude of 45°, its breadth is nearly four degrees. To the Northward and Southward it narrows almost to a point, and seems insensibly to drop into very deep water. When entering upon the Great Bank, you change the soundings from sixty to thirty, thirty-seven, forty-four, forty-five, and sixty fathoms; and as you advance toward the Whale, you will have sixty to sixty-seven fathoms. On the Western side of the Great Bank, and to the Southward of the Island of Newfoundland and Nova Scotia, a chain of banks extends almost two degrees from the land. These are called Green Bank, St. Peter's Bank, Artimon Bank, Banquereau Bank, Mesaine Bank, Canso Bank off Cape Canso, and Sable Island Bank. All these have soundings over them of various depths, from twenty to seventy fathoms, admirably situated, in dark weather, to warn the mariner of his approach toward land.

Outer or False Bank.

THE OUTER OR FALSE BANK, called also the *Flemish Cap.*—This is a patch of rising ground lying two degrees to the Eastward of the Edge of the Great Bank, in latitude 46° 50′ and longitude 45°. Its length is supposed to be about ninety miles, and breadth fifty miles. On it are from one hundred to one hundred and fifty-eight fathoms. Between it and the Eastern edge of the Great Bank is much deeper water, the bottom being very fine sand and ooze, which will hardly stick to the lead. As you enter upon the Great Bank you will have fine whitish sand, speckled black. These banks are frequently enveloped in most horrid fogs, which, from the middle of spring to December, have been known to last eight and ten days successively. At such times they are often so thick that you will not be able to see any object at ten fathoms' distance. A continual drizzling rain is dropping from your sails and rigging, a general calm prevails, and sometimes attended with a considerable swell of the sea, so that you are constantly in fear of running foul of some vessel, or being drifted by the currents upon some danger, which, from the total inability of discovering, you will have great difficulty to avoid. Added to this, the currents which surround the Island of Newfoundland are frequently so violent and so irregular, sometimes driven toward the shore, and sometimes toward the sea, that the greatest caution will always be found necessary, while the known current coming from the Northern regions, sweeps along the shores of Labrador, and in the spring detaches immense icebergs, which float to the Southward, and become exceedingly dangerous, especially in foggy weather. Some of these masses will frequently be grounded in forty or fifty fathoms water, and others will be met with farther out to seaward, at the

* E. & G. W. BLUNT have published a CHART of the Bank of the Coast of Newfoundland, Gut of Canso, and Gulf of St. Lawrence, from the Admiralty and French Surveys.

distance of one hundred and twenty-five or one hundred and thirty leagues from the land. Fortunately, these formidable objects may generally be discovered even in dark weather, by a white and bright appearance on the sky above them, and also by the roar of the waters breaking against them; they also may be apprehended by the intense coldness they diffuse to a great distance around them. They continue and are met with sometimes every month in the year. Your approach toward the banks may be known by the numerous sea-fowls which will attend you, as roches, malimauks, and divers. These latter are seldom found more than thirty leagues off the banks. Malimauks and others are occasionally seen all across the Atlantic, but in the vicinity of the banks they become numerous.

The following directions are translated from the report of a recent survey of the Banks of Newfoundland by the French:

"The quality of the bottom varies greatly; but we will remark, that on the Great Bank of Newfoundland the bottom is generally of sand, or sand mixed with gravel: seldom of pebbles.

"The Eastern approach is a fine white or whitish sand, often brilliant. In the deep places which separate the banks, and more particularly in the Whale's Hole, the muddy bottom which is found has a fetid smell.

"The currents on the Great Bank of Newfoundland have a variable direction. The wind is not the sole cause of them. It is not rare for the current to be against the wind. We think that the tide has also some influence; for we have remarked, while at anchor, that the direction of the current varied as well as the velocity. Veracious fishermen have assured us, that the current daily made the round of the compass. However, we can say with a certainty which results from what we have seen and discovered during our navigation on these coasts, that most frequently beyond the meridian of Cape Race, the current runs to the Westward; that to the North as well as to the South of the Great Bank of Newfoundland, and on the Eastern approach, its direction varies from E. S. E. to S. S. E., and most generally is between these points. The velocity, which is seldom below eight or ten miles in twenty-four hours, increases sometimes to twenty-four or thirty miles.

"We should inform navigators that on the outside approaches of all the banks, and principally on the Southern approach of the Great Bank, the currents boil and form eddies in such a manner that a vessel becalmed, or with a light wind, cannot estimate their course with exactness.

"The courses on the parallels between 46° and 48° of latitude are the best for crossing the Great Bank of Newfoundland, and arriving at Green Bank and St. Peter's Bank. When these are reached, if you are bound to St. Peter's, in foggy weather, you must keep on the Northern side of St. Peter's Bank and wait a favorable opportunity of reaching land.

"By sounding frequently, the position of the vessel will be known well enough to arrive at the islands of St. Pierre and Miquelon."

Bertel Rock. BERTEL ROCK, of eight fathoms, is in lat. 44° 41′ N., long. 49° 40′ W.

The Virgin, or Cape Race Rocks. THE VIRGIN, or CAPE RACE ROCKS, are extremely dangerous. They extend in an irregular chain or cluster S. W. by W. and N. E. by E. eight hundred yards, the breadth varying from two to three hundred yards. The least water on a white rock is four and a half fathoms, with from five to six and a half fathoms, about one hundred yards all around it; the bottom distinctly visible. Toward the extremities of the shoal, the soundings are from seven to nine fathoms, on detached rocks, with deep water between them, the current setting a mile an hour to the W. S. W. with a confused cross-swell to the S. E. S., S. W., W., and W. N. W. of the shoal the water deepens gradually to thirty fathoms, half a mile distant; to the N. W., N., and N. E., one third of a mile; and to the E. N. E., E., and E. S. E., a mile.

The bank upon which the shoal is situated extends E. by N. and W. by S. four and one fourth miles; and two and three fourths miles across its broadest part, with regular soundings of from twenty-eight to thirty fathoms, until they suddenly deepen on its outer edge to thirty-nine and forty-three fathoms.

The bottom is seen, and large patches of sea-weed on the sand around them. Over them the sea breaks so violently as to make it unsafe to pass in a gale. Lat. 46° 26′ 15″ N., long. 50° 57′ 30″ W.

A Shoal. A SHOAL of twenty-one feet is said to have been found by Capt. Ryder, of Provincetown, Mass., in lat. 56° 30″. It is a rock between one and two hundred feet surface, about fifty miles E. of the Virgin Rocks.—(See the Chart.)

EAST COAST OF NEWFOUNDLAND.

FROM CAPE RACE TO ST. JOHN'S HARBOR.

Variation 30° 40′ *West*, 1863.

CAPE RACE is the S. E. point of Newfoundland. It is table land, moderately high. Near it is a black rock, and several smaller ones around it. *Cape Race.*

There is a revolving white light on Cape Race, which revolves every half minute; it will be visible to seaward from N. E. by E. round by the S. E. and S. to W. The light is elevated one hundred and eighty feet above mean water level of the sea, and may be seen in clear weather seventeen miles from a ship's deck. The tower is striped red and white vertically. It stands close to the old beacon, which has been reduced in height. The light-house is in lat. 46° 39′ 12″ N., long. 53° 2′ 38″ W. *Revolving Light.*

ROCK OFF CAPE RACE.—Cripple Rock, of fifteen feet, is nearly W. S. W. one and six tenths miles from Cape Race light, it is half a mile from the nearest land; Cape Pine light, open of Mistaken Point, carries you outside of it. *Rock.*

On Cape Race there is a beacon, painted white; the ground on which it stands is one hundred and forty feet above the sea. *Beacon.*

E. S. E. from Cape Race is a fishing-bank over which are from seventeen to twenty-five fathoms water. It is named the New Bank, and is about five miles long and two miles broad.

From Cape Race to Cape Ballard the course is N. E. by E., distant eight and a half miles. About one mile Southward of Cape Ballard is Chain Cove Head, appearing high and dark. Between the points is a cove, and to the Westward of Chain Cove Head is Chain Cove, having a black rock above water lying before it.

RENOWES.—About three fourths of a league N. E. from Cape Ballard lie some small rocks, off Small Point; and three and a half miles beyond Small Point are the Renowes Rocks. They are moderately high and bold too, being distant from the land about one mile. One mile and three fourths to the Northward of these lies Renowes Island, situated near the main land, and about one mile to the Southward of the entrance of Renowes Harbor, which is but an indifferent place of shelter, with a depth of water fifteen feet. To sail into it you must keep the North shore on board, for several rocks lie scattered about its entrance, and S. E. winds commonly send in a very rough sea. *Renowes.*

FERMOSE.—Near three miles farther North is Fermose or Fermouse Harbor, and between them is Bear's Cove, off which a sunken rock lies a cable's length from the shore. There is no danger in sailing into Fermose Harbor, though the entrance is narrow. Just within it on the Northern side, is a small cove, where a fishery is carried on, but the anchorage is indifferent. Farther in is Admiral's Cove, where merchant vessels ride landlocked in seven and eight fathoms; and one mile within that is Vice-Admiral's Cove. Large ships anchor on its South side in twelve and fifteen fathoms, muddy ground, and very convenient for both wood and water. On the same side, farther in is Sheep's Head Cove, directly off which, near the middle of the channel, is a bank with only nine feet, constituting the only known danger within this harbor. *Fermose.*

From Fermose Harbor, about one mile N. E. by E. is Bald Head. N. by E. from which, one mile farther, is Black Head.

AQUAFORT.—From Black Head to the entrance of Aquafort Harbor the course is N. by W., distant one mile, at the mouth of which is a rock above water. To the Northward of this rock is the passage in, having fifteen fathoms water. The harbor runs in W. N. W. about three miles, becoming narrow as you advance. Here you have four fathoms water. Within the narrows, on the Northern shore, is a little cove, where vessels may heave down, the shore being steep. To sail up, give the stony beach on the North shore a berth, it being shoal, except at the point of the narrows, where it is bold to. *Aquafort.*

FERRYLAND HARBOR is to the Northward; and its entrance is between Ferryland Head and Bois Island, being little more than half a cable's length wide. Ferryland Head has two rocks near it called the Hare's Ears. When you have passed these and are within Bois Island, it becomes wider, having good anchorage, with eight and ten fathoms, but Northeast winds send in a heavy sea over the lower rocks, which run from Bois Island to the main. *Ferryland Harbor.*

From Bois Island to Goose Island the course is N. N. E. ¾ E., distant half a mile; and from Goose to Stone Island the course N. N. E. ½ N., distant half a mile.

CAPLIN BAY.—Two and a half miles from Goose Island is Caplin Bay, running in N. W. by N. There is a passage into it on either side of Goose Island. To the Northward of Goose, and between it and Stone Island, there is no danger, the islands being bold to; but in passing between it and the Island of Bois, take care to keep the point of Ferryland Head open to the Eastward of Bois; by which means you will avoid a sunken rock, being only two fathoms water over it. This rock lies nearly midway between Goose Island and Cold East Point; and having passed this rock, no other *Caplin Bay.*

danger will be found in sailing up the bay to the best anchorage, which is abreast of a cove on the port shore, and half a mile within Scogin's Head, with sixteen fathoms water.

From Ferryland Head to Cape Broyle, the course is nearly N. N. E. distant two and three fourths miles. Cape Broyle is high land, making somewhat in the form of a saddle. South of the North part of the Cape, three fourths of a mile, lies the Old Harry Rock; over which are only three fathoms water, though between the main and it are twenty fathoms. E. N. E. of the cape, distant three fourths of a mile, are the Horse Rocks, having from seven to fourteen fathoms over them. The mark for these rocks is a white house on Ferryland Downs open with Stone Islands; and the head of Cape Broyle Harbor open will lead directly upon them. In stormy weather the sea breaks very high over them.

Cape Broyle Harbor. CAPE BROYLE HARBOR runs in about four miles between Cape Broyle and Brigus Head, their distance from each other being one mile and a half. Within the entrance, on the North side is Admiral's Cove, where you may anchor in twelve fathoms water, good ground, but exposed to the S. E. The best anchorage will be found above the Narrows, in seven fathoms. The only danger in the way is the Saturday's Ledge, which lies about one and a half cables' length outside of the Narrows, on the North shore. Bring the Saddle of Brigus Head open or the point of Admiral's Cove, and you will clear it; and after you get beyond the Narrows anchor in seven fathoms, good ground, very convenient for both wood and water.

Brigus. BRIGUS.—This is a small cove, or harbor, a little to the Northward of Brigus Head; but it is only fit for boats.

Four and a half miles from Cape Broyle is Cape Neddick, a kind of table land moderately elevated and steep to. From Cape Neddick to Baline Head is one mile and a half. One fourth of a mile to the Northward of this is Baline Cove, fit only for boats. The outer part of Great Island is about two and a half miles N. E. by E. ½ E. from Cape Neddick; and from Baline Head to Spear Island, the course is N. N. E. ½ E., distant one mile. Within this island is a fishery, but the anchorage is unsafe, and the bottom rocky. One mile to the Northward is Toad's Cove, fit only for boats; half a mile from which is Tinker's Point, the Southern boundary of Momables Bay; this place is nearly one mile deep; it is open, and its Northern point forms the Southern part of Witless Bay; about three fourths of a mile from which is Green Island; and the same distance to the Northward of Green Island is Gull Island, about a mile in length, and one fourth of a mile in breadth, the land appearing high.

Whittle Bay. WHITTLE BAY extends inward full two miles from Gull Island, but lies open to the sea; the ground is tolerably good, and the depth of water moderate; but halfway up is a ledge of rocks off the Northern shore, part of which are seen at half tide.

Bay of Bulls. BAY OF BULLS.—One mile and a fourth to the Northward of Gull Island is the Southern point of the Bay of Bulls, and hence to the Northern point called Bull Head, the course is E. N. E. ½ E. distant one mile and a fourth; between these points the bay runs up N. W. by W. nearly two miles, and then N. W. by N. one mile farther to the river head. Within this bay the riding is good, in from twenty to sixteen fathoms; and after you have passed Bread-and-Cheese Point there is a cove; off this latter point lies a sunken rock, at the distance of about half a cable's length, having passed which, the bay is free from danger, and the shores bold; run up and anchor over against John Clay's Hill, bringing it to bear N. E. by N., having twelve, thirteen, and fourteen fathoms; the merchant vessels run farther in to ten and seven fathoms.

From Cape Broyle to the Bay of Bulls, the course is N. E. by N., distant four and a half leagues. From Bull's Head to the South point of Little or Petty Harbor, from which a reef of rocks stretches out about a fourth of a mile, the course is N. E., distant eight and one fourth miles. The South point of Petty Harbor is distant from the North point two and a half miles, between which lies the bay, running in two miles; at the bottom of this is a cove and fishery. About midway between the Bay of Bulls and Little Bay, is a cavern, having an opening at its summit, through which, whenever the sea runs high, the water spouts, forming a remarkable appearance, which may be seen far off; it is therefore significantly enough named the Spout.

From the N. or Lady Point of Little Harbor, Cape Spear bears N. E., distant two and one fourth miles; it has a low and ragged appearance, and is the Easternmost part of Newfoundland, and lies in latitude 47° 30′ 53″ N., and in longitude 52° 39′ 30″ W. Vessels from the Eastward, upon getting into soundings, and bound for St. John's, generally steer for this point. Between the cape and the entrance of St. John's are three bays; the first is called Cape Bay, and lies between Cape Spear and Black Head; the second is called Deadman's Bay, and lies between Black Head and Small Point; and the third is called Freshwater Bay, and lies between Small Point and Fort Amherst.

Light. There is a light-house on Cape Spear, containing a revolving light, elevated two hundred and seventy-five feet above the level of the sea. The time of revolution one minute.

ST. JOHN'S HARBOR is one of the principal places in Newfoundland, being the seat of government; and although its entrance is narrow, its harbor is excellent, and its situation readily known, both by the block-house built on the Signal Hill, at the North side, and Fort Amherst, on which there is a fixed light, on its South head or point of entrance. The channel, from point to point, is only three hundred and sixty fathoms wide; but it gets wider just within the points than between them, decreasing again as you approach the Chain Rock, for from the latter to the Pancake Rock the distance is only ninety-five fathoms; these are rocks, both being above water, and steep to; Chain is the Northern rock, and Pancake Rock lies on the South side of the channel. *St. John's Harbor.* *Light.*

In approaching the Harbor of St. John's with a large ship, care must be taken to avoid the Vestal Rock, which lies about fifty fathoms off the Southern or Fort Amherst Point: over this rock are twenty-five feet water; the marks for it are Fort William, or the Old Garrison, just open of the South head; and the outer Washball Rock open to the Eastward of the Cuckold's Head; these latter rocks lie close to the Northern point of the harbor, and are always above water, being steep to, and therefore not dangerous. The course is N. W. by W., the shores continuing bold until you get near the Pancake, then give the South side a small berth, continue the same course, or rather more inclined to the Westward, keeping Fort Amherst flag-staff open to the Northward of Frederick's Battery flag-staff; you will by these means avoid the Prosser, a rock on the port side, running off the end of another rock, formed like a saddle, with eighteen feet water in the hollow, and only five on its outside; yet it is steep to, having not less than five fathoms close to it; so soon as you are within, and have passed the Prosser Rock, you may steer up as you please, both shores being clear of dangers, and anchor in from four to ten fathoms water, on a bottom of mud, and lying quite land-locked.

There are two fixed red lights, one placed on the custom-house roof, fifty feet above the sea, the other near a chapel in front of the cathedral, at two hundred and twenty-five feet above the sea. The lights are two cables distant from each other, and when in line bearing N. W. ¾ W. lead through the Narrows into St. John's Harbor. *Lights.*

It is in contemplation to remove the light now at Fort Amherst, at the S. point of entrance of the harbor, to the N. head or N. point of entrance.

The winds from the S. W. to the Southward, as far as N. E. by E., blow in; all other directions of the wind either baffle or blow out of the Narrows; with the latter winds you must warp in, for the convenience of doing which, rings are fixed in the rocks on each side; the anchorage within the Narrows has from ten to sixteen fathoms, and a little before you enter the Narrows there are twenty fathoms. The tides rise six, seven, and eight feet, but very irregular, being much influenced by the winds.

Vessels bound into St. John's at night can have a pilot by hoisting a light at the yardarm.

FROM ST. JOHN'S HARBOR TO BACCALIEU ISLAND.

We recommend the mariner to be careful, lest, if a stranger to the coast, he should mistake Kitty Vitty, a small place fit only for boats, lying about one mile to the Northward of St. John's, for St. John's itself; at a distance it has the appearance of a good harbor; he will therefore observe that at Kitty Vitty's South side is a round hill, shaped like a hay-cock, standing upon Cuckold's Head; while St. John's Harbor may be distinguished by Fort Amherst, which appears white; and by the flag-staffs on the hill, over the North point of entrance; these will sufficiently denote the right entrance.

About one mile from Cuckold's Point is a small point or projection of the land; and two miles farther is Sugar Loaf Point tapering upward, and much resembling a sugarloaf. One league farther is Red Head; between Sugarloaf Point and which is Logy Bay.

TORBAY.—One mile and a half from Red Head is the South point of Torbay, which is somewhat lower than the others. Thence to Green Cove, the customary place where vessels anchor, the course is W. N. W. about two miles, where you may ride in fourteen and twelve fathoms, but it is much exposed to seaward. This bay is large, being fully a league in extent; from off its Northern point is a flat rock, where the sea breaks; a heavy swell sets from the Eastward into the bay, so that it is not a good place to lie in. *Torbay.*

From Flat Rock Point, which is low dark land, the coast runs Northerly to Red Head, a distance of two miles; and thence to Black Head, N. E. by E., two miles more; the latter bearing North, distant six and a half miles from Torbay South Point.

CAPE ST. FRANCIS.—From Black Head to Cape St. Francis the course is N. N. W., distant one league. Cape St. Francis has a white appearance, and is itself low, but above it the land rises high. A little South of the cape is Shoe Cove, a place used in bad weather for splitting and salting fish. Off the cove there is good fishing, and with Northerly, Westerly, and Southerly winds you will lie safely within the cove. *Cape St. Francis.*

About one mile and a half East of the cape lie the Brandy Rocks, in triangular position, the outermost being distant from the cape one and three fourths miles; the sea breaks over them and there is a channel between them and the cape, but too dangerous to be attempted. These rocks considerably add to the safety of Shoe Cove.

There is also another small cove, fit for boats, to the Northward of the cape, which may be used with the wind off shore.

Conception Bay. CONCEPTION BAY.—Cape St. Francis, already described, is the Southern point of Conception Bay. From Cape St. Francis to the Southern point of Baccalieu Island, which may be considered the other point or boundary of Conception Bay, the course and distance is N. N. E. ½ N. five and two thirds leagues; this is an extensive and deep bay, running to the Southwestward, and comprehending many lesser bays and inlets

Belle Isle. BELLE ISLE.—Four leagues S. W. by W. from Cape St. Francis is Belle Isle, in length five and a half miles, in breadth about two; this island is lofty, and its Eastern side is near three miles off the main; there is on this side a beach, to the Southward of which is good anchorage, in thirty fathoms, sandy ground; and a league farther, near the South part of the island, is also tolerable anchorage in from fifteen to thirty fathoms. At the South end of the island is a small cove, called Lanse Cove, which fishing vessels sometimes resort to, and find good shelter for five or six vessels. One mile from the South part of the island lies a rock, over which are two and a half fathoms of water. Two miles S. by W. from Lanse Cove, lies a small low island called Little Belle Isle, W. S. W. of which, distant one mile and a half, is Kelley's Island, of middling height, and about three fourths of a mile in length.

Within Belle Isle, on the main, is Portugal Cove, the anchorage within with is not deemed safe. To the Southward is Broad Cove and at the bottom of the bay is Holyrood Harbor, in depth about three miles and a half; in a cove on the West side of which is good anchorage, in eight, nine, ten, or twelve fathoms water, and room enough to moor.

Following the coast, about one mile and a half from Holyrood entrance, is Harbor Main, about one mile and a half in depth, and half a mile wide; it is an open place, but near the upper part you may anchor in from seven to ten fathoms water.

Salmon Cove. SALMON COVE.—One mile farther is Salmon Cove, the entrance to which is a mile wide; the course in is W. S. W., about two and a half miles; it then divides into two branches, one to the Westward about one mile, the other Southward one mile and a half; in either of these branches the anchorage is good, but the Southern River is considered the better one, there being no danger in entering. In the Western branch a rock lies at a small distance from the starboard shore, having on either side a passage, but the Southern one is the wider of the two.

Collier's Bay. COLLIER'S BAY.—To the Northward, near one league, lies Collier's Bay, running inward Southwesterly full two leagues; one mile and a half from the entrance of which lies a sunken rock, nearly mid-channel, on both sides of which the channel is good; this rock is visible at three quarters ebb. Two miles and a half up the bay is good anchorage in ten fathoms water, on the Eastern side and opposite a small cove; into this cove vessels may go, and ride in three and four fathoms water. Higher up the bay is another cove, at the farther distance of one mile and a half, but it is both foul and shallow. Near the head of the bay the anchorage is good in eight, nine, and ten fathoms.

Brigus Bay. BRIGUS BAY is two miles to the Northward of Collier's Bay, and seldom frequented but by small vessels, it being open, and too far up Conception Bay; it runs in from Brigus Head about one mile and a half and has anchorage in from ten to fifteen fathoms; or at the head of the bay, behind a small island on the South side, small craft may lie secure from all winds, with three and four fathoms water, and moor to the shores. The South point of Brigus Bay may be known by its peculiar ragged appearance.

Portgrave Bay. PORTGRAVE, or PORT DE GRAVE BAY, lies to the Northward of Brigus, and has within it Sheep's and Cupid's coves; the latter is on the S. side of the bay, and is a good place for two or three ships to ride in, with four, five, and six fathoms water, almost land-locked, and having not above one point open. Its North side is bold, and you may lie alongside the rocks and take in your cargoes. The shore on the Northern side is remarkably high, and called Spectacle Head. Sheep's Cove, or Ship Cove, will accommodate small vessels in four and five fathoms water, mooring head and stern, having their S. W. anchor in twenty-two fathoms, about a cable and a quarter's length from the ship.

Portgrave is about three fourths of a mile to the Westward of Ship Cove; the water within the islands is shallow, but without them the anchorage is twenty and twenty-five fathoms deep, where you will be quite exposed to Southeasterly winds. Burnt Head is the S. point of Portgrave Bay; from which two and a half miles N. E. ¼ N. lies Bay Roberts Point, the Southern point of the entrance to Roberts Bay, which is one mile and a half broad, and runs into the Southwestward five miles. One mile above Bay Roberts Point is Blow-me-down Head, which is higher than any land near it; half a mile within this is a cove.

Bay Roberts. BAY ROBERTS has no invisible danger at its entrance; you may borrow on either side or go close to the island, which lies farther in on your starboard side; having passed which, you may run on about a mile, and lie land-locked in nine or ten fathoms. Between the island and main vessels can anchor, but the ground is foul and bad; and there are two sunken rocks, one near the inner part of the island, the other above

the island and near the main. Two miles above the island is excellent anchorage, in the N. W. arm or branch of the bay, on muddy ground. Give the S. point a good berth in sailing in, as some rocks under water lie near it, and the starboard shore shoals near half a cable's length.

SPANIARD'S BAY is divided from Bay Roberts by an isthmus, or neck of land. This bay is deep and extensive but open to the Southeasterly winds. There is anchorage within it, nearly all over, especially at its head, in seven and eight fathoms water. Two leagues N. E. from Spaniard's Bay are the islands of Harbor Grace; they are distant from Cape St. Francis about six leagues, bearing E. ¼ S. To the Southward is Briant's Cove, a good place for fish, but not for shipping. There is a rock midway of the entrance. You may sail in on either side of this rock, and find good anchorage in four and five fathoms water. The ground within the rock is clean. *Spaniard's Bay.*

HARBOR GRACE.—The entrance to the harbor is to the Northward of the islands, on one of which, a mile from the main land, there is a fixed light; to the Southward, and between them and the shore, the channel is narrow and the ground is foul: the course in will be nearly W. Almost mid-channel is the Salvage Rock; no danger is outside of this rock. There is also another rock, called the Long Harry, lying near the N. shore; both these rocks are above water, and always visible. When you are within the Salvage, go no nearer the W. shore than just to open a passage on the W. side of the Long Harry, the leading mark for sailing in being the high point of the main, called Mosquito Point, just open to the Eastward of Long Harry Rock; this will carry you in with not less than twenty-two fathoms, quite up to the harbor, clear of all danger: but toward the Eastern shore, you may stand over until you bring the Western Landmark on with the Cupola of the Chapel; you will then be up to the N. side of the bar, and must take care not to open these marks, especially if the mark in the Cove at Ship's Head is open with the mark on the point of Admiral's Beach, but if you can bring the Western Landmark at the back of the Chapel on with the Cupola, before the mark at the Cove at Ship's Head comes on with the mark at the point of Admiral's Beach, then you will be in the narrows, and must not stand farther over to the Eastward than to bring those marks in one, and continue turning with these marks to the E. and W., until you bring the Eastern Landmark at the back of the Chapel on with the Cupola; then you will be within the bar, and should stand well over to the Eastward. About half-way down this harbor a broad spit of sand runs off from the Southern shore, extending full two thirds over toward the Chapel; this appears to be what Mr. Lane has called the bar; it has one and a half, two, three, and three and a half fathoms in some places over it; but there is a channel between it and the Northern shore, with four and five fathoms water; to sail through which bring Otterbury Head on with the point of the beach, at Ship's Head; this will also lead to the Northward of the island of the Harbor Grace. A white rock on the beach at the W. end of Father Ewer's House, near the Catholic Chapel, will clear the E. end of the spit; the Western post of the said Father Ewer's Gate on with the opening between the spire and the W. end of the Catholic Chapel, will clear the W. end of the spit; and the outer edge of the Long Harry on with the extreme point of the Northern shore, will clear the shoal on its Northern side. This is a very good and convenient anchorage, with room enough for a vessel to turn in or out of the Narrows; and the marks here given are very easily to be distinguished, and will clear all dangers. The Middle Mark, at the back of the Chapel on with the Cupola, and the mark at Ship's Head on with that at Admiral's Beach, leads on to the shoalest part of the bar. To the Northward of Harbor Grace is Carbonierre Island and Harbor; before you reach which is Mosquito Cove, a place between Harbor Grace and Carbonierre, little frequented, although the anchorage is good, it not being convenient for the fisheries. *Harbor Grace. Light.*

CARBONIERRE ISLAND lies about eighteen miles from Cape St. Francis: its Southern end is low land, but upon it stands a small fort, built for the defence of the fishermen. The island is bold to, so are the shores of the harbor, but off the S. W. end of the island are several rocks under water; the passage, therefore, between the island and the main, should not be attempted. On the N. side, opposite Carbonierre Island, are two small coves, where the planters live, who keep fishing-boats; the Northern of these is called Clown's Cove, fit only for boats; the other is called Crocker's Cove, and is separated only from Carbonierre Bay by a small point of land, named Crocker's Point. Off these coves are several rocks, both above and under water; therefore, in sailing either in or out of the Bay of Carbonierre, these must have a berth; and after you reach Otterbury Point you may stand in to either shore, both being bold to, until you near the head of the harbor: this is a good place for riding in. It is wide, and with water of various depths for anchoring everywhere. *Carbonierre Island.*

Two miles N. E. by N. from Carbonierre Island is Salmon Cove Head, high and steep; behind which is a cove, where abundance of salmon are caught; an island lies in the midway of the channel, but the cove is only fit for boats.

GREEN BAY.—Four or five miles farther N. is Broad Cove Head, and three and one *Green Bay.*

half miles farther is Green or Western Bay Point; off the shore, and about a mile to the Northward of Broad Cove, is anchorage in from ten to fifteen fathoms. At the entrance to Green Bay, is anchorage in fifteen and sixteen fathoms, but it would be dangerous to go far into the bay, which is quite open to the Eastward.

Five miles to the Northeastward of Green Bay is Devil's Point Cove, a place of little note, and farther on is Flamborough Head, black and steep to. There is no good place of shelter hereabout, nor from Carbonierre to the Island Baccalieu, except with the wind off shore.

Bay Verde. BAY VERDE is about half a mile to the Westward of the head, and up to the cove is three fourths of a mile; the entrance is not above a cable's length across, and vessels lie about half a cable's length from the head of the bay, in five fathoms water, having a cable fastened to the shore, and an anchor out astern. Six or seven ships can lie in this manner, but S. W. winds blowing right in, would make that a dangerous situation; it is also a bad place for either wood or water, but the great quantities of fish which resort here, occasion it to be much frequented. It is a place easily known by Baccalieu and the projecting land, called Split Point. Bay Verde Head itself will serve to point out its position, for these three heads, Bay Verde Head, Split Point, and Baccalieu Island, appear prominent bluff land, very similar to one another, as you come from the Southward; and there is no hidden danger in entering the bay.

Baccalieu Island. Revolving Light. BACCALIEU ISLAND.—On the N. point of this island there is a revolving light, showing a flash every twenty seconds: it is three hundred and eighty feet above high water. When the Southern end of the island bears S. S. W., you shut in the light when within eight miles of the island.

The Island Baccalieu is high land, nearly four miles long and one and a half broad; it is distant one mile and a half from the main, and between is a good channel. Nearly midway between its Southern point and Split Point is a sunken rock, over which, in blowing weather, the sea generally breaks, although it is six fathoms under water, and steep to all round.

From Split Point about four and a half miles is the Point of Grates, having rounded which, you will open Trinity Bay.

FROM BACCALIEU (OR BACCALOU) ISLAND TO CAPE BONAVISTA.

Trinity Bay. TRINITY BAY is, like Conception Bay, wide, extensive, and forms itself Southwestward; like that also, it contains many lesser bays and harbors within it; these will be regularly described in rotation. Point Grates is the Southeastern point of the bay; from which, distant about two miles, is Break-heart Point, and between them is a kind of bay, where boats with an off-shore wind, ride in safety. Within this bay is a ledge of rocks above water. To the Southward of Break-heart Point is Scurvy Island, and between this island and Sherwick Point is a bay running in S. S. E. about three fourths of a mile; the course from Break-heart Point to Sherwick Point is S. W. by W. three miles. Off the latter is a rock above water; this forms the Northern point of Old Perlican; vessels cannot go between the island and point, although the passage appears good and open, because the ground is altogether foul and rocky; always, therefore, run in to the Southward of the island, and when you have passed it anchor in four or five fathoms. This cannot be considered a good harbor, as the ground is bad for holding, and with the wind at N. W. you will then be obliged to buoy your cables. From Old Perlican to Salvage Point the course is W. ½ N., distant five miles. Salvage Point requires a good berth, having a reef of rocks running out from it; the point itself is low. From Salvage Point to Hants Head the course is W. by S., distant seven miles; and one mile to the Eastward of the head is Hants Harbor, fit for small craft only; two miles off which is Hants Harbor Rock, over which the sea generally breaks; bring King's Head open of the Sugarloaf, and you will clear it to the Northward. Two miles further is King's Head, and from King's Head to the Sugarloaf the course and distance is S. W. ¼ W. about three miles.

Eastward of the Sugarloaf is Sillee Cove, fit only for boats, and unsafe for vessels.

New Perlican. NEW PERLICAN.—From the Sugarloaf to the N. point of the entrance of New Perlican the bearing is S. W. ¼ W., distant two miles: and one mile farther is the harbor, small, but tolerably good, within which you may ride landlocked in from five to ten fathoms. The shores are bold to, and free from danger. The entrance is nearly two miles wide, being bounded by Smutty Nose Point on the E., and Gorlob Point on the W.; but as you advance the harbor becomes narrower, so that at the anchorage it will scarcely be half a mile broad.

Heart's Content. HEART'S CONTENT.—Three miles from New Perlican is Heart's Content, a good harbor, fit for any ship, with excellent anchorage toward the N. shore, in from eight to twelve fathoms water. One league farther is Heart's Desire, fit for boats only, and three and a half miles beyond that is Heart's Delight, another cove, adapted for small craft

only. From Heart's Delight, about three miles, is Long Point, projecting considerably into the bay, and a league farther is Witless Bay, by no means a place of safety, being too much exposed, and the bottom rocky. Between Long Point and Witless Bay are two small islands, which you leave on your port hand.

One mile from Witless Bay is Green Harbor, where vessels may anchor in from seven to ten fathoms. Three miles farther is Hope-all-a-head; two miles beyond which is New Harbor, a place of shoal water, and only fit for boats.

DILDO HARBOR.—Two and a half miles from New Harbor is Dildo Harbor, within which is very good anchorage, in a cove, at the Northern side of the entrance, in from ten to twenty fathoms water, good clean ground. Three miles thence is Chapel Bay, the mouth of which is a mile broad, and the bay about three miles deep. Here, behind a small island, about two miles in, is good anchorage in from eight to twelve fathoms. About five miles to the Northward is Collier's Bay, very similar and running nearly in the same direction to Chapel Bay. Seven miles farther is the Point of Tickle Harbor Bay, which runs inward, in a Southerly direction, full eight miles; there is no danger in the way, and though little frequented, the anchorage is safe. *Dildo Harbor.*

BAY OF BULLS.—To the Northward is the Bay of Bulls, running in a N. N. Westerly direction to within two miles of Chance River, in Placentia Bay. There is very good anchorage in various parts of this bay, in twelve and ten fathoms water, particularly on the Western side in a cove, about one mile and a half from the entrance, with from ten to fifteen fathoms, sandy ground. To the N. E. is Bull Island, and five miles farther Copper Island. Both these lie very near the shore. We now open Deer Harbor, a place extensive, and good for anchorage, but barred with many shoals. The first shoal lies midway between Tickle Point and Deer Island, having six fathoms on its shoalest part, and therefore not dangerous; but one third of a mile farther in, is a bank with only two and two and a half fathoms water; bring the point of the N. E. cove open of Shallop Cove Point, and you will go clear to the Westward in seven fathoms water. There is also another shoal lying off the point on the outside of Shallop Cope, on which are two and a half fathoms. This will be avoided by just opening the point of Deer Island with the first point on the main, within Deer Island; and after you have passed Harbor Island, you may anchor on good ground, in from ten to twenty-six fathoms. The entrance of Deer Harbor bears from the N. point of Baccalieu Island W. ½ S., distant about thirteen leagues. *Bay of Bulls.*

Full two and a half miles N. E. from the entrance to Deer Harbor is Jones' Harbor, the mouth of which is not above one fourth of a mile wide, and the channel in is, in several parts, still less. It runs in two and a half or three miles, and has good anchorage in from five to twenty-four fathoms water. To the Southward is a high and steep island, called Jones' Island; about four miles from which is Bald Head; and two miles farther Ganny Cove; its entrance is confined, being not more than one fourth of a mile wide; there is, nevertheless, good riding within it, in ten, twelve, and fifteen fathoms. About a cable's length off the N. shore, just at the entrance, lies a sunken rock, and about a mile S. S. E. from the S. point of Long Island, is another rock, by some called White Island, just appearing above water. This rock bears S. W. from Random South Head.

Random North Head lies W. by N., distant nine and a half leagues from the N. end of Baccalieu Island, about four and a half leagues N. by W. from New Perlican.

RANDOM SOUND lies to the Westward, and comprehends several arms and harbors; thus Random and Smith's sounds unite and form Random Island, the channels being narrow, long, and circuitous. At the junction of the two sounds is a small island with a bar of only two fathoms water, the passage being not a mile broad. About three leagues from Random North Head lies Hickman's Harbor, where you will find good anchorage in fifteen fathoms. Random North Head bears from Random South Head N. E. ½ E., distant three miles. When you are within the entrance of Random Sound there is a branch runs in toward the S., about one mile within which is Fox Cove, fit for boats, and two miles farther Little Heart's Ease, a similar cove, running in one fourth of a mile, then dividing into two branches; the Western one has four and five fathoms within it, but the Eastern branch is shallow and adapted for boats only. There is also an anchorage two miles farther, on the same side, in a cove with an island before it, with eight fathoms; and not far from this is another cove on the Northern side, where a vessel may ride in seven fathoms. *Random Sound.*

SMITH SOUND has generally deep water, and is, in most places, one mile wide until you get near the head. Shut-in Harbor is on the starboard side; it is nearly at the entrance, and has no safe anchorage, the ground being rocky. Three miles farther up is Pope's Harbor; this also is encumbered with rocks, a shoal lying near the middle of it. The direction of the channel is Westward about seven and a half leagues. To the Eastward of Random Island are Duck and Green Islands, both lying a considerable distance from the main; the latter is high, and may be seen as far as Trinity Harbor; it bears from Bonaventure Head S. W. ¾ S., distant about six miles; and Bonaventure Head bears from the entrance of Smith Sound E. N. E. ½ E., distant five miles. To the North- *Smith Sound.*

westward of Green Island is Anthony Island and Ireland's Eye; the latter is three and a half miles in length, and lies in a S. W. and N. E. direction, making the port side of the entrance to Smith's Sound. The Northern point of Ireland's Eye bears from Bonaventure Head, nearly S. W., distant five and a half miles.

There is a small place of anchorage, called Ryder's Harbor, formed by a little island near the main, and bearing from Green Island S. E. ¼ E., distant four miles; the passage to it is round the West end of the Point, off which are some scattered rocks, both above and under water. Within this harbor are three fathoms water, and about one fourth of a mile from Ryder's Island the N. W. arm branches off, running Westward one mile, and being about one fourth of a mile wide; here are seven fathoms and good anchorage. From Bonaventure Head to Port Bonaventure is two miles; but when you are a mile off, and to the Southward of the Head, the harbor to the Admiral's Stage will lie about N. by W.

Port Bonaventure. PORT BONAVENTURE'S best entrance is between two small islands; but you may go on either side of them in three and four fathoms water: with a leading wind there will be little danger; and when you are within, and have passed these islands, anchor in four or five fathoms. Southerly winds here send in a very heavy sea; there is, however, a secure place for boats within a point behind the Admiral's Stage, appearing like a great pond, where a hundred boats may lie, even with bad weather, in safety.

From Baccalieu North Point to Bonaventure's Head the course and distance is N. W. ¼ W. twenty-two and a half miles. Bonaventure Head is remarkably high and steep.

From Bonaventure Head to the entrance of Trinity Harbor, the course and distance is N. E. ½ N. four and three fourths miles; and from Bonaventure Head to the Horsechops E. N. E. ½ E. eight miles.

Trinity Harbor. TRINITY HARBOR is considered one of the best and largest harbors in all Newfoundland, having several arms and coves, where some hundred ships may ride landlocked. It is a place where you may safely turn in or out, being bold to on each side, and having no danger but what is visible, except when going into the S. W. arm. Where the Admiral's Stage usually is, there is a shoal, called the Muscle Bank, from which shoots off the point within the small island on the port side going in, and extends over N. N. W. about a third of the breadth of that arm. Being within that bank, which will discover itself by the color of the water, you may edge over close to the S. shore, or keep your lead going to avoid the Muscle Bank, giving it a little distance; the mark for avoiding it is the house standing over the steep perpendicular rock, situated between Tavernor's Point and Ship Cove, open of the Neddick. Keep this mark on until you are halfway over to the Neddick, then haul toward the S. W. branch, taking care to avoid the S. shore till you shut in Tavernor's Point with the Neddick, you will then go within the Muscle Bank. You may anchor in from fourteen to ten fathoms, and approach near to the stage on shore, so as to make a stage with topmasts to your stage on shore, to load or unload your ship. This will be found a most excellent harbor; for, after you are in the S. W. arm, you will perceive another branch running up to the N. W. which is continued by another to the S. W.; but there is a bar or ledge at the entrance of the S. W. arm. The N. W. arm is also a large place, having good anchorage for five hundred sail of ships. Besides the fore-mentioned arms, the main harbor turns up to the N.

Ships, being within the harbor's mouth, may safely ride in a large cove on the starboard or E. side, landlocked, on good ground; here the planters live. Over against that cove, on the port or W. side, are two other coves; the Southernmost of them is called the Vice-Admiral's Cove, very convenient for curing fish; and above, or to the Northward of that, is a large cove or arm, called Got's Cove, where there is room enough for three or four hundred sail of ships to ride, all on clear ground; there neither winds, nor sea, nor tide, can hurt you; and in this place ships may lie undisturbed until the weather becomes clear and open.

There are several other anchoring places in this harbor, with good clean ground. The bottom everywhere is tough clay, with four and five fathoms water, within two boats' length of the shore; and six, seven, eight, nine, ten, twelve, and fourteen fathoms, and in some places more, in the middle of the arms and channels. You may turn in or out readily, observing your tide, which rises about four feet, and sometimes more.

Robinhood's Bay. ROBINHOOD'S BAY.—Sherwick Head, which is the Eastern point of Trinity Harbor, forms also the Southwestern boundary of Robinhood's Bay, the entrance to which is a mile wide, and the bay extends Northward nearly two miles. Here vessels frequently ride and fish, in from seven to seventeen fathoms water. At the farther or upper end of this bay there are some spots of shallow water, but at its entrance, and between Sherwick and Fox Island points there is no danger whatever.

Salmon Cove and English Harbor. SALMON COVE and ENGLISH HARBOR lie to the Eastward of Robinhood's Bay, being only divided from it by a narrow neck of land, called Fox's Island. The former of these runs in Northerly, and is considered a good fishing place; it is clear of dangers, and has a good depth of water, from seventeen to ten and eight fathoms; the Eastern

shore is bold to, and at the farther end of the cove there is a small run of water, which extends about two miles to the Northward.

ENGLISH HARBOR is situated at the Southeastern entrance of Salmon Cove. It is a clean bay, where you may ride in four and five fathoms water. Hence the coast rounds to the Eastward to the Horsechops, a distance of more than three miles; it is all high land, steep to and without danger. To the Northeastward of Horsechops is Green Bay, open and entirely exposed to the Southward. At the Eastern part of this bay is a small sandy beach, with a rivulet of water. This place is little frequented, and is neither convenient for ships to fish or ride in. When you have passed this bay there is no sheltering cove or place until you reach Ragged and Catalina Harbors. *English Harbor.*

RAGGED HARBOR is so named from the rough and craggy appearance of the surrounding rocks, which render it unsafe for either boats or ships to enter; but for those who intend going there, we shall observe, they must go to the Northward of the reef of rocks at its entrance, running on N., until the harbor becomes quite open, then you may steer in between the Round Island near the main, and a large black rock, being the outermost of the ragged ones beforementioned; sail on until you are to the Westward of them all, or until you get the S. head of Catalina to appear between the Westernmost rock and the main, then anchor. A river of good water is at the head of the harbor. *Ragged Harbor.*

CATALINA HARBOR is nearly two miles to the Northward of Ragged Harbor, and is in the latitude of 48° 31′ 15″ N., bearing from the N. point of Baccalieu Island nearly N., distant twenty-four miles. It is a good harbor for small vessels, and may be known by a singular green island at the S. points of its entrance. On the S. side of Green Island there is a fixed light ninety-two feet above the sea. Nearly half a mile to the N. of this island are the Brandy Rocks, a ledge over which the sea frequently breaks. You may go on either side of these rocks, giving the little island a berth, or with a leading wind between the island and the main, though this passage is exceeding narrow, in four and five fathoms. Just within the entrance of the harbor is Charlton Rock or Shoal, lying near mid-channel, over which are only eight feet water. You must avoid bringing the N. point of Green Island on with Burnt Head, the S. point of the harbor, for that will carry you right upon the rock; there is a passage between the island and rock, and also between the rock and the N. shore, only steering nearer the main, about two thirds over. *Catalina Harbor.* *Light.*

LITTLE CATALINA BAY lies inward on the Northern side. From Catalina Harbor to Little Catalina, the course is about N. E. one mile and a half; and thence to the N. head of the bay E. N. E., a little Easterly, four and a half miles. When within the harbor, you may anchor close to the shore in four and five fathoms, landlocked; or to the Southward of the Little Green Island in three and a half fathoms, or by running up two miles farther obtain fresh water. In the S. W. arm or branch of the river, where there is anchorage in five fathoms, the harbor runs Westerly. Sometimes the water in this harbor will suddenly rise three or four feet, then fall again, and in certain seasons it will often do so two or three times in three or four hours. It abounds with salmon, and the herb Alexander grows luxuriantly on the Little Island. Near a small cove at the N. W. is a sort of mineral of a glittering nature, generally called Firestone; excellent willicks may be found on the rocks. *Little Catalina Bay.*

From the S. to the N. head of Catalina the course is N. E. ¾ E., distant five and a half miles, and between them are from thirteen to five fathoms water. The whole way is a kind of broken ground, and in blowing weather the sea frequently breaks high over it.

From the N. head of Catalina to Flower's Point, the course is N. N. E. ¾ E., distant two and one third miles; and one mile to the Eastward of the point lie some sunken rocks; you may go between Flower's Point and these rocks in six fathoms water, but it is more advisable to pass on the outside of them; this you will readily do by bringing Gull Island open of Spiller's Point, or by keeping the S. head of Catalina open of the N. head.

From Flower's Point to Bird's Island is two miles. Within Bird's Island is a small bay where ships can occasionally ride, in one branch which runs up toward the W., and in the other, amidst some rocks, which are above water. Bird's Island Bay extends as far as Cape l'Argent.

From Flower's Point to Cape l'Argent is three and two thirds miles. It is rather a low rocky point, having also a large rock above water lying off it.

From Cape l'Argent to Spiller's Point is one mile and a half. Between these points the leads falls into very deep water. Spiller's Point is steep and bold to, but not very high, with a rock above water near it. Over the point you may discern the high land of Port Bonavista, a great way off at sea.

From Spiller's Point to Cape Bonavista the course is N., distant almost one league. Between them is a deep bay, which might be mistaken for the harbor of Bonavista, from the head of which it is only divided by a neck of land. Two miles over, and from Red Head Bay, it is not above a musket-shot.

Hitherto the allowance made for the variation of the compass has been two points W.: which, it is presumed, will be found sufficiently near to the truth for all the purposes of navigation; but hence to the Northward it appears to have generally increased. At the capes which form Bonavista Bay, the variation in 1820 was 30° 28′ W.; at Barrow Harbor, 28° 30′ W.; and at Happy Adventure, only 28°.

FROM CAPE BONAVISTA TO CAPE FREELS (NORTH*).

Cape Bonavista. Light.

CAPE BONAVISTA is in latitude 48° 42′ N., and longitude 53° 8′ W. On it there is a revolving light of two minutes intervals, showing a red and white light alternately. It is one hundred and fifty feet above the level of the sea. Kept open with Spiller's Point, it keeps vessels clear of the rocks called the Flowers.

The cape appears from a distance of a bluish color, and is a steep rocky point, having four fathoms close to the shore. Somewhat less than three fourths of a mile N. N. E. from the extremity of the cape, lies Gull Island, which, though small, may easily be recognized, by being of moderate height, and elevated in the middle, making something like a round hat with broad green brims, and visible four or five leagues off, when the weather is clear. N. N. E. ½ E., distant three and a half miles from Gull Island, is the Old Harry Rock, having only thirteen feet water over it. From this a reef or bank extends to the N. E. nearly three miles, having several dangerous spots upon it, of only eighteen feet and three or four fathoms. The outer edge of this danger is called the Young Harry. At its Northern extremity are ten fathoms water, and a little farther off forty-five fathoms. Between the Young Harry and the middle ground of eighteen feet, are twelve, twenty, and fifty fathoms; to the Northward of the middle ground are sixty and forty fathoms; to the Eastward are nineteen and twenty fathoms; to the Southward and between it and the Old Harry, twenty-six and thirty-one fathoms. At the N. part of the Old Harry are eleven fathoms; to the Westward, thirty fathoms; to the S. W., nine fathoms; and a little farther S. W., fifty-seven fathoms. Abundance of fish are caught by the boats which frequent this bank, but it is very dangerous for shipping. The sea commonly breaks over Old Harry, unless in fine weather, and the water be very smooth; but the other part of the shoals show themselves only in, or immediately after, heavy gales on the shore.

In order to avoid the Old Harry, you should bring Gull Island on with the Green Ridge, which lies considerably inland; but you must beware, for this mark will carry you too close to the Young Harry. Vessels running along shore, to avoid these rocks, must be careful in keeping Cape Bonavista open with the Westernmost extremity of a high range of land to the Southward, called the Inner Ridge; these dangers, together with the long ledge, called the Flowers, already noticed, render it very imprudent for a mariner to attempt making land hereabout in thick or boisterous weather; indeed, at any time, the Island of Baccalieu is the best and safest landfall for the stranger that is bound to any part of Bonavista Bay.

Bonavista Bay.

BONAVISTA BAY.—This extensive bay is formed on the S. by Cape Bonavista, and on the N. by Cape Freels. These capes lie N. ¾ E. and S. ¾ W. from each other, and comprehend a distance of forty miles; between which the coast is much indented with bays and inlets of the sea, most of which are navigable, but difficult, rocky, and dangerous. The land, on the S., is generally high and mountainous, and the shores steep and ironbound; the N. side is low and marshy, from which the water runs off shoal to a considerable distance. The whole bay abounds with small islands, and is on every side encompassed with dangers. The harbors, sounds, and inlets, are deep, extensive, numerous, well sheltered, and safe; but they are generally so deeply embayed, the passages into them so intricate, and the surrounding land so similar in appearance, that few, except those to whom the navigation is familiar, ever attempt to enter them. Of those which seem to offer the best refuge to strangers, who, from necessity, should be compelled to seek a place of shelter, the following appear best calculated to suit his circumstances: Barrow Harbor, or Great Chance Harbor, on the S.; and New Harbor, or Cat Cove, on the N. side of the bay; but the extreme narrowness of the entrance to New Harbor is a great impediment, and renders Cat Cove the most to be preferred.

Port Bonavista.

PORT BONAVISTA, or Bonavista Harbor, lies within and about three and three fourths miles to the Southeastward of Cape Bonavista; and vessels intending to rendezvous there, may either pass to it between Gull Island and the cape, or between Gull Island and the Old Harry Rock, or to the Northward of the Young Harry altogether; if the former, between Gull Island and Bonavista. The passage is about three fourths of a mile wide, and both the cape and island steep to, having four fathoms water close to each side, and sixteen or eighteen fathoms mid-channel; but it will be advisable not to go too near to the Gull Island, on account of a rock under water, which lies about three

* So called to distinguish it from a cape of the same name, situated on the Southern part of Newfoundland near St. Mary's Bay.

hundred yards off the S. E. part of the island. Having passed through this channel, and finding yourself to the Westward of the cape, you will see Green Island, distant about half a mile from the cape. Large vessels commonly leave this island on their port side, in their passage to Port Bonavista, going between Green and Stone islands. The channel is full one mile and a quarter wide, and with twelve, sixteen, and eighteen fathoms water in it, and no danger whatever, except a sunken rock of three fathoms water, which lies about two hundred yards to the N. E. of Green Island; or they may go to the Westward of Stone Island, and run on suddenly until they open the points of the harbor, and having passed Moses Point, sail to the Southward of the Swerry's Rocks; these are always visible, and have no passage between them and the point. Here they may anchor in ten or eight fathoms.

The inner passage, between Cape Bonavista and Green Island is frequently attempted by small vessels. The channel is in some parts narrow, and the ground foul. About a mile to the Southeastward of Green Island is a ledge of red rocks; you may go between these and the land into Red Cove. There are six fathoms of water, and in the cove four and a half, four, and three fathoms; but the ground is all foul. There is a passage also to the Southward of these rocks, and between them and Western Head, in which are six fathoms. A little to the Eastward of Western Head there is a small rock under water. It lies about a cable's length from the shore, and the sea commonly breaks over it, but boats can go between it and the shore. To the Southward is Red Head, or Point, and farther on is Moses Point. Between these is another opening, called Bayley's Cove. You may, in case of extreme necessity, run in here and anchor, but the ground is foul and rocky throughout. There was on the N. side of this cove a stage for fishing. Moses Point is the Northern point of Bonavista Bay. This place is a very eligible situation for carrying on the fishery; but it is so open to the weather, that with Northwesterly gales, following a continuance of strong winds from seaward, the waves break right athwart of the harbor's mouth and sometimes the whole of the fishing-boats founder at their anchors, and not unfrequently many of their stages are destroyed. Vessels during the summer months commonly moor under Swerry Head in eight or ten fathoms; but even here, and in every other part of this harbor, the ground is so rocky and uneven that you will be obliged to buoy up your cable.

Black Head Bay.

BLACK HEAD BAY.—This is a wide and deep bay, comprehended between Black Head to the Eastward and Southern Head to the Westward. Black Head bears from Cape Bonavista W. S. W. ½ S., distant five and three fourths miles; Southern Head bears from Cape Bonavista W. ¾ N., distant twelve miles; and Black Head and Southern Head bear from each other E. S. E. ¾ S., and W. N. W. ¾ N., being nearly eight miles apart. On the Western side of Black Head Bay is King's Cove, distant about four miles from Southern Head. This, also, is a fishing establishment, but still more objectionable, as a place of shelter, than Bonavista, for this is directly open to seaward, and the ground is all foul.

Keels.

KEELS.—This is another establishment for the fisheries, and situated in one of the coves about midway between Southern and Western Heads. Between these two heads are four other coves; but neither Keels nor any of these coves are fit or good places for anchorage, especially with ships of burden.

From Western Head the land bends W. S. W. ½ S., and leads to numerous coves, bays, and arms of the sea, most of which have deep water and places of anchorage. We shall here enumerate the principal of these, with their respective situations; but, as many of them are too deeply embayed for general navigation, we shall not extend our directions to a minute or particular description of them all, but confine ourselves to such only as are situated in prominent parts of the bay, and are mostly fitted for general use, and commonly frequented.

We have already stated, that from Western Head the land turns W. S. Westward, and leads to Plate Cove, Indian Arm, and Southward Bay.

Plate Cove.

PLATE COVE is situated on the coast about seven and a half miles distant from Western Head. Its entrance, between Arrow Point and Plate Cove Head, is three fourths of a mile wide, whence it bends in more than a mile to the Southward. At its Eastern extremity is a run of fresh water, but the bottom is foul and rocky. It is, therefore, not much frequented.

Indian Arm.

INDIAN ARM lies about S. W. by W. from Plate Cove Head, distant three miles. It is a narrow inlet running in nearly S. W., about two miles, and terminates in a rivulet of fresh water.

Southward Bay.

SOUTHWARD BAY is separated from Indian Arm only by a narrow neck of land. This is an extensive branch of the sea. Its entrance, between Red Head and Kate's Harbor Head, is a full mile wide, with thirty, fifty, eighty, and ninety fathoms water, mid-channel. Hence it bends to the Southwestward seven and a half miles, becoming narrower as you advance, but with deep water and no danger. On the Western side there is an opening, called Hayes Cove. It lies about two miles from Kate Harbor Head.

Bacon-Bone Rock. BACON-BONE ROCK.—It will be proper here to remark, that vessels intending to seek either of these places, must be aware of the Bacon-Bone Rock, a danger of only eighteen feet water over it; this lies W. ½ N., distant one mile from Western Head, and directly in the fair way of the navigation. To avoid this danger, do not shut in Southern Head until Little Denier comes on with the outer Shag Island.

Kate Harbor. KATE HARBOR lies to the Westward of Plate Cove. Its entrance is three fourths of a mile wide, and the harbor runs in about one mile and a quarter. The depth of water is thirty-six, twenty-nine, and twenty-seven fatboms mid-channel, decreasing as you advance to the farther end. There is a rock under water off its entrance, with seven, eight, and nine fathoms round it; this lies nearer to Kate's Head, but there is a passage between them, and also a still wider channel on the Western side of the rock.

Sweet Bay. SWEET BAY.—This is another extensive inlet, lying to the Westward of Kate Harbor. Its entrance is between Cutler's Head and Chance Point, and leads also to Maidenhair Cove, and Little and Great Chance Harbors. Sweet Bay is the Easternmost inlet, which, having entered and passed Cutler's Head, which is rocky and steep to, you will see Turfpook Island; it is small and narrow. About half a mile to the S. W. of this is Woody Island, and between them a rock under water. There is a passage on either side of these, and when you get beyond Woody Island, the bay becomes about three fourths of a mile wide, with sixty fathoms water, midway. Advancing still farther, you will observe several islands in your passage. There is also a rock under water on your starboard side, three fourths of a mile beyond Woody Island. It lies abreast of a little island which is mid-channel. Farther on, is Wolf Island, between which and the main there is no passage. Off this lies Gooseberry Island; between which and Wolf Island there are thirty fathoms water, but the channel is narrow, and that on the Eastern side of Gooseberry Island is much wider. Sweet Bay here divides into two branches; that to the Eastward is called the Southwest arm, and has directly before its entrance Hunt's Island, the channel to the Eastward of which has ten, twelve, and fourteen fathoms water, and that to the Westward seven and nine fathoms. You will then see on your starboard side a small island: you may pass it on either side; and having so done, will drop into twenty-four, twenty-two, and twenty fathoms water. The head of the arm is foul and rocky. The N. W. arm is divided from the S. W. arm a little below Hunt's Island, and at the farther end of Wolf's Island is nearly a mile wide; whence it runs Southwesterly three and one fourth miles, with good depth of water, and clear of dangers. At the bottom is a sandy beach and a small rivulet.

Great Chance Harbor. GREAT CHANCE HARBOR.—This is an excellent and convenient place of anchorage, the entrance to which lies W. ¾ S., distant ten and a half miles from Western Head. Vessels sailing for this place should recollect the mark already given to avoid the Bacon-Bone Rock. Having passed this danger, you may sail on directly for the harbor; the course will be W. ½ N. until you get abreast of Chance Point. You will now guard against a sunken rock at the Southern part of the entrance, which has only sixteen feet water over it. To avoid and go clear of this danger, be careful not to shut in the Westward Mustard-bowl Island with the Eastern one; these are situated at the port side of the channel. Having passed the Eastern island, stand boldly in, approaching each side as nearly as you like, and anchor anywhere above the narrows, in from eleven to five fathoms. The ground is good and holds well. You will lie sheltered from all weather, and may procure wood and water with great facility. Chance Point and Cutler's Head are both steep to. Off the former, and directly in a line between the Southern part of Long Islands, there is a spot of ground with only seven fathoms of water; during heavy gales from the seaward this will show itself by the sea breaking over it, but in fine weather it is not dangerous. N. E. a little Northerly, distant almost one mile, is the Chance Gull Rock, steep to, and always visible. To the Westward is Deer Island, one mile and a quarter long, but narrow. There is a good channel between it and the main to Chandler's Reach.

Chandler's Reach. CHANDLER'S REACH is the channel leading to Goose Bay and Clode Sound; the course through which is W. ½ S., which, from the N. W. point of Deer Island, will take you to Connecting Point, the point of the peninsula dividing the former from the latter.

Goose Bay. GOOSE BAY runs in Southwesterly about seven and a half miles, and by keeping in mid-channel you will meet with no danger, but have forty-seven, forty, and thirty-six fathoms water, until, having passed Lubber's Hole, the depth decreases to twelve, thirteen, ten, and eight fathoms, when you will see a small island situated to the Westward of Goose Head; behind, and to the Westward of this, you may anchor in from four to seven fathoms, or farther to the Southward in five and a half fathoms. In most of these inlets you will lie perfectly safe, and entirely land-locked. Fresh water and wood are plentiful and easily obtained.

Clode Sound. CLODE SOUND is a fine branch of the sea, running in from Chandler's Reach full twenty miles. It has many good places of very good anchorage, and without any danger. Vessels may find perfect safety on the Northern shore, at Brown's Cove or farther in, at Long Cove, or Platter Cove; or on the Southern shore, at Bunyan's and Love

Coves; or, passing the Platter Rocks, and steering Westward, at Freshwater Cove. The mid-channel has all the way deep water, and there are no rocks except near the shores.

LION'S DEN.—This is an opening lying at the N. W. end of Chandler's Reach; to enter which you must sail to the Northward of the Deer and Cluster islands, and pass the narrows, which is about one third of a mile wide, and has twenty-four fathoms water in it. Having passed the entrance about one mile, there is a sunken rock, round which are four, five, and six fathoms: you may then perceive the inlet to branch off into two divisions; that to the N. W. is very narrow, and has a rocky islet at its entrance; but that which runs to the S. W. is broader, and has eleven, fourteen, and ten fathoms water in it. It runs in from the sunken rock about a mile and three fourths, and at its farther end becomes shoal, narrow, and rocky. *Lion's Den.*

THE LONG ISLANDS are four in number, having narrow channels between them, some of which are encumbered with rocks, and dangerous. The eastern island is the largest and broadest; the next to it is the longest; the two Western ones are smaller and narrower. They form the Northern boundary of the passage from Western Head to Chandler's Reach; and also the Southern boundary to Swale Tickle, and Newman's Sound. Off the Northeastern point of the largest Long Island lies a sunken rock; it is close to the land, and therefore may easily be avoided; this point bears from Western Head nearly W. by N. distant six miles. *The Long Islands.*

NEWMAN'S SOUND.—This is a large arm of the sea, running in W. by N., having at its entrance Swale Island, which is nearly four and a half miles long, and not one broad in the widest part. This divides the entrance into two channels; the Northern passage is called the Swale Tickle, and the Northern one goes by the general name of Newman's Sound. To sail from abreast of the Western Head into Swale Tickle, you must steer W. N. W. ½ W. To sail from abreast of the Bonavista Gull Island, steer W. N. W. ¾ W. twenty-nine miles, and will carry you a little to the Southward of Little Swale Island, and in the fairway of the passage; but in advancing through this channel there are several obstructions, and the passages thence into Newman's Sound are so narrow, that it will always be advisable to go to the Northward of the Great Swale Island. To do this, having rounded the Gull Island steer W. N. W. ½ W. twenty-seven or twenty-eight miles: you will then have the Sound open, and can proceed accordingly. It is a full mile and three fourths wide, and extends in nearly a N. by W. direction from the N. E. point of Swale Island eleven miles, having several places of good anchorage. Those on the Southern Shore are South Broad Cove, Minchin's Cove, and Stanford Cove. *Newman's Sound.*

SOUTH BROAD COVE is situated two miles and a half beyond the Western point of Swale Island, and is a place of great safety. The passage is to the Southwestward, and you will ride well sheltered in ten fathoms, free from any danger. There is a small island at the entrance, which you will leave on your port side. *South Broad Cove.*

MINCHIN'S COVE is to the Westward; to go to this place there is a long narrow point of land running out to the Northward, which you will round and turning Southerly, the cove will appear open: there you will lie in five fathoms, opposite a sandy beach. To the Westward is Mount Stanford, off the point of which lies a small island, reaching halfway over the passage, making the channel in this part very narrow. The best course through is to the Eastward of this island, in nine fathoms. Here an opening appears to the Eastward, called Buckley's Cove, fit for small vessels. The coast now widening to the Westward forms a broad bay with twenty, twenty-six, and twenty-seven fathoms water in it, free from any danger, and shallowing on each side toward the shores. At the Southwestern part of this is Stanford Cove, having a sandy beach the approach toward which shallows gradually. *Minchin's Cove.*

The anchorages on the Northern shore are, North Broad Cove, Great and Little Happy Adventure Coves, and Barrow Harbor. Barrow Harbor is tolerably safe, and the most convenient harbor on the S. side of Bonavista Bay; it is situated on the Southern side of the peninsula which divides Newman's Sound from Salvage Bay, and is formed by three large islands, Keat's, Goodwin's, and Richard's Islands. That part between Goodwin's island and the main is the entrance, about five hundred yards wide, and not difficult of access. The harbor is a full mile in length, the outer part is rocky and not well sheltered, but the inner part is completely landlocked, and has good holding ground. Vessels taking their departure from Gull Island, Bonavista, should steer N. W. by W. ¾ W. about twenty-two miles. But if coming from the Northward, their course from the Eastern Gooseberry Rock, toward Barrow Harbor, will be S. W. ¾ W. eighteen miles. Gooseberry Rock appears just above water. In this course they will have to avoid the Alone Rock and ledge, the latter being a shoal, lying S. ¾ W., distant one mile from the rock, which is always above water; this shoal has never less than four fathoms over it, so that in fine weather, no danger whatever is to be apprehended. In sailing on, and approaching Little Denier Island, which is almost opposite the harbor's mouth, you must be particularly careful of the outer rock, lying N. ¾ W. of Denier, distant three

fourths of a mile; this has only four and six feet upon it, but fortunately the sea constantly breaks over it, thereby pointing out its situation, and enabling the mariner to guard against and steer clear of the danger. Having reached the Little Denier, it will be better to go on its Northern side, for between Little Denier and Richard's Island there lies a dangerous reef of rocks, called the Brandishes; these extend nearly in a line, but at various distances, almost halfway over the channel. Upon these rocks are from twelve to seventeen feet, with narrow channels of seven and eight fathoms between them; to navigate this passage, therefore requires a pilot. To clear the Brandishes, you should keep Wedge Point a little open to the Southward of Smoky Ridge, which is a range of high lands at the top of the harbor until you bring Broom Head on with the Middle Shag Island; the passage then will be open, and without obstruction, until you get near to Wedge Point; off which, only seventy yards, lies a sunken rock, with eight feet water; you may then sail up Pudner's Cove, until you are entirely shut in from the sea; then you can anchor in from ten to eighteen fathoms. Some vessels prefer anchoring in Garland's Creek, but without running well up, the ground is foul. The land about Barrow Harbor is higher than the neighboring shores, and consequently may be the more readily recognized by its projection.

Sandy Cove. SANDY COVE lies farther up Newman's Sound, and has good anchorage; it may readily be known, having the only sandy beach on the N. side of the Sound. There is no danger in entering, and it is perfectly safe, the depth of water being from ten to twenty fathoms. In sailing to this place, and keeping along the Northern shore between Barrow Harbor and Sandy Cove, you will meet with a rocky islet, called the Halfway Rock; it is steep to, and has four fathoms close to it; there is also a deep water channel between it and the main, but keep outside and pass to the Southward of it, and there will be no danger.

Great and Little Adventure Coves. GREAT AND LITTLE ADVENTURE COVES.—These are two snug little coves lying about three fourths of a mile above Sandy Cove, and on the same side of Newman's Sound; but from the narrowness of their entrances they are fit only for small vessels. Between these coves, and off a point of land which separates them, lies a sunken rock, about eighty yards from the shore, with only four feet over it. Off the entrance to Great Adventure Cove, lies Sidney Island; the passage in is to the Northward of this island, for between the island and Harbor Head there is no thoroughfare.

North Broad Cove. NORTH BROAD COVE.—The entrance to this place lies one mile and three fourths from Harbor Head, and is on the Northern shore. It is a convenient and well-sheltered anchorage, and may be easily known by a round island lying at its Western side; this is named Black Duck Island. Sailing into the cove you should keep the island on board, until you make a tickle* between it and the Western shore, to avoid a sunken rock at its Eastern side; after which, it is advisable to keep as close as possible to the Eastern shore, for there is a dangerous rock lying mid-channel: being inside this rock you may anchor in from ten to twenty-five fathoms, muddy ground.

In advancing farther up Newman's Sound, there are some other dangerous rocks lying off the Northern shore; one of these is called the Shag Rock, and lies three fourths of a mile beyond Black Duck Islet; and one mile farther on is Hall's Rocks; both these are under water, and distant about a cable's length from the land; they have four and five fathoms close to them, and a passage between them and the shore of six and seven fathoms; therefore in sailing up Newman's Sound, the Northern shore should always have a good berth. Keep nearly half a mile off, and you will avoid them all.

Salvage Bay. SALVAGE BAY lies on the Northern side of the promontory which divides it from Newman's Sound; it has several runs of fresh water within it, but no place of good shelter.

Damnable Harbor. DAMNABLE HARBOR lies to the Northward of Salvage Bay; between them are several small islands and rocks; the largest of these is named the Baker's Loaf, and is a narrow island, about three fourths of a mile long. To go to this place from Gull Island, Bonavista, you should steer W. N. W. ¾ N. about seven leagues, and round the Shag Islands; proceed thence to the Northward of the Baker's Loaf, or steer N. W. by W. from the Gull toward the Ship Island, which may readily be known by a remarkable bald point, like a sugar-loaf; then W. ½ S. from Ship Island five and a half miles, will bring you to the entrance of Damnable Harbor. This place is well adapted for the reception of small vessels, but its very narrow entrance disqualifies it for ships of burden. There is a rock off the Southern part of the entrance, and another off the Northern side of the island, which lies in the middle of the harbor; there is good anchorage all round the island in four and five fathoms, sandy bottom.

Morris's Cove. MORRIS'S COVE.—This lies on the North side of Morris's Island, and is considered to be a safe anchorage. In sailing for this place, keep Ship Island well on board, on account of a dangerous reef, which extends from Flat Island nearly two thirds of the way toward Ship Island, on some parts of which there are not above seventeen or

* "Tickle," a narrow passage between islands and rocks.

eighteen feet; proceed, therefore, to the Northward of Ship Island, passing at not more than half a mile distant; and when you are well inside, avoid shutting in Lexington Rock with Varket Island; this latter will be known by its appearing like two singular hummocks, on account of there being several clusters of rocks between Ship and Horse-chop islands. Steer for Varket until you get abreast of Lackington Rock, then keep Lackington Rock on the Northern extremity of Ship Island, until the Varket bears N., in order to clear the two sunken rocks off the end of Morris's Island; you may then steer directly for the cove, which you can enter without fearing any obstructions, and anchor in any part thereof, in twenty-five to five fathoms; but the Western side of the cove is to be preferred.

Bay of Fair and False.

BAY OF FAIR AND FALSE.—This place may contain several good anchorages, but it is so filled with small islands and rocks, that no description we could give would be of any use to the mariner. A cluster of large islands extends off the frontage of this bay full twenty miles, or so far as Offer Gooseberry Island; between these are passages innumerable, with deep water; there is also a wide channel, running from Fair and False Bay, and Morris's Island, to the Northward. This leads to Bloody Bay, which then turns Westward, and is divided into various branches, forming the N. W. arm, the middle arm, and the N. E. arm—this latter being a peculiar and extensive channel, running in one direction, Southward, almost to Newman's Sound; and in another almost to Damnable Harbor—all these are navigable, and afford places of good anchorage, and plenty of both wood and water. There is also an open strait from Bloody Bay to the Eastward, through Bloody and Cottel's reaches, and out to the Northward of Offer Gooseberry Island. Other channels branch off to the Northward from Bloody and Cottel's Reaches, and between the Lakeman's Islands, running into Pitt's Sound, Locker's and Content reaches, and thence to Freshwater Bay; within these, and on the Northern shore, are Hare, Locker's, Trinity, Indian, and many other lesser bays, coves, and inlets, abounding with good anchorages, and calculated to afford shelter for shipping of all descriptions, in cases of necessity; these are, at present, but little known, and frequented only by the constant traders; we shall, therefore, proceed to those which are the usual places of resort, and are better situated for the purpose of fishing.

Vessels coming from the Southeastward, and bound to the Northward, for New Harbor, Greenspond Tickle, Cat Cove, the N. W. arm, or anchorage adjacent, frequently take their departure from Cape Bonavista; in which case, their course will be N. by W. to clear the Eastern Rock, which lies E. S. E., distant one mile and a fourth from Offer Gooseberry Island. Thence they should steer N. ¾ E. to Copper Island, at the mouth of Greenspond Tickle; here pilots may frequently be obtained to conduct you to this or any of the adjoining anchorages. There is good holding ground between Greenspond Island and the main; but the water is generally so deep that a vessel is liable to be drifted on shore in the act of weighing; nor is there sufficient room to veer out a lengthened cable in heavy gales from the S. W., to which quarter it is much exposed.

Ships coming from the Eastward, or round Cape Freels, must be careful to go clear of the Charge Rock, which lies S. E. ¾ S., two and a half miles from Gull Island off Cape Freels. This has only six feet water over it, and is circumscribed by a large spot of rough fishing ground, with from eight to thirty fathoms upon it. From the Gull Island of Cape Freels you may run immediately for the Stinking Islands, taking care not to open Cape Freels to the Eastward of the former; this will carry you inside the danger. You should keep a good look out for the mid-rocks, which appear just above water, and lie two miles N. E. by E. ¼ E. from the Stinking Islands; but vessels not bound up the bay are strictly recommended to keep outside of them all; for, should the weather become suddenly thick and foggy, a circumstance by no means unusual, more especially with an Easterly wind, you will run great hazard of getting bewildered among the innumerable rocks, which are scattered so profusely about this part of the coast; and from which neither compass nor chart can extricate you. In the winter months, when the Northeasterly gales are generally heavy and continuous, the sea breaks exceedingly high over several spots of the Stinking Banks, which lie E. by N. ½ N. from the islands, distant about two and a half miles; in two places there are only seven fathoms over these banks; and in such weather, although a ship would not strike, she would be in great danger of foundering in the tremendous sea which would then frequently break over her; but when the weather is settled, and the sea smooth, they are by no means dangerous.

Having rounded the Stinking Islands, and wishing to sail into New Harbor, or Cat Cove, you may, with propriety, steer S. W. by W. ¼ W. directly for the Offer Gooseberry Island, until you bring Pouch and Flour islands to touch each other; you will then be two miles outside of the three rocks, which lie one mile and a half to the Southward of Flower Island; the outer rock has three fathoms over it, the middle rock fourteen feet, and the inner rock only eleven feet. You will now alter your course to W. ¼ S., keeping the white face of Chalky Hills a little on the starboard bow, which will take

you clear of Copper Island dangers; then, should the inclemency of the weather prevent you getting a pilot on board you can continue this course until you bring Shoe Cove Point, which may be distinguished by its semblance to white marble, to bear N. W. ½ W., then shape your course W. N. W. for Indian Bay.

New Harbor. NEW HARBOR is situated on the Eastern side of Indian Bay, about two miles from the Shoe Cove Point. This place, during the easterly winds, will be quite inaccessible, on account of its narrow entrance; in this case you must proceed onward, about four miles, for Cat Cove.

Cat Cove. CAT COVE.—In order to reach this place, you will proceed between Silver Hare and Brown Fox islands and the main; and as you approach the latter the channel narrows, and you will have a narrow island on your starboard side; this is Cat Island, behind which is Cat Cove. You will have no difficulty in distinguishing this island, it being the only part that is covered with LIVE WOODS, for the surrounding forests have all been destroyed by some general conflagration. Off the upper part of Cat Island lie two high green rocks; you must go round these, for the water is too shoal to go between them; having done so, you may run on until you get some distance inside the upper point of the island, when you may anchor in from five to thirteen fathoms, with a hawse open to the N. W., the winds from that quarter being most heavy and squally. In working in, you may stand close to either shore, except off the point of the island, as there is a sunken rock within one hundred yards of it, with not more than ten feet water over it.

Northwest Arm. NORTHWEST ARM.—This is situated on the main, and is the place of safety nearest to Cape Freels; but its entrance is very difficult, on account of the number of islands that surround it, and these islands are almost undistinguishable one from the other, from their similarity of appearance. In coming from Southward for the N. W. Arm, the greatest danger which you will have to encounter is the Northern Rock, which never has less than twenty-two feet over it; this lies N. E., distant one mile and three fourths from the Copper Island; this island you will easily recognize by its having no wood upon it, and by its height. In fine weather, and smooth sea, vessels pass over it in perfect safety; but in hard gales, the waves beat over it incredibly high. To avoid it, be careful to open Fool's Island, which is somewhat higher and more prominent than the rest, and which is covered with trees, except about the summit, to the Westward of the Western Pond Rock, until you get Butterfly Island to touch the inner part of Flower Island, or until Puffin and Copper Islands touch each other; then, leaving the Pond Rocks on your starboard side, steer in for Fool's Island. It is advisable to keep this island well on board, for there is a sunken rock lying mid-channel, exactly between it and Partridge Island Rocks; this danger has only eighteen feet water over it; but no mark can be given to avoid this rock. The course then up the arm will be N. W. ¼ W., and so soon as you get inside of Odd Island, you may anchor, on muddy ground, in from seven to nine fathoms, Fool's Island Hill bearing S. E. to S. E. by S.

Greenspond Tickle. GREENSPOND TICKLE.—Greenspond is a square island, about a mile in breadth, each way. A reef of rocky islets runs off its Southern part all the way to Puffin Island. Greenspond Tickle lies on the Southeastern part of the island, and is of very little importance, being incapable of receiving any vessels whose draught of water exceeds fourteen feet. The dangers in going to this place are, the Northern Rock, the Cookroom and Harbor rocks; but it will be almost impossible to get into this harbor with an adverse wind, or even with a fair one, without the assistance of a pilot.

Ships sometimes run in and anchor between Greenspond Island and the main, but the channel is narrow, the water is very deep, and it lies too open to the S. W. winds to be considered a place of safety. In order to sail into it you must get to the Westward of the Copper Islands; in so doing, be careful of the Midsummer Rock, which lies nearly W. by S. ¼ S., distant one mile from Copper Island, and has only five and six feet water over it. Observe, when you shut in Silver Hare Island by Shoe Cove Point, you will be within side of the danger; it is also necessary to give Newal's and Ship Island a wide berth, as the water shoals off them to a considerable distance.

CAPE FREELS TO THE STRAIT OF BELLE ISLE.

Cape Freels CAPE FREELS is formed of three points, the South Bill, the North Bill, and the Middle, or Cape Freels. There are many shoals and rocky dangers about them all, and therefore a wide berth should be given them at all times. Over these points is some high land, commonly called the Cape Ridge, which is visible at a considerable distance.

Funk Island. FUNK ISLAND.—N. 54° E. from Cape Freels, distant twenty-seven miles, lies Funk Island. This is little more than a sterile rock, and cannot be seen farther than at the distance of ten or twelve miles, but it will always be distinguished by the great number of birds which continually hover over it. About two hundred yards N. of Funk Island is a large rock above water, and N. W. by W., one hundred and eighty

yards from this, are still larger rocks; they are all barren and only the resort of sea-birds, that inhabit and breed there. Between these rocks are eighteen, thirty-seven, and forty-two fathoms water, with a clear passage; but between the Eastern rock and Funk Island there is a dangerous sunken rock, of only ten feet water, over which the sea generally breaks; near this sunken rock are fourteen and sixteen fathoms, and between it and Funk Island, thirty, twenty-five, fifty-six, thirty-eight, twenty-four, and seventeen fathoms. Off the Western point of Funk Island are some rocks, and at its Eastern part a sort of creek with five fathoms in it. It is also reported that a ledge of rocks lies S. W. from Funk Island, distant about seven miles.

Durel's Ledge.

DUREL'S LEDGE, OR SNAP ROCK.—This is a dangerous reef, said to lie about seven leagues N. W. by N. from Funk Island. The sea breaks over it continually; and nearly N. W. by W., distant three leagues from Durel's Ledge, is another danger named Cromwell's Ledge. It is supposed to bear E. S. E. ¾ E., distant ten or sixteen miles from Little Fogo Islands.

N. N. W. ½ W. from Cape Freels, distant six and a quarter miles, is the outer Cat Island. It is connected to the main by a sandy reef, which is impassable for shipping, and forms the Southern point of Deadman's Bay. A little before you come to the Outer Cat you will see a remarkable hill, called the Windmill Hill, and near it the Little Cat Island. In sailing to or from Cape Freels the shore should have a good berth, although there are soundings all the way, and they decrease gradually towards the shore. Deadman's Bay is formed by the Outer Cat Island to the Southward, and Deadman's Point to the Northward. The soundings within are regular, and the bay without rocks, unless close to the shore; but it is totally unsheltered, and open to all Easterly winds.

Having passed Deadman's point, you will approach the Penguin Islands. These are two in number, and bear from Cape Freels N. N. W. ¼ W., distant fourteen and fifteen miles. Between them the passage is clear, with from five and a half to seven fathoms water, but vessels should not go within them and the shore, for there are several rocky reefs, which render it particularly dangerous.

Ragged Harbor.

RAGGED HARBOR lies to the Northwestward of the Penguins, distant six and a half miles. The main land hereabouts is low and sandy, and the passage from the Eastward rocky and dangerous; it should therefore not be attempted by a stranger, or without a pilot. To the Northwestward is Little Cove Island, and seven miles beyond that is Rocky Bay. At its entrance, which is wide, lie three islands: Noggin Island, Green Island, and farther S. is White Island. You may pass between each of these, in seven fathoms; between Rocky Point and Green Island, in seven, eight, thirteen, or ten fathoms; and between Green and White Islands in thirteen and fourteen fathoms. Between Noggin Island and the Western point of the bay there are three and a half, seven, twelve, nine, and four fathoms. The bottom of these bays, for there are three openings, is rocky, and vessels cannot go far into them.

The Wadham Islands. Light.

THE WADHAM ISLANDS.—On the Offer Wadham Island, which is to the N. and E. of Peckford's Island, there is a fixed light one hundred and fifty-five feet above the level of the sea. The Wadham Islands are a cluster lying to the Northwestward of Cape Freels. They consist of eight or ten scattered islands, separated from each other by channels more than one and two miles wide. The largest of them is called Peckford's Island, which is almost a mile long, lies in the direction of N. and S., and bears from Cape Freels nearly N. by W., distant twenty miles. From its Southern part, toward the land about Ragged Harbor, there are a number of rocky islets and reefs, with channels between them, rendering the navigation of this part extremely hazardous N. N. W. ½ N. one and a half miles from Peckford's Island, is White Island, but a passage between them should not be attempted, for there are several small rocks lying off the North and Northwestern part of Peckford's Island, some of which stretch out almost as far as White Island. N. W. by W., from Peckford's Island, about four and a half miles, is Copper Island. Green Island lies W. N. W. ¼ N., two and a half miles from Peckford's Island and about a similar distance S. S. E. ½ E., from Copper Island. There are also some small rocks lying off the N. W. end of Green Island, which, being visible, can always be avoided with ease.

S. W. Rock.

S. W. ROCK.—This is a small detached rock above water, bearing from Peckford's Island S. S. E. ¼ E., distant three and one fourth miles; near it are thirteen, seventeen, and twenty-one fathoms. About N. N. E., distant two miles from the S. W. Rock, is a small flat island; and a little more to the Eastward is Offer Island: this is the most Easterly of all the Wadham Islands. There is yet a rock to describe, which lies E. S. E. ¼ E., from Offer Island, distant about one mile and a half: this is dangerous, and must have a berth in passing either N. or S. of it.

The Fogo Islands.

THE FOGO ISLANDS lie to the Northwestward of the Wadham Islands. Great Fogo is a large island, four leagues long, and nine miles broad. Off its Southwestern point lie the Indian Islands; and N. E. by N., four miles from the body of Great Fogo, are the Little Fogo Islands. Numerous other rocks and small islands are scattered about.

Shoal Bay. SHOAL BAY.—This harbor is very secure, with good anchorage in any part above the Harbor Rock; it has two tickles, so called in Newfoundland, and intended to describe narrow passages between islands and rocks: these may be entered with any wind, except from the South to the Southwest, which wind blows out of both. To enter the Eastern Tickle, you should borrow on Rag's Island, keeping the extreme of Fogo Island nearly open of Lane's Island, until Gappy's Island comes open of Simon's Island; you will then clear the Shoals of Filly's Point. To avoid the Harbor Rock, bring Slade and Co.'s flag-staff on with the Eastern chimney of their dwelling-house; it will be necessary to get this mark on before Boatswain's Island closes Bullock's Point. In coming from the Westward it is advisable to make free with Fogo Island, in order that you may distinguish the small islands that form the tickle, which, if passed with Westerly winds, can never be regained, owing to the constant set there is to the Eastward. Having passed Little Motion, keep the extreme point of the head over the Narrows Point, until you get past Bullock's Point, when the above directions will clear all the harbor's dangers.

Coming from the Eastward, and bound to Fogo Harbor, N. W. part of Fogo Island, you must be careful to avoid the Dean's Rock, which is a sunken rock, and lies between Joe Batt's Point and the Harbor. Steer W. N. W. until Brimstone Hill, a remarkable round mountain, appears in the centre of the harbor: then steer for the East Tickle, which may be known by the lantern on the top of Sim's Island. Make the West side of the tickle. Give a good berth to the point, on the starboard side, and run right up the harbor, keeping near the S. side, and you will carry from five to three fathoms through. Immediately you get round the point, steer S. W. to avoid the Harbor Rock, and follow the directions given above for anchoring. The middle tickle appears the widest, but it is fit only for boats. The other two must be adopted, as best suits the wind.

Little Fogo Islands. LITTLE FOGO ISLANDS lie nearly N. E., distant four and a half miles from Joe Batt's Point. There are numerous rocks about them, both above and under water, making this part of the coast exceedingly dangerous. A little to the Eastward of Little Fogo is a small rock just above water, called the Northeastern Rock, and somewhat in this direction, distant ten or eleven miles, is said to lie Cromwell's Ledge, whose exact position is not well determined, although it is considered to be extremely dangerous. Northward of Little Fogo are the Turr Rocks, and hence in the direction of the Western side of Great Fogo Island and the Storehouse Rocks, the Seal Nests, Gappy and Stone islands, the Jigger and Black Rocks, and various other dangers, all having deep water round them, and tending to increase the difficulty of the navigation.

Change Island Tickle. CHANGE ISLAND TICKLE.—This harbor is accessible when Fogo Harbor is not. It is very secure, and has good anchorage with six or seven fathoms muddy bottom. In general the islands about it are low and marshy, but there is abundance of firewood, though water is scarce. The passage in from the Eastward is between Ruth's Rock and the Tobacco Islands, the mark being Brimstone Head kept between both; this will clear all the dangers on the Northern shore, and also off Skinner's Harbor; or you may bring the tickle to the Westward between the points off the land, and steer directly through in great safety.

Toulinquet Harbor. TOULINQUET HARBOR.—This harbor is sheltered from all winds but those which blow from the N. and N. E., when in heavy gales it becomes dangerous. In entering either by the Eastern or Western channel, you must take the greatest care to avoid the White Ground, to clear which, you must bring Messrs. Slade's dwelling-house open of Sim's Island, and keep it so until French Head opens through the Eastern passage. This is very commonly called Burnt Island Tickle, and should not be attempted without you are thoroughly acquainted with navigation, or in cases of great emergency. The anchorage is mostly foul, but the best and most secure is about five or six fathoms, off Colburn's Stores. Both water and wood are scarce. If the mariner should be here either early or late in the year, Back Harbor, which lies off the Western side of the table-land, will be found a preferable place for shelter, and a few small vessels may ride there with much safety. You may proceed in on either side of Gull Island, lying with the Western Head open of Batrix Island and the Bluff Head, or with the Eastern Stage on Batrix Island. The islands about the harbor of Toulinquet are moderately high, and bounded by dark-colored slate-cliffs. It may readily be known by Gull Island or the table-land.

Fortune Harbor. FORTUNE HARBOR.—This harbor lies between the Bay of Exploits and New Bay. It is good when attained; but the entrance, which is the Western Tickle, is extremely narrow and dangerous, on account of the high land around it; from which all winds baffle, except those blowing directly in.

Triton Harbor. TRITON HARBOR (Great Triton Island).—The entrance to this harbor is between the Great and Little Denier islands. In entering you will see Francis Island, which has a reef running to the Southwestward. Give this a berth; but both the Denier Islands are bold to and free from danger. Little Denier Island lies S. W. three miles and a fourth from Sculpin Rocks; on approaching which, the harbor opens off the high land of Great Denier. Its shores are exceedingly bold, and therefore it is always to be preferred to Cutwell Harbor. Its great depth of water will be avoided by running into

Inspector's or Scrub Cove, where vessels may moor with hawsers to the trees, in perfect security.

The tides here, and also upon all the Eastern coast of Newfoundland, have nearly the same rising, the springs being about six feet, neaps four feet; but these are much influenced by the winds.

CUTWELL HARBOR (Bong Island).—This harbor has a spacious entrance, sufficient for the largest ship to beat in to secure anchorage, in from ten to five fathoms, sand and mud. The best anchorage is about W. by N., distant three miles from the Southern head. The arm runs in full one mile and a half above the narrows, in which is abundance of wood and water, and well adapted for heaving down and refitting vessels. At the entrance is the Fool's Cap Rock, the marks for which are Copper Island seen through Indian Tickle, and Mark Island on with the White Point. To Clear the Fool's Cap Rock, keep the extremity of Southern Head touching the N. end of Hardrix Island, until Green Bay Gull Island opens to the Westward of the Hag Rock. The only danger within the heads is the rocks on the Eastern shore, and most of these are visible at half tide. *Cutwell Harbor.*

THE ISLAND OF TOULINQUET lies to the Westward of Fogo, and has several small islands about it. Here is situated what is called Toulinquet Bay; and to the Southwestward of Toulinquet Island is the Harbor of Herring Neck. This is said to be a spacious fine harbor, and fit for any vessels. *The Island of Toulinquet.*

CAPE ST. JOHN.—From Toulinquet Bay to Cape St. John, the course is N. W. by N., distant twelve or thirteen leagues. This a high and rugged point of land, and may readily be known by the small high round island to the Southeastward, distant from the Northern pitch of the cape about two and a half or three miles. This is called the Gull Island, and is the third of that name on this side of Newfoundland. Perhaps, it would be better we should hereafter distinguish this as the Northern or St. John's Gull; that near Cape Freels, as the Middle or Cape Freels Gull; and the one lying off Cape Bonavista, as the Bonavista or South Gull. *Cape St. John.*

Between the Fogo Islands and Cape St. John the charts commonly represent various deep bays and inlets, but their particulars are very little known, although there can be little doubt the Great Bay and River Exploits, and the Bay of Notre Dame, afford many places of good anchorage, and of easy access, which, when fully explored, may become hereafter frequented, better understood, and prove highly beneficial.

LA SCIE.—About five miles to the Westward of Cape St. John, is the Little Harbor or Cove of La Scie; to sail into which there is no danger whatever, and you may anchor anywhere in from three to eight fathoms. It is easy of access, and open to the N. N. W. winds, which throw in a heavy sea. The best holding-ground is just within a little cove on the starboard side, in fifteen fathoms, muddy ground; but farther in the ground is not good. *La Scie.*

GREAT AND LITTLE ROUND HARBORS.—The former of these is a good and convenient place for vessels engaged in the fishing trade. There is no danger in sailing in or out of it, both shores being bold to. The anchorage lies within the two inner points, where vessels may ride in four or five fathoms water, secure from the weather and entirely landlocked. But Little Round Harbor, which lies round a point on the Northeastward, about one mile and a half distant, is merely a cove, and totally unfit for shipping. *Great and Little Round Harbors.*

NIPPER'S HARBOR.—This harbor lies to the Northeastward of Green Bay Island, about four and a half miles, and is fronted by several small islands, between which are several channels; but the best and safest is between them and the Northern shore, in which the water is very deep and the shores bold. The harbor is rather confined and small, and therefore only fit to accommodate small vessels; but it is the most safe and secure on the shores of Cape St. John, and has an excellent anchorage with from seven to fourteen fathoms water. The land about it is high and barren, but it is well supplied with water, and may be easily distinguished by the islands which lie off it. *Nipper's Harbor.*

PAQUET HARBOR.—About five miles N. W. by N. from Great Round Harbor lies Paquet Harbor. Its entrance bears from the channel between the Horse Islands nearly S. W. by S. It may be known by its Southern Head, which is a high and rocky mountain. The Northern Head is somewhat lower, and there are three rocky islets lying directly off its point. Both points are bold to; but a little to the Southward of the three rocky islets is a small shoal with two and a half, three, and four fathoms upon it. The channel between it and these three rocks has seven, eight, and nine fathoms; and the water across the entrance is from eight and nine to nineteen and twenty fathoms. A similar depth continues more than one fourth of a mile in, where the harbor divides into two channels, the one running Northward, the other W. and S. W. The Northern arm is about one fourth of a mile long, and has twenty, eighteen, and nineteen fathoms at its entrance, becoming shallower as you advance. Vessels running in here should keep the starboard shore on board, for about two thirds up the channel. On the port side there is a rocky shoal, a small part of which occasionally appears above water. On the other *Paquet Harbor.*

part of this shoal are from three to four fathoms. Having passed up this shoal, steer up mid-channel, and anchor in five, seven, or eight fathoms. The Northern part near the land becomes shallow, and a rivulet here falls into the bay, which is said to issue from some extensive lakes about two miles inland. The Southwestern channel is somewhat narrower than the Northern one, but is quite free from danger. The shores on both sides are steep to, and bold, and you will have twelve, ten, nine, eight, and seven fathoms for half a mile in; it then shallows to the head of the bay, where there is a sandy beach and a river running Southward. This is a snug and secure place for vessels to run into whenever occasion may require. To the Northward of the Northern point is a mountain called Signal Hill, commonly having a signal-post upon it, and serving to point out its situation.

Horse Islands. THE HORSE ISLANDS are situated nearly equidistant between Partridge Point and Cape St. John, bearing from the latter N. by W. and N. N. W., distant about five leagues. There are two islands, and form a circuit of nearly two leagues, appearing moderately high. There are three rocks above water lying to the Northward of the Easternmost; and on the E. side of the same island there are some sunken rocks, which stretch out in some places near a mile from the shore. At the S. E. part of this island there is also a little cove, fit only for boats. There is probably a safe channel between these islands, but it is seldom attempted. The Eastern island is the largest.

Following the shore of Newfoundland to the Northwestward of Cape St. John, there are two bays, called Pine Bay and Bay Verte; but although these may be places of good anchorage, they are little frequented by shipping.

Fleur de Lis Harbor. FLEUR DE LIS HARBOR.—This harbor lies to the Southeastward of Partridge Point, from which it is distant one league, and derives its very appropriate name from three remarkable hillocks just over it. It is small, but safe and secure from all winds, having excellent anchorage in its N. E. arm, in four fathoms water. To avoid a rocky shoal that lies about one hundred yards off the island, borrow toward the Eastern shore, until you get Bluff Head open to the Eastward of the island. There is plenty of wood, but in a dry season water becomes scarce. It is, however, very conveniently situated for the fishery, and commonly is frequented by eight or ten French vessels.

White Bay. WHITE BAY.—This is a large and extensive arm of the sea, being at its entrance, from Cape Partridge to Cat Head, full four leagues wide, and running in a Southwesterly direction about fourteen leagues to its head, where it is contracted to a river's mouth one mile and a half wide. In this bay or gulf are several islands, coves, and inlets, affording both anchorage and shelter; these are Lobster Harbor, Southward Arm, Middle Arm, Pigeon Islands, Westward Arm, Purwick Cove, Gransby's Island, Gold Cove, or River's Head, Goat and Sop Islands, Sop's Arm, Jackson's Arm, French Cove, Great and Little Coney Arms, and Great and Little Cat Arms.

Lobster Harbor. LOBSTER HARBOR.—This is a small round harbor, with a shallow, narrow entrance, having at low water, in some places, not above eight or nine feet water; but when you are once entered, you will have twelve and thirteen fathoms all over the harbor. Small vessels, therefore, sail in commonly at the flood tides.

The Southward Arm. THE SOUTHWARD ARM lies about eight miles from Lobster Harbor, and farther up the bay. Here a ship may anchor with great safety, in seventeen fathoms water, about three miles within the heads; but there is also good anchorage in any part below this, and before you have advanced so far up, in twenty and twenty-five fathoms. A little above the inner point, on the Northern side, is a muscle bank, which stretches quite across the arm, and nearly dries at low water; and when you have passed this, you will have eleven and twelve fathoms water, and the channel continues deep until you approach the River's Head. This is the first great inlet on this side of the gulf, and may therefore be readily recognized.

Middle Arm. MIDDLE ARM.—This inlet lies about one mile and a half S. W. from the Southward Arm; at its entrance is a rocky island, which is joined to the shore by a shoal, over which are one, two, and in some places, three fathoms water. This inlet runs in to the Southward, about three or four miles. To enter it you will do well in keeping the port shore on board; it is fitted only for small vessels. Two leagues W. by S. from Middle Arm, is Hawling Point; and between them lie the Pigeon Islands, about which the ground is good for fishing.

Westward Arm. WESTWARD ARM.—This lies E. S. E. ½ S. of Hawling Point, and runs up nearly four miles. Here large vessels may anchor in eighteen fathoms water; there is a cove on each side of its entrance; that to the Northeastward is named Bear Cove, where smaller vessels may moor securely, and ride safe from all winds, in about twelve fathoms water. The other is called Wild Cove, a very indifferent anchorage, open to the Northwesterly winds, and the bottom rocky and foul.

Purwick Cove. PURWICK COVE.—About five leagues down from the River's Head, and near the S. E. side of the bay, lies Gransby's or Mid Bay Island, without either cove or place of shelter; on the Southeastern part of this island is a shoal running off the length of two cables, with not more than nine feet water over it, and nearly abreast of this island, on

the S. E. side of White Bay, is Purwick Cove, where shipping may find safe anchorage, and lie with good conveniences for the fisheries.

Having passed to the Southward of Gransby's Island, the bay narrows and runs up about five leagues toward Gold Cove, where the river branches out into several streams, and is commonly called the River's Head.

On returning up the Western side of White Bay, you will perceive Sop's Island, about three miles in length, and eleven miles in circuit; near its Southern end is Goat's Island; these form a long passage, or arm, called Sop's Arm, at the N. part of which a vessel may safely anchor, just inside the N. side of Sop's Island; this will be the best side of the channel, or passage, in the arm; but there is anchorage in deep water between Sop's Island and the main before you reach so far up as Goat's Island; there is also a small cove at the N. end of the island called Sop's Cove, and two other coves opposite the main, called Heart's Coves, in which the fisheries are carried on, although ships generally anchor in the upper part of the arm, and within side of Goat's Island.

Jackson's Arm.

JACKSON'S ARM.—About four or five miles to the Northward of Sop's Island, is Jackson's Arm, to enter which, you will pass a ragged point, low and round; the water here is deep, except in a small cove on the starboard side, where a vessel should moor head and stern. This place affords the largest timber in White's Bay. Frenchman's, or French Cove, is about a league to the Northward of Jackson's Arm, and offers good and safe anchorage.

Little and Great Coney Arms.

LITTLE AND GREAT CONEY ARMS.—Nearly four miles to the Northeastward of Frenchman's Cove is Coney Arm Head, the most remarkable land on the Western side of White Bay, and bears W. N. W. ¾ W., distant six leagues from Cape Partridge; the land here projects out one mile and a half, forming a deep bight, called the Great Coney Arm. In this place there is no good shelter for shipping; but in Little Coney Arm, which lies to the Westward of the head, is convenient anchorage for small vessels, although its entrance is too shallow for large ships. Here fishing craft frequently rendezvous.

Great and Little Cat Arms.

GREAT AND LITTLE CAT ARMS.—To the Northeastward of Coney Arm Head, distant three miles, lies the Great Cat Arm, and five miles farther is Little Cat Arm. This latter inlet runs up to the Westward fully two miles. Off its Northern point are some rocks above water; to avoid which, keep near to the Southern shore. You will find the water deep, and no good shelter, unless you approach the head or farther end of the arm, where you will lie secure and landlocked.

Little Harbor Deep.

LITTLE HARBOR DEEP.—You will now be to the Northward of White Bay, and following the shore, will perceive the entrance to Little Harbor Deep, called by the French La Vache. This place is much exposed to Southeasterly winds, and by no means a good harbor; off its Northern point are some rocks, which are always above water; they lie half a mile from the shore, and afford good fishing about their environs. The water is not very deep in any part of this inlet, and when you get halfway from the entrance to the head, or farther end, it becomes quite shoal.

Grandfather's Cove, or L'Anse Union.

GRANDFATHER'S COVE, or L'ANSE UNION, is an inlet about two miles deep, lying one mile and a half from Little Harbor Deep. This is also open to the Southerly winds, and may be known, when near the shore, by the Northern point appearing like an island, and bearing N. N. W. ½ N. from Cape Partridge. It is but an indifferent place for shipping, and seldom frequented.

Orange Bay, or Great Harbor Deep.

ORANGE BAY, OR GREAT HARBOR DEEP.—This may be known from any other inlet, by the land at its entrance being much lower than any land on the N. side of White Bay, and by its bearing N., distant five leagues, from Cape Partridge. It forms a large harbor, and when you get about three miles within its entrance, divides into three branches. In the Northern arm the water is too deep for vessels to anchor, until they have run up near the head; but the middle arm has a small bottom, and safe anchorage in six and seven fathoms water. A little within the entrance of Orange Bay there is a cove on each side, frequented by the fishing vessels; but these are very dangerous for a ship to lie in, for, although they moor head and stern, yet should a gale come on from the Eastward, there is little safety to be depended upon.

Fouchee.

FOUCHEE.—This place is little frequented, and there is no anchorage until you approach its farther end, where you will find a cove on the Northern side. This cove is two or three miles above the entrance, and very small vessels may anchor there in eighteen fathoms, mooring head and stern. The land on both sides is extremely high and steep to the shore. There is also another arm running in above two miles farther than the cove; but it is so narrow, and has such a depth of water, that it is almost useless to shipping.

Hooping Harbor.

HOOPING HARBOR.—About eight miles to the Northeastward of Fouchée, and a little to the Southwestward of Canada Head, lies the entrance to Hooping Harbor, or Sans Fond. This place has two arms or bays, one running up Northward, the other Westerly. Like many of the adjacent inlets, there is deep water all the way, until you go near to the head of the Northern branch, there the bottom is a kind of loose sand;

open to the Southerly winds, and by no means a safe place to lie in; but in the Western arm a vessel may anchor in a moderate depth with safety.

Canada Head. CANADA HEAD lies about three miles to the Southwestward of Canada Point, or Bide's Head. It is elevated land, and very easily to be distinguished, from either the Northward or Southward; but when you are directly to the Eastward of it, it becomes hidden by the high land up the country, and commonly called the Clouds.

Canada Bay. CANADA BAY.—This is an inlet of considerable size and extent. At its Southern entrance is Canada Head; whence it runs N. N. Easterly full five leagues. Here vessels caught in Easterly gales may seek shelter, and anchor in safety. In entering, when you get above the two rocky islets which lie near Bide's Head, and called the Cross Islands, you will see a low white point, and another low black one a little beyond it. Off this latter, distant two cables' length, lies a sunken rock: keep therefore toward the middle of the bay, and you will find no danger, except a rock above water, which lies about a mile below the point of the narrows; this you will endeavor to keep on your port hand, keeping mid-channel, and you will have eighteen fathoms through the narrowest part. Soon after you have passed the narrows, the bay widens, and is above a mile across, and you may then anchor in from eighteen to twenty fathoms, good holding ground, and secure from all winds. But this bay is not much frequented, and only occasionally resorted to in case of necessity.

Englée Harbor. ENGLEE HARBOR is situated on the N. side of Canada Bay. To sail into this place, you must pass a low point, appearing white, and forming the Northern point of entrance to Canada Bay; then keep near the shore until you get abreast of the next point, which makes the harbor: haul round it to the S. E., taking care not to come too near the point, for it shoals a full cable's length off. Having so far advanced, you can anchor in from fifteen to seven fathoms, good holding ground; but this is well up the cove, which is too small to lie in, unless you moor head and stern. In Bide's Arm, which runs up N. N. E. from Englée almost two leagues, there is no good anchorage, the water being too deep; but within the S. end of Englée Island is a good harbor for shallops, although thence to where the ships lie there is no channel, even for boats, unless at high water, or beyond half tide.

Conch Harbor. CONCH HARBOR bears nearly E. N. E. ½ E., distant seven or eight miles from the entrance of Canada Bay. It lies very open to the winds from the S., but has good anchorage well up to the head, in eleven fathoms water, good holding ground. S. by W. from Conch, distant two leagues, is Hilliard's Harbor, called by the French, Botitot. This is a bad place for shipping, but very convenient for the fishing craft.

Cape Rouge Harbor. CAPE ROUGE HARBOR.—This harbor lies to the Westward of Groais and Bell Islands, which contribute to shelter it from the heavy swells of the Atlantic. The Southern part of its entrance is shallow and rocky, and in the S. W. arm is the Harbor Shoal. The best anchorage is in the Northern arm, in any depth of water. Ships may beat in or out, but the centre of the harbor is too deep for anchorage. Directly opposite to its entrance is a small island, which is named after the harbor, Rouge Island. Its Northern end requires a berth in passing.

Bell Island. BELL AND GROAIS ISLANDS.—These are high islands, lying off the N. E. coast of Newfoundland, from which they are separated nine or ten miles. Bell Island is the Southernmost and the larger island, being eight miles in length and three in breadth. There is a little harbor at its S. part, where fishing craft occasionally resort, but not calculated for shipping. Other coves may be found about the shores of the island, where shallops sometimes take shelter. Off its Southeastern side lies Green Island, a small rocky islet, and to the Southward a bank of soundings extends twelve, twenty, twenty-five, and thirty fathoms. There are some rocks, both above and under water, at the S. point of Bell Island; but these lie close in to the land.

Groais Island. GROAIS ISLAND lies to the Northeastward of Bell Island, and is about eight miles in length and two and a half miles broad, its northern point lying in latitude 51°. Off this end, and also off the N. W. part of the island, are several rocks above water; otherwise this island is bold all round; and between it and the main are from twenty to seventy fathoms water. There are also two islets midway; the Southern one is commonly called Red Island. They are both steep to, and without any known danger.

Croque Harbor. CROQUE HARBOR.—The entrance to this harbor is half a mile wide, and somewhat difficult to discover. It bears N. W. from Groais, distant three leagues. When the N. point of Bell Island is clear of the Southern point of Groais, you will be a little to the Southward of Croque: and this mark will not fail pointing out to those unacquainted with this navigation the fairway to its entrance, especially as the headland forming the Southern shore is bare of trees, and has a round appearance, with some rocks, which are always visible, and lie about forty yards to the S. E. of it. The shores of the harbor are bold to, and even a frigate may easily work into it. The anchorage is excellent, being good holding ground, of dark slate-colored mud. Having opened the harbor's mouth, steer in N. W. by N., proceed mid-channel, and when you have advanced up about a mile, you will see the river divide into two branches. Anchor hereabout. There is a

little cove at the Southern entrance, called Irish Bay, in which are thirteen, ten, eight, and five fathoms, and two rocks above water at the head of the bay, near which is a little rivulet of fresh water.

GREAT AND LITTLE ST. JULIEN.—To the Northeastward of the harbor of Croque, lie Negro and St. Julien's islands, near which are the harbors of Great and Little St. Julien, and also that of Grandsway. These are all adjacent to the Island of St. Julien, and bear to the Northwestward of the Northern part of the Island of Groais. The S. W. end of the Island of St. Julien is but little separated from the main, and cannot be distinguished to be an island until you arrive very near it. There is, at this end, no passage except for boats; therefore, to sail into either of these harbors, you may keep close to the N. E. end of the island, and in passing that the harbors will open to your view. *Great and Little St. Julien.*

Great St. Julien is the Easternmost harbor, to which there is no danger, until you get within the entrance; then you will find the starboard shore to be shoal nearly one third over; but when you have passed the first stages you may anchor in from eight to four fathoms water.

To sail into Little St. Julien's, you will first steer for Great St. Julien's Harbor, in order to clear a sunken rock, which lies directly before the harbor's mouth; and having arrived opposite the entrance of Grandsway, steer into the harbor, and anchor in five or four fathoms water. It will be requisite for all ships which go into either of these harbors, to moor both head and stern; but Grandsway is not a harbor for shipping, although it is extremely convenient for fishing craft.

CREMALLIRE AND GOOSE COVES.—These places lie on the Northern shores of Hare Bay. Cremallire has spacious and good anchorage in seven or eight fathoms, and is supplied with abundance of wood and water. Trois Montagnes is merely a small creek, in which a few French vessels moor during the winter season. It is situated to the Southwestward of Cremallire, and has a rivulet which extends Eastward to Goose Cove. *Cremallire and Goose Coves.*

Goose Cove is situated on the Western side of Goose Cape; it is small but very secure, and has most excellent anchorage in four and five fathoms. Vessels can sail into it with a Westerly wind, or into Cremallire with an Easterly one.

ST. ANTHONY'S HARBOR.—This lies a little to the Northeastward of Cremallire Bay, and is a very safe place, having good anchorage with six and seven fathoms water, on a bottom of blue clay. Its entrance lies W., distant one mile and a half from Cape St. Anthony. It cannot be easily mistaken, from the remarkable high land on its Southern shore. It is well supplied with wood and water, and is commonly frequented by some French fishing vessels. *St. Anthony's Harbor.*

BRAHA HARBOR.—This harbor is small but safe, having good anchorage within it; the bottom is sandy, and the shores are bold and steep to. The Braha shoal lies S. 74° E. (true), distant a mile and a half from the Needle Rocks; it is reported to have not more than six feet water over it, but Capt. Bullock says he never found less than sixteen feet. With a little sea it occasions breakers, but the common current will always create a constant ripple. *Braha Harbor.*

HOW HARBOR lies on the Northern shore of Hare Bay. The entrance to this place bears N. 48° W., distant twelve miles from Fishot's Northern Island, and is by far the best harbor in Hare Bay, having safe anchorages over every part. The surrounding hills are barren, but small stunted wood may be found in the valleys. To the Northward a range of marshes and ponds extends as far as Pistolet Bay. The harbor is about half a mile wide, and a full mile and a half long. A small rock lies off the Western point, but it is very near the land, and the upper part of the harbor shoals gradually. *How Harbor.*

ST. LUNAIRE BAY.—This excellent harbor will contain one hundred vessels in perfect security, is remarkably easy of access, and may always be recognized by the appearance of the White Cape; the best and most convenient anchorage will be found at Amelia Cove in from five to seven fathoms. The approach and entrance are bold and steep to, only observing to give the point of the Southern Islands a good berth. Both wood and water are to be obtained without difficulty, and it affords in every respect a good and secure anchorage. *St. Lunaire Bay.*

GRIGUET BAY AND CAMEL'S ISLAND HARBOR.—The North Bay is insecure in spring and fall, on account of its being exposed to the Southerly gales; the S. W. Bay is therefore recommended, where there is good anchorage in five or six fathoms water. Camel's Island Harbor will always be found too intricate for a stranger, and should never be attempted without the assistance of a pilot. *Griguet Bay and Camel's Island Harbor.*

THE NORTH HARBOR runs in with Stormy Cape, and has at its entrance a rock above water which is bold to all round, and vessels may sail on either side of it, and anchor in six fathoms water. In the passage which leads to the N. W. and S. W. harbors, there is an island which contracts the channel, rendering the passage narrow; the best and safest entrance is the Northward of this island, giving the outer point of the *The North Harbor.*

N. W. harbor a little berth, and so soon as you get within the island you will open both harbors; that which runs in Northwestward is the larger of the two, and is two miles deep; you should sail up on its Western side, having fourteen, sixteen, and eighteen fathoms, until you get inside the point, a little within which is a bank of seven or eight fathoms; but when you have passed over this you will again drop into sixteen, and seventeen fathoms; and as you approach the head of the bay, you will lessen your water to seven, six, and five fathoms, everywhere good anchorage, and well sheltered from all winds. The two islands of Griguet lie outside of Camel's Island, and together form between them several small but snug harbors for fishing vessels.

White Islands. WHITE ISLANDS.—You will now perceive the White Islands lying to the Northward of Stormy Cape from which they are distant one league, and about two and a half miles from the shore opposite; they are small, of moderate height, and have several rocks inside both above and under water; but these are not considered to be dangerous, as they are easily discoverable, even in fine weather, and the passage between them and the main is very safe.

Quirpon Island. QUIRPON ISLAND.—This lies off the Northeastern part of Newfoundland, and forms the S. E. point of entrance to the Strait of Belle Isle. It is large, high, and barren, and Cape Degrat is visible, in clear weather, full twelve leagues to seaward.

Little Quirpon. LITTLE QUIRPON.—There is a narrow channel which runs in to the Southward of Quirpon and divides it from the main; here lies Little Quirpon Harbor, to enter which there is no danger but what you will easily perceive. Vessels commonly moor head and stern, and lie there perfectly secure.

Degrat and Pigeon Coves. DEGRAT AND PIGEON COVES.—These coves lie on the Eastern side of Quirpon Island, and to the Northward of Cape Degrat; at their entrance are several small rocky islets and rocks above water, and affording behind them very fair security for shipping in four fathoms water, and good conveniences for fishing. Bauld Cape, which is the Northern extremity of Quirpon Island, lies in latitude 51° 39′ 45″ N., and in longitude 55° 27′ 50″ W.; it is rocky and steep to, and may be approached very near, with great safety. Having rounded this cape, you will perceive a rocky point to the Southward, leading to the harbor of Quirpon.

Great Quirpon Harbor. GREAT QUIRPON HARBOR lies on the N. W. side of the island, and its entrance is between it and Grave's Island; in your approach toward it from the Northward, you may borrow as close as you please to Bald Head, there being no invisible danger until you arrive at the entrance of the harbor, where there are some shoals which must be left on your port side; to do this, keep Black Head on Quirpon Island open of all the other land, until Raven Point comes over Noddy Point, then haul in for the harbor, going not nearer than the distance of half a cable's length from the point of Grave's Island; the anchorage within the island is everywhere good, with room and depth enough for any ship, and the ground holds well; but the best place to ride in will be toward the upper end of Grave's Island, abreast of Green Island, in nine fathoms water; the passage to the Inner Harbor, on either side of Green Island, is very good for ships of moderate water, through which you will have three fathoms, and above Green Island you have excellent riding in seven fathoms. There is also a passage to this harbor through Little Quirpon Harbor, but it is too narrow and intricate for any one to attempt, unless they are perfectly acquainted with the navigation.

Noddy Harbor. NODDY HARBOR.—This place lies a little to the Westward of Quirpon Harbor, and runs in between Noddy Point and Cape Raven; there is no danger in entering, and you will pass to the starboard of the little island that lies about a mile within the entrance and anchor above it in five fathoms water; or you may, with a small vessel, run farther up into the basin, and anchor in two and a half or three fathoms; here is a stage within the island, and on the Eastern side of the harbor, with convenient room for many vessels.

Gull Rock and Maria's Ledge. GULL ROCK AND MARIA'S LEDGE.—The Gull Rock lies W. N. W. from Bauld Cape, in the Island of Quirpon, distant two and a half miles; and N. N. E. ¾ E., nearly three miles from Cape Raven; it is always above water. Maria's Ledge lies nearly S. W. from the Gull Rock, distant two miles, and N. by E. one mile and a half from Cape Raven, being distant about a mile from Maria's Head. In standing in from the Northward for either QUIRPON or NODDY HARBOR, you need be under no apprehension of danger from the Gull or Maria's Rocks, for both are above water, the passage between them is half a league wide, and very safe; but it will be prudent to pass nearer the Gull Rock, because of the N. W. Ledge which never appears but in bad weather; this N. W. Ledge bears W., a little S., distant one mile and three fourths from the Gull Rock, and you should not attempt the passage between it and the main, on account of other rocks that are said to lie about it, and places of shallow water.

To the Westward are the Sacred Islands; Great Sacred Island lies about N. W. by W. ½ W. from Bauld Cape, distant five and a half miles, and S. E. by E. ½ E. from Cape Norman nearly thirteen miles. Little Sacred Island is one mile to the Southward of the great island; the passage between them is safe, and you may sail round both, for they

are high and bold: within them, on the main and to the W. S. Westward, is Sacred Bay, tolerably large, with numerous rocky islets within it; the shores of this place abound with wood, and therefore it is much resorted to for the use of the fisheries at Quirpon, Griguet, &c. Cape Guion forms the N. point of Sacred Bay, being high and steep; near it is a remarkable rock called the Mewstone, and much resembling that in Plymouth Sound. There is a little cove to the Southward of this rock, where a vessel may occasionally resort with safety.

Ha-Ha Bay.

HA-HA BAY.—From Cape Onion to Burnt Cape the course is W. ¾ N. about six miles; it has a white appearance, and rises from the seaward to a considerable height. On the Eastern side of Burnt Cape is Ha-Ha Bay, which runs in Southerly about two miles; it lies open to Northerly winds, but when you are within the cape you will find anchorage in six or seven fathoms; or you can go farther up and ride well sheltered in three or two and a half fathoms. This is a convenient place for the fisheries, and has plenty of wood.

Pistolet Bay.

PISTOLET BAY.—This bay lies between Burnt Cape and the Norman Ledges, which bear from each other N. W. by N. and S. E. by S., distant eight miles, the bay is extensive, and reaches several miles each way, having good anchoring ground in most parts, particularly on the Western side, a little above the islands, in about five fathoms water; the shore is tolerably well furnished with wood, and contributes to supply those places which are destitute of that article.

Cook's Harbor.

COOK'S HARBOR lies in the N. W. part of Pistolet Bay, and within the islands, about two miles above Norman Ledge Point. These ledges are about one mile to the Eastward of the N. point: to clear these dangers as you enter, be sure to keep Burnt Cape well open of the outer rocks, that lie off the islands at the Western entrance to Pistolet Harbor; and if going in, so soon as you consider yourself to be to the Southward of these ledges, steer in for the harbor, leaving the islands and rocks on your portside; keep the Southern shore on board, for fear of a ledge of rocks that juts out from a little rocky island on the other side; and so soon as you get within the island haul over to the Northern shore, and anchor in four or five fathoms water. This harbor is capable of being made very convenient, and several fishing rooms and proper stages for the boats to resort to, and cure their fish, might be erected in all the coves between it and Cape Norman.

Cape Norman.

CAPE NORMAN is the Northernmost point of Newfoundland, being of a moderate even height, and very barren appearance, which continues far inland; it is about a league to the Northwestward of the ledges from Cape Norman the shores of Newfoundland turn Southwesterly, and will be described hereafter.

Belle Isle.

BELLE ISLE, lying N. E. of the coast just noticed, and directly off the Atlantic entrance of the Strait of Belle Isle, is usually frequented by British and American fishermen. It is about nine and a half miles long in an E. N. E. direction, and three miles wide, including Lark Islet, close to its N. side. It is composed of a range of hills bare of trees, and which rise to the height of seven hundred feet above the sea. These hills are principally of granite, alternating with clay and slate, and their steep sides dip into the sea in every part, excepting at the N. E. end of the island where two low points converge so as to form a narrow creek, named Black Joke Cove, which shelters very small fishing vessels during the finest months of summer. Shelter may also be obtained in Lark Harbor, under Lark Islet, and in Valley Cove, at two and a quarter miles W. of the islet; but none of these coves are considered safe early in the spring or late in the autumn, because of the heavy swell which rolls into them from the Eastward.

The anchorage called Lark Harbor, between Lark Islet and the island, is only two cables wide, with deep water, indifferent holding ground, and much exposed to Easterly winds, but it having the advantage of two entrances, vessels are allowed a speedy and safe passage to sea.

Black Joke Cove, at the E. end of the island, is not more than one hundred and fifty feet wide, with twelve feet water. It is formed inside an islet joined to the island at low tide, and will only afford secure shelter to one or two small vessels moored head and stern; but in heavy gales from the Eastward, especially at high water springs, the breaking seas dash with such violence over the ledge of rocks and make it so unsafe, that the Newfoundland government granted £300 for the construction of a breakwater, which was completed in the summer of 1858, but it being of insufficient weight and strength, the whole of the material was swept into the cove.

In Valley Cove, at two and a quarter miles W. of Lark Islet, vessels may find fair anchorage and shelter during Easterly winds. The bottom is sand, and in the line of the points the soundings are seventeen fathoms, decreasing gradually to the shore.

The S. side of Belle Isle affords no anchorage, and there is hardly a creek where a boat might be saved.

The bottom around the island is, on the N. side sand and rock, but on the S. always rock. The water is deepest on the S. side; at the distance of two miles the depth is sixty fathoms, and the same depth, rock, at only one mile and a half from the N. E. ledge.

The S. W. extreme of Belle Isle bears S. E. ¾ S. nineteen miles from York Point, and N. E. ½ N. nearly fourteen miles from Cape Bauld, in Quirpon Island, at the N. E. extreme of Newfoundland. Between Belle Isle and Cape Bauld the deepest water is fifty fathoms, which is found near the island, but there is a middle bank of rock, sand, and shells of thirty fathoms. In the direction of Cape Norman the soundings are comparatively shoal, from twenty-two to thirty fathoms, sand and shell.

The narrowest part of the channel between Belle Isle and the coast of Labrador, is between Lark Islet and the St. Peter Islands, which are distant from each other nearly twelve miles; the depth increases gradually from either shore, until it reaches ninety fathoms, mud. There is said to be a small rocky bank, with five fathoms least water, about three and a half miles N. by E. from the Northeast end of Lark Islet.

Light. LIGHT.—The light-house erected on the Southwest point of Belle Isle is a circular stone tower, sixty-two feet high, faced with white firebrick. It exhibits, at an elevation of four hundred and seventy feet above the sea, a fixed, white light, of the first order, which is visible in clear weather from a distance of twenty-eight miles. It is lighted from sunset to sunrise, from the 1st of April to the 15th of December of each year. A gun is fired from the light-house during a fog.

Strait of Belle Isle. STRAIT OF BELLE ISLE.—The breadth of the channels, on either side of Belle Isle, has just been mentioned.

The entrance of the Strait of Belle Isle, between York Point and Cape Bauld, is twenty-six miles wide; the latter point bearing from the former S. by E. At Cape Norman, eighteen miles to the Westward of Cape Bauld, the opposite coast of Labrador is distant only fourteen miles; but the narrowest part of the strait is at Amour Point, in Forteau Bay, where it is only nine and a quarter miles wide. The western entrance of the strait, between Greenly Island and Ferolle Point, is nearly twenty-one miles wide; the point bearing from the island S. S. W.

The course and distance through the strait is S. 54° W. (true), or according to the mean variation, W. sixty-five miles.

The Newfoundland side of the strait is now being surveyed by Captain Orlebar, R. N.

Captain Bayfield, R. N., observed at Cape Norman, Green Island, and Ferolle Point, and the coast has been laid down by his observations. The old survey by Captain Cook, although only exhibiting a rude resemblance of the shores, was so generally faithful in pointing out the position of dangers, as to be very useful. It is a low coast, of limestone, partially wooded with spruce trees, and having no good anchorages for large ships, unless it be in St. Margaret's Bay; for the other harbors, such as Old Ferolle, St. Genevieve, &c., are too small, or too narrow and intricate in their entrances, for vessels to run to for shelter in bad weather. There are dangerous ledges off this side of the strait, between Green Island and Ferolle, which render it desirable to avoid it at night, or in thick weather. The opposite coast is much more free from danger, and, besides, has several good roadsteads. It is composed of steep granitic shores, from York Point Westward to Cape Diable, where sandstone commences, and continues to Grand Point, at the Western entrance of the strait, lying on the granite, and occasionally forming magnificent cliffs, several hundred feet in height.

Soundings. THE SOUNDINGS in the strait are not so irregular, but that they will afford assistance to a vessel at night, or during the fogs which so frequently prevail. The deepest water is on the Labrador side—as, for instance, from York Point to Red Bay, where, however, it is interrupted by the shallow water of Wreck Bay. It is also very deep on that side from Black Bay to Forteau Bay inclusive; but the line of deep water is not direct, nor, we believe, continuous through the strait; and it is still more perplexing that there is as deep water within two miles of the dangerous Flower Ledge, on the Newfoundland side, opposite Forteau Bay, as in any part of the strait. The depth of water varies in different parts from between sixty and seventy to twenty fathoms; and the nature of the bottom is as various as the depths, being sometimes of rock and at others of sand, broken shells, pieces of coral, or gravel.

Tides and Currents. TIDES AND CURRENTS.—Near the shores, on either side of the Strait of Belle Isle, there is usually a regular alternation of flood and ebb in fine weather, but it is not constant.

The flood comes from the Northward, along the coast of Labrador, and also from the Southeast, from Cape Bauld to Cape Norman. The latter stream we have reason to believe, is often turned off to the Northward, by Cape Norman, and the same thing takes place at Green Island, on the Newfoundland side, toward Greenly Island, on the opposite side of the strait. There is, moreover, at times, a stream running from the Southwest for several days together along the West coast of Newfoundland. This stream occasionally sets from Ferolle Point obliquely across the strait, toward Forteau Bay.

Sometimes, and especially with Northeast winds, the current runs directly in an opposite direction along the W. coast of Newfoundland, from Ferolle Point past Rich Point. In short, there is no constancy either in the rate or set of these streams, for the

winds and the irregular tides modify the set and rate of the equally irregular currents, in a manner which it is extremely difficult, if not impossible, to calculate upon with any degree of certainty. The prevalent current from the Northward comes from between Belle Isle and the coast of Labrador. It is often at the temperature of the freezing point, bringing many icebergs into the straits, and frequently carrying them through it many miles up the Gulf. Some of these bergs ground in deep water, while others are continually changing their positions. They are much more numerous in some seasons than in others; two hundred bergs and large pieces of ice were counted in the strait, in the month of August, in one year, while there were not above half a dozen to be seen in the same month of the following season.

This current has been observed from the Northward and Eastward, assisted by the Northeast winds, running full two miles an hour, while at other times it was almost insensible.

It is even reported that there is sometimes a current in the opposite direction, and this report of the fishermen is, very probably, correct, especially during the ebb tide, and when Southwest winds prevail in the Gulf. At the same time that this current is running to the Westward, there is, at times, a stream of warmer water running out to the Eastward, on the Newfoundland side, especially during the ebb tide.

Navigation of the Strait in Fogs.

NAVIGATION OF THE STRAIT IN FOGS.—From these remarks, it will plainly appear that the navigation of this Strait of Belle Isle is attended with great danger in dark or foggy nights, during which no vessel should attempt to run through; for we found that, with all our experience, we could not be sure of the vessel's position within ten miles, under such circumstances. On the approach of a dark or foggy night, therefore, it would be prudent to anchor in some one of the bays on the N. side of the strait, rather than to continue under way. A vessel bound into the Gulf, and running with an Easterly wind, will however, find no place fit for that purpose until she arrives at the indifferent anchorage of Black Bay, for Red Bay cannot be entered by a large vessel with an Easterly wind.

Loup Bay.

Loup Bay is the first good anchorage under such circumstances, and there the vessel would be so far advanced in her run through the strait, that it would not be worth while to stop, since she might easily clear everything in the remaining short distance. But with a Southwest wind, at the approach of night, and appearance of a fog, a vessel bound out through the strait to the Eastward had better stand off and on, under easy sail tacking by the deep-sea lead, from the Newfoundland side till morning, if she be not farther to the Eastward than Ferolle Point. If she be farther advanced, she had better endeavor to make Forteau Bay before dark, and anchor there for the night. In light winds or calms, during dark nights or foggy weather, it is better to bring up with a stream anchor, anywhere in the strait, than to drive about with the tides, without knowing whither, but then a lookout must be kept for drifting icebergs. The lights exhibited on the Southeast point of Belle Isle and Amour Point, and from which fog-whistles are sounded, or a gun fired, in fogs and snow-storms, now greatly lessen the dangers of the navigation.

Fogs occur with all Southerly and Easterly winds, and they are frequent likewise with the Southwest wind; it is only when the wind is from between the North and West, that clear weather can be safely reckoned upon.

THE SOUTHERN COAST OF NEWFOUNDLAND.

FROM CAPE RACE TO CAPE CHAPEAU ROUGE.

Currents.

REMARKS.—It is well understood by all the boat-masters, that there is in general a strong current setting in from the Eastward, along the Western coast of Newfoundland, which, after passing Cape Pine, runs more toward St. Mary's and Placentia bays; this current will be felt at least twenty leagues to the S. W. of Cape Pine, and becomes more rapid as you approach the land; its velocity increasing as the winds favor its direction; but at all times of sufficient magnitude to endanger the safety of any vessel approaching from the S. or W. in foggy weather, and being ignorant of its existence.

In order to avoid the danger arising from this current, the fishermen in foggy weather, when returning from the Western coast to their homes on the Eastern shore, invariably use the lead, depending more upon the depth of water than their compass, and always keeping a sufficient distance from the land to insure the safety of the vessel. On passing to the Eastward of Cape Race they never approach nearer to the land than thirty-five fathoms water; the ground being more of an inclined plane on the West than on the East coast, you will find that depth of water at a considerable distance; the ground becomes more broken, and the depth of water increases so fast, that in your course from Cape St. Mary's to avoid Cape Race, you will, when to the Eastward of it, find yourself in fifty fathoms, and when advanced a very short distance farther, you will drop into

sixty and seventy fathoms; consequently, you will then be clear of any land, and may safely pursue what course you think proper; but in all this navigation, the mariner's safety may be insured by a due attention to the lead.

Although the current between the Grand Bank and Newfoundland is ordinarily to the W. S. W., sometimes nearly one mile per hour; it is not invariably so, and near the shore, in moderate weather, it changes with the tide. During the flood it runs to the S. W., and during ebb to the N. E., the former being the stronger.

Westward of Cape Race, it must also be remembered, that the current so frequently setting to the N. W. one mile per hour in the offing is not invariable in strength or direction, but is affected greatly by the prevailing winds. It is observed generally to run in upon the Eastern side of the great bays indenting the South coast of Newfoundland, and out upon the Western.

In the offing it is influenced by the winds, and near the shore it is altered and influenced by the tides, so that during spring tides the stream of ebb runs nearly to the S. E., and the stream of flood to the N. W., the latter sometimes two miles per hour round the headlands.

Capes Race and Pine. CAPES RACE AND PINE.—Coming from the Westward in thick weather Capes Pine and Race may be rounded with perfect safety if only attention be given to the lead. The water shoals gradually to the shore, and at the distance of ten miles there is not more than forty fathoms; so that maintaining a depth of more than thirty fathoms no risk can be incurred.

Coming from the Eastward in thick weather, if sounding carefully the Ballard Bank which extends fifteen miles nearly parallel to the shore, is nearly sure to be crossed and a careful comparison of the soundings obtained, with those on the chart will show the position of the vessel with sufficient accuracy to enable the navigator to round Cape Race without danger.

Cape Race Light and Beacon. *See* p. 3. Cape Race, on which there is a light-house and beacon, is situated on the Southernmost part of Newfoundland, and lies S. W. ½ W., distant three leagues from Cape Ballard: before it lies two or three rocks above water; these are close to the land, and have ten fathoms water very near them. Between six and seven miles E. S. E. from Cape Race is the Mew Bank, being four miles long and one and a half broad, and lying N. E. by N. and S. W. by W.; on it are seventeen, twenty, and twenty-five fathoms, with very deep water on its outside, and thirty fathoms just within it. Vessels making this part of the coast may know their approach toward the land, by suddenly lessening their water to the above depths.

Near Cape Race is a small inlet named Cripple Cove; the land then turns Westerly toward Mistaken Point, a distance of four and one fourth miles; the shores are bold, and off Mistaken Point is a rock above water. N. W. by W. about two miles, is the French Mistaken Point: this also has a rock off its extremity. Hence the shore winds N. by W. into Trepassey Bay, at the Northern part of which lies Biscay and Mutton bays, and Trepassey Harbor. The two former of these are seldom frequented, and it is considered dangerous to get embayed there, for the sea commonly drives in, and there is hardly any current to help you out again. Mutton Bay is formed to the Eastward by Cape Mutton, and to the Westward by Cape Powles; this last is the extreme point of a narrow neck of land that divides Mutton Bay from Trespassey Harbor: it is a long, low, sandy, and stony beach, over which the ships lying in Trespassey Harbor can be distinctly seen. Mutton Bay is about two miles deep, and has from twelve to thirteen fathoms water in it; but the bottom is foul and rocky.

Trepassey Harbor. TREPASSEY HARBOR.—The entrance to this harbor is to the Eastward of Cape Powles, and the direct course in will be N. E. ½ E. Cape Powles lies from French Mistaken Point N. W., about eight miles; from Cape Mutton W. S. W. ¾ W., one mile; and from Cape Pine N. E. by E., five miles. The entrance to Trespassey Harbor is three fourths of a mile wide, and continues of that breadth full two and a half miles up; it then narrows to less than half a mile, and opens again to its former width, and there vessels commonly ride. To enter this harbor ships commonly steer over from Mistaken Point toward Cape Pine, until you fairly open the harbor; you may then run safely along the shore, for it is bold. In sailing into the harbor you will meet with a rock on the Southeastern shore, lying about a mile from Powles Head, and one third a cable's length off the shore. There is, also, on the Northern side a shoal which runs along up the harbor, so far as a low green point; to clear this shoal, bring Baker's Point on with a low rocky point at the entrance of the harbor; and when you get so far up as the low green point, you may steer more Westerly, and anchor either in the N. W. or N. E. arm, in five or six fathoms water. Both wood and water can be obtained with ease.

Cape Pine Light. CAPE PINE.—On this cape there is a light-house three hundred and two feet above the level of the sea. The tower is fifty feet high, painted red and white alternately. The light is a fixed one.

Freels Rock. FREELS ROCK, with twenty-four feet water, the only danger off Cape Pine, bears from Cape Pine Light W. ½ S. distant three miles. In running along the land to the

Westward, it may be cleared by not shutting in any of the land of Cape Mutton until Cape English comes in sight.

From Mistaken Point to Cape Pine the course and distance are W. N. W. ¼ W. five leagues; and from Cape Pine to Cape Freels, W. one mile. The land about Cape Pine is barren and moderately high; from Cape Freels, the shores extend W. N. W., one mile to Shoal Point, and thence N. W. ¾ W. to the Eastern reef and head of St. Shot's Bay.

ST. SHOT'S BAY.—This is the fatal spot where so many vessels have been recently wrecked; the bay is about a mile deep, and from the Eastern to the Western head, the bearing is N. by W. ¾ W., distant one mile and a quarter; it lies entirely open and exposed to the sea. *St. Shot's Bay.*

ST. MARY'S BAY.—This is an extensive bay, or gulf, commencing on the Eastern side at St. Shot's, and on the Western side at Point Lance; the course from the Eastern head of St. Shot's to Point Lance, being N. W. ½ W., twenty-one and a half miles; thence the land runs up E. N. E. nine leagues and a quarter; the land on each side being moderately high, and having several good harbors in it. In proceeding from St. Shot's along the Eastern shore you will pass two little coves, and reach Gull Island; this lies close into the land, and bears from the Western head of St. Shot's N. ¼ E., distant four miles. *St. Mary's Bay.*

From Gull Island to Cape English the bearing and distance are N. by E. ¾ E., two leagues; Cape English is high tableland, terminating in a low rocky point, and forming Holyrood Bay, about a mile deep, to the Southward of it; at the bottom of this bay is a stony beach, within which is Holyrood Pond, running E. N. E. nearly four leagues, and about a mile in breadth; this occasions the cape to appear like an island when you are to the Southward of it. One mile and three quarters N. E. ¼ N. from Cape English is False Cape; six and a half miles E. N. E. from Cape English is Point la Haye; this is low, and has a ledge of rocks running from it about a quarter of a mile into the sea, and above a mile along the shore, on which the waves break furiously in bad weather; this is the only danger you will meet with in St. Mary's Harbor. *Holyrood.*

ST. MARY'S HARBOR.—From Point la Haye to Double Road Point, which is the Southern extreme of St. Mary's Harbor, the course and distance are E. N. E. one mile and a half, the land between is low, and wears a barren appearance. Within Double Road Point is Ellis' Point, distant half a mile; these two form the starboard points of entrance to the harbor, which is here nearly a mile wide. You will now perceive the river to be divided into two branches, the one running E. N. E. into what is called Mal Bay, the other Southeasterly into St. Mary's Harbor. When you are within Ellis' Point, in St. Mary's Harbor, you can haul to the Southward, and anchor abreast of the fishing stages and houses, upon a flat, in four or five fathoms water, where you will ride landlocked; this flat runs off shore about half a mile, and between it and the opposite shore are from fifteen to thirty fathoms water. The best anchorage is about two miles above the town, opposite to Brown's Pond, where it is about half a mile wide; here also you will lie landlocked in twelve fathoms, and have excellent ground to the farther end of the by. *St. Mary's Harbor.*

MAL BAY, on the E. N. E. branch, is about one mile wide, and runs up two and a half miles; but the anchorage is not good; a heavy sea frequently sets into it, and unless you run up to its very head in five or six fathoms, you can have no place even for occasional security. It therefore is seldom resorted to. The entrance to these harbors bears from Point Lance nearly East, distant nineteen miles. From Trapeau Point the coast runs N. N. E. ¼ N., above two miles to Shoal Bay; and opposite to the Northern point of this Shoal Bay lies Great Colinet Island. This is about a league in length and one mile broad; the Southern end of which bears from Cape English N. by E., distant three leagues. There is a safe channel on either side of this island, only taking care to give Shoal Bay Point a good berth of a quarter of a mile, in order to avoid some rocks which lie off it. On the Northern side of the Great Colinet is a stony beach, off which runs a bank with from seven to seventeen fathoms water, rocky ground. One mile and a half Northeastward from Great Colinet is Little Colinet Island, above a mile in length, and half a mile in breadth. There is deep water all round it. *Mal Bay.*

GREAT SALMON RIVER.—E. N. E. five miles and a half from the Northern part of Little Colinet Island, is the entrance to Great Salmon River, which is nearly three quarters of a mile wide, and runs E. N. E. seven or eight miles. About three miles up this river, and on its Southern shore, is an opening called Little Harbor. Opposite this, in a small cove, is the best anchorage in the river, although it is generally good throughout. Here you may ride safely in five or six fathoms water. The river narrows as you advance up it, and toward its farther end becomes very shallow. *Great Salmon River.*

COLINET BAY.—N. W. by N. from the entrance of Great Salmon River, distant two and one fourth miles, and N. E. ½ E., five and a half miles from Little Colinet Island, is the mouth of Colinet Bay. Between Salmon River and Colinet Bay, is a cove a good mile and a half deep, with from thirteen to four fathoms in it, but it is exposed to the S. W., and therefore not much resorted to. Colinet Bay runs in N. E. by N. about two *Colinet Bay.*

miles, where the point of an island on the starboard side narrows the passage; having passed which, the channel opens wider again, and the top of the bay is a sandy, shallow beach. Throughout the whole of Colinet Bay the anchorage is good. You will have from twelve to six fathoms water up to the narrows. In passing the narrows there are seven and eight fathoms, and above it six, five, and four fathoms; all good ground.

North Harbor. NORTH HARBOR.—To the W. S. W. of Colinet Bay, four miles, and N. by E. about two miles from the Northern end of Little Colinet Island, is the entrance to North Harbor, which is three fourths of a mile wide, and runs up to the Northward three miles. The anchorage is very good about two miles up the river, where it is half a mile wide, in five or six fathoms; or vessels may run farther up, where two sandy points stretch out, being half a cable's length asunder; keep the starboard point on board, and anchor close within the starboard shore. In entering North Harbor always keep mid-channel, for the Eastern land is somewhat shallow.

The land now trends W. S. W. ½ S. toward Point Lance. There are one or two coves in the way, but no place fit for the reception of shipping.

Point Lance. POINT LANCE lies in lat. 46° 48′, and is a low ragged point, although the land in the interior rises up and becomes highly elevated. We have already stated that the course and distance from the Eastern head of St. Shot's to Point Lance is N. W. ½ W., about twenty-two miles; from Point Lance to Cape St. Mary is N. W. ½ W., about five and three fourths miles.

Bull and Cow Rocks are W. 2° S. from Cape Lance one and three fourths miles; they are two flat rocks having many small rocks about them.

Lance Rock, with twelve feet least water, is S. W. ¾ S., one mile and three fifths from Lance Point; to clear this rock keep St. Mary's Light open of the Bull and Cows.

False Cay, of twelve feet least water, bears from the light S. W. by S. five and seven tenths miles, and from Lance Point W. 2° S.

St. Mary's Cays.—Awash at high water; bear from St. Mary's Light S. W. by S. six and a half miles.

Cape St. Mary Light. CAPE ST. MARY.—There is a revolving light on Cape St. Mary, showing a red and white light alternating every minute. It is three hundred and twenty-five feet above the level of the sea, and can be seen thirty miles in favorable weather from the vessel's deck. Lat. 47° 36′, long. 54° 3′ 30″ W. The tower is of brick, and on each side of it stand the keeper's and assistant's dwellings, the sides of which are painted white, and the roofs red.

Cape St. Mary is a high bluff point of land; the land to the Northward along shore, to a considerable distance, has an even appearance, and is nearly of equal height with the cape itself. Between the above-named rocks and Cape St. Mary are twenty-four and nineteen fathoms water; and near the Cape are thirteen, fourteen, and fifteen fathoms. Vessels, therefore, may proceed between them, and also between the Bull and Cow Rocks and the main, if necessary, for there is no hidden danger; but perhaps it will always be more prudent to go to the Southward of both.

In St. Mary's Bays, on the E. side of the cape, five and a half miles, E. ¼ S. from Point Lance, and S. W. ½ W. 1.9 miles from Hare's Ears, is Red Cove Rock, with eighteen feet water; and five and a half miles E. by N. from this, and S. ½ E., two miles from Red Head, is Red Head Rock, with twenty-four feet least water.

Rocks. In Placentia Bay, on the W. side of the cape, there is—

Perch Rock, fifteen feet water, 5.7 miles N. by W. from the light.

Nest Rock, nine feet water, 6.2 miles N. from the light.

Curslet Rock, twelve feet water, 1.85 miles W. by S. from Point Breme.

Patrick Rook, nine feet water, N. E. by N. 3.3 miles from Point Breme.

South Rock, nine feet water, 1.7 miles S. W. by S. from the Virgin Rocks.

False Girdle, six feet water, S. S. W. ½ W., 1.4 miles from the Virgin Rocks.

Gibraltar Rock, lying 1.25 miles W. from Point Verde, has only four feet water instead of eight, as given in the old charts.

Placentia Bay. PLACENTIA BAY.—The entrance to Placentia Bay is formed by Cape St. Mary on the E., and Cape Chapeau Rouge, or Mountain of the Red Hat, on the W., the former lying in latitude 46° 49′ N., the latter in 46° 53′ N., bearing from each other W. N. W. and E. S. E., distant seventeen leagues. Cape Chapeau Rouge is the most remarkable land on all the coast, appearing higher than the surrounding shore, and somewhat like the crown of a hat, from which singularity it obtains its name; it is visible eleven or twelve leagues to seaward in clear weather.

From Cape St. Mary to Cape Breme your course will be N. by E. about nine miles, and from Point Breme to the Virgin Rocks N. E. by E. thirteen miles; these rocks lie one mile and a half from the main, and always appear above water; a little to the Southward of the Virgin Rocks are some whitish cliffs in the land, by which it may be known if falling in with the land hereabouts in thick weather.

From the Virgin Rocks to Point Verde, the Southernmost point of Placentia Harbor,

the course and distance are N. E. by E. ¼ E., five miles. From St. Mary's Cape to Verde Point there is no harbor or place of shelter for ships of any size.

PLACENTIA HARBOR.—Point Verde or Green Point is low and level, and forms the Southern point of the road. It has a pebbly beach on each side, and several fishing stages within it. At the end of this beach is a high rocky cliff, extending to the S. E. corner of the bay, where it again terminates in a pebbly beach. This beach then runs E. N. E. one mile to the Fort Point, and on the inside, which faces the S. E. arm of the harbor, stands the town of Placentia. A little Southward of the town is a high hill, with a remarkable cliff on the middle of the beach. The outside of the N. Point is level, with a clay cliff on its outer part, bearing nearly N. E. by N., distant from Point Verde one mile and a half. From this point the land forms a small bay, with a stony beach round it, to the corner of the cliff under Signal Hill. This cliff continues to Freshwater Bay, which is formed in a valley between Signal Hill and Castle Hill, having a pebbly beach round it. Here a small rivulet runs down the valley, at which vessels may obtain water. To sail into this road, if coming from the Southward, you should keep a league off the land, in order to avoid the Gibraltar Rock, which lies about two miles to the Westward of Green Point, and has only eight feet water over it; the mark to go to the Northward of which is the castle, standing on a hill at the Northern side of the harbor, and very conspicuous to the seaward, open of Point Verde. When you have this castle on with the point, you will pass a little to the Northward of the rock; but when you have the castle well open of the point, you will give the rock a wide berth: run in with this mark; keep your lead going; for there are regular soundings on both sides, and give Green Point a good berth of two cables' length, passing it in four fathoms water; then proceed to the anchorage in Freshwater Bay, and under Castle Hill, at three fourths of the distance over from that side, where you will lie in six or seven fathoms water, good ground. At the bottom of the road is a long beach, which terminates in a point to the Northward, on which stand some houses and an old fortress. There is also a fort on the opposite point. The entrance to the harbor is between these. It is very narrow, not above sixty fathoms across, and has three and a half fathoms water in it. When you get within these points the harbor opens, becomes one third of a mile wide, and extends E. N. E. above one mile and a half, where ships may lie in perfect security, with six and seven fathoms water. In going in, keep nearer to the starboard side. The stream runs into the harbor more than four knots an hour. The tide rises six or seven feet; and it is high water, full and change, at fifteen minutes after 9 A. M. *Placentia Harbor.*

N. E. ½ E. from Point Verde, distant two miles, and N. N. W. from Moll Point, above three fourths of a mile, is the Moll Rock, over which are only twelve feet water, with eight and ten fathoms near it. N. E. by N. five and one fourth miles from Point Verde, is Point Latina. S. W. from Point Latina, distant one mile, is the Wolf Rock. These lie about half a mile from the main, and between Placentia Harbor and Point Platina, and therefore must have a good berth in passing. The shore all the way is low near the sea, but high and ragged inland. A large mile to the Eastward of Point Latina is Point Roche which has a shoal off it, extending one fourth of a mile out. *Moll Rock.*

Placentia Harbor has now only ten feet water at the entrance instead of eighteen feet, as at the time of Cook's Survey.

BURIN is on the W. side of Placentia Bay. *Burin.*

Mortier Rock, eighteen feet on Mortier Bank, lies E. by S. ½ S. from Burin Lighthouse distant 6.4 miles.

Near the S. entrance to Burin Harbor, six hundred and sixty fathoms S. by E. from little Burin Island, lies Emberly Rock, with twenty-four feet water. And S. W. by S. two hundred and thirty fathoms from Cat Island, lies Cockle Rock, with eighteen feet of water. Also W. one hundred and seventy fathoms from Poor Island, lies Poor Rock, with twelve feet of water. Within the entrance, and half a mile E. N. E. from Neck Point, and one hundred fathoms from the shore of Burin Island, lies Mine Rock, with [illegible] feet of water.

Off Sauker Head there are two rocks instead of one, the outer, with twenty-one feet water, lies S. by E. ¾ E. two hundred and fifty fathoms from the head.

Off Small Point, W. by S., ½ S. three hundred and fifty fathoms, lies Bass Rock, with twenty feet of water.

LITTLE PLACENTIA HARBOR runs in to the Southward from Point Roche; and E. by E. ½ E. from Point Roche, distant two miles, is the opposite of Fox's Point, which may be considered to be the Eastern entrance to Placentia Sound. On the Western side of the Sound is the harbor of Little Placentia, which extends W. by S. above one mile and a half, and is nearly half a mile broad. There is good anchorage in a cove on the Northern shore, which you may know by the Western side of it being woody. Off the E. point of the cove lies a shoal, stretching nearly one third across the channel. In this cove are seven and eight fathoms water. To the Eastward an arm also runs in *Little Placentia Harbor.*

almost a league, with deep water, but little frequented: it is called Placentia Sound. Fox's Harbor is a small sandy cove, fit for boats only.

Ship Harbor. SHIP HARBOR.—From Point Latina to Ship Harbor the course and distance is E. nearly seven miles. This inlet runs up Northerly two miles and three fourths, and is half a mile wide. The best anchorage is in a cove on the W. side, in ten fathoms water, about one mile from the entrance.

Fox Island. FOX ISLAND is small and round, and lies N. E. ½ N., distant three miles from Point Latina, and N. W. by W. full three miles from Ship Harbor Point; this latter is a low stony point, lying a mile and a fourth from the entrance of the harbor. Between Fox's Island and Ship Harbor Point is a ledge of rocks, which, in bad weather, will show breakers quite across. Between the rocks are two and a half, five, seven, and ten fathoms water. N. N. W., one mile and a half from Fox's Island, is Fishing Rock, a steep rock always above water; and N. N. E., one mile and a half from Fishing Rock, is Rowland's Sunken Rock, over which the sea most commonly breaks.

The Ram Islands. THE RAM ISLANDS.—These are a cluster of high islands, lying nearly N. E. ¾ E. from Fox Island, distant three miles. On the Eastern side of these islands is Long Harbor. There is no danger on entering this place, but the best anchorage will be on the Northern side, to the Eastward of Harbor Island, between it and the main, in six or seven fathoms water, where you will ride secure from all winds.

From Long Harbor the shore runs N. N. E., N. by E., and N., full fifteen miles, having no harbor or place fit for the reception of vessels, until you reach Little Harbor, Little South Harbor, and Great South Harbor. Within this space are said to be several low islands and rocks; one of which, called the White Rock from being covered with the dung of birds, lies N. E. by N. from Point Latina, distant thirteen miles, and direct midway between Fox Island and Little Harbor. It is abreast of a small place called Tinny Cove, and full two miles off the land. Vessels pass on either side.

Little Harbor. LITTLE HARBOR has very bad anchorage, and is much exposed to S. Westerly winds: therefore not much frequented.

Little South Harbor. LITTLE SOUTH HARBOR lies one mile to the N. Westward of Little Harbor, and has several rocky islands at its entrance, which, in sailing in, must be left on your starboard side, excepting one, on either side of which there is a good passage, with fifteen fathoms water. On the Southern shore, within these islands, is a sunken rock, over which the sea commonly breaks; it lies about a cable's length from the land. Nearly opposite are also some rocks, half a cable's length from the shore, which appear at half ebb. This harbor is one mile and a half long, half a mile wide, and has seven, eight, ten, and twelve fathoms water in it; and the ground, except where these rocks are situated, tolerably good.

Great South Harbor. GREAT SOUTH HARBOR lies one mile to the Northward of Little South Harbor. Its entrance is between the middle point and the Isle au Bordeaux, one mile and a fourth wide, with from twenty to thirty fathoms water. There is no danger in going in, and the anchorage one mile and a half up, or near the head of the harbor, is very good, in six or seven fathoms water.

Chance Harbor. CHANCE HARBOR.—The Isle au Bordeaux is a high round island, from which the coast runs N. Easterly four miles, to the entrance of an inlet, calted Come-by-Chance. This runs up full three miles, and has from twenty to three fathoms water, gradually decreasing in depth unto the farther end. Vessels may anchor here on a sandy bottom, but they will be quite exposed to S. Westerly winds.

North Harbor. NORTH HARBOR.—About N. N. W., three miles from the entrance of Come-by-Chance, is that of North Harbor. It is above a mile wide, and there is no danger in sailing into it; but, like the former, it is too open to be trusted to. There is, however, fair anchorage about two miles up in seven fathoms water.

Piper's Hole. PIPER'S HOLE.—N. W. by N., distant two and a half miles from the entrance to North Harbor, is that which leads to Piper's Hole. The channel in it is between Sound Island and the main. In the passage you will have nineteen, fifteen, and twelve fathoms; and when to the Northward of the island, eight, seven, and six fathoms. Hence Piper's Hole runs to the Northward full five miles; but the water is shallow and unfit for shipping. From Piper's Hole, in a S. W. direction, lie Sound, Woody, and Barren Islands, having a channel between them and the N. Western shore half a mile wide, in which are from seven to twenty fathoms, and good anchorage all the way. Between Woody and Sound islands is a passage with from seven to sixteen fathoms water in it; that between Woody and Barren islands is much wider and deeper, having forty and fifty fathoms. Opposite the Northern part of Barren Island is a small cove, called La Plant, fit only for boats. Barren Island is three and a half miles in length, and one mile in breadth; it is high land, and at its S. Eastern part is a small cove, to which is tolerably good anchorage, in from eight to sixteen fathoms. N. W. by W. from the Southern part of Barren Island is Gulsh, an inlet of very little importance. Farther S. W. are Great and Little Sandy Harbors.

GREAT SANDY HARBOR lies W. ½ S., distant four miles from the S. end of Barren Island. To this place there is a passage between Ship Island and the main, with seven, nine, and seventeen fathoms water; but the entrance to the harbor is very narrow, and much encumbered with rocks: these are all above water, and have channels between them; but when you get within the harbor there are six and seven fathoms, and good shelter. *Great Sandy Harbor.*

LITTLE SANDY HARBOR is one fourth of a mile to the Southward of the Great Harbor; in it you will have six and seven fathoms water, good ground. In sailing in, you should pass to the Northward of a low rock which lies at the entrance. You may readily know this harbor by the Bell Island, which lies S. E. ½ E. one mile and a half from the mouth of it, and N. E. by N. thirteen miles from the Western point of Merasheen Island. This island has a remarkable appearance, resembling a bell with the bottom upward. *Little Sandy Harbor.*

CLATISE HARBOR, &c.—S. W. by S. from Bell Island lie the Burgoe Islands, and farther S. the White Islands. S. W. by W. from the Burgoe Islands, nearly five miles, is the entrance to Clatise Harbor, between the Great Isle of Valen and the main. The shore all along from the Sandy Harbors is steep to, and the passage to Clatise three fourths of a mile wide, with forty and fifty fathoms water; but the cove itself is very narrow. The best anchorage is in the Western branch, which is a mile long, in from ten to seventeen fathoms water, good ground. There is also a good channel from the Southward, between Great and Little Valen islands and the main, with twenty, thirty, and fifty fathoms in it. *Clatise Harbor.*

GRAMMER'S ROCKS.—These are a cluster of low rocks just appearing above water, and lying E. by N. ½ N. one mile and a half from the Northern end of Valen Island. There is a passage between Great and Little Valen islands, but it is encumbered with several rocks. *Grammer's Rocks.*

MERASHEEN ISLAND.—This is a long narrow island, running nearly in the direction of the coast full six leagues. Off its Northern shores is a large cluster of rocks and islands, denominated the Ragged Islands. At its Southwestern part is a small but good harbor, with from six to ten fathoms water in it. To sail into this place, you should keep the starboard shore on board, in order to avoid a sunken rock that lies a cable's length off a ragged rocky point on the port side going in. There is also a small cluster of rocks lying off the Southeastern part of the Merasheen, three fourths of a mile from shore: these lie between it and Red Island. Shoals also extend twelve miles S. S. W. of Merasheen Island. *Merasheen Island.*

RED ISLAND is high, being visible eleven or twelve leagues, and wears a barren appearance, about four and a half miles long and two and a half broad. Its Southern point bears N. N. W., distant eleven miles from Placentia Road, and E. by N. sixteen leagues from Mortier Head. On the Eastern side of the island, and near its Northern end is a small cove or bay, fit only for small craft. *Red Island.*

LONG ISLAND.—Directly N. E. from Red Island, distant seven miles, lies the main body of Long Island, and midway between them is Woody Island, off the S. W. of which are two small rocks above water. The passage between Red and Woody islands is otherwise clear from dangers, and nearly three miles wide: that between Woody and Long islands is two miles across: both have deep water. Long Island is irregularly shaped, and indented with inlets. Its length is full eight miles; its breadth nowhere much above one. Off its Southern end is Iron Island, and a small rock above water; the Southern point being formed of high and steep rocks. From Point Latina to this end of Long Island, the course and distance are N. ½ E. four and a half leagues, and thence to Indian Harbor, which is situated on the Eastern side of Merasheen Island, N. W. by W. four miles. To enter this place, you may go on either side of a small island at the entrance; the passage is safe, but the only anchorage is to the Westward of the island, between it and Merasheen, and here the ground is uncertain. *Long Island.*

HARBOR BUFFET.—On the Eastern side of Long Island, about a league from Iron Island, is Harbor Buffet, a tolerably good harbor, the entrance to which is narrow, but has thirteen fathoms water in it. This place may be known by the islands that lie in the mouth and to the Southward of it, and by Harbor Buffet Island, which lies E. ½ S. one mile from the entrance. To sail into this harbor, you must steer to the Northward of the islands at its mouth, and being within them, you will perceive the harbor divides into two branches, one running Westward, the other Northward. The best anchorage is in the Northern arm, in fifteen fathoms water. *Harbor Buffet.*

MUSCLE HARBOR.—On the Western side of Long Island, and about four miles from its Southern end is Muscle Harbor, the entrance to which is between a low green point on the starboard side and a small island on your port. The harbor is nearly two miles long and one broad, and has from ten to twenty fathoms water within it. Vessels bound to this place, may run in between Woody and Iron islands, from the Southward, or between Long and Merasheen islands from the Northward; but in the latter track there are some rocks to be guarded against, which lie nearly mid-channel between the North- *Muscle Harbor.*

ern ends of both islands. There are also some rocks above water, to the Northeastward of Long Island, called the Bread-and-Butter Islands; but these are always visible and steep to.

Presque. PRESQUE.—W. N. W. ¾ N., distant four miles from the Southwestern point of Merasheen Island, lies the little Island of Presque. The water here is sufficiently deep, but there are so many rocks about its entrance, that it is rendered thereby difficult of access. S. W. ½ W. two miles from Presque, is the Black Rock, and one fourth of a mile within this is a sunken rock. West from the Black Rock, distant two miles, is the Island of Marticot, about one mile in length, and half a mile broad. Within the Black Rock and Marticot Island lie the harbors of La Perche and Little and Great Paradise.

La Perche. LA PERCHE runs in to the Northward of the Black Rock. Its entrance is difficult, and there is no good anchorage. Little Paradise lies to the Westward of La Perche, and to the Northward of the E. point of Marticot Island. The only safe anchorage is in a cove, at the head of the harbor, on the port side; there you may moor to the shore, and lie landlocked. Great Paradise is fit only for boats; it lies to the Westward of Little Paradise. Between the Northwestern Point of Marticot and the main is Fox Island: between these islands is a safe passage into Paradise Sound, with nine fathoms; but vessels must never attempt going between Fox Island and the main.

Paradise Sound. PARADISE SOUND.—To the Westward of Fox Island about one mile is the entrance to Paradise Sound, extending N. E. by E. four leagues, and being about one mile broad, having very deep water throughout, and no safe anchorage, except at its head. Just within the sound, on its Eastern side, is a cove, with ten fathoms water; but there are several rocks above water in it, and the bottom is rocky, so that you cannot well anchor there. In passing to the Northwestward of Fox Island, there is a sunken rock which must be avoided. To the Southwestward of Paradise Sound lies Long Island, running W. S. W. ½ S. about three and a half miles: it is principally high land, making in several peaks.

Petit Fort Harbor. PETIT FORT HARBOR.—One mile to the Westward of Paradise Sound lies Petit Fort Harbor, a very good inlet, having in it from fourteen to seven fathoms water, good ground. The entrance is more than one fourth of a mile wide, and lies, N. E., distant five miles from the S. point of Long Island, and N. by E. two and a half miles from the N. point of the same. There is no danger in going in; and the best anchorage is on the starboard or Eastern side, for S. E. winds heave in a great swell on the Western shore, when it blows hard. Nonsuch harbor has no good anchorage.

Cape Roger Harbor. CAPE ROGER HARBOR lies close to the Westward of Cape Roger, which is a high, round, barren head, lying N. ¼ E. three and a half miles from the S. point of Long Island. There are several low rocks and islands lying off the Eastern point of the entrance. In the harbor, at one fourth of a mile within, on the Western side, lies a small island, to the Northward of which, between it and the main, is a very good anchorage in seven or eight fathoms water, or farther up in six or seven fathoms.

Great Gallows Harbor. GREAT GALLOWS HARBOR.—N. N. W. two miles from the S. point of Long Island, lies a small green island, which has a shoal all round, to nearly a cable's length. From Green Island N. N. W. two and a half miles, lies Great Gallows Harbor Island, which is high. Vessels may pass on either side of this island into Great Gallows Harbor, which lies one mile to the E. N. E. of the island. In this harbor is exceedingly good anchorage in seven fathoms water, on the starboard side, just within a low stony point, taking care to give the point a small berth, in order to avoid a rock, which is alternately covered and uncovered with the tide.

Little Gallows Harbor. LITTLE GALLOWS HARBOR lies close round to the Eastward of Great Gallows Harbor, and is only fit for small vessels, which must be moored to the shore. A rock above water lies at the entrance, and the two harbors are only divided by a narrow neck of land. To the Northwestward of Great Gallows Harbor are Little Harbor, Bay de l'Eau, and Boat Harbor: the first of these is only fit for boats. Bay de l'Eau runs in a full league, and has deep water all the way up, except at its head, where there appears a sandy beach. Here vessels may ride in three fathoms.

Boat Harbor. BOAT HARBOR lies round the Western point of Bay de l'Eau, off which is a rock above water. This harbor runs up N. E. three miles, with deep water, until you get near its farther end The land hence runs Southwestward to Bane Harbor; this lies on the main land, and is fronted by several islands, the largest of which is called Cross Island, being two miles in length, and one in breadth. The other islands are named Gooseberry, Petticoat, Gull, and Jerseyman's islands, and are situated between Cross Island and the main.

Bane Harbor. BANE HARBOR is a good place for small vessels; its entrance is narrow, but when you are within it, there is sufficient room to moor, with three fathoms water. There are good channels between all these islands, through which vessels may pass to the harbors at the Northward. One mile and three fourths S. W. from Bane Harbor is Rashoon, too shallow for any vessels; and about the same distance from Rashoon is Broad Cove; here the anchorage is exceedingly good, with eight and nine fathoms water; it

lies to the Northeastward of a point of land which juts out; and is named Broad Cove Head.

RED HARBOR lies three miles from Broad Cove Head, and is a good harbor, but too open to the Southward: in it are seventeen, thirteen, and nine fathoms. S. W. hence, distant three and a half miles, and situated on the main, is John the Bay: in your passage to which, and nearly mid-channel, between Flat Islands and the shore, is a cluster of small islands, with deep water all round them; and farther on, near the land, is a rock above water; you may sail on either side of this; the channel between it and the land is narrow, and has seventeen fathoms; that on the Eastern, or outside, has eighteen, twenty-five, and twenty-six fathoms, and leads directly out to Placentia Bay. *Red Harbor.*

AUDIERNE ISLAND lies half a mile to the Northward of Cape Jude, or Middle Island, on the W. side of which there is a tolerably good harbor. At about a cable's length from Audierne Island, to the Southward of the harbor, is a sunken rock, the mark for avoiding which, in coming in from the Southward, is not to haul in for the harbor until you open a remarkable green point on the Southern side of the harbor. The best anchorage is on the N. shore, just within a small island. A spit of rocks stretches off the green point on the S. shore, which is covered at high water. *Audierne Island.*

Vessels bound for Audierne Harbor may pass between Cape Jude, or Middle Island, and Audierne Island, and between Crow and Patrick's islands, which are two small islands lying off the S. W. point of Audierne Island. Off the Eastern point of Audierne is Ford's Island, to the West of which is a sunken rock, about a cable's length from the island, and another on the Eastern side, which almost always breaks. W. by N. about one mile and a half from Ford's Island is Green Island, having a little rocky islet off its Eastern, and another off its Western end; there is deep water all round it; eleven fathoms close to the rocky islets, seventy fathoms between it and Ford's Island, seventy-three and sixty-three fathoms between it and Long Island, and still deeper water toward the Gallows Harbor.

THE SADDLE-BACK is an islet lying E. N. E. eight and a half miles from Corbin Head; E. by. N. from Mortier West Point, and E. ¾ S. three leagues from John the Bay Point. Between it and the main are a great number of rocks and little islands, which render this part of the coast very dangerous. A chain of rocks extends N. E. by E. two miles from the Saddle Back. *The Saddle-Back.*

CAPE JUDE, or MIDDLE ISLAND, is about two and a half miles in length, two in breadth, and lies one mile and a half N. of the Saddle-Back. On the S. end of it is a round hill which is called the Cape. Between this island and the main are a cluster of islands and low rocks, with a great number of sunken rocks about them, called the Flat Islands, the innermost of which lies about one mile from the main. *Cape Jude, or Middle Island.*

W. three and a half miles from the Southeastern Flat Island, and two miles to the N. N. W. of John the Bay Point, lies John the Bay, in which there is tolerably good anchorage, with about eight fathoms water, sandy bottom.

ROCK HARBOR.—From John the Bay Point to Mortier East Head, the bearing and distance are S. W. ¼ W. eight miles. Two miles S. W. by W. from John the Bay Point lies Rock Harbor, not fit for shipping. Between lie two sunken rocks, nearly half a mile from the shore. *Rock Harbor.*

MORTIER BAY.—Two miles W. S. W. from Rock Harbor is the opening into Mortier Bay, at the Western entrance of which is a small harbor, called Boboy, of only nine feet water. The course into Mortier Bay is N. N. E. for about two miles; and in it there are from fifty to seventy fathoms water, the land on each side being high. It then extends Westward about two miles, and is nearly two miles wide. On the Eastern side, at about three miles from the entrance, is an exceedingly good harbor, called Spanish Room, in which vessels may anchor in from four to six fathoms water, good ground, and secure from all winds. There is not the least danger in going into this harbor, only giving the low rocks above water, on the port hand at the entrance, a berth of one cable's length. *Mortier Bay.*

LITTLE MORTIER BAY.—Two miles and a half from the entrance at Mortier Bay lies Crony Point and Islands. About two miles farther Southward, and nearly a mile Westward of Mortier East Point, is Little Mortier Bay, at the entrance of which is a round island, called Mortier Island, lying one third of the distance from the West side; it is bold to all round, and may be passed on either side. Close to the first point, beyond the island, on the port side going in, is another little island, close under the land; and two cables' length from it, in a direct line toward the outer island, is a sunken rock; on which the sea breaks in bad weather, which is the only danger in the bay. At the bottom of it, one mile and a half from Mortier Island, on the E. side, is a cove, called Fox Cove, where there is fair anchorage, and room for one ship to moor in nine fathoms, good holding ground, two points open to the sea, from S. S. E. to S. E. On the West side of the bay is the harbor, which is small and narrow, but a very good one for small ships, where they lie moored to the shore. Off the starboard point, going in, is a rock which is always covered at high water. *Little Mortier Bay.*

One mile and a half S. W. by W. from Mortier East Point lies Mortier West Head, one mile beyond which is Iron Island, and S. E. ½ E. two leagues from Iron Island, and S. W. ¼ W. five leagues from Cape Jude, lies the Mortier Bank, the shoal part of which is about one league over, and on which there are said to be only four fathoms. The sea breaks heavily on it in blowing weather.

Iron Island. IRON ISLAND is small and high. Off its S. W. point is a rock under water. Three quarters of a mile to the Southward of it is Gregory's Rock, S. ½ W., one quarter of a mile from which is Galloping Andrews; and S. E. by E. from Iron Island is the White Horse of eight fathoms. A W. S. W. course from Marticot Island will clear all these dangers.

Great and Little Burin Harbors. Light. GREAT AND LITTLE BURIN HARBORS.—On Dodding Head, Great Burin Island, there is a revolving light of one minute, with flashes every twenty seconds, four hundred and thirty feet above the level of the sea. S. W. ½ W. from Iron Island, distant one league, is the S. E. point of Great Burin Island; and W. N. W. one and a half miles from it is the North part of Pardy's Island. On the main, within these islands, lie the harbors of Great and Little Burin. Vessels bound for Burin may pass on either side of Iron Island. The only danger in passing to the Northward is the ledge called the Brandys, which almost always breaks; it lies near a quarter of a mile to the Southward of a low rock, above water, close under the land of Mortier West Head. By keeping Mortier West Head open to the Westward of Iron Island, you will avoid Gregory's Rock, on which are only two fathoms of water, and which almost always breaks. Vessels may pass with safety between this rock and Iron Island, by giving the latter a berth of above a cable's length.

Galloping Andrews. GALLOPING ANDREWS.—On the main, within Pardy's Island, are two remarkable white marks in the rocks; the Northernmost of these brought on with the North part of Pardy's Island, and Iron Island, N. E. ½ N., will lead on the Galloping Andrews, a shoal with five fathoms water on it.

The White Horse is a shoal with eight fathoms on it, which bears S. E. by E. one mile from Iron Island.

The Dodding Rock lies about one fourth of a mile from the Easternmost part of Great Burin Island.

Great Burin Island is about two and a half miles in length, lying N. N. E. and S. S. W., being high land. Near its S. end is Cat Island, high and round, lying E. N. E., nearly four miles from Corbin's Head.

From Corbin's Head to Shalloway Point the bearing and distance are N. E. ½ N. four and a half miles. Between them, and nearly in the same direction, lie Corbin and Little Burin islands, both high and round, not more than a cable's length from the shore.

Shalloway Island. SHALLOWAY ISLAND lies N. N. W. ½ W. one mile from Cat Island, and N. E. by E. a quarter of a mile from Little Burin Island. The passage into Burin Harbors, from the Southward, is to the Westward of Shalloway Island.

In sailing in, take care to give Poor Island a berth on your port hand, and when within Shalloway Island, you may anchor in safety between it and Great Burin Island, in from twelve to eighteen fathoms. The best anchorage in Great Burin Harbor is in Ship Cove. The course up to it, after you are within Neck Point, which is to the Westward of the Shalloway Island, is N. N. E. about one mile. It is nearly a quarter of a mile wide. In sailing up, keep the West shore on board, in order to avoid a sunken rock on the East shore, at about halfway up, and near a cable's length from the shore. Directly off this is a remarkable hole in the rock, on the same side, and a gully in the land, from top to bottom on the Western shore. Another rock, with two fathoms on it, lies above a cable's length to the S. W. of Harbor Point, which is round and green, and of a moderate height, joined to Great Burin Island by a low, narrow, sandy neck.

Burin Bay. BURIN BAY is about one mile N. N. E. of Little Burin Island. It is clear, and about a mile wide every way. Here ships may occasionally anchor, and lie almost landlocked. In this bay are two islands, one called Poor Island, low and barren, the other lies to the Northward, before the entrance of Burin Inlet, and is high and woody.

Burin Inlet. BURIN INLET may be entered on either side of the island. It extends up five miles. A little within the entrance, on the E. side, half a cable's length from the shore, is a rock, covered at three quarters flood: and one and three fourth miles from the entrance, near the middle, is another rock, to the Westward of which is good room and fair anchorage, in from seven to twelve fathoms. There are fifteen fathoms in the entrance; and in the middle, two miles up, fifteen to twenty-three fathoms, and thence up to the head are from ten to five fathoms.

The East passage in is between Pardy's Island and Iron Island; but is not safe without a commanding gale, and that between N. N. E. and S. E.

Corbin Harbor. CORBIN HARBOR is about a mile to the Northward of Corbin Head, and is a good

harbor for small vessels. A quarter of a mile Eastward from this harbor, and two cables' length from the shore is a sunken rock, of five or six feet water, on which the sea breaks in bad weather. Vessels bound for this harbor, must also avoid a shoal of two fathoms water, which lies E. S. E. from the S. point of the entrance, distant half a mile. The best anchorage is in the North arm, and about half a mile within the entrance, opposite a cove on the starboard side.

From Corbin Head, which is high bluff land, to Small Point, the lowest hereabout, the course and distance are W. S. W. two and a half miles; and from Small Point to Sauker Head, W. ½ S. two miles. There are many headlands between, which form coves, but afford no shelter. The coast is clear of rocks, and there are thirty fathoms water close to the shore; but a little to the Southwestward of Sauker Head there is a small rock under water. It lies close in with the land.

From Sauker Head, which is a high hill in the shape of a sugar-loaf, to Cape Chapeau Rouge, the bearing and distance are W. three miles; between lie the harbors of Great and Little St. Lawrence.

LITTLE ST. LAWRENCE.—The harbor of Little St. Lawrence is the first to the Westward of Sauker Head. To sail in you must keep the W. shore on board, to avoid a sunken rock which lies a little without the point of the peninsula, which stretches off from the E. side of the harbor. The anchorage is above the peninsula (which shelters it from the sea-winds), three or four fathoms water, a fine sandy bottom. Ships may anchor without the peninsula, in twelve fathoms, good ground; but this place is open to S. S. E. winds. *Little St. Lawrence.*

GREAT ST. LAWRENCE.—The harbor of Great St. Lawrence, which is the Westernmost, is close to the Eastward of Cape Chapeau Rouge. To sail in, you should be careful with Westerly, particularly with S. W. winds, not to approach too near the Hat Mountain, in order to avoid the flaws and eddy winds under the high land. There is no danger but what is very near the shore. The course in is, first, N. N. W. till you open the upper part of the harbor, then N. ½ W. The best anchorage for large ships is before a cove, on the E. side of the harbor, in thirteen fathoms water. A little above Blue Beach Point, which is the first on the W. side, you may lie, only having two points open, and may anchor anywhere between this point and the point of Low Beach, on the same side, near the head of the harbor, observing that close to the W. shore, the ground is not so good as on the other side. Fishing vessels commonly lie at the head of the harbor, above the beach, sheltered from all winds. *Great St. Lawrence.*

Garden Bank, whereon are from seven to sixteen fathoms water, lies about half a mile off Little St. Lawrence, with Blue Beach Point on with the E. point of Great St. Lawrence.

FROM CHAPEAU ROUGE TO CAPE RAY.

FERRYLAND HEAD lies W. S. W. one mile from Cape Chapeau Rouge. It is a high rocky island, just separated from the main, and, with Chapeau Rouge, an infallible object to point out the harbor of St. Lawrence. *Ferryland Head.*

LAUN BAY.—W. N. W. eight miles from Ferryland Head, lies the point of Laun, whence the land turns to the Northward, and forms the Bay of Laun. Here are two small islets, called Great and Little Laun. Little Laun, the Easternmost, lies open to S. W. winds, and therefore is no place to anchor in. Great Laun runs in N. E. by N. two miles; is nearly half a mile wide, and has from fourteen to three fathoms water. In sailing in, be careful to avoid a sunken rock which lies about a fourth of a mile off the E. point. The best anchorage is on the E. side, about half a mile from the head, in six and five fathoms, tolerably good bottom, and open only to the S. and S. by W. winds, which cause a great swell, as the head of this place is a bar harbor, where boats can ascend at half tide, and find convenience for fishing, with both wood and water. *Laun Bay.*

LAUN ISLANDS lie off the W. point of Laun Bay, not far from the shore; the Westernmost and outermost of which lies W. N. W., Westerly fourteen miles from Ferryland Head. Nearly a fourth of a mile to the Southward of this island is a rock whereon the sea breaks in very bad weather. There are other sunken rocks about these islands, but not dangerous, being very near the shore. *Laun Islands.*

TAYLOR'S BAY lies open to the sea, about four miles to the Westward of Laun Islands. Off the E. point are some rocks, nearly a fourth of a mile from the shore. *Taylor's Bay.*

POINT AUX GAUL is a low narrow point of land, which stretches out a little to the Westward of Taylor's Bay. A rock lies off it above water, half a mile from the shore, called Gaul Shag Rock, which bears from Ferryland Head W. N. W. ¾ W. six and a half leagues; there are fourteen fathoms close to the off side of it, but some rocks on its inside. From Point Aux Gaul Shag Rock to the Lamelin Islands, the bearing and distance are N. W. by W. one league. Between is the Bay of Lamelin, which is unfit for shipping, being shallow, and having several rocks and islands about it. The river at the bottom of the bay abounds with salmon. *Point Aux Gaul.*

Near the S. point of the Westernmost Lamelin Island is a rock high above water, called Lamelin Shag Rock. From Lamelin Shag Rock to Point May the distance is nine miles. Between lie the Lamelin Ledges, which are very dangerous, some of them being three miles from the land. To avoid them, in the daytime, you should not bring the Lamelin Islands to the Southward of E. S. E. until Point May bears N. E. by N. from you. You may then steer Northward, between Point May and Green Island, with safety. By night approach no nearer than in thirty fathoms water.

REMARKS.—Mariners who navigate this part of the coast, will do well by observing the appearance of the land, for all that part of the Chapeau Rouge and Laun is very high and hilly close to the sea; from Laun Island to Lamelin it is only moderately high; and from Lamelin to Point May the land near the shore is low, with beaches of sand, while inland it becomes mountainous.

St. Pierre, or St. Peter's Island. ST. PIERRE, OR ST. PETER'S ISLAND.—The island of St. Pierre lies thirteen leagues W. by N. from Cape Chapeau Rouge. It is about four leagues in circumference, and pretty high, with a craggy, broken, uneven surface. On coming from the Westward, Point Cronier, which is the S. E. point of the island, makes in a round hummock, like a small island, separated from St. Pierre. A little to the N. E. of Point Cronier, lie three small islands, the innermost of which is the largest, and called Dog Island; within it are the road and harbor of St. Pierre. The harbor is small and has from twenty to twelve feet water; but there is a bar across the entrance with only six feet at low water, and twelve or fourteen at high water. The road lies on the W. side of Dog Island, and will admit ships of any burden, in eight, ten, or twelve fathoms water. The best anchorage is on the N. side; but in general it is rocky, and exposed to the N. E. winds. Be cautious, in going out, of some sunken rocks which lie about a mile E. S. E. from Boar Island, which is the Easternmost of the three islands above mentioned. This is the only danger about St. Peter's but what lies very near the shore.

Galantry Head Light. On GALANTRY HEAD there is a flashing light—flashes every twenty seconds, varied by a red flash, succeeded by two white flashes. This light is elevated two hundred and ten feet above high water, and with a range of eighteen miles. The light will be obscured on the N. by the high bluffs of St. Pierre.

Range Lights. RANGE LIGHTS for entering from the S. E. The entrance to the roadstead of St. Pierre, from the S. E., is marked by two small fixed lights, one of which (a white light, illuminating three fourths of the horizon) is situated on the rocks at Canon Point, and the other (a red light) on the level N. of the city.

The white light is elevated thirty-six feet above high water, having a range of six miles; and the red light is elevated sixty-three feet above high water, with a range of three miles. The line joining these two lights marks the best water between the extremity of the Bertrand Rocks and Isle Aux Chiens, or Dog Island.

The position of the red light is such that any one coming from Columbier, and turning into the N. E. channel, upon seeing it to the left of Cape l'Aigle, will be in no danger from the shoals off Cape Rouge.

Signals. A system of signals during fog has been adopted at St. Pierre and Miquelon, at the light-house at the Point de Galantry. For the future, from 1st April to 1st November, in each year, there will be fired at the said light-house, at St. Pierre and Miquelon, during thick fog, two guns every two hours, at intervals of three minutes between each, from six o'clock in the morning until six o'clock in the evening.

Independently of these regular signals, gun for gun will be returned to vessels that may be desirous of ascertaining their position by these means.

Island of Columbier. THE ISLAND OF COLUMBIER lies very near to the N. E. point of St. Pierre. It is rather high. Between them is a passage one third of a mile wide, with twelve fathoms water. On the N. side of the island is a rock, called Little Columbier: and about one fourth of a mile E. N. E. of it is a sunken rock, with two fathoms on it.

Green Island. GREEN ISLAND is about three fourths of a mile in circuit, and low. It lies E. N. E. about five miles from St. Pierre, and nearly in the middle of the channel between it and Point Mary, in Newfoundland. On its S. side are several rocks, above and under water, extending one mile and one fourth to the W. S. W.

Langley or Little Miquelon. LANGLEY OR LITTLE MIQUELON.—Langley Island lies to the N. W. of St. Pierre, with a passage of about two and a half miles wide between, free from danger. It is about eight leagues in circuit, of a moderate and equal height, excepting at the N. end, which is a low point, with sand-hills: off which, on both sides, it is flat a little way; but every other part of the island is bold to. There is anchorage on the N. E. side of the island, near Seal Cove, in five or six fathoms, a little to the Southward of the sand-hills on a fine sandy bottom.

Great Miquelon. GREAT MIQUELON.—From the N. point of Langley to the S. point of Miquelon, the distance is scarcely one mile, and the depth of water between is two fathoms. Miquelon is four leagues in length from N. to S., and is about five miles in breadth at the widest part. The middle of the island is high land, called the High Lands of Dunne; but down by the shore it is low; excepting Cape Miquelon, which is a lofty promontory at the Northern extremity of the island.

On the S. E. side of the island is the little Harbor of Dunne. It is a bar harbor admitting fishing shallops at half flood, but no way calculated for shipping.

Miquelon Rocks stretch off from the Eastern point of the island, under the high land, one mile and a fourth to the Eastward. Some are above and some under water. The outermost are above water, and there are twelve fathoms water close to them, with eighteen and twenty a mile off. N. E. ½ E., about four and a half miles from these rocks, lies Miquelon Bank, on which are six fathoms water.

Miquelon Road, which is large and spacious, lies toward the N. end, and on the E. side of the island, between Cape Miquelon and Chapeau, which is a very remarkable round mountain near the shore, off which are some sunken rocks, at the distance of about a quarter of a mile; but everywhere else it is clear of danger. The best anchorage is in six and seven fathoms, near the bottom of the road, on fine sandy bottom; but there you lie exposed to Easterly winds.

The Seal Rocks, two in number, are above water, and lie about one league and a half off from the N. W. side of Miquelon. The passage between them and the island is very safe, and there are fourteen or fifteen fathoms water within a cable's length, all round them.

Point May has a rocky islet at its point, and thence the land turns N. N. E. toward Dantzic Cove and Point and thence E. N. E. toward Fortune Head.

FORTUNE BAY, &c.—From Point May to Pass Island the bearing and distance are N. ½ E., twelve leagues. Between them is the entrance to Fortune Bay, which is about twenty-two or twenty-three leagues deep; and in which are numerous bays, harbors, and islands. *Fortune Bay.*

BRUNET ISLAND.—The island of Brunet lies nearly in the middle of the entrance into Fortune Bay; it is above five miles in length, two in breadth, and of moderate height; the Eastern part appears, in some points of view, like islands. On its E. side is a bay, wherein there is tolerable anchorage for ships, in fourteen or sixteen fathoms water, sheltered from Southerly and Westerly winds. In the bottom of the bay, at about one fourth of a mile from the shore, are some rocks which must be avoided. Opposite to this bay, on the Southwest side of the island, is a small cove, with six fathoms water. The islands lying off the W. end of Brunet, to the Southward, are called the Little Brunets, which, with Brunet, may be approached within one fourth of a mile all round. *Brunet Island.*

MERCER HEAD.—There is a flashing light, showing a flash every ten seconds, on Mercer Head, the S. E. point of Brunet Island. It is four hundred and eight feet above the level of the sea. *Light.*

The Plate Islands are three rocky islets of a moderate height, the nearest of which lies W. S. W., one league from the W. end of Great Brunet. The Southernmost is about two miles farther off, and bears from Cape Miquelon, E. ½ S. three and three fourths leagues; and in a direct line between Point May and Pass Island, seventeen miles from the former and nineteen miles from the latter. E. S. E. one fourth of a mile from the Great Plate (which is the Northernmost) is a sunken rock, whereon the sea breaks, and this is the only danger about them. There are several strong and irregular settings of the tides or currents about the Plate and Brunet islands, which seem to have no dependency on the moon, and the course of the tides on the coast.

SAGONA ISLAND, which lies N. E two leagues from the E. end of Brunet, is about one mile across each way, of a moderate height, and bold to all round; on its Western side there is a small creek, admitting fishing shallops; in the middle of the entrance to this is a sunken rock, which occasions it to be difficult of access, except in very fine weather; a sand-bank surrounds this island, running Westerly full seven miles, upon which are four-teen, seventeen, and twenty fathoms water. *Sagona Island.*

POINT MAY is the Southern extremity of Fortune Bay, and the S. W. extremity of this part of Newfoundland; it may be known by a great black rock, nearly joining to the pitch of the point, and something higher than the land, which makes it look like a black hummock on the point. At about one fourth of a mile directly off from this black rock are three sunken rocks, on which the sea always breaks. *Point May.*

DANTZIC COVES.—N. by E. one mile and three fourths from Point May, is Little Dantzic Cove, and two miles farther is Great Dantzic Cove. From Dantzic Point (which is the N. point of the Coves) to Fortune Head, the bearing and distance are E. N. E. two and one fourth leagues; and thence to the town of Fortune, one mile and a half, S. E. by E. This is a fishing village, and the road where the ships lie has from six to ten fathoms water, quite exposed to nearly half the compass; it lies S. by W. from the E. end of Brunet. To the N. N. Westward of Dantzic Point is the long narrow bank of Jersey-man's, with twenty-four and twenty-five fathoms over it, extending from abreast of the Point in the direction of the Plate Islands. *Dantzic Coves.*

SHIP COVE.—The Cape of Grand Bank is high, and lies one league E. N. E. from Fortune. To the Eastward of this cape is Ship Cove, where there is good anchorage for shipping, in eight or ten fathoms water, sheltered from S., W., and Northwesterly winds. Grand Bank lies S. E. half a league from the cape, and is a fishing village, where there is no security for shipping, and the entrance is barred. *Ship Cove.*

From the Cape of the Grand Bank to the Point Enragée the course is E. N. E. ¼ E. distant eight leagues. The coast between forms a circular bay, in which the shore generally is low, with several sandy beaches, behind which are bar harbors, fit only for boats, of which the principal is Great Garnish, lying four and a half leagues from the Cape of Grand Bank; it may be known by several rocks above water, lying before it, at two miles distance from the shore. The outermost of these is steep to; but between them and the shore are several dangerous sunken rocks. To the Eastward, and within these rocks, is Frenchman's Cove, where small vessels sometimes run in and anchor in four or five fathoms water, tolerably well sheltered from the sea-winds. This is a convenient place for the cod-fishery. The passage in is to the Eastward of the rocks that appear the highest above water. Between them and some other lower rocks lying off to the Eastward of the E. point of the cove, there is a sunken rock nearly in the middle of the passage, which you must be aware of. The shore is bold all the way from Point May to Cape of Grand Bank, there being ten or twelve fathoms within two cables' length, and thirty or forty at a mile off. Between the latter and Great Garnish the water is not so deep, and ships may anchor anywhere in eight or ten fathoms water, sheltered only from the land winds.

From Point Enragée to the head of the bay, the course is, first, E. N. E. ¼ E., three leagues to Grand Jersey; then E. ¾ N., seven and a half leagues to the head of the bay. The land in general along the S. side is high, bold to, and of uneven appearance, with hills and valleys of various extent, the latter mostly covered with wood, and having many fresh water rivulets.

Bay l'Argent. BAY L'ARGENT.—Seven leagues Eastward of Point Enragée, is the Bay l'Argent, where there is anchorage in thirty or forty fathoms water, sheltered from all winds.

Harbor Millé. HARBOR MILLE.—The entrance to Harbor Millé lies to the Eastward of the E. point of L'Argent. Before this harbor and the Bay l'Argent is a remarkable rock, which, at a distance, appears like a shallop under sail. Harbor Millé branches into two arms, one lying to the S. E., the other to the E.; at the upper part of both are good anchorages. Between this harbor and Point Enragée are several bar harbors, or small bays, with sandy beaches; but the water all along the coast is very deep. You may safely anchor anywhere, but it must be very near the shore.

Cape Millé lies N. E. ½ E., one league from the Shallow Rock above mentioned, and near three leagues from the head of Fortune Bay; it is a high, reddish, barren, rocky point. The width of Fortune Bay at Cape Millé does not much exceed half a league; but immediately below it becomes twice as wide, by which the cape may readily be known; and above this cape the land on both sides is high, with steep craggy cliffs. The head of the bay is terminated by a low beach, behind which is a large pond, or bar harbor, fit only for boats. In this, and in all the bar harbors between this and the Grand Bank, are convenient places for building stages, and good beaches for drying fish, fitted to accommodate numerous boats.

Grand le Pierre. GRAND LE PIERRE is a good harbor, situated on the N. side of the bay, half a league from the head. The entrance cannot be seen until you are abreast of it. There is no danger in going in, and you may anchor in any depth from eight to four fathoms sheltered from all winds.

English Harbor. ENGLISH HARBOR lies a little to the Westward of Grand Pierre; and to the Westward of English Harbor is the Little Bay de l'Eau, both of which are small, and only fit for boats.

New Harbor. NEW HARBOR is situated opposite to Cape Millé, and to the Westward of the Bay de l'Eau; it is a small inlet, and has good anchorage on the W. side, in from eight to five fathoms, sheltered from S. W. winds.

The Harbor Femme. THE HARBOR FEMME lies half a league to the Westward of New Harbor; it is narrow, and has in it twenty and twenty-three fathoms; before its entrance is an islet near to which are some rocks above water; one league to the Westward of Harbor Femme is Brewer's Hole, fit only for boats; before this cove is also a small island near the shore, and some rocks above water.

Harbor la Conte. HARBOR LA CONTE is situated one mile to the Westward of Brewer's Hole; before this are some islands; the outer one is called Petticoat Island, the inner Smock Island; there are also two smaller ones between these, and a sunken rock or two; the best passage in is on the W. side of the outer island, and between the two larger ones. So soon as you begin to open the harbor, keep the inner island close on board, to avoid some sunken rocks that lie near the small island, which you will discover between the N. E. point of the outer island and opposite point on the main; there is also another rock which appears at low water, and lies higher up on the side of the main; and when you get beyond these dangers, you may keep in the middle of the channel, and will soon open a fine spacious harbor, wherein you may anchor in any depth, from six to sixteen fathoms water, on a bottom of sand and mud, shut in from all winds. To the Eastward of the outer island there is a small cove, fit for small vessels and boats, and otherwise convenient for the fisheries.

Long Harbor. LONG HARBOR lies four miles to the Westward of Harbor La Conte, and N. E. by

E. distant five leagues from Point Enragée. It may be known by Gull Island, which lies at its mouth, and a small rock, which lies half a mile without the island, and has the appearance of a small boat; there is a passage into the harbor on each side of this island; the Western one is the broader of the two; nearly in the middle of this channel, a little outside of the island, is a ledge of rocks, whereon are two fathoms water; and a little within the island, on the eastern side, are others, two cables' length from the shore; they lie off two sandy coves, and are visible at low water. Long Harbor runs five leagues up into the country, but the only anchoring place is in Morgan's Cove, on the N. W. side of the harbor, about two miles within Gull Island, in fifteen fathoms water, unless you run above the narrows. There is a salmon-fishery at the head of the bay.

A little to the Westward of Long Harbor is Hare Harbor, fit for small vessels only. Two miles to the Northward of Hare Harbor is Mal Bay, having very deep water, extending Northeasterly about five miles, and having no anchorage except at its farthest end. To the Westward of Mal Bay, near the shore, lie the Rencontre Islands; the Westernmost, which is the largest, has a communication with the main at low water. In and about this island is shelter for small vessels and boats..

BELLE HARBOR lies four miles N. W. by N. from the Westermost Rencontre Island; the passage into it is on the Western side of the island, and so soon as you have passed the island you will open on a small cove, on the E. side, where small vessels can anchor, but large vessels must run up the head of the harbor and anchor in twenty fathoms, where there is most room; it is but an indifferent harbor. About a mile and three fourths Westward of Belle Isle is Lally Cove, behind an island, fit for small vessels only. The W. point of this cove is high and bluff, and is called Lally Head; to the Northward of this head is Lally Back Cove, where ships may anchor in fourteen or sixteen fathoms water *Belle Harbor.*

Two miles to the Northward of Lally Cove Head, are East Bay and North Bay; in both of these there is deep water, but no anchorage near the shore. At the head of North Bay is the largest river in Fortune Bay, and appears to be a good place for the salmon-fishery, from which circumstance it is named Salmon River.

CINQ ISLES BAY.—The Bay of Cinq Isles lies to the Southward of the North Bay, and opposite to Lally Cove Head; there is tolerably good anchorage for large ships on the S. W. side of the islands, in the bottom of the bay. The Northern arm is a very snug place for small vessels, and salmon may be caught at his head. *Cinq Isles Bay.*

CORBEN BAY.—A little to the Southward of the Bay of Cinq Isles is Corben Bay, where there is good anchorage for any ships in twenty-two or twenty-four fathoms water. About two miles Southeastward from Lally Cove head are two islands, about a mile distant from each other; the Northeastermost is called Bell Island, and the other Dog Island; they are bold to all round. Between Dog Island and Lord and Lady Island, which lies off to the S. point of Corben Bay something nearer to the latter, is a sunken rock, with deep water all round it; and about a quarter of a mile to the Northward of Lord and Lady Island, is a rock which appears at low water. *Corben Bay.*

BANDE DE L'ARIER BAY lies on the W. point of Belle Bay, and N. ½ W. three leagues from Point Enragée; it may be known by a very high mountain over the bay, which rises almost perpendicular from the sea, called Iron Head. Chapel Island, which forms the E. side of the bay, is high land also; the harbor lies on the W. side of the bay, just within the point formed by a narrow low beach, and is a snug place; between the harbor and Iron Head there is tolerably good anchorage, and eighteen or twenty fathoms. *Bande de l'Arier Bay.*

Bande de l'Arier Bank has seven fathoms water on it, and lies with the beach of Bande de l'Arier Harbor just open of the W. point of the bay, and Boxy Point on with the N. end of St. Jaques Island.

ST. JAQUES.—Two miles to the Westward of Bande de l'Arier is the Harbor of St. Jaques, which may be readily known by the island before it being high at each end, and low in the middle. The passage into the harbor is on the W. side of the island, free from danger, as is the harbor, where you may anchor in from seventeen to four fathoms. *St. Jaques.*

BLUE PINION.—About one mile and a half to the Westward of St. Jaques, is the harbor of Blue Pinion; and a little to the Westward of that is English Cove. *Blue Pinion.*

BOXY HARBOR.—Boxy Point lies W. ¾ S., six miles from St. Jaques Island, and E. N. E. ½ E., twelve and a half miles from the E. end of Brunet Island; it is of moderate height, and the most advanced to the Southward of any land on the coast. Boxy Harbor lies N. E. three miles from Boxy Point, in which there is anchorage in four or five fathoms water, fine sandy ground: to sail in, bring Boxy Point open of a little black head just within the point, called Friar's Head; in this direction you will keep the middle of the channel, and between the shoals which lie off each point of the harbor where the stages are. *Boxy Harbor.*

W. N. W., one mile from Boxy Point, is the Island of St. John; and N. N. W., half a league from St. John's Island is St. John's Head, high, steep, and craggy. Between St.

John's Head and Boxy Point is St. John's Bay, quite exposed; in the bottom of this is John's Harbor, fit for boats only. On the N. side of St. John's Head are two rocky islets, called the Gull and Shag; at the W. end of which there are several sunken rocks.

Great Bay de l'Eau. GREAT BAY DE L'EAU is about one league and a half to the Northward of St. John's Head. In this bay there is good anchorage in various depths, sheltered from all winds. The passage in is on the E. side of the island, which lies in its entrance; for only very small vessels can enter to the Westward.

Barrysway Bay. BARRYSWAY BAY.—To the Westward of Bay de l'Eau, about three miles N. from St. John's Head, is Little Bay Barrysway; on the W. side of which there is good anchorage for large ships, in seven, eight, or ten fathoms; and both wood and water to be obtained with ease.

Harbor Briton. HARBOR BRITON lies to the Westward of Little Barrysway, and N. N. E. ½ E., two leagues from the Island of Sagona. The heads which form the entrance are high, and lie from each other S. E. and N. W., distant about two miles. Near the E. head is a rock above water. The only danger in going in is a ledge of rocks, which stretches two cables' length from the S. point of the S. W. arm, which is more than a mile within the W. head. The only place for ships-of-war to anchor in is above this ledge, before the entrance of the S. W. arm, in sixteen or eighteen fathoms, mooring nearly E. and W.; the bottom is very good, and plenty of wood and water is to be obtained here. Opposite to the S. W. arm is the N. E. arm, or Jerseyman's Harbor, which is capable of holding a great number of ships, secure from all winds, in six, seven, and eight fathoms water; it has a bar at the entrance, on which there are three fathoms. The mark to sail over the bar is, the point of Thompson's Beach, which is the S. point at the entrance into the S. W. arm, open of Jerseyman's Head, which is high and bluff on the N. side of the entrance into Jerseyman's Harbor; so soon as you open the harbor, haul up to the Northward and anchor.

From the W. end of Harbor Briton to Connaigre Head, the bearing and distance are W. five miles; between are Gull Island and Deadman's Bay, off which there is a bank stretching from the shore between two and three miles, whereon the depths vary from thirty-four to four fathoms. The sea, during storms, will sometimes break for a considerable way out from Gull Island.

Connaigre Bay. CONNAIGRE BAY.—From Connaigre Head, which is high and craggy, to Basseterre Point, the bearing and distance are N. W. ¾ W., seven miles; between is Connaigre Bay, which extends about four leagues inland. In the mouth of the bay lie the Connaigre Rocks above water, which may be approached very near, there being no danger but what shows itself; the channel between them and Connaigre Head is the safest, as a ledge of rocks extends a mile from the N. shore, which renders the other channel rather dangerous.

Connaigre Harbor is near five miles above the head, within a point of the S. side of the bay; it is very small, and the depth of water is seven fathoms; the passage in is on the S. E. side of the island, which lies before it. Abreast of this harbor, nearly in the middle of the bay, are two islands; on the S. side of the Westernmost are some rocks above water.

Dawson's Cove is on the N. W. side of the bay, and bears N. N. E., about four miles from Connaigre Head, and W. N. W., two miles from the W. end of the Westernmost (and the greatest) island; the anchorage is in six or five fathoms, quite exposed to Southerly winds. Basseterre Point, which forms the W. point of Connaigre Bay, is of moderate height, clear of wood, and thence to Pass Island bold to; Pass Island lies nearly W. by N., distant three miles from Basseterre Point.

Pass Island. PASS ISLAND, which is the Northwestern extremity of Fortune Bay, is a full mile in length, and narrow; it bears from the N. point of Miquelon N. E. by N., seven leagues; and from Point May. N. ½ E., twelve leagues. It lies near the shore, and is rather lofty; on its Southwestern side there are several rocks above water, which extend a full mile from the island; and to the N. W. is a sunken rock about a quarter of a mile from the island; there is a passage between this island and the main, about the length of two cables wide; it frequently is traversed by small vessels, which sometimes anchor there on fine sandy bottom, in six fathoms water. The cod-fishery about this part is generally considered good and productive.

REMARKS ON FORTUNE BAY.—The general appearance of the land on the Northern side of Fortune Bay is hilly, rising directly from the sea, with craggy, barren hills, extending four or five leagues inland, having many rivulets and ponds; while that on the Southern side of Fortune Bay has a very different appearance, having less of these rugged hills, and being better clothed with wood of a short brushy kind, giving to the country an air of greenness and fertility.

Soundings. SOUNDINGS.—In the night-time, or in dark foggy weather, the mariner should not place much dependence on the soundings in Fortune Bay, for therein they might be greatly and fatally deceived, inasmuch as, in many places, the water near the

ores, and in its creeks and harbors, is often deeper than in the middle of the bay self.

HERMITAGE BAY.—This extensive bay is bounded on the S. W. by Pass Island, nd to the Northward by the islands that form the Bay of Bonne and Great Jarvis Har- or, the width being more than two leagues; and by the Southern shores of Long Island, here it begins to narrow. In sailing along the Southern coast from Pass Island, you ill discover the Fox Islands, which are distant from Pass Island ten or eleven miles; hese islands are situated opposite to the entrance to Hermitage Cove, about three urths of a mile from the land, and are said to have good fishing about them. Off the orthern Fox Island are several rocks above water, and a sunken rock lies also off the outh side of this island. To enter Hermitage Cove, you should keep between the lands and the shore, borrowing somewhat toward the main land, where you will find hirty, thirty-two, and thirty-seven fathoms water; here you will see the cove open, and ay turn in South, having deep water, and without the least danger; the anchorage is ood, with every convenience for fishing, and plenty of both wood and water. Hence ermitage Bay runs in nearly W. for twelve miles, with very deep water, until you et near the head, where it gradually lessens to twenty-five and twenty-two fathoms, nd farther in to nine fathoms. There is a small islet or two on the Southern side, but o danger whatever. *Hermitage Bay.*

LONG ISLAND, which separates the Bay of Despair from Hermitage Bay, is of a quare form, about eight miles long and nearly eight leagues in circuit. The Eastern assage is very good, but narrow, and is between the E. end of Long Island and the ain, called the passage of Long Island. The W. entrance into the Bay of Despair om Hermitage Bay, is by the W. end of Long Island. About half a mile from its W. point are two rocks above water, with deep water all round them. *Long Island.*

GALTAUS HARBOR.—There are four harbors on the S. side of Long Island, the asternmost of which is called Galtaus; this is but small, and lies near the S. E. point the island. The best channel into the harbor is on the W. side of several rocky lands which lie at the entrance, wherein are four fathoms; but in the harbor there are om fifteen to twenty-four fathoms. *Galtaus Harbor.*

PICARRE HARBOR.—The next is Picarre, which lies N. by E. half a league from e Easternmost Fox Island. In going in here, keep near the W. point, in order to avoid me sunken rocks off the other. The anchorage is in the first cove on the E. side, in ne or ten fathoms, sheltered from all winds. *Picarre Harbor.*

ROUND HARBOR.—The next harbor, called Round Harbor, is about two miles to e Westward of Picarre, and fit only for small vessels, the channel in being so narrow. *Round Harbor.*

LONG ISLAND HARBOR is the fourth, and lies about two and a half miles from e W. end of Long Island. This harbor has two arms, one running in to the N., the her to the Eastward. They are both very narrow, and have from forty to seven thoms water. The Eastern arm is the deepest, and affords the best anchorage. The assage in is on either side of an island which lies off the entrance, and has several cks above water about it. *Long Island Harbor.*

BAY OF DESPAIR.—The entrance of the Bay of Despair lies between the W. end Long Island and Great Jarvis Island (which lies in the mouth of the harbor of that me): the distance between is one mile and a fourth, and midway no bottom is found th a line of two hundred and eighty fathoms. The Bay of Despair forms two capa- us arms, one extending full eight leagues to the Northeastward, the other about thir- n miles Northward. In the N. E. arm are several arms and islands, and tolerably od anchorage in several places. In the N. arm there is very deep water, and no an- orage excepting in the small bays and coves which lie on each side of it; but in an m of this bay, which runs Easterly, there is a fine salmon fishery, and wood in plenty. the N. E. arm also there are good salmon fisheries at Little River and Conne River. l the country about this part is mountainous and barren, but about the head of the y it becomes level, and has abundance of wood—such as fir, pine, birch, witch hazel, ruce, &c. *Bay of Despair.*

GREAT JARVIS HARBOR is situated at the W. entrance into the Bay of Despair. is a safe harbor, with good anchorage in every part of it, in from sixteen to twenty thoms, secure from all winds, and plenty of wood and water. The passage is in on her side of Great Jarvis Island; but the Southernmost channel is the safest, there be- no danger in it but the shore itself. In the Northern channel are several sunken cks. To sail in you should bring the N. point between the two rocks above water, on starboard side, and then steer directly in. This will carry you clear of some sunken ks which lie on the W. point of the island. These rocks appear at low water. The rance to the harbor may be known by the E. end of Great Jarvis Island, which is a h, steep, craggy point, called Jarvis Head, and is the Northern point of the S. en- nce to the harbor. *Great Jarvis Harbor.*

BONNE BAY lies about a league to the Westward of Great Jarvis Head, and nearly by E., distant seven miles from Pass Island. It has several islands at its entrance, *Bonne Bay.*

the Westernmost of which is the largest and highest. The best passage in is to the East ward of the largest island, between it and the two Easternmost islands. The bay runs in N. four miles, and there is no danger but what shows itself. You may go on either side of Drake Island, which is small and nearly in the middle of the bay; between which and two small islands on the W. side of the bay, within Great Island, there is anchorage in twenty or thirty fathoms; but the best place for large ships is near the head of the bay, in twelve or fourteen fathoms, clear ground and convenient for wood and water. On the N. W. side of Great Island, within the two small islands, is very good anchorage, in from sixteen to twenty-four fathoms, secure from all winds. The entrance to this bay is from the Northward of the two small islands. In sailing in or out of the bay, approach not too near the S. point of Great Island, as there are some sunken rocks lying about one fourth of a mile from the shore. A little to the westward of Bonne Bay is Mosquito Cove, a small inlet of from thirty to forty-seven fathoms water.

W. N. W., four miles from Bonne Bay, is the entrance to the Bay of Facheux and Dragon. This entrance being very conspicuous at sea, the coast may here be readily known.

Facheux. FACHEUX, which is the Easternmost branch, is very easily seen to seaward; it runs in N. N. E. two leagues, and is one third of a mile wide at the entrance, with deep water in most parts of it. On the W. side of the bay are three coves, where ships may anchor in from ten to twenty fathoms. Dragon Bay lies in N. W. one league, and is near half a mile wide, with sixty or seventy fathoms water, and no anchorage excepting near the head; and then you must lie very near the shore. One mile to the Westward of Facheux is Little Hole, with shelter for small craft; and one league to the Westward of Facheux is Richard's Harbor, a place fit only for small vessels and fishing shallops, with twenty-three fathoms water in it.

Hare Bay. HARE BAY.—N. W. by W., one league from Richard's Harbor, is Hare Bay, which runs in N. N. E. about five miles, and is about one third of a mile wide, with deep water close home to both shores on all parts of it; except about one league up on the W. side, where there is good anchorage, in from eight to fifteen fathoms, with plenty of wood and water; and a small cove about one mile up on the E. side, where there are thirty fathoms, with gradual soundings to the shore.

Devil's Bay. DEVIL'S BAY.—N. W., about four and a half miles from Hare Bay, and one league N. E. from Hare's Ears Point, is Devil's Bay, a narrow inlet, extending a league to the Northward, with deep water, and no anchorage until you come close to the Head.

The Bay of Rencontre lies to the Northward of Hare's Ears Point, and runs in N. W. by W. two leagues; it has deep water in most parts of it, and is near half a mile wide at the narrowest part. The anchorage is in thirty fathoms, above a low woody point on the S. shore, quite landlocked. Hare's Ears Point is large, with a ragged rock upon it, which, from some points of view, looks like the ears of a hare. It lies W. by N. ½ N., distant ten miles from Richard's Harbor, divides the bays of Rencontre and Chaleur, and bears N. W. ½ W., six leagues from Pass Island. Off this point is a fishing bank, extending a full mile from the shore, having from twenty to thirty-six fathoms over it.

Chaleur Bay. CHALEUR BAY.—Two miles to the Westward of Hare's Ears Point is the Bay of Chaleur, which runs in about two leagues N. N. W. It is very narrow, and has deep water in most parts. At the N. entrance into the bay, and close to the land, is a small island of moderate height, and half a league within the island, on the N. E. side of the bay, is a rock above water; a little within this rock, on the same side, is a small cove, with a sandy beach, off which you can anchor in twenty-eight fathoms, a cable's length from the shore.

Francois Bay. FRANCOIS BAY.—West, nearly half a league from the Bay of Chaleur, is the Bay of François, a small inlet running in N. W. ¼ W. one mile, being at the entrance about a quarter of a mile broad, and seventeen fathoms deep, but just within are fifty and sixty fathoms. At the head are from thirty to twenty fathoms, good anchorage and very convenient for carrying on the fishing business.

Oar Bay. OAR BAY.—Westward, four miles from the Bay François, on the E. side of Cape La Hune, lies Oar Bay. Off the E. point of its entrance is a low rocky islet, and in the entrance of the bay is another, with a passage on each side of it. The bay runs in N. N. E. about four miles, and is one third of a mile wide, with deep water close to both shores all the way up. At the head is a harbor for small vessels, with only five fathoms water. At the W. side of the entrance into the bay, is Cul de Sac, a little cove, with three and four fathoms water, and good shelter for small vessels.

Cape La Hune. CAPE LA HUNE is the Southernmost point of land on this part of the coast, and lies in lat. 47° 31′ N., bearing W. N. W. ½ N., eight leagues from Pass Island, and N. N. W. ½ N., ten leagues from Cape Miquelon. Its figure much resembles a sugarloaf. This cape may also be known by the high land of La Hune, which lies one league to the Westward of it, appearing flat at the top, and may be seen from a distance of sixteen leagues.

THE PENGUIN ISLANDS lie W. S. W. ½ S., ten and a half miles from Cape La Hune, and N. W. ½ N., ten leagues from Cape Miquelon. They are an assemblage of barren rocks, lying near to each other, and altogether about two leagues in circuit, and may be approached in the daytime to the distance of half a league all round. On the W. S. W. side of the large island, which is the highest, is a small cove fit for shallops, and convenient for the fisheries, and the ground about it is considered to be good for fishing. *The Penguin Islands.*

WHALE ROCK.—E. S. E., eight miles from the Penguin Islands, and S. by W., three leagues from Cape La Hune, lies the Whale Rock, on which the sea generally breaks; it is about one hundred fathoms in circuit, with ten, twelve, and fourteen fathoms close to, all round it. From this rock a narrow bank extends one league to the Westward, and half a league to the Eastward, with from twenty-four to fifty-eight fathoms water on it, rocky and gravelly bottom. In the channel between the shore and this rock, and also between the shore and the Penguin Islands, are one hundred and twenty and one hundred and thirty fathoms water, muddy bottom, and there is the same depth of water at one league without them. *Whale Rock.*

LA HUNE BAY lies close to the Westward of Cape La Hune. It is about two leagues deep, and one third of a mile wide, with deep water in most parts of it: but there is a sunken rock which lies off the W. point of the entrance, nearly one third of the channel over. In sailing in or out of this bay, you should keep the Eastern shore on board, in order to avoid a sunken rock which lies off the W. point of the entrance into the bay, nearly one third over. Two miles up the bay is Lance Cove, having anchorage in fourteen and sixteen fathoms water, good clean ground. A cable's length off the Southern point of this cove is a small shoal with nine feet water, and between it and the point there are five fathoms. To sail into this place, keep the E. point of the bay open of a red cliff point, off which is a rock above water, until the round hill you will see over the valley of the cove is brought on with the N. side of the valley; you will then be above the shoal, and may haul into the cove with safety. There is a narrow bank which stretches quite across the bay, from the S. point of the cove to the opposite shore, whereon are from twenty-seven to forty-five fathoms. *La Hune Bay.*

LA HUNE HARBOR lies half a league to the Westward of Cape La Hune: it has an island before its entrance, and is fit only for small vessels, and open to Westerly winds. Before it lies an island near the shore. The channel into the harbor is on the N. W. side of the island. There is no danger in going in, and you must anchor close up to the head, in ten fathoms water. This harbor is well adapted for the fishery, there being good fishing ground about it, and a large beach quite across the head of the harbor to La Hune Bay; a space of eight hundred feet, exposed to the open air, and well calculated for drying fish. *La Hune Harbor.*

Four leagues N. W. ¾ W. from Cape La Hune is the entrance of Little River, which is about one hundred fathoms wide at the entrance and ten fathoms deep. A little way up there is anchorage in ten, eight and seven fathoms water, good ground. Between Cape La Hune and Little River, the land is tolerably high, and forms a bay, where there are several small islands and rocks above water, the outermost of which lie N. N. E. ½ E., three leagues from the Penguin Islands. and are called the Magnetic Rocks.

S. by W. ½ W., seven miles from the entrance of Little River, and N. by W. ½ W. from the Penguin Islands, lie the Little River Rocks, which are just above water, with very deep water all round them.

THE ISLES OF RAMEA, which are of various extent, both in height and circuit, lie N. W. ½ N., five and a half leagues from the Penguin Island, and one league from the main; they extend E. and W. five miles, and N. and S. three miles, and have several rocks and breakers about them; but more on the S. side than on the N. The Easternmost island is the largest, and is very high and hilly; the Westernmost, called Columbe, is a remarkably high round island, of small circuit, with some rocky islands and sunken rocks near it. *The Isles of Ramea.*

RAMEA HARBOR.—There is a harbor for small vessels, formed by the islands which lie near Great Ramea and the Columbe, called Ramea Harbor, where they may lie sheltered from all winds. To enter this from the Westward, you should give the Southern point a berth, on account of some rocks that lie off the starboard island; these are all above water: steer E. N. E. toward the harbor, keeping as nearly mid channel as you can—the passage is above a cable's length broad—and run for the anchorage in Ship Cove; this is the second inlet, on the Northwestern shore. You will here ride safely on clean ground, in five fathoms water. To enter from the Eastward, you must keep the Northern side of Great Ramea on board until you are up to the W. end thereof, then steer S. W. into the harbor, keeping in the middle of the channel, in about three fathoms, and anchor as before directed. This harbor is very convenient for fishing vessels; in it, and also about the islands, are several places for erecting stages and drying fish, which seem to be well calculated for that purpose. *Ramea Harbor.*

The Ramea Rocks are two in number close to each other; they lie about S. distant four miles from the E. end of Great Ramea. W. S. W., one league from these rocks, is *Ramea Rocks.*

a small bank with only six fathoms water on it; and nearly in the middle, between Ramea and the Penguin Islands, is the New Bank, with from fourteen to fifty fathoms water. To run upon the shoalest part of this bank, bring the two Ramea rocks on with the Southwestern part of the Ramea Islands, and between them and Columbe, and the entrance to Little River, N. E. ¾ E.

Old Man's Bay. OLD MAN'S BAY.—Four miles to the Westward of Little River is Old Man's Bay, which runs in N. N. E. about seven miles, and is nearly a mile wide. The water throughout the bay is very deep. About one mile and a half up the bay, on the Eastern side is a small island, called Adam's Island, behind which vessels can ride, if necessary, in thirty and forty fathoms water; but the best anchorage is at the head in fourteen or sixteen fathoms.

Mosquito Harbor. MOSQUITO HARBOR lies about half a league to the Westward of Old Man's Bay. It is a snug and safe harbor, and will hold a great number of vessels in perfect security; but the entrance is so narrow, being only forty-eight fathoms in breadth, that it is difficult to get in or out. The land on both sides is high, and off the Southern point of entrance is a large white rock, about a cable's length from which is a black rock above water, on the Southern side of which is a sunken rock, whereon the sea breaks. From this black rock to the entrance of the harbor, the course is about N. N. W., distant one third of a mile. In sailing either in or out, you should give the black rock a small berth, keeping the Western shore on board, and if obliged to anchor, be as quick as possible in getting a rope on shore, lest you drift on the rocks. In this harbor you will have eighteen to thirty fathoms water, with good riding everywhere, and plenty of both wood and water. In the narrows you will find twelve fathoms, the shores being bold to. S. and Easterly winds blow right in, Northerly winds right out; and with Westerly winds, it is commonly either quite calm, or descends in irregular puffs.

Fox Island Harbor is formed by an island of the same name. It lies about half a league to the Westward of Mosquito Harbor; between are several rocky islands and sunken rocks. This is a commodious harbor for small vessels, which may anchor in eight, nine, and ten fathoms water. You may go in on either side of the island, and there is no danger but what shows itself.

White Bear Bay. WHITE BEAR BAY lies about two miles to the Westward of Fox Island Harbor, and N. N. E., one league from Great Ramea Island. It has several islands at its entrance. It runs in N. E. ¾ N. about four leagues, is near half a mile wide in the narrowest part, and has deep water close to both shores in most parts, to the distance of eight miles up; then the ground rises at once to nine fathoms, whence it shoals gradually to the head, with good anchorage. The best passage into the bay is to the Eastward of all the islands. On the S. W. side of Bear Island, which is the Easternmost and largest in the mouth of the bay, is a small harbor, running in about E. half a mile, with from ten to twenty-two fathoms of water, but there are several sunken rocks before its mouth, rendering it difficult of access. At the Western entrance is a high, round, white island; and S. W., half a mile from this island, is a black rock above water. The best passage into the bay, from the Westward, will be to the Westward of this black rock, and between White and Bear islands. Some of the rocks are above a mile off the land.

Red Island Harbors. RED ISLAND HARBORS.—Five or six miles to the Westward of White Bear Bay, and nearly N. from Ramea Columbe, are two small harbors, called Red Island Harbors, formed by Red Island, which lies close under the land. The Westernmost is the largest and best, and has from six to eight fathoms water, good anchorage. In going in keep the island close on board, the outer part of which is composed of steep red cliffs.

The Burgeo Isles. THE BURGEO ISLES are a cluster of islands extending about five miles along shore, and forming several snug and commodious harbors. They lie about three leagues N. W. by N. from Ramea Columbe. To sail into Burgeo from the Eastward, the best passage is on the N. E. side of Boar Island, which is the Northernmost, and lies N. N. W. from Ramea Columbe. S. E by S. from this island, half a league, is a rock, uncovered at low water, on which the sea generally breaks. You may go on any side of this rock, the water being deep all around it. So soon as you are to the N. W. of it, keep the N. side of Boar Island on board, and steer W. ½ N. for Grandy's Cove, the N. point of which is the first low point on your starboard bow; haul round that point, and anchor in the cove in fourteen fathoms, and moor with a fast on shore. The best place for large ships to anchor in is between Grandy's Cove and a small island lying near the W. point of Boar Island, in twenty or twenty-four fathoms, good ground, and sheltered from all winds. To sail into Grandy's Cove, from the Westward, is dangerous, unless well acquainted. There are several safe passages in from the Southward and Eastward between the islands, and good anchorage; and in bad weather all the sunken rocks discover themselves and you may run in without any fear; but the islands do not afford either wood or water.

Wolf Bay. WOLF BAY extends inward, N. E. by E. one league; the entrance is E. N. E., two

miles from Boar Island, and two miles to the Westward of Red Island Harbor. The E. point of the entrance is composed of low ragged rocks, off which is a sunken rock, at the distance of one fourth of a mile from shore, over which the sea breaks in bad weather. Near the head of the bay is tolerably good anchorage, and plenty of wood and water.

King's Harbor lies round the W. point of Wolf Bay, and runs in N. E. by E., three fourths of a mile; before its mouth is a cluster of little islands. To sail in, keep the E. point of these islands on board, and steer N. by W. and N. for the entrance of the harbor, anchoring under the E. shore, in nine fathoms.

Ha-Ha.

HA-HA.—On the S. side of the islands before King's Harbor, and nearly N. one mile from Boar Island, is the entrance into the Ha-Ha, which runs in W. N. W. one mile, and is about a fourth of a mile broad, with from twenty to ten fathoms water, and good ground all over. Over the S. point of the entrance into this harbor is a high green hill; and a cable's length and a half from the point is a sunken rock that always shows itself. Over the head of the Ha-Ha is Richard's Head, and a mark for running upon Ramea Shoal.

Great Barrysway.

GREAT BARRYSWAY.—About four miles to the Westward of the Burgeo Isles is the Great Barrysway Point, which is low, white, and rocky; and E. N. E. ½ E., half a league from this point, is the W. entrance into the Great Barrysway, wherein is room and depth of water for small vessels. Between the Burgeo Isles and the Great Barrysway Point are several sunken rocks, some of which are half a league from the shore.

Connoire Bay.

CONNOIRE BAY.—N. W. ½ N., four leagues from the Burgeo Isles, is the E. point of the Bay of Connoire. This point is so far remarkable, that it rises with an easy ascent to a moderate height, and much higher than the land within it. The W. point of the bay is low and flat, and to the Westward of this are several small islands. The bays run in N. E. by N., about a league from the E. point to the middle head, which lies between the two arms, and is half a league wide, with fourteen, twelve, ten, and eight fathoms, close to both shores, good anchorage and clear ground, but open to the S. W. winds. The N. E. arm affords shelter for small vessels from all winds. To sail in, keep nearest the starboard shore, and anchor before a small cove on that side, near the head of the arm, in three and a half fathoms. Toward the head of the arm, on the Northwestern side, is a bank of mud and sand, and upon which a vessel may run, if necessary, and receive no damage.

The Bay of Cutteau.

THE BAY OF CUTTEAU lies about two leagues to the Westward of Connoire. Its depth will admit small vessels only. Round the W. point of Cutteau is Cinq-Serf, wherein are a number of islands, which form several small, snug harbors. Right off Cinq-Serf, about half a league from the shore, is a low rocky island, Westward of which is the safest passage into the largest harbor; keep near this rock, steering E. N. E. ¼ E. toward the Southeastern shore, until you get abreast of a small woody island; this is the Easternmost except one, and lies about one fourth of a mile E. N. E. from a white rock in the middle of the channel; haul short round this island, and anchor behind it, in seven fathoms water: here you will lie safely sheltered from all winds; or you may go farther up, and anchor at its head, in four fathoms.

Grand Bruit.

GRAND BRUIT.—Four miles to the Westward of the rocky islands of Cinq-Serf, is the harbor of Grand Bruit, which is small but commodious, and may be known by a very high remarkable mountain over it, half a league inland, which is the highest land on all the coast; down this mountain runs a considerable brook, emptying itself by a cascade into the harbor. Before the mouth of the harbor are several little islands, the largest of which is of middling height, with green hillocks on it. A little outside of this island is a round rock, rather high above water, called the Columbe of Great Bruit; and one fourth of a mile to the Southward of this rock, is a low rock. In a direct line between the low rock and the rocky isles of Cinq-Serf, half a league from the former, is a sunken rock, whereon the sea does not break in fine weather. The safest passage into Grand Bruit is to the Northeastward of this rock and of the islands lying before the harbor, between them and the three islands, which are low and lie under the shore; and, after you are to the Northward of the sunken rock above mentioned, there is no danger but what shows itself. The harbor extends N. N. E. half a mile, and is but one fourth of a mile wide in the broadest part; but it is bold to on both sides, and has a depth of from four to seven fathoms.

Bay of Rotte.

BAY OF ROTTE.—To the Westward of Grand Bruit, between it and La Poile Bay, lies the Bay of Rotte, wherein are a great many islands and sunken rocks. The Southernmost is a remarkable high round rock, called the Colombe of Rotte, which lies N. W. by W. eight and three fourths leagues from the Southernmost of the Burgeos. Between this island and Great Bruit is a reef of rocks, some above and some under-water, but they do not lie to the Southward of the direct line between the islands. Within the islands of Rotte there is shelter for shipping; the safest passage is to the Westward of the islands, between them and Little Ireland, which lies off the E. point of La Poile Bay.

La Poile Bay. Beacons. LA POILE BAY.—La Poile Bay, twenty-six miles E. N. E. from Cape Ray, is now distinguished by a beacon erected on the Western point of entrance, and also a beacon on Little Ireland Island, Eastern side of entrance.

La Poile Bay is large and spacious, and has several commodious harbors. It may be known by the high land of Grand Bruit, which is only five miles to the Eastward of it, and likewise by the land on the E. side of the bay, which rises in remarkable high craggy hills. About one mile and one fourth S. W. from its E. point lies Little Ireland, a small low island, environed with sunken rocks, some of which are one third of a mile off. N., about half a mile from Little Ireland, is a sunken rock that shows itself at low water; this is the only danger in going into the bay, excepting such as lie very near shore.

Great and Little Harbors. GREAT AND LITTLE HARBORS.—Two miles within the W. point of the Bay and N. ½ W., two miles from Little Ireland, is Tweeds or Great Harbor: its S. point is low, and it extends inward W. N. W. one mile; it is about one and a half cables' length wide in the narrowest part; and the anchorage is near the head of the harbor, in eighteen or twenty fathoms, clear ground, and sheltered from all winds. Half a mile to the Northward of Great Harbor is Little Harbor, the N. point of which, called Tooth's Head, is the first high bluff head on the W. side of the bay; the harbor extends inward W. N. W. about a mile. In sailing in give the S. point a small berth. You may anchor about half way up the harbor, in ten fathoms water, before the stage on its Northern side.

Gally Boy's Harbor. GALLY BOY'S HARBOR lies on the E. side of the bay, opposite Tooth's Head; it is small, snug, and convenient for ships bound to the Westward. The N. point is high and steep, with a white spot in the cliff, and near its Southern point are some hillocks close to the shore. To sail in or out, keep the N. side on board. You must anchor so soon as you are within the inner S. point, in nine or ten fathoms, good ground, and sheltered from all winds. One mile to the Northward of Gally Boy's Harbor, between two sandy coves on the E. side of the bay, and nearly two cables' length from the shore, is a sunken rock, that just uncovers at low water.

Broad Cove is about two miles to the Northward of Tooth's Head, on the same side of the bay. In this there is good anchorage, in twelve or fourteen fathoms.

Northeast Arm. NORTHEAST ARM.—About two leagues up the bay, on the Eastern side, is the Northeast Arm, which is a spacious, safe, and commodious harbor. In sailing in, give the low sandy point on the S. E. side a small berth, and anchor above it where convenient, in ten fathoms water, good holding ground, sheltered from all winds and very convenient for wood and water.

Indian Harbor and De Plate lie just within the outer W. point of La Poile Bay; these are two small coves, conveniently situated for the fishery, but fit only for small vessels, who may get in at high water.

Little Ireland bears from the Southernmost of the Burgeos N. W. by W. ¼ W., nine and three fourths leagues, and lies nearly eleven leagues to the Eastward of Cape Ray.

Garia Bay. GARIA BAY.—From Little Ireland to Harbor la Coue and La Moine Bay, the course is W. N. W. ¾ W., nine or ten miles; between lies the Bay of Garia and several coves, fit only for small vessels; before these there are several islands and sunken rocks scattered along the shore, but none of them lie without the above course. In bad weather all the sunken rocks discover themselves. To sail into Garia Bay, you will, in coasting along shore, discover a white head; this is the S. point of an island lying under the land, off the Eastern point of the bay, and a little to the Westward of two green hillocks on the main; bring this white point N. N. E. and steer directly toward it; keep between it and the several islands that lie to the W. S. Westward; from the white point, the course into the bay is N. by W.; borrow toward the Eastern point, which is low. The Bay of Garia affords plenty of timber, large enough for building ships.

La Moine and La Coue Harbors. LA MOINE AND LA COUE HARBORS.—The S. W. point of the entrance into Harbor la Coue, called Rose Blanche Point (near to which are some rocks above water), is tolerably high, and the land near the shore over Harbor la Coue and La Moine Bay is much higher than any other land in the vicinity; by this they may be known. La Moine Bay extends inward N. E. ¾ E., about four miles, and is one fourth of a mile broad in the narrowest part. Off the E. point are some small islands and rocks above water. In sailing in, keep the W. point on board until you have entered the bay; then edge over toward the E. shore, and run up to the head of the bay, where you may anchor in ten or eleven fathoms, good ground; here is plenty of wood and water. To sail into Harbor la Coue, which lies at the W. entrance into La Moine Bay, steer in N. N. W. between a rock above water, in the mouth of the harbor, and the W. shore. So soon as you are within the rock, haul to the Westward into the harbor, and anchor in six or eight fathoms water, mooring with a hawser on shore; or you may steer into the arm, which runs in N. E. by E. from the harbor, and anchor in twenty fathoms, sheltered from all winds. This has been the resort of the small fishing-vessels for many years.

Rose Blanche. ROSE BLANCHE.—To the Westward of Rose Blanche Point is the Harbor of the same name. It is small and snug, and the anchorage is in nine fathoms water. The

channel into the harbor is between the island lying off its Western point, and Rose Blanche Point. Give the island a good berth, on account of some sunken rocks which lie on its Eastern side, and keep the W. side of a small island, which lies close to the point, on board, anchoring within the N. E. point of this island in nine fathoms. To enter into the N. W. part of the harbor would be dangerous, if a stranger, because of numerous islands and rocks.

Mull Race is a small cove two miles to the Westward of Rose Blanche Point, wherein is anchorage for small vessels in four fathoms. Off the W. point of the cove are two small islands, and several sunken rocks. The passage in is to the Eastward of these.

Several miles to the Westward of Rose Blanche Point, are the Burnt Islands, which lie close under the shore, and are not easily to be distinguished from it. Behind these is a shelter for small vessels. Off these islands are sunken rocks, some of which are half a mile from the shore.

CONNEY AND OTTER BAYS.—Six miles to the Westward of Rose Blanche Point are Conney Bay and Otter Bay, both of which are rendered difficult of access by several sunken rocks outside of the passage, which do not show themselves in fine weather; but when once you are safe within Otter Bay, there is good riding in seven, eight, and nine fathoms water. *Conney and Otter Bays.*

DEAD ISLANDS HARBOR.—W. N. W. ¾ W., nearly four leagues from Rose Blanche Point, are the Dead Islands, which lie close under the shore. In the passage to Dead Islands Harbor, between the islands and the main, is good anchorage for shipping in six and eight fathoms, sheltered from all winds; but it is very dangerous of access to strangers, as there are several sunken rocks in both the E. and W. entrances. The Eastern entrance can be known by a remarkable white spot on one of the islands, Bring this spot to bear N. by W., and steer in for it, keeping the starboard rocks on board, and leave the white spotted island on your port side. The Western entrance may be recognized by a high point on the main, a little to the Westward of the islands, on the Western part of which point is a green hillock; keep this point close on board, until you get within a little round rock, near to the Westernmost island, at the Eastern point of entrance; then haul over to the Eastward for the great island, distinguished by a high hill, and steer E. ¾ N., keeping the before-mentioned little rock in sight. *Dead Islands Harbor.*

PORT AUX BASQUE.—From the Dead Isles to the Port aux Basque, the course and distance are W. N. W. about four miles: between which lie several small islands close under the shore, and there are sunken rocks, some of which are half a mile from the shore. Port aux Basque is a small commodious harbor, which lies about two and a half leagues to the Eastward of Cape Ray. To fall in with it, bring the sugarloaf hill over Cape Ray to bear N. N. W. ½ W., or the W. end of the Table Mountain N. N. W. Steer in for the land with either of these marks, and you will fall directly in with the harbor. The S. W. point, called Point Blanche, is of a moderate height, and of white appearance; but the N. E. point is low and flat, and has, close to it, a black rock above water. In order to avoid the outer shoal, on which are three fathoms, and which lies E. S. E. three fourths of a mile from Point Blanche, keep the said point on board, and bring the flag-staff, which is on the hill over the W. side of the head of the harbor, on with the S. W. point of Road Island. That direction will lead you in the middle of the channel, between the E. and W. rocks, the former of which always show themselves, and these you leave on your starboard hand. Continue this course up to Road Island, and keep the W. point on board, in order to avoid the Fryingpan Rock, which stretches out from a cove on the W. shore, opposite the island; and so soon as you are above the island haul to the E. N. E., and anchor between it and Harbor Island wherever you please, in nine or ten fathoms, good ground, and sheltered from all winds. This is called the Road or Outer Harbor, and is the only anchoring-place for men-of-war, or ships drawing a great depth of water, but small vessels always lie up in the Inner Harbor. To sail into it, run in between the W. shore and the S. W. end of Harbor Island, and anchor behind the said island, in three or four fathoms. In some parts of this harbor ships can lay their broadside so near to the shore as to reach it with a plank. This place has been frequented by fishermen for many years. It is well situated for their purposes, and is capable of most excellent accommodations. One mile to the Eastward of Basque is Little Bay. *Port aux Basque.*

GRAND BAY lies about two miles to the Westward of Port aux Basque; there are several small islands and rocks in and before it, the outermost of which are not above a fourth of a mile from the shore; on these the sea generally breaks. It is only fit for small vessels. *Grand Bay.*

From Port aux Basque to Point Enragée, the bearing and distance are W. N. W. about a league, and thence to Cape Ray N. N. W. nearly one league and a half. Point Enragée is low; off it and to the Eastward of it, are some sunken rocks a mile from the shore, on which the sea breaks.

CAPE RAY is the S. W. extremity of Newfoundland; the land of the Cape is very remarkable; near the shore it is low, but three miles inland is a very high table moun- *Cape Ray.*

tain, which rises almost perpendicular from the low land, and appears to be quite flat at the top, excepting a small hillock on the S. W. point of it. This land may be seen, in clear weather, from the distance of sixteen or eighteen leagues. Close to the foot of the table-mountain, between it and the point of the cape, is a high round hill, resembling a sugarloaf (called the Sugarloaf of Cape Ray), whose summit is a little lower than that of the table mountain; and to the Northward of this hill, under the table-mountain, are two other conical hills, resembling sugarloaves, which are not so high as the former. One or others of these sugarloaf hills are, from all points of view, seen detached from the table-mountain.

There is a sandy bay between Cape Ray and Point Enragée, wherein ships may anchor with the winds from N. N. W. to E., but they should be cautious not to be surprised with the S. W. winds, which blow directly in, and cause a great sea. The ground is not the best for holding, being fine sand. Toward the E. side of this bay is a small ledge of rocks, one mile from the shore, on which the sea does not break in fine weather. The best place for large ships to anchor in, is to bring the point of the cape N. W. and the high white sand-hill in the bottom of the bay N. E. in ten fathoms water. Small vessels may lie farther in. Be careful not to run so far to the Eastward as to bring the end of the table-mountain on with the sand-hill in the bottom of the bay, by which means the ledge of rocks before mentioned will be avoided.

N. W. ½ W., nearly one mile from the point of the cape, is a small ledge of rocks, called the Cape Rocks, whereon the sea always breaks; and one mile to the Northward of the cape, close under the land, is a low rocky island. There is a channel between the ledge and the cape, with fourteen and fifteen fathoms water, and also between it and the island, with four and five fathoms; but the tides, which run in here with great rapidity, render it unsafe for shipping.

The soundings under one hundred fathoms do not extend above a league from the land to the Southward and Eastward of the cape, nor to the Westward and Northward of it, except on a bank which lies off Port aux Basque, between two and three leagues from the land, whereon are from seventy to one hundred fathoms, good fishing ground S. E. ½ S., about thirteen leagues from Port aux Basque, in the latitude of 70° 14′ N., is said to be a bank, whereon are seventy fathoms.

Tides. THE TIDES.—Between Cape Chapeau Rouge and Cape Ray, in all the bays, &c., the tide generally flows till nine o'clock, on full and change, and its perpendicular rise is about seven or eight feet on springs; but it must be observed, that the tides are everywhere greatly influenced by the winds and weather. On the coast between Cape Chapeau Rouge and St. Pierre, the current sets generally to the S. W. On the S. side of Fortune Bay, it sets to the Eastward, and on the N. side to the Westward. Between Cape La Hune and Cape Ray, the flood sets to the Westward in the offing, very irregularly; but generally two or three hours after it is high water by the shore. The tide or current is inconsiderable, excepting near Cape Ray, where it is strong, and at times sets quite contrary to what might be expected from the common course of the tides, and much stronger at one time than at another. These irregularities seem to depend chiefly on the winds.

THE WESTERN COAST OF NEWFOUNDLAND.

FROM CAPE RAY TO THE STRAITS OF BELLE ISLE.

FROM Cape Ray to Cape Anguille, the course and distance are N. ¼ E., seventeen or eighteen miles. Cape Anguille is the Northernmost point of land you can see after passing to the Westward of Cape Ray. It is high tableland, and covered with wood, in the country above it. Between the high land of the two capes the coast is low, and the shore forms a bay, wherein are the great and little rivers of Cod Roy; the Northernmost is the great river, which has a bar-harbor, fit to admit vessels of eight or ten feet draught only at high water. The shore may be approached between the two capes to half a league, there being no danger so far off. It is a good salmon fishery, and for building small vessels and boats, there being timber in abundance.

Island Cod Roy. ISLAND COD ROY.—The Island of Cod Roy lies one mile and a half or two miles to the Southward of Cape Anguille, close under the high land. It is a low, flat, green island, of nearly two miles in compass, in the shape of a horseshoe, forming between it and the main a small snug bar-harbor for vessels of ten or twelve feet draught. The safest entrance to it is from the Southward.

Cod Roy Road. COD ROY ROAD.—Southeastward from the island is Cod Roy Road, wherein is very good anchorage for shipping in eight, seven, or six fathoms, on a clay bottom. With the S. point of the island bearing about W. N. W., and the point of the beach on the inside of the island, at the S. entrance into the harbor, on with a point on the main to the

Northward of the island, you will lie in seven fathoms, and nearly half a mile from the shore. One league to the Southward of Cod Roy Island is a high bluff point, called Stormy Point, off which a shoal stretches out a full mile. This point covers the road from the S. S. E. winds, and there is a good anchorage all along the shore, between it and the island.

ST. GEORGE'S BAY.—From Cape Anguille to Cape St. George, the course and distance are N. N. E. ½ E., nearly twelve leagues. These two capes form the Great Bay of St. George, which extends inward E. N. E. eighteen leagues from the former, and E. S. E. eleven leagues from the latter. At the head of this bay, on the S. side, round a low point of land, is a good harbor, with excellent anchorage in from eight, ten, and twelve fathoms water. The river St. George empties itself into the head of this bay, but it is not navigable for anything but boats. On the N. side of the bay, before the isthmus of Port-a-Port, is good anchorage in seven and eight fathoms, with Northerly winds. From off this place a fishing bank stretches two thirds across the bay, with from seven to nineteen fathoms water on it, and dark sandy bottom. *St. George's Bay.*

CAPE ST. GEORGE may be readily known, not only by its being the N. point of the Bay of St. George, but also by the steep cliffs on the N. part of it, which rise perpendicularly from the sea to a considerable height; and by Red Island, which lies five miles to the Northeastward of the cape, and half a mile from the shore. This island is about one mile and a half in length, and of middling height; the steep cliffs around it are of a reddish color. There is anchorage with off-shore winds under the N. E. end of the island, before a sandy cove on the main, which lies just to the Northward of the steep cliffs in twelve or fourteen fathoms. You will there ride, covered from the S. W. winds by the island, and from the Southerly and Easterly winds by the main land, but there is no shelter whatever with winds from the N. or N. W., although this place was heretofore much resorted to by vessels in the fishing trade. *Cape St. George.*

From abreast of Red Island, distant four or five miles, to Long Point at the entrance into the bay of Port-a-Port, the bearing and distance are E. by N. seven or eight leagues; from Red Island to Guernsey Island, in the mouth of the Bay of Islands, E. N. E. ½ N., nearly sixteen leagues; from Red Island to Cape St. Gregory, N. E. by E. full twenty leagues; and from Red Island to Point Rich, which is the N. point of Ingornachoix Bay, N. E. ¼ E., forty-eight and a half leagues. *Bearings and Distances.*

PORT-A-PORT.—The land between Red Island and the entrance into Port-a-Port is rather low, with sandy beaches, except one remarkable high hillock, called Round Head, close to the shore, about two leagues to the E. N. Eastward of Red Island; but up in the country over Port-a-Port are high lands; and, if you are three or four leagues off at sea, you cannot discern the long point of land which forms the bay. This bay is capacious, being about five miles broad at the entrance, and four leagues deep, running into the S. and Southwestward, with good anchorages in most parts of it. Long Point is the W. point of the bay; it is low and rocky, and a ledge of rocks extends from it E. N. E. nearly a mile. S. E. by E. ¾ E., four miles from Long Point, and half a league from the E. shore, lies Fox Island, which is small, but of middling height. From the N. end of this island a shoal stretches out nearly two miles to the N. N. Eastward, called Fox's Tail, and nearly in the middle of the bay, between Fox Island and the W. shore lies the Middle Ground, on one place of which, near the S. W. end, there are not above three or four feet water. From the head of the bay projectiug out into the middle of it, is a low point, called Middle Point, off which, extending two miles N. E. by N., is a shoal spit, part of which dries at low water. This Middle Point divides the bay into two parts, called East and West Bays. From the head of the East Bay, over to the Bay of St. George, the distance is a large quarter of a mile; this isthmus is very low, and has a pond in the middle of it, into which the sea frequently dashes over, especially at high tides, and with gales of wind from the Southward. On the E. side of it is a tolerably high mountain, rising directly from the isthmus, and flat at top; to the Northward of this, and at about five miles distant from the isthmus, is a conspicuous valley or hollow, hereafter to be used as a mark. N. E. by E. ½ E., above two leagues from Long Point, and half a league from the shore, lies Shag Island, which appears at a distance like a high rock, and is easily to be distinguished from the main; and W. N. W., about a league from it, lies the Middle of Long Ledge, which is a narrow ledge of rocks stretching E. N. E. and W. S. W. about four miles; the Eastern part of them is above water, and the channel into the bay of Port-a-Port, between the W. end of this ledge and the reef which stretches off from the W. point of the bay, is a league wide. *Port-a-Port.*

In sailing into Port-a-Port, if coming from the Southwestward, advance no nearer to the Long Point of the bay than one mile and a half, until you have brought the valley, in the side of the mountain before mentioned (on the E. side of the isthmus), over the E. end of Fox Island, or to the Eastward of it, which will then bear S. a little Easterly; you will then be clear of the Long Point Reef, and may haul into the bay with safety; but if coming from the N. E. without the Long Ledge, or turning into the bay, in order to keep clear of the S. W. end of Long Ledge, bring the isthmus, or the foot of the mountain

(which is on the E. side of the isthmus), open to the Westward of Fox Island, nearly twice the breadth of the island, and it will lead you into the bay clear of Long Ledge; and when Shag Island is brought on with the foot of the high land on the S. side of Coal River, bearing then E. ¾ S., you will be within the Long Ledge: there is also a safe passage into the bay, between the Long Ledge and the main, on either side of Shag Island, taking care to avoid a small shoal, two and a half fathoms, which lies W. by N. one mile from the island.

To sail up in the West Bay and Head Harbor, keep the Western shore on board; this shore is bold to. In turning between it and the Middle Ground, stand no nearer to the middle than into eight fathoms; but you may stand to the spit of the Middle Point into six or five fathoms. The anchorage in West Bay is in about eight fathoms, and in Head Harbor in about five fathoms. The West Road lies before a high stone beach, about two miles Southwestward of Long Point, where you may lie very secure from Westerly and N. W. winds, in about ten or twelve fathoms water: this beach is steep to, and forms an excellent place for landing and drying your fish: there is a good place at the Northern end of Fox Island for the same purpose. The whole bay and the adjacent coasts abound with cod, and extensive fishing banks lie all along the coasts.

The East Road lies between Fox Island and the East shore; to sail up to it, you should keep the high bluff head, which is about a league to the E. N. E. of the island, bearing to the Southward of S. E. by E. ½ E., until the isthmus is brought to the Eastward of Fox Island; you will then be within the shoal called the Fox's Tail, and may haul to the Southward, and anchor anywhere between the island and the main, in from ten to eighteen fathoms.

To sail up the East Bay, pass between the island and the E. shore, and after you are above the island, come no nearer to the main than half a mile, until you are abreast of a bluff point above the island called Road Point, just above which is the best anchorage with N. E. winds, in about twelve fathoms water; and to sail up the East Bay between the Middle Ground and the Fox's Tail, bring the said bluff point on with the S. W. point of Fox Island: this mark will lead you up in the fairway between the two shoals; give the island a berth, and anchor, as before directed, in from eight to twelve fathoms water.

Bay of Islands. BAY OF ISLANDS.—From the Long Point at the entrance of Port-a-Port to the Bay of Islands, the bearing and distance are N. E. by E., eight leagues. Be careful to avoid the Long Ledge; the land between is of considerable height, rising in craggy, barren hills, directly from the shore. The Bay of Islands may be known by the many islands in the mouth of it, particularly the three named Guernsey Island, Tweed Island, and Pearl Island, which are nearly of equal height with the land on the main. If you are bound for Lark or York Harbor, which lie on the S. W. side of the bay, and are coming from the Southward, run in between Guernsey Island and the South Head, both of which are bold to; but with Southerly and S. W. winds approach not too near the South Head, lest calms and sudden gusts of wind should proceed from the high land, under which you cannot anchor with safety. There are several channels formed by the different islands, through which you may sail in or out of the bay, there being no danger but what shows itself, except a small ledge of rocks which lie half a mile Northeastward from the Northern Shag Rock, and in a line with the two Shag Rocks in one. If you bring the South Shag Rock open on either side of the North Rock, you will go clear to the Eastward or Westward of the ledge. The safest passage into this bay from the Northward, is between the two Shag Rocks, and then between Tweed Island and Pearl Island.

Lark Harbor. LARK HARBOR.—From Guernsey Island to Tortoise Head, which is the N. point of York Harbor, and the S. E. point of Lark Harbor, the course and distance are nearly S. S. W., six miles. Lark Harbor extends inward W. S. W., nearly two miles, and is one third of a mile broad in the entrance, which is the narrowest part; in sailing into it with a large ship, keep the port shore on board, and anchor with a low point on the starboard side, bearing W. N. W., or N. N. E., and you will ride in six or seven fathoms water, secure from all winds.

York Harbor. YORK HARBOR.—From Tortoise Head into York Harbor, the course and distance are W. S. W., nearly a league; there is good turning room between the Head and Governor's Island, which lies before the harbor, but you must be careful to avoid a shoal which runs off from a low beach point on the W. end of Governor's Island, called Sword Point; there is also a shoal which spits off from the next point of Governor's Island, which must also be avoided; Tortoise Head, just touching Sword Point, will lead clear of it; in sailing in, give Sword Point a berth, passing which, the best anchoring ground is in ten fathoms, along a sandy beach on the main, with Tortoise Head open of Sword Point; W. and Northwesterly winds blow here with great violence.

Harbor Island lies at the entrance of the River Humber, and S. by E. ¾ E., seven miles from Guernsey Island; at its S. W. point is Wood's Harbor, which is unfit for shipping. The River Humber, at about five leagues within the entrance, becomes narrow, and the stream is so rapid in some places, for about four leagues up, to a lake, that it is with great difficulty that even a boat can stem the current.

The North and South arms are both long inlets, with very deep water up to their heads. On the E. side of Eagle Island, between the North and South arms, is anchorage in eight, ten, and twelve fathoms water. Under the N. side of Harbor Island, also, is good anchorage with S. W. winds: and opposite to the S. E. end of Harbor Island, on the S. side of the bay, is Frenchman's Cove, wherein is good anchorage in from twenty to twelve fathoms. The Bay of Islands was formerly much frequented by vessels in the cod fishery, and stages were erected at Small Bay, which lies a little on the outside of South Head; and the large beach on Sword Point, in Governor's Island, is an excellent place for drying the fish.

From the North Shag Rock to Cape St. Gregory, the course and distance are nearly N. E., eight miles; and thence thirteen or fourteen miles, on a similar bearing, will carry you to the entrance of Bonne Bay. The land near the shore from the North Shag Rock to Cape St. Gregory is low, along which lie sunken rocks, a fourth of a mile from the shore; but a very little way inland it rises into a high mountain, terminating at the top in round hills.

Cape St. Gregory. CAPE ST. GREGORY is high, and between it and Bonne Bay, the land rises directly from the seashore to a considerable height; it is the most Northerly land you can discern when sailing along shore between Red Island and the Bay of Islands.

Bonne Bay. BONNE BAY may be known at the distance of four or five leagues, by the land about it; all that on the S. W. side of the bay being very high and hilly, and that on the N. E. side, and thence along the seacoast to the Northward, being low and flat; but at about one league inland is a range of mountains, which runs parallel with the seacoast. Over the S. side of the bay is a very high mountain, terminating at the top in a remarkable round hill, very conspicuous when you are to the Northward of the bay. This bay extends inward E. S. E. nearly two leagues, then branches into two arms, one of which runs in to the Southward, and the other to the Eastward; the Southern arm affords the best anchorage; small vessels should ride just above a low woody point at the entrance into this arm, on the starboard side, before a sandy beach, in eight or ten fathoms water, about a cable's length from the shore; there is no other anchorage in less than thirty or forty fathoms, excepting at the head of the arm, where there are from twenty-five to twenty fathoms water; in sailing into the East Arm, keep the starboard shore on board; and a little round a point at the entrance will be found a small cove, with good anchorage in seventeen to twenty fathoms, but you must moor to the shore. There is a snug cove also close within the North Point, with anchorage in six or seven fathoms water; in sailing in or out of Bonne Bay with S. W. winds, come not near the weather shore, lest you should happen to be becalmed, or should meet with heavy gusts of wind, as the depth of water is too great to admit of your anchoring.

Ten miles to the Northward of Bonne Bay is Martin Point, high and white, off which, about three fourths of a mile, is a small ledge of rocks, whereon the sea breaks. Broome Point is low and white, and lies about a league to the Northward of Martin Point; about half a mile W. S. W. from it lies a sunken rock that seldom shows itself; on the N. side of Broome Point lies the Bay of St. Paul, wherein vessels may anchor with off-shore winds, but it is quite exposed to the sea.

Cow Head. COW HEAD lies about four miles to the Northward of the Bay of St. Paul; this is a promontory, which has the appearance of an island, it being joined to the main only by a very low and narrow neck of land; about three fourths of a mile off this head lies Steering Island, which is low and rocky, and is the only island on the coast between the Bay of Islands and Port Rich. Cow Cove lies on the S. side of Cow Head, and ships may lie there in from seven to ten fathoms, sheltered from Northerly and Easterly winds. Shallow Bay lies on the N. side of Cow Head, and has water sufficient for small vessels; at the N. E. side of the entrance is a cluster of rocky islands, extending E. N. E. and W. S. W., and at the W. S. W. side are two sunken rocks close to each other, which generally show themselves; they lie a cable's length from the shore, and there is a channel into the bay on either side of them. Steering Island lies right before this bay which you may pass on either side, but come not too near its N. E. end, as there are some sunken rocks extending from it. This is considered the best situated for a fishery of all the coast, and the ground about its environs is eminently productive.

Ingornachoix Bay. INGORNACHOIX BAY.—From Steering Island to Point Rich the course is nearly N. E., distant fifty miles; Point Rich is the Northern Point of Ingornachoix Bay. From Shallow Bay to the Southern point of Ingornachoix Bay the coast is nearly in a straight line, there being all the way neither creek nor cove where a vessel can find shelter from the sea-winds, though there are a few places where they might anchor occasionally with land-winds. About six leagues from Steering Island there is a hill standing half a mile inland, commonly called Portland Bill, probably because it resembles Portland Bill in the English Channel, and alters not its appearance in whatever point of view it is taken.

Port Saunders and Hawkes Harbor. PORT SAUNDERS AND HAWKES HARBOR.—These are situated within, and to the Eastward of Ingornachoix Bay. At the entrance lies Keppel Island, which, at a distance, will not easily be distinguished from the main land. There is a passage on both sides of the island. To sail into Port Saunders there is no impediment or danger.

You will leave Keppel Island on your starboard side, and when you get about half a mile within the entrance, you can anchor in twelve or fourteen fathoms water; but if you are intending to run up to the head of the harbor, you must keep the port shore on board in order to avoid a ledge of rocks which lies near the mid-channel. This is considered to be the best harbor for vessels that are bound for the Southward.

Hawke's Harbor. HAWKE'S HARBOR.—To enter this harbor, vessels commonly go to the Southward of Keppel Island. The starboard shore is shoal, and has a sand-bank which stretches along the land, and runs out two thirds of the passage over, great part of which dries at low water. Your course in will be E. S. E., keeping nearer to Keppel Island than to the main, until the Eastern end of the island, which is a low stony beach, bears N. E. by N. or N. N. E., then steer S. S. E. ½ E. for a small island you will see, situated farther up the harbor, keeping the port shore well on board; run direct for this island, and when you have brought the point at the S. entrance of the harbor to bear N. N. E. ½ N., and are at the S. S. E. point of a bay on the starboard side of the harbor, you will then be beyond the shoal ground, and may anchor in twelve fathoms water; or else run within half a mile of the small island, and anchor there, which will be more convenient for both wood and water. This the best harbor for ships bound to the Northward. The land round about these harbors is generally low, and covered with wood. You may occasionally anchor outside, in the Bay of Ingornachoix, according as you find the prevailing winds.

Point Rich. POINT RICH is the Southwestern point of a peninsula, which is almost surrounded by the sea, being everywhere of moderate height, and projecting farther to seaward than any other land on this side of Newfoundland, the coast thence, each way, taking an inward direction.

Port au Choix. PORT AU CHOIX.—Rounding Point Rich, on its Northern side, you will meet with Port au Choix, small, but yet capable of admitting a ship of burden, mooring head and stern. To sail in you should keep the starboard shore on board, and anchor just above a small island lying in the middle of the harbor. In this place, and also in Boat Cove, which lies a little to the Northeastward, there are several stages and places for drying fish.

Old Port au Choix. OLD PORT AU CHOIX lies to the Eastward of Boat Cove; it is a small but safe harbor, having at its entrance an island called Harbor Island, and on its Western side some rocks, both above and under water. There is also another island lying E. N. E. ½ N., distant nearly a mile from Harbor Island, about which are several rocks, some of which stretch out toward Harbor Island, and render the passage very narrow between them. There are four, five, six, and seven fathoms water between Savage Island and the main, and four and five fathoms between Savage Island Rocks and Harbor Island; and nearly the same depth between Harbor Island and the Western shore. To sail into Old Port au Choix, on the Western side of Harbor Island, you must keep the Island close on board; but to go in on the Eastern side of the island, give the Northeastern point of the island a berth, and having well entered, you may anchor anywhere on the port side of the harbor, only avoiding the starboard side, for a shoal of sand and mud runs all along it.

Bay of St. John. BAY OF ST. JOHN.—This is an open and extensive bay, bounded by Point Rich to the Southward, and Point Ferolle to the Northward, having several islands within it, and some sunken rocks. The largest of these islands is St. John's, about two and a half miles in length, and one and three fourths broad; this lies E. N. E., distant eight and a half miles from Port Rich; on its Southwestern side is a small harbor, well calculated for the cod-fishery, but too much exposed for shipping, as Southwesterly winds commonly drive in a heavy sea. On the Southeastern or inner side of the island, and between it and One Head Island, vessels may lie much more secure, in fourteen or sixteen fathoms water, and sheltered from most winds; and this is considered to be the only safe anchorage in the whole bay. W. from St. John's Island, one large mile, is Flat Island, having a rock above water at its Southern end. The channel between St. John's and Flat Island has from thirteen to thirty-five fathoms in it, and they are both bold to. The Twin Islands lie N. E. by N. from Flat Island, distant one league, and have no danger about them. To the Westward of the Twins are several scattered rocks above water, named the Bay Islands; they have deep water around them, but no anchorage. The land at the bottom of the bay is very high, and there is the little river of Castors, the entrance to which is dangerous and shallow, therefore seldom frequented. From the Northern point of this bay a rocky shoal extends all the way to Point Ferolle, stretching out two and a half miles from the shore.

Point Ferolle. POINT FEROLLE lies N. E. by E. from Point Rich, distant twenty-two miles; it is of moderate height, and joined to the main by a neck of land, which divides the Bay of St. John's from New Ferolle Bay, making it appear like an island when seen from a distance; its Northern shore is bold to, and this part of the coast will easily be known by the adjacent tableland of St. John's, the W. end of which mountain lies from the middle of Ferolle Point S. by W. and its Eastern end S. E. ¾ S.

New Ferolle. NEW FEROLLE BAY is a small cove lying to the Eastward of the point, and is

quite flat all over, there being not more than two and three fathoms at any part; it is quite open to the Northerly winds, has a stage on each side of it, with plenty of room for others.

St. Margaret's Bay is large, and has several islands within it; also various inlets or coves affording good anchorage, particularly on its Western side, which is the best situation for ships, being most clear of danger, and convenient for wooding and watering. On its banks are spruce and fir trees in plenty, and many rivulets of fresh water. Dog Island is to the Eastward of Point Ferolle full three miles, and only divided from the main at high water; it is higher than any land near it, which gives it the appearance, when seen from the Eastward, of an island situated some distance from the main.

OLD FEROLLE.—To the Eastward of Dog Island about five miles, is Ferolle Island. This island lies parallel to the shore, and forms the harbor of Old Ferolle, which is very good and safe. The best entrance to it is at the S. W. end of the island, passing to the Southward of a small island at the entrance, which is bold to. As soon as you are within it, haul up E. N. E., and anchor under the S. W. end of Ferolle Island, in eight or nine fathoms, good ground, quite landlocked. There is also good anchorage anywhere along the inside of the island, and a good channel up to the N. E. end thereof. There are some little islands lying at the N. E. end of Ferolle Island, and on the outside are some ledges of rocks a small distance off. *Old Ferolle.*

BAY OF ST. GENEVIEVE.—From the N. end of Ferolle Island to St. Genevieve Head, the course is E. N. E., four and a half miles, and thence to the W. end of Current Island, it is Northeastward about three miles. There are several small islands lying in and before this bay, only two of which are of any considerable extent. The aforementioned Current Island is the Northernmost of the two, and the largest; it is of a moderate height, and when you are to the E. N. E. of it, the Western point will appear bluff, but not high; and when you are to the Westward of it, it appears flat and white. The other, called Gooseberry Island, lies nearly a mile to the Southward of it, and its W. point bears from the W. point of Current Island, S. S. W. ½ W., nearly a mile. Gooseberry Island has a cross on its S. W. end, from which point stretches out a ledge of rocks near a half a mile to the Southward. There is also a shoal about half a mile to the W. S. W. from the S. W. point of Current Island. The best channel into this bay is to the Southward of these islands, between the rocks which stretch off them and a small island lying S. S. W. from them, which island lies near the S. shore. In this channel, which is very narrow, there are not less than five fathoms at low water, and the course in is E. by S., Southerly, until you come to the length of the aforementioned island, passing which, you should haul to the Southward, and bring St. Genevieve Head between the small island and the main, in order to avoid the middle bank. You may either anchor behind the small island in five or six fathoms water, or proceed farther, with the said mark on, until the S. W. arm is open, and anchor in the middle of the bay, in seven or eight fathoms water. Here wood and water are to be had. There is tolerably good anchorage in most parts of the bay, but the snuggest place is in the S. W. arm. The entrance to it is narrow, and has only four fathoms at low water. In coming into the bay, if you get out of the channel on either side, you will shoal your water immediately to three or two fathoms. *Bay of St. Genevieve.*

BAY OF ST. BARBE.—From the W. end of Current Island to St. Barbe Point it is E. by N., two and a half miles: and from St. Barbe Point to Anchor Point it is N. N. E. nearly one mile and a half. Between them lies the Bay of St. Barbe; it runs in S. by E. about two miles from Anchor Point. To sail in, give Anchor Point and all the E. side of the bay a good berth, to avoid the sunken rocks which lie along that shore. You must be well in before you can discover the entrance into the harbor, which is but narrow: then steer S., keeping in the middle of the channel, and anchor as soon as you are within the two points, in a small cove on the W. side, in five fathoms water, on sand and mud, quite landlocked. Near this place branch out two arms or rivers, one called the South, the other the East; the latter has three fathoms a good way up, but the former is shoal. Between the S. W. point of the Bay and W. point of the harbor is a cove, wherein are sunken rocks, which lie a little without the line of the two points. In the open bay are seven, eight, or nine fathoms; but the N. W. winds cause a heavy sea to fall in here, which renders it unsafe. *Bay of St. Barbe.*

From Anchor Point to the extremity of the Seal Islands, the course is N. E. ½ E., one league. Off Anchor Point a ledge stretches itself W. by S. about one third of a mile. There are no other dangers between it and the Seal Islands, but what lie very near the shore.

The Seal Islands are white and rocky, and must not be approached but with care of their N. and Western sides, because there are some sunken rocks near them.

From the N. W. Seal Island to the N. W. extremity of Flower Ledge, it is N. N. E., near two miles. Part of this ledge appears at low water, and there are ten fathoms close on its off side.

Mistaken Cove. MISTAKEN COVE.—From the N. part of Flower Ledge to Greenville Ledge, it is about one mile and a half E. by S., and Greenville Ledge lies about two thirds of a mile W. by N. from the Eastern point of Mistaken Cove; between which and Seal Islands lie also Nameless Cove and Flower Cove, neither of which are fit for ships.

Savage Cove. SAVAGE COVE.—Close to the Eastward of Mistaken Cove is Savage Cove, which has a little island in its entrance, and is only fit for small vessels and boats.

Sandy Bay lies two miles Eastward from Savage Cove, where small vessels may ride in three or four fathoms water, with the winds from the E. to S. W.

Green Island. About E. N. E., five large miles from Sandy Bay, is Green Island; between them, at three miles distant, W. ½ S. from Green Island, is the N. extremity of Double Ledge, which extends nearly two thirds of a mile from the shore, and has only eight or nine feet water on it.

Green Island lies about three fourths of a mile from the main, is two thirds of a mile in length, very low and narrow, and agreeable in color to the name it bears. From the E. end of it a ledge of rocks extends three fourths of a mile to the Eastward, on which the sea breaks in bad weather. There are four or five fathoms water in the channel between the island and the main, where ships may anchor if necessary. To go in from the Westward, keep the island close on board for the deepest water, which is four fathoms; and going in from the Eastward, keep the main on board. From this island to the opposite part of the coast of Labrador, called Castles, or Red Cliffs, which is the narrowest part of the Strait of Belle Isle, the distance is about three and three fourths leagues, and they bear from each other N. N. W. and S. S. E.

Boat Harbor. BOAT HARBOR.—From Green Island to Boat's Head, it is E. ½ N., eight leagues; between there is no shelter on the coast; but to the Southeastward of Boat's Head is a cove, called Boat Harbor, where small vessels and boats may lie very secure, except with N. E. winds.

Cape Norman lies E., four miles from Boat's Head, and is the Northernmost point of land in Newfoundland. This has been already described. (See page 27.)

Tides. TIDES.—The tides flow at the full and change of the moon as follows: At New and Old Ferolle, till a quarter after eleven o'clock; in the Bays of St. Genevieve and St. Barbe at half after ten, and at Green Island until nine. Spring tides rise seven feet, neaps four feet. In the Bay of Pistolet it flows till three quarters after six, and in Noddy Harbor and Griquet, till a quarter after five. Spring tides rise five feet, neaps about three. Before Quirpon, in settled weather, the tide sets to the Southward nine hours out of the twelve, and stronger than the Northern stream.

GULF OF ST. LAWRENCE.

THE following directions for navigating this gulf are taken, with some alteration as to arrangement, from those of Captain H. W. Bayfield, R. N., who has been employed in a minute survey of this gulf for some years.

The main entrance into this gulf is between Cape Ray, the Southwestern point of Newfoundland, and Cape North, the N. E. point of Cape Breton Island.

Ice. ICE.—Among the difficulties of navigation may be mentioned the ice. In spring the entrance and Eastern parts of the gulf are frequently covered with it, and vessels are sometimes beset for many days. Being unfitted for contending with this danger, they often suffer from it, and are occasionally lost; but serious accidents from this cause do not frequently occur, because the ice is generally in a melting state from the powerful effect of the sun in spring. In the fall of the year accidents from ice seldom occur except when the winter commences suddenly, or when vessels linger imprudently late from the temptation of obtaining high freights.

Fogs. FOGS.—But all danger from ice is far less than that which arises from the prevalence of fogs; they may occur at any time during the open or navigable season, but are most frequent in the early part of summer. They are rare, and never of long continuance, during Westerly winds, but seldom fail to accompany an Easterly wind of any strength or duration. The above general observation is subject, however, to restriction, according to locality or season. Thus winds between the S. and W., which are usually clear-weather winds above Anticosti, are frequently accompanied with fog in the Eastern parts of the gulf. Winds between the S. and E. are almost always accompanied with rain and fog in every part. E. N. E. winds, above Point de Montz, are often E. S. E. or S. E. winds in the gulf, changed in direction by the high lands of the S. coast, and have therefore in general the same foggy character. I speak of winds of considerable strength and duration, and which probably extend over great distances. Moderate and partial fine-weather winds may occur without fog at any season, and in any locality. In the early part of the navigable season, especially in the

months of April and May, clear weather N. E. winds are of frequent occurrence, and they also sometimes occur at other seasons, in every part of the Gulf and River St. Lawrence.

The fogs sometimes last several days in succession, and to a vessel either running up or beating down, during their continuance, there is no safe guide but the constant use of the deep-sea lead, with a chart containing correct soundings.

The fogs which accompany Easterly gales, extend high up in the atmosphere, and cannot be looked over from any part of the rigging of a ship. They, however, are not so thick as those which occur in calms after a strong wind, and which are frequently so dense as to conceal a vessel within hail; while the former often, but not always, admit the land, or other objects, to be distinguished at the distance of half a mile or more in the daytime.

The dense fogs which occur in calms, or even in very light winds, often extend only to small elevations above the sea; so that it sometimes happens, that when objects are hidden at the distance of fifty yards from the deck, they can plainly be seen by a person fifty or sixty feet up the rigging. In the months of October and November, the fogs and gales that accompany Easterly gales are replaced by thick snow, which causes equal embarrassement to the navigator.

Winds.

WINDS.—The prevailing winds during the navigable season, are either directly up or directly down the estuary, following the course of the chains of the high lands on either side of the great valley of the St. Lawrence. Thus a S. E. wind in the gulf becomes E. S. E. between Anticosti and the S. coast, E. N. E. above Point de Montz, and N. E. above Green Island. The Westerly winds do not appear to be so much guided in direction by the high lands, excepting along the S. coast, where we have observed the W. S. W. wind at the Island of Bic become W., W. N. W., and N. W., as we ran down along the high and curved S. coast, until it became a N. N. W. wind at Cape Gaspé. These winds frequently blow strong for three or four days in succession; the Westerly winds being almost always accompanied with fine, dry, clear and sunny weather; the Easterly winds as frequently the contrary, cold, wet, and foggy. In the spring the Easterly winds most prevail, frequently blowing for several weeks in succession. As the summer advances the Westerly winds become more frequent, and the S. W. wind may be said to be the prevailing wind in summer, in all parts of the river and gulf. Light S. winds take place occasionally; but N. winds are not common in summer, although they sometimes occur. Steady N. W. winds do not blow frequently before September, excepting for a few hours at a time, when they generally succeed Easterly winds which have died away to a calm, forming the commencement of strong winds, and usually veering to the S. W. The N. W. wind is dry, with bright, clear sky flying clouds, and showers. After the autumnal equinox, winds to the Northward of W. become more common, and are then often strong, steady winds, of considerable duration. In the months of October and November, the N. W. wind frequently blows with great violence, in heavy squalls, with passing showers of hail and snow, and attended with sharp frost.

Thunder storms are not uncommon in July and August: they seldom last above an hour or two; but the wind proceeding from them is in general violent and sudden, particularly when near the mountainous part of the coast: sail should, therefore, be fully and quickly reduced on their approach.

Strong winds seldom veer quickly from one quarter of the compass to another directly or nearly contrary; in general they die away by degrees to a calm, and are succeeded by a wind in the opposite direction. I do not mean, however, by this observation, that they may not veer to the amount of several points. N. W. winds seldom or never veer round by N. and N. E. to E. and S. E.; but they do frequently, by degrees, to the S. W. after becoming moderate. S. W. winds seldom veer by the N. W. and N. to the Eastward, but sometimes by the S. to S. E. and E. Easterly winds generally decrease to a calm, and are succeeded by a wind from the opposite direction.

In the fine-weather Westerly winds of summer, a fresh topgallant breeze will often decrease to a light breeze or calm at night, and spring up again from the same quarter on the following morning: under these circumstances only may a land breeze off the N. coast be looked for. I have observed the same off the S. coast also, but not so decidedly or extending so far off shore. I have occasionally carried the N. land-wind nearly over to the S. coast just before daylight, but have never observed the S. land-wind extend more than five or six miles off, and that very rarely. Under the same circumstances, that is, with fine-weather Westerly wind going down with the sun, a S. W. land breeze will frequently be found blowing off the N. coast of Anticosti at night and during the early part of the morning. If, however, the weather be not settled fair, and the wind does not fall with the sun, it will usually prove worse than useless to run a vessel close in shore at night in the hope of a breeze off the land. Such is the usual course of the winds in common seasons, in which a heavy gale of wind will probably not be experienced from May to October, although close reefed topsail breezes are usu-

ally common enough. Occasionally, however, there are years, the character of whic is decidedly stormy. Gales of wind, of considerable strength, then follow each other i quick succession and from opposite quarters.

Barometer. BAROMETER.—The marine barometer, which is at all times of great use to the naviga tor, becomes particularly so in such seasons: and the following remarks upon its gene ral indications, when taken in connection with the usual course of the winds and weathe in the St. Lawrence, may, therefore, be useful. The barometer has a range from twenty nine to thirty and a half inches in the Gulf and River of St. Lawrence during the navi gable season, and its changes accompany those of the winds and weather with a consid erable degree of constancy. The fluctuations of the barometric column are muc greater and more frequent than in lower latitudes; and the sudden alterations whic in other climates would be alarming, may occur there without being followed by an corresponding change either in the wind or weather. But the navigator should not b inattentive to those minor changes, as a constant attention to the instrument can alone enable him to appreciate those decisive indications of the mercury which seldom o never prove deceptive. The following remarks will apply to those well-marked changes which usually indicate the approach of a gale of considerable strength, or a shift o wind and weather; the correct anticipation of which is often of the utmost consequence to the safety of the vessel, as to the length of her voyage. When, after a continuance of Westerly winds and fine weather, the barometer has risen nearly to its greatest height, say some tenths above thirty inches, or begins to fall a little, an Easterly wind may be soon expected. If to this notice given by the barometer be added a warm hazy atmosphere during the day, and a heavy precipitation of dew at night, with very bright twinkling stars, of a colored aurora borealis, the approach of an E. wind is almost certain. If land be in sight at such a time, and appears much distorted by terrestrial refraction, or if vessels in sight have the relative proportions of their hulls and sails changed by the *mirage*, or present double or treble images, such appearances will render the before probable indications of the barometer certain. At the commencement, the Easterly wind will probably be light, with fine clear weather, but this will not last above a few hours if the barometer continues to fall; on the contrary, the winds will gradually increase, and as it does so, the sky will become overcast by degrees until it is completely clouded. Rain and fog will follow, and continue during the continuance of the Easterly wind, with little intermission, until they are dissipated by a fresh breeze from the contrary quarter.

If the fall of the barometer during the continuance of the Easterly winds be very slow, the gale will probably continue, and not be very violent; if rapid, it will probably be of short duration, and of greater strength; at any rate, when the mercury falls toward twenty-nine inches, a change is certainly at hand, and the gale will in general come from the N. W. The strength of this succeeding gale will be in proportion to the fall of the barometer, and the strength of the Easterly gale which preceded it. In such a case there is seldom many hours interval between the one gale and the other. The E. wind generally dies away to a calm, and in a few hours, or sometimes in much less time, the N. W. gale springs up. A heavy cross sea remains for some time from the previous gale. The barometer sometimes begins to rise in the interval of calm which precedes the N. W. gale, at others at its commencement; the fog and rain cease, and the weather becomes quite clear, generally in a few hours, and sometimes almost immediately. The strength of the Westerly gale is usually the greatest soon after its commencement, and diminishes as the barometer rises, veering gradually to the W. and S. W. It is worthy of remark, that the circumstances just mentioned are exactly the reverse of those attending the Easterly gale. The latter usually commences with clear weather and a high barometer, light at first from the S. or S. E., and gradually increasing as it veers to the Eastward, with a falling barometer. To return to the Westerly gale.—If, after it has veered to the S. W. and become moderate, the barometer remains steady at a moderate height, fine weather may be expected. If it remains at a considerable height, but still fluctuating and unsteady within certain limits, variable, but not heavy winds, and variable weather may be expected. If, on the contrary, it rises quickly to a great height, a repetition of the Easterly gale will not be improbable. We have experienced seasons in which the barometer may be said to have been no sooner blown up by one wind, than it has been blown down by another, and this stormy alternation to have continued for several months; while in others we have scarcely had a double-reefed topsail breeze during the whole summer.

There is, in fact, so great a difference in the phenomena of the weather in different seasons that it becomes very difficult to write anything respecting it that shall not be liable to many exceptions. There are, however, some strongly-marked cases of connection, between the indications of the barometer and changes of the winds and weather, which, within our experience of eight or nine years, have been subject to few, I might almost say no exceptions. The first of these cases is that most common one, which I have endeavored to describe, of an Easterly gale with a falling barometer

being always wet and foggy, and succeeded by a strong wind from the opposite quarter with a rising barometer. A second case, not of so frequent occurrence in common seasons, excepting in spring or early in summer, is the Easterly wind with a rising barometer; which, although it may not be at first for a few hours, will almost always become fine and clear, and end in fine weather. A third case may be considered certain: if the barometer fall suddenly and greatly, at any time, a Northerly and most probably a N. W. gale, of great strength may be confidently expected. It does not follow that it will be immediate, for it may be preceded by a strong gale from S. W. for a few hours, during which the barometer will seldom rise, and even, probably, continue to fall; but when the S. W. gale dies away, the Northerly or N. W. will soon succeed with a rising barometer.

In conclusion, I may remark, that as, on the one hand, a considerable fall of the barometer may occur, without being followed by a strong wind: so, on the other hand, a breeze of considerable strength may come on without any indication from the barometer; but not anything that deserves the name of a gale. There has never, within our experience, occurred a gale, so heavy as to be of serious consequence to a good vessel, the approach of which has not been indicated by the barometer. But it must be remembered, that a high barometer, in this climate, and under the circumstances which I have mentioned, is often indicative of an Easterly gale. It is remarkable that in the gulf and estuary of the St. Lawrence, a high barometer may be considered as the forerunner of wet and foggy weather, which usually accompanies its fall; while a low barometer renders it equally probable that dry weather will ensue, since it often accompanies its rise. I am fully of opinion, that the marine barometer is of the greatest assistance in the navigation of the Gulf and River St. Lawrence, and that by attending constantly to its state and changes, with references to the wind and weather which preceded them, combined with the indications afforded by the appearance of the sky, &c., those changes of the wind and weather, which are about to take place, may be anticipated with a degree of certainty sufficient, in most cases, to enable us to avoid being caught on a lee shore, or in an unsafe anchorage, as well as to regulate our course in a voyage, in anticipation of the coming change.

Currents.

CURRENTS.—It is a generally received opinion, that a current sets constantly to the Southeastward of the Gulf of St. Lawrence, between Newfoundland and Cape Breton Island; and also that it is frequently deflected to the Southward, towards the shores of the island last named, by another current from the Northward, which is said to enter the gulf by the Strait of Belle Isle.

I have myself observed that a current sets out between Cape Ray and St. Paul Island, during Westerly winds and in calm weather; but it is checked by Easterly winds, and I believe that it may sometimes run in a contrary direction from the same cause. Northerly winds, and perhaps also the above-named current from the Northward, may cause the stream to set to the Southward toward Cape Breton Island. But the truth is, that winds, both present and at a distance, possess so powerful and irregular an action upon the set and strength of the currents and tides in this entrance of the gulf, that I can say nothing certain or definite respecting them.

The reality of a current inward through the Strait of Belle Isle, is confirmed by the presence of icebergs, which it transports into the gulf every summer, against the prevailing S. W. winds, frequently carrying them as far as Mecatina, and sometimes even to the neighborhood of the E. point of Anticosti. It is probable that this is a branch of the great current from Davis's Strait, which is known to run along the coast of Labrador, and to transport numerous icebergs far to the Southward every year. Its strength is very much increased by a prevalence of N. E. winds; at such times it runs at the rate of two knots through the strait and for thirty or forty miles farther to the Westward, diminishing gradually in force as it spreads out in the wider parts of the gulf. Usually, however, its rate is much less. At times, when S. W. winds prevail, it becomes very weak; and it has even been reported to me, that a current has been observed setting out of the gulf, in a contrary direction to the N. E., for days together; but this was never observed by us during either of the three seasons which we passed there. There is, however, no doubt that this current is extremely irregular, as might be expected at the narrow outlet of a great inland sea, where winds, both within and without, must of necessity possess great influence.

After entering the gulf, it runs along the North, or Labrador coast, at the distance of two or three miles from the outer islands, leaving a narrow space inshore, in which the stream of the tides, when uninfluenced by winds, are tolerably regular. Passing outside of Mistanoque, the islands of Grand Mecatina, and the South Maker's Ledge, it pursues a direction given to it by the trending of the coast, till it is turned gradually to the Southward, by the weak current which is often found coming from the Westward between Anticosti and the N. coast, during Westerly winds, and which is set off to the Southward from Natashquan Point. The united streams continue their Southern course at a rate diminishing as they become more widely spread, and which seldom exceeds

half a knot; and, finally, joining the main downward current out of the St. Lawrence of which an account will be given immediately, they all pursue a S. E. direction toward the main entrance of the gulf, between Cape Ray and the Island of St. Paul. It is this current from the Northward, which is felt by vessels crossing from off the Bird Rocks toward Anticosti; and which, together with neglecting to allow for the local attraction of the compass, has been the principal cause of masters of vessels so often finding themselves unexpectedly on the S. coast. Many shipwrecks have arisen from this cause near Cape Rozier, Gaspé, Mal Bay, &c.

Both these currents, viz., that from the Northward, and the main downward current of the St. Lawrence, are modified by the tides, but in a way directly contrary; for the Northern current in through the Strait of Belle Isle, is accelerated by the flood, and checked by the ebb; while the other is accelerated by the ebb, and checked by the flood tide. These modifying causes, viz., the tides and winds, give rise to various combinations, and consequent irregularities, in the direction and strength of these streams, which it is extremely difficult at all times to estimate and allow for correctly.

TIDES IN THE STRAIT OF BELLE ISLE.—(See page 28.)

Island of St. Paul.

ISLAND OF ST. PAUL.—Vessels bound to Canada, or to any of the ports in the Gulf of St. Lawrence, should endeavor to make the Island of St. Paul, which, being of considerable elevation, and bold all round, may, with care and a good lookout, be made at night, or even in fogs, unless the former be very dark, or the latter very thick.

Light-houses.

On this island there are two light-houses erected; one on the Northern extremity, one hundred and thirty feet high, containing a fixed light. This light can be seen on any bearing, except between N. by E. and E. by N., when it is obscured by the hills to the Southward of it. The Southern Light can be seen on any bearing, except between S. S. E. and W., when it is obscured by the hills to the N. of it.

This island lies in the main entrance to the Gulf of St. Lawrence, between Cape Ray, at the S. W. extremity of Newfoundland, and Cape North, near the Northern extremity of Cape Breton Island. From the S. point of the Island of St. Paul, Cape North bears W. S. W. ¼ W. by compass,* distant thirteen miles; and from the N. point of the same island, Cape Ray bears E. by N., distant forty-one miles and a half. In approaching St. Paul from the S. E. with Northerly winds, the current, which is at times coming from the Northward, and setting toward the shore of Cape Breton, should be guarded against. The S. coast of Newfoundland, Eastward of Cape Ray, is broken, rocky, and dangerous. The tides and currents, being influenced by the winds, are irregular; while all Southerly and Easterly winds, and often, also, Southwesterly winds, bring a thick fog, which is most dense near the lee-shore. On these accounts, this coast should not be approached, excepting with a decided Northerly wind and clear weather.

St. Paul Island is two and nine tenths miles long by one mile broad. Its N. E. point is a small detached islet, although it does not appear as such from the sea. This islet is separated by a very narrow channel from a peninsula, between three and four hundred feet high; which, together with the isthmus, is so precipitous as to be nearly inaccessible. The remaining greater part of the island, which is also very steep and precipitous toward the sea, has two parallel ranges of hills, that on the Atlantic coast being the highest, and attaining an elevation of about four hundred and fifty feet. A valley runs through between these hills, having two small lakes or ponds, two or three hundred feet above the sea. These supply the principal stream on the island, which is about a fathom wide, of yellowish brown water, well tasted and wholesome, and descending into the sea in the Southern part of Trinity Cove. There are several other, but much smaller runs of water, one of which is into Atlantic Cove. These two coves are nearly a mile from the S. W. extremity of the island, the first being on the gulf side, and the other on that which is toward the Atlantic, as its name implies. They afford the only shelter for boats, and the only good landing on the island, which is easier of ascent from them than at any other part. Off the two coves just mentioned, small fishing schooners anchor, with the wind off shore, in ten or twelve fathoms, sand and gravel bottom, and at the distance of two cables' length from the rocks. In very fine weather large vessels might venture to ride with a stream anchor, in from twenty-five to thirty fathoms, about half a mile off shore: but should be in constant readiness to weigh at the first sign of a change in the wind or weather. Farther off shore the water becomes extremely deep, as will be seen in the chart, so that there is little or no warning by the lead in approaching this island in foggy weather.

The irregularity of the tidal streams and currents add much to the danger arising from the fogs which prevail in Southerly, Easterly, and often also in S. W. winds. During the whole of a fine calm day, at the end of June we observed the current to set to the S. E., at the rate of one knot, past the N. point of the island.

* In these directions, all bearings are magnetic, or given by compass, unless when the contrary is expressed.

After having made St. Paul, vessels bound to Canada should endeavor, if the weather be clear, to make the Bird Rocks, the largest or Southeasternmost of which bears from the N. point of St. Paul, N. N. W. ¼ W., fifty-five miles.

There is a deep channel between St. Paul and the bank on which the Magdalens, Bryon Island, and the Bird Rocks, are situated. This channel is twelve miles wide, and no soundings have been found in it with sixty fathoms of line. Twelve miles N. W. from St. Paul, on the S. E. extremity of the bank above-mentioned, there are fifty fathoms of water over a bottom of fine sand; and thirteen and a half miles from the island, on the same line of bearing, there are thirty-five fathoms, the bottom being the same, with the occasional addition of gravel. From this point the water shoals gradually toward the Magdalens, distant forty-two miles. Following the Eastern edge of the banks to the Northward, inclining gradually to the N. W., regular soundings extend from twenty-eight to thirty-five fathoms, over sand, stones and broken shells; the latter depth being where the Great Bird Rock bears W. N. W.; and when the same rock bears W. S. W. ¼ W., distant thirteen and a half miles, there will be fifty fathoms, over fine sand, on the edge of the bank, off which there is no bottom with seventy fathoms of line. At the distance of ten miles from the rock, and on the same line of bearing, there are forty-three fathoms; and at six miles, thirty-three fathoms; shoaling gradually in to twenty-four fathoms within a mile of the rocks. This bank is an excellent guide up to the Bird Rocks at night, or in thick weather, which almost always accompanies Easterly and Southerly winds; but under such circumstances it will be safer to run along the Northern edge of the bank, taking care not to come into less than forty fathoms, than to attempt to make the Bird Rocks. When well passed them by the reckoning, a course can be shaped up the gulf.

In Northerly winds the weather is usually clear; and if the ship be far enough to windward, it will be advisable to stand to the Westward, and endeavor to make Entry Island, taking care to avoid Doyle Reef and the sandy spit of the East end of the Magdalens, by not approaching the islands in that part nearer than twenty fathoms. Under the lee of these islands a smooth sea will be found, sufficient guidance by the soundings, and good shelter and excellent anchorage in Pleasant Bay.

Another advantage of following this course arises from the circumstance that the N. W. winds very generally veer to the S. W., so that, if a vessel has passed to leeward of the Magdalens with the Northerly or N. W. winds on the starboard tack, the succeeding S. W. wind will enable her to stand on the opposite tack toward Cape Gaspé.

From the N. point of the Island of St. Paul to the E. point of the Magdalens the course is N. W. ¼ W., distance fifty-six miles; and to Entry Island, N. W. by W., ¾ W., sixty-three miles.

Light-house. From the N. Bird Rock the light-house on the S. W. point of the Island of Anticosti bears N. 46° 13′ W., true, or N. N. W., by compass, one hundred and thirty-four miles; and the E. point of Anticosti, N. 14° 46′ W., true, or N. ¾ E., by compass, eighty miles.

After leaving the Bank of Soundings, Northward of the Bird Rocks, the water is very deep all the way, until near the shores of Anticosti, there being no bottom with eighty fathoms of line, nor probably at much greater depths. In making this part of the voyage up the gulf, the frequent current from the Northward, mentioned as having been one of the causes of shipwrecks in the neighborhood of Capes Rosier and Gaspé, Mal Bay, &c., should be considered. Accidents, however, from this cause, can never occur if the lead be used; for, upon consulting the chart, it will be seen that there are soundings to be obtained nearly all the way upon, and to the Southward of, a line joining the Bird Rocks and Cape Gaspé, while a few miles to the Northward of that line there is no bottom with eighty fathoms of line. *Soundings.*

Light-house. With a fair wind, the object should be to make the light-house or revolving light upon the S. W. point of Anticosti; and, with Westerly winds, any part of the coast of that island which can be attained. When the light-house on Heath Point shall be lighted, it will be easy to make the E. end of the island at night, if the weather be clear: and, if the weather be thick, the Bank of Soundings, which extends off it twenty-eight miles to the Southeastward, may seem to determine the vessel's position by the lead. At the distance from the island above-named, there are sixty-two fathoms of water, shoaling gradually in toward the island, as will be seen by the chart.

In the event of a vessel being near the Eastern extremity of Anticosti, and having succeeded in making the E. point, or the light on Heath Point, with a S. W. wind, it will often be preferable to proceed to the Northward of the island, where there is a good channel, rather than to tack and stand back to the Southward and Eastward. Under the lee of Anticosti she will, in this case, have a smooth sea, and often, also, clear weather, while there is a heavy swell and frequently a thick fog to windward of it. She will, moreover, avoid the current out of the St. Lawrence, which runs constantly, with Westerly winds, between the S. coast and Anticosti, and thus be able, at all times, to make way to the Westward in moderate weather. At night, or in foggy

weather, the Bank of Soundings off the N. coast, and farther Westward, the bank off the Mingan Islands, will safely guide her, even although the land should not be visible.

The Magdalen Islands. THE MAGDALEN ISLANDS.—The Magdalens are a chain of islands, assuming an irregular curved direction, the greatest length of which, from the S. W. cape of Amherst Island to the E. point, is thirty-five miles; but if the smaller isles be included, as they evidently form a part of the Magdalen group, the whole length of the range, from the Deadman to the Great Bird Rock, will be fifty-six miles, in an E. N. E. direction.

There are at present upon the islands about one thousand one hundred inhabitants, the majority of whom are of French extraction, and who all inhabit Amherst, Grindstone, and Alright islands, with the exception of about eleven or twelve families divided between Entry Island, Grosse Isle, and East Island, near the N. E. extremity of the chain. Ships may obtain limited supplies of fresh provisions, especially at Entry Island, and water most readily from Amherst Harbor, either from a spring which issues from under the Demoiselle Hill, or from a small stream which falls into Anse à la Cabane, near the S. W. cape of the island. Wood for fuel is becoming scarce near the settlements. Large spars are not to be had, unless when they chance to be saved from wrecks; but small ones, of spruce and juniper, may be obtained. The latter, of which the inhabitants build their fishing boats and shallops, or smaller schooners, somewhat resembles larch wood. It is said to be extremely strong and durable.

When first made from sea, the Magdalens appear like several hilly islands, with channels between, but on a nearer approach they are seen to be all connected together, with the exception of Entry Island, by a double line of sand-bar sand beaches, enclosing extensive lagoons, having very narrow entrances, by which the tide finds access and egress. These sand-bars are in some parts only a few feet above the sea, while in others they rise into hills of blown sand of considerable elevation. They appear to be increasing, since they are generally ridges of sand with from nine to twelve feet water, parallel to, and from fifty to one hundred fathoms outside the beach. There are three and four fathoms of water between these ridges and the shore, a circumstance which has often proved fatal to the crews of vessels wrecked upon these shores. These hilly islands thus disposed in a curvilinear shape, and connected together by sand-bars, enclosing lagoons, remind one forcibly of those islands in tropical seas which are connected together by coral reefs.

In a bright sunny day of summer, the cliffs of various colors, in which different shades of red predominate, and the yellow of the sand-bars contrasted with the green pastures of the hill-sides, the darker green of the spruce trees, and the blue of sea and sky, produce an effect extremely beautiful, and one that distinguishes these islands from anything else in the Gulf of St. Lawrence. In stormy weather, the appearance is equally characteristic. Isolated hills and craggy cliffs are then dimly seen through the rain and mist which accompany an Easterly gale, and appear joined by long ranges of breakers, which almost hide the sand-bars. At such times it is dangerous to attempt making the islands, for in approaching the lower parts the breakers would probably be the first thing seen from the vessel.

The Magdalens possess no harbors for ships, but three for small vessels, named Amherst, House, and Grand Entry Harbors, which will be noticed in the following concise description of the shores of the islands, and the dangers off them.

The E. point of the Magdalens is of low sand, enclosing several shallow ponds, and having several sand-hills, some of which are near its extremity, while others, of greater elevation and farther to the Westward, extend in a chain nearly to the N. E. cape. These last-mentioned sand-hills are inland, and on the margin of the Northeastern part of the great lagoon. The N. E. cape is a hill on East Island, which stands at the head of Grand Entry Harbor. It is a very remarkable cape, and its isolated cliffs, being two hundred and thirty feet high, can be seen over all the sand-hills and sand-bars, so that when these last are below the horizon, the N. E. cape appears to be the Eastern extremity of the chain.

Long Spit. LONG SPIT is a ridge of sand, with from two to three fathoms of water, which extends off the E. point S. E. ½ S., rather more than one mile and a half, and for one mile and one fourth farther in the same direction, the depth is from four to six fathoms. To clear this spit observe the following remarks and directions: The Southern part of Coffin Island is a peninsula, forming the Southern shore of the Oyster Pond, and connected to the remainder of the island by a low neck or isthmus at the W. end of the pond. Now the mark for the three fathoms extremity of the spit is the N. side of this peninsula on with the Old Harry Head; and the S. side of the Northern part of Coffin Island (where the narrow neck joins it, as above-mentioned) on with the Old Harry Head, will lead over the spit in four fathoms. A person with our charts before him will have little difficulty in making out these leading marks, but may, if he pleases, pass round the spit, by the lead, in five or six fathoms, taking care not to bring the Old Harry to bear to the Southward of W. To know when a vessel from the Eastward has passed

it, observe that the line of the summit of the N. cape on with the E. side of the N. E. cape clears it nearly half a mile to the S. W., which mark will also be useful to a vessel approaching it from the Westward. The tides set rapidly over this spit, and, together with the shoal water, cause a heavy breaking sea. It is extremely dangerous, and vessels should take care not to get becalmed near it without an anchor clear.

DOYLE REEF.—Doyle Reef lies S. ½ E., distant six and three fourths miles from the E. point and consists of pointed rocks. It is very small, being only three hundred fathoms long and fifty fathoms wide, from six fathoms to six fathoms. The least water is three fathoms on one spot nearly in the centre, and there are twelve and thirteen fathoms all round it. The only mark for this reef is the N. cape of the Magdalens open two thirds of its breadth to the N. E. of the N. E. cape. On the reef the angle between these marks and the Western point of Coffin Island is 24° 27′. *Doyle Reef.*

Lying completely in the way of vessels, and very seldom showing, the sea breaking upon it only in heavy gales, Doyle Reef may justly be considered as one of the worst dangers off the Magdalens. It has been examined and laid down by us for the first time, and was previously known only to a very few persons on the Magdalens.

OLD HARRY HEAD.—Proceeding to the Southwestward from the E. point, the first headland is the Old Harry, the S. E. point of Coffin Island, bearing from the E. point W. S. W., by compass, four and a half miles. Between them is a sandy bay, in which vessels may anchor, with good shelter, in all winds from W. round by N. to N. E.: but it is not a place to be recommended, because a vessel would be there very much embayed by the shoals on either side and might find it difficult to get out on the occurrence of a sudden shift of wind, either at night or attended with fog. *Old Harry Head.*

The Old Harry Head has red sandstone cliffs of a moderate height with a reef off it to the Southeastward one third of a mile.

COLUMBINE SHOALS.—From the Old Harry, two and a half miles S. S. W. ½ W. and S. S. E. by S. two miles from the E. end of the cliffs, Westward of the entrance of the Oyster Pond, lies the outermost of the Columbine Shoals, a patch of rocks, with three fathoms at low water. Within this, and toward Coffin Island, are numerous small shoal patches and pointed rocks, on some of which there are not more than three feet at low water, as will be seen in the chart. These shoals are extremely dangerous, and much in the way of vessels hauling round the E. point of the Magdalens with Northerly winds. To clear the E. side of them, the whole of the high N. E. cape must be kept open to the Eastward of the Old Harry. There are no good marks for clearing the W. side or for leading clear outside of them, so that the only guide for the latter purpose is not to bring the E. point to bear to the Eastward of the N. E., and, for the former, is not to bring the W. end of Coffin Island to bear to the Westward of N. W. ½ N. But although there are no good marks, an angle with a quadrant will answer the purpose as well and as easily. On the outer edge of these shoals, the angle between the Old Harry Head and the left or W. extremity of Coffin Island is 77°: consequently with these points subtending any less angle, the vessel will pass outside of the shoals. Coffin Island extends four miles to the Westward of the Old Harry, having on its S. side a lagoon with a very narrow outlet, called the Oyster Pond and which boats can only enter in fine weather. Off the coast of Coffin Island there are several rocks, besides the Columbine Shoals, but as these are inshore, and out of the way of vessels, it is sufficient to refer to them, and to remark that this is a very dangerous part of the islands, which should never be approached at night or in foggy weather. *Columbine Shoals.*

GRAND ENTRY HARBOR.—At the N. W. end of Coffin Island, and between it and the sand-bars to the Westward, is the entrance of Grand Entry Harbor, which has water enough within for large vessels and is superior in this respect to any other in the Magdalens. But its entrance is extremely narrow, not exceeding fifty fathoms in breadth, and the narrow channel leading to it, between sandy shoals, which are said to shift, extends one mile and a third to the Westward. These circumstances render instructions for entering it of no avail. A native pilot should be employed, or the channel buoyed or staked, and even then the entrance should not be attempted excepting with a leading wind, flowing tide, and fine weather. The depth that can be carried in, at low water, is ten feet; at high water, neap tides, twelve feet; and in spring tides, thirteen feet. There are twenty-eight feet water at, and immediately within, the entrance. The ebb tide runs out with great rapidity, and the flood in is also strong. There are no settlements at Grand Entry Harbor, but there are a few families in the vicinity of the N. E. cape who feed cattle, and are of British extraction. *Grand Entry Harbor.*

Within this harbor there is a large expanse of water, from one to three fathoms deep, extending Northeastward to the Southern shores of Grosse Isle, and communicating by a very narrow channel with a large shallow pond, which washes the base of the N. E. cape, and extends to within about two miles of the Eastern extremity of the chain. This great lagoon also extends Southwestward, between a double line of sand-bars, to the Eastern shores of Grindstone Island, and is, in all, twenty-three miles long, and from half a mile to three miles wide. Throughout its whole extent there is a communication for

boats, at high water, perfectly sheltered from the sea. There are, at present, three en trances into this lagoon from the sea, namely: Grand Entry Harbor, already mentioned another three and a half miles to the Westward, which is very shallow; and Hous Harbor, near its Southwest extremity, between Alright and Grindstone islands. Ther were formerly others, which have been closed since the time of Des Barres, 1788; and on the other hand, the second mentioned above, has opened since his time.

Shag Island. SHAG ISLAND.—Shag Island is small and low, and of sandstone, lying about a hal mile from the sand-bars, nearly midway between Coffin and Alright islands, and out o the way of vessels.

Cape Alright. CAPE ALRIGHT.—Cape Alright bears from the Old Harry Head, S. 72° W., sixteen and a half miles. It is the Southern point of Alright Island, and a very remarkabl headland. The cliffs, of a grayish white color, with occasional brick-red low down, ar four hundred feet high, at the highest part, which is about a mile to the Eastward of th cape; and those to the Westward of the cape, toward House Harbor, are also very hig and of the same color.

Alright Summit. ALRIGHT SUMMIT.—Nearly a mile inland is the summit of Alright Island, fou hundred and twenty feet above the sea. Between this summit and the cape there is very remarkable hill, named Bute-Ronde. The South extremity of the cape is low, with a small rock close off it.

Alright Reef. ALRIGHT REEF.—Alright Reef lies S. 80° E., three and one fourth miles from Cape Alright to the outer edge of the reef, which is four hundred fathoms long, by three hundred fathoms wide. It is of white and pointed rocks, having over them six feet least water. On this reef the Butê-Ronde is on with the summit of Grindstone Island. The W. side of Cape Alright is on with the W. side of Cape Moule; and the whole of the woody Wolf Island is just open to the Westward of Shag Island. Therefore, to clear the S. W. side, keep the well-marked summit of Grindstone Island open to the South-westward of Cape Alright; and to clear the Southeastern side of this reef, keep the E side of the woods of Wolf Island (seen over the sand-bars) open to the Eastward of Shag Island.

The N. E. point of Entry Island bears S. ½ E., seven miles from Cape Alright; and the channel between them leads into Pleasant Bay, passing previously between Alright Reef and the Pearl Reef.

Pearl Reef. PEARL REEF.—The Pearl Reef is small and dangerous, and of white pointed rocks, like most of the reefs round these islands. It is round, and about two hundred fathoms in diameter, with nine feet least water. It bears S. 41° E., eight and one fourth miles from Cape Alright; and N. 80° E., four and a half miles from the N. E. point of Entry Island. Even with a moderate swell the sea breaks heavily upon it. The marks on this reef are the Demoiselle Hill open one quarter of a point to the Northward of the cliffs of Entry Island, and exactly on with the extremity of the N. W. spit, above water, of the same island. This spit, however, can seldom be seen from the reef. The cross mark is the three high cliffs, on the S. W. side of Alright Island, nearly in one, bearing N. 44° W., when the Northwestward of those cliffs will be seen over the middle one, and between it and the Southeasternmost. Hence, keeping all those cliffs open will clear the reef to the Westward, and the Northwesternmost cliff completely shut in behind the other two will clear it to the Eastward. The Demoiselle Hill, shut in behind the N. side of Entry Island, will clear it to the Southward; and lastly, the Demoiselle kept more than half a point open to the Northward of Entry Island will clear it to the Northward.

To the N. W. of Cape Alright, and distant two miles and three fourths, is the entrance of House Harbor, a narrow and crooked channel, with only six feet at low water.

Red Cape. RED CAPE.—From Cape Alright, S. 80° W., five miles across the bay in which is the entrance of House Harbor, brings us to Red Cape, the Southern point of Grindstone Island and the N. point of Pleasant Bay. The opposite point of the bay, Sandy Hook, is the E. point of Amherst Island, and bears from the Red Cape S. by E. ½ E., six miles. From this line to the shore of Amherst Island at the head of the bay, the distance is four and one fourth miles. Between Red Cape and House Harbor is Cape Moule, of gray sandstone, off which there is a rock, with five feet of water; and there is another rock with three feet, off the W. side of Alright Island. These will be seen in the chart and as they lie out of the way of vessels, require no further notice.

Grindstone Island. GRINDSTONE ISLAND.—Grindstone Island is the second largest of the chain being, in this respect, intermediate between Amherst and Alright islands. Its summit is elevated five hundred and fifty feet above the sea at high water.

Amherst Island. AMHERST ISLAND.—Amherst Island, the largest and Southwesternmost of the Magdalens, is connected with Grindstone Island by a double line of sand-bars enclosing an extensive lagoon, five or six miles long, and from one to three miles wide, the South-ern part of which is called Basque Harbor. This lagoon is full of sands which dry at low water, and has thirty outlets into Pleasant Bay, the Southernmost being the deepest but having only three feet water over its bar at low water. The others, including three through the sand-bars of the N. W. coast, will only admit boats at high water, and when the surf is not too high.

The hills in the interior of Amherst Island rise to the height of five hundred and fifty feet above the sea. Toward the Southeast part of the island, and about a mile to the N. W. of Amherst Harbor, is the very remarkable conical hill named the Demoiselle, of trap rock, and two hundred and eighty feet high. The perpendicular and dark red cliffs of the Demoiselle are washed by the waters of Pleasant Bay.

AMHERST HARBOR.—Amherst Harbor is formed by a peninsula, presenting cliffs of gray sandstone to seaward, in the S. E. corner of Pleasant Bay. Its entrance between this peninsula and the sands to the Southward is two and a half miles within, or to the Westward of the extremity of Sandy Hook, which is a long and narrow sandy point with sand hills. This harbor is the easiest of access and egress of any in the Magdalens, and has, moreover, the advantage of an excellent roadstead outside, where vessels may wait their opportunity of running in. Nevertheless its entrance is extremely narrow and rather crooked, so that, without a pilot, it would be necessary to buoy or stake the channel. The depth over the bar, which is rocky, is seven feet at low water, and from nine to ten feet at high water, according as it may be neap or spring tides. Within the harbor there are from twelve to seventeen feet, over a bottom of soft, black, and fetid mud, well sheltered from every wind. *Amherst Harbor.*

PLEASANT BAY.—Pleasant Bay is the best roadstead in the Magdalens, and the only one where vessels can venture to lie with all winds during the three finest months of summer, June, July, and August. In those months, a gale of wind from the Eastward, so heavy as to endanger a vessel with good anchors and cables, does not occur above once in three or four years. The riding, however, is often heavy and rough enough in N. E. gales, and a vessel should be well moored with a whole cable on each anchor, an open hawse to leeward, and all snug aloft. *Pleasant Bay.*

The best and most sheltered anchorage is in four fathoms, with the rocky point of entrance of Amherst Harbor, bearing S. W. ½ W., two thirds of a mile, and a little more than half a mile from high-water mark on the sandy beach to the Southward, when a remarkable and high sand hill will bear S. ½ E. A large ship should anchor farther off, and should take notice that there are only from three to three and a half fathoms in one part of the bay, as will be seen in the chart. The bottom is everywhere excellent for holding, and of red sandy clay. A vessel, anchored as I have recommended, will be sheltered from E. N. E. ½ E., rounded by the Southward and Westward to N. E. ½ N., and will, consequently, have only three points completely open. Even when the wind comes right in, the sea is much lessened by passing over so much of shoal water; nevertheless, I am of opinion that the attempt to ride out a heavy Easterly gale, either before June or after August, would be attended with great danger, and do not recommend Pleasant Bay as a pleasant place under such circumstances at any time of the year. In the Northern and Western parts of the bay, sandy flats extend more than a mile from the beach.

SANDY HOOK CHANNEL.—From the Sandy Hook to the N. W. point of Entry Island, the bearing is E., by compass, two and a half miles. There is an extensive flat sandy shoal running out two miles from Sandy Hook toward Entry Island, which last has also rocky shoals off its W. side. Sandy Hook Channel, between them, is two thirds of a mile wide, and four fathoms can be carried through it by a good pilot, but three and a half fathoms is the utmost that can be safely reckoned on by a stranger. There are several rocky patches of two and a half fathoms off the S. W. point of Entry Island, reaching to fully three fourths of a mile from the shore. The ebb tide sets strongly through this channel, and over Sandy Hook Flat, so that large vessels should go round to the Eastward of Entry Island rather than encounter so many difficulties. To run through Sandy Hook Channel from the sea, keep the E. side of Alright Island just open to the Westward of the shingle and sandy spit forming the N. W. point of Entry Island until abreast of the S. W. point of the last-named island, then haul up for the summit of Grindstone Island, looking out for the edge of the land shoal to the Westward which can generally be seen. *Sandy Hook Channel.*

ENTRY ISLAND.—Entry Island is the highest of the Magdalens, its summit being five hundred and eighty feet above the sea at high water. Its red cliffs are magnificent and beautiful, rising at the N. E. point to three hundred and fifty feet, and at the S. point to four hundred feet perpendicular height. Off the N. E. point there is a high rock about half a cable's length from the cliffs, and on its N. side the remarkable Tower rock of sandstone joined to the island, and which can be seen from the S. W., over the low N. W. point, as well as from the N. E. *Entry Island.*

Vessels occasionally anchor under Entry Island in Northerly and Easterly winds, but it is rough riding, by reason of the sea which rolls round the island.

The inhabitants of Entry Island raised cattle and sheep, depending more upon the sale of fresh provisions than the fisheries. Vessels, may, therefore, almost always obtain supplies.

From Sandy Hook, the South coast of Amherst Island, consisting of sand hills and beaches, with shoal water half a mile off, curves round to the Westward for six or seven miles, to the entrance of a basin, which extends nearly across the island to within less

than half a mile off Pleasant Bay. The basin is now so nearly closed with sand, that boats can only enter at high water, and in the finest weather; but formerly the entrance was deep enough for large schooners, and it has been frequented by these vessels within the memory of the elder inhabitants.

There is good anchorage off the entrance, in from six to nine fathoms, sandy bottom, and with winds from the N. W. round by N. to E.

Amherst Cliffs. AMHERST CLIFFS.—A mile and a half to the Westward of the entrance of the basin, cliffs commence and continue, except in Cabane Bay, to the West Cape, which is the highest cliff of Amherst Island, its summit being three hundred feet above the sea. There is a remarkable rock above water close to the shore, and about a quarter of a mile to the Southward of it.

Cabane Bay. CABANE BAY.—Cabane Bay is a small bight, between the S. and S. W. capes of Amherst Island, where vessels may safely anchor with Northerly and Easterly winds, and where good water may easily be obtained. The best berth is in eight or nine fathoms, sandy bottom, off the centre of the bay, with the S. cape and Cape Percé in one, three fourths of a mile off shore.

From the W. cape, the remainder of the seacoast of Amherst Island consists of red cliffs, without beach, but having shoal water one third of a mile off shore, all the way to West Lake, a small pond at the S. W. end of the sand bars, which join Amherst and Grindstone Islands. At the N. E. extremities of these sand bars is Gull Islet, which is small, rocky, and close to the Western point of Grindstone Island, and has shoal water off its W. point to the distance of one third of a mile. About a mile and a half Southwestward of it, nearly a mile and a quarter off the N. W. outlet of Basque Harbor and with the W. side of Gull Islet and Gros Cap in one, lies a rocky shoal with three fathoms at low water, and leaving no good passage between it and the shore. Close to the N. E. of Gull Island is the Etang du Nord, a small islet, affording good shelter to boats.

Hospital Rock. HOSPITAL ROCK.—The Northern shore of Grindstone Island is of red sandstone cliffs, less high than those of Amherst Island. Near their N. E. extreme lies the Hospital Rock, close to the shore, and also some rocky three-fathom patches, more than half a mile from the shore, as will be seen in the chart.

White Horse. WHITE HORSE.—The White Horse is the name of a very dangerous reef, lying N. 60° E., seven miles from Deadman Islet; and due W. N. W., five and a half miles from Gull Islet. It is extremely small, being scarcely more than a cable's length in diameter, and having ten feet least water over pointed rocks, on which the sea often breaks. On this reef the summit of Entry Island is seen over a low part of the sand bars at the N. E. outlet of Havre Basque, but this mark cannot be easily discerned by a stranger, nor is there any other; but the bearings and distances, together with the chart, will be a sufficient guide. To those that can take a terrestrial angle with a quadrant, a matter so simple that it is astonishing that it is not more generally known and practised, the following may be of use: when on the reef, the Western extremity of Amherst Island and Hospital Cape (the Northeastern extremity of the cliffs of Grindstone Island) subtend an angle of 91° 30′; consequently with these points subtending a less angle by three or four degrees, the vessel will pass outside of the reef. With a greater angle, ninety-four or ninety-five degrees, she will pass inside of it, or between it and the shore.

There are irregular soundings and foul ground between this reef and the shore, but nothing less than five fathoms, excepting what has been already mentioned.

The Pierre de Gros Cap is another dangerous reef of rocks, nearly of the same size as the White Horse, and having eighteen feet least water. This reef is seldom seen, as the sea breaks upon it only in very heavy weather. It lies N. 62° E. six miles from the White Horse; due N. from the W. point of Etang du Nord; N. 56° W. from Hospital Cape, and three and two thirds miles off Cape le Trou, the nearest point of Grindstone Island. The marks on this reef are—First, the summit of Alright Island, seen over the N. E. point of Grindstone Island, which is in the lagoon, and very nearly on with Hospital Cape. Secondly, the Bute de Portage, a hill of Amherst Island, situated about one mile and a half N. W. of the Demoiselle, midway or in the centre of the narrow passage between Gull Island and the W. point of Etang du Nord. These marks kept open will clear the reef to the N. E. and S. W., and a vessel will pass well clear outside of it, and also of the White Horse, if Deadman Islet be not brought to bear to the Westward of S. W. ½ W.

From Hospital Cape to Wolf Island, off which there is a rocky three-fathom shoal nearly half a mile from the shore, the Northern coast of the Magdalens consists merely of sand-beaches and sand-hills for a distance of nine or ten miles. The low sandstone cliffs of Wolf Island, which is about three fourths of a mile long, interrupt the continuance of the sandy shore for only half a mile; the sand-beaches then recommence, and continue, with high sand-hills occasionally, nine or ten miles farther, to the N. cape. In all this part the sand bars may be safely approached by the lead as near as nine or ten fathoms of depth of water.

North Cape. NORTH CAPE.—The North Cape of the Magdalens is the Northern point of Grosse

Isle, and a precipice of considerable height, but not so high as the W. point of the same sland, which is in the great lagoon, and three hundred feet above the sea.

NORTH CAPE ROCKS.—The North Cape Rocks, and some of which always show, ie to the Westward of the cape, the outermost being six hundred fathoms off shore. The W. end of these rocks bears S. S. E. from the high S. W. side of Grosse Isle, and heir extent to the Eastward is marked by the N. E. sides of the N. and N. E. capes in ne. Therefore, in running down from the Westward to anchor under the North Cape, o not come nearer to the shore than one mile until the above-named marks open. In his anchorage, namely, to the Eastward of the North Cape, vessels may ride in eight or ine fathoms, over sandy bottom, with all Southerly winds, and will find good holding round, and plenty of room to get under way. Water may be had in small quantities ear the houses on the E. side of the North Cape, but there are no good watering places xcept those already mentioned. *North Cape Rocks.*

The coast continues from the North Cape, in a curved line of sand-beaches and sand-ills for about six miles, which distance again brings us to the E. point, and completes he description of the Magdalens.

Although I have given a general description of the appearance of the Magdalens, yet s vessels passing to the Southward of them have been directed to endeavor to make ntry Island, it may be useful to add, that that island, when first made from the East-ard, will appear like a double-peaked hill, sloping somewhat abruptly down to per-endicular and high cliffs on either side. The S. W. point of Amherst Island is also a eep cliff, but of less height; and as there is no land to the Southward and Westward of , it cannot be mistaken. The land rises from it in undulations to the highest parts of e island. Should the weather be foggy the soundings, as shown in the charts, will fely guide vessels passing to the Southeastward of the islands. The general sound-gs around the Magdalens, which extend off them so many miles in every direction, nd which have now for the first time been correctly laid down by us, thus affording an valuable assistance to vessels at night, or in foggy weather, will be better understood om the charts than by any written directions.

TIDES AND CURRENTS.—I have only now to notice the important subject of the set the currents or tidal streams around these islands, respecting which I can say nothing at will not be subject to exception, for they are so irregular, that the most experienced d intelligent pilots for the islands, who are also fishermen, who have passed their lives fishing craft around them, can give no certain account of their rate and direction, t all agree in stating, that they vary in both respects, either from the effects of winds, other unknown causes. *Tides and Current.*

Nevertheless, the following observations will hold good as a general rule, and although bject to occasional interruption, the set of the tidal streams, which I am about to de-ribe, will be found to recur with considerable constancy in fine weather.

A few miles outside of Bryon Island and the Bird Rocks, there appears to be usually current setting to the Southeastward, out of the gulf; but the stream of flood-tide ws between them and the Magdalens. The stream of flood comes from the S. E., and divided by the E. point of the Magdalens. One branch of the stream sets strongly er the long spit, which, with the Old Harry Head and the shoals off it, turn it off to e Southwestward toward Entry Island, leaving nearly slack water in the bay between ffin Island and Cape Alright, and also in Pleasant Bay. The other branch, to the rthward of the islands, follows the shore from East Point round to the S. W. cape of nherst Island, whence the greater part of the stream continues its course to the S. W.: ile the remainder, following the shore, runs round and along the Southern coast of nherst Island, until it meets the before-mentioned other branch of the stream from e E. point setting off the E. side of Entry Island; it is overcome by this other branch, d turned gradually round to join the general weak stream of flood to the Westward the offing.

EBB STREAM.—On the S. E. side of the islands, the stream of the ebb-tide sets ongly out of the lagoons and out of Pleasant Bay, between the Sandy Hook and En-Island. It is also often found running to the Westward along the Southern shores Amherst Island, and right round it in like manner, but contrary in direction to the rse of the flood already described. In the offing, at the same time, the stream of is from the S. W., and sets over the sand-spit off Sandy Hook Point, where it meets stream from the N. W., which has followed the N. shore of the islands, round from nherst Island to the E. point. The meeting of these two streams of the ebb-tide, to-her with the shoalness of the water, causes so heavy a breaking sea in strong East-y winds, that the fishing shallops dare not venture, at times, to pass the point. The rate of either stream seldom amounts to a knot, excepting close in shore, or round points. The ebb, however, is generally the strongest stream, and its rate is in-ased by Westerly winds, as is that of the flood by winds from the Eastward. *Ebb Stream.*

DEADMAN ISLET.—The Deadman bears N. 52° W., seven and three fourths miles rly from the W. cape of the Magdalens, and is very small, being not more than *Deadman Islet.*

three hundred fathoms long, in an E. S. E. direction, and less than half that breadth. It is about one hundred and seventy feet high, with steeply sloping sides, meeting at the summit like a prism, so that when seen end on, it resembles a pyramid. When seen from a distance, with its longest side presented to view, its outline very much resembles that of a body laid out for burial, from which circumstance its name is derived. It is composed principally of trap rocks, and when seen close to, on a bright sunny day, with the white surf dashing against its variously colored sides, it is a very beautiful object. It is so bold on the W. side that a vessel may pass within a couple of cables' length with perfect safety; but a reef extends toward Amherst Island one third of a mile.

About a mile to the Northward of it there is a rocky fishing ground with eight fathoms least water; and six miles S. S. W. ½ W. of it, there is another with eleven fathoms. There is no danger nearer than the "White Horse," to be mentioned hereafter, and vessels may safely pass between it and Amherst Island. It is, however, much in the way of vessels passing around the W. end of the Magdalens, and they should beware of it at night, or in foggy weather, for the lead will give little warning since there is nearly as much water within half a mile of it, as at the distance of several miles.

Bryon Island. BRYON ISLAND, which is uninhabited, is rather more than four miles long, in a W. by N. and E. by S. direction, with the extreme breadth of rather more than a mile. Its Eastern end bears from the E. point of the Magdalens, N. by E. ½ E., ten and a half miles; but its S. W. point approaches to within eight and three fourths miles of the N. cape of these islands.

A great part of the island is wooded with dwarf spruce-trees, and there is a large upland tract covered with good native grass. Water is neither plentiful nor easy to be obtained, but it may be had in small quantities by digging, and there is a spring on the N. side of the narrow isthmus which joins the Eastern peninsula to the remainder of the island.

I had no opportunity of measuring the height of Bryon Island; but I conceive it nowhere exceeds two hundred feet above the sea. The cliffs on the N. side are much higher than those on the S., where there are several small coves in which boats may land easily with the wind off shore. There are three reefs off Bryon Island: one off its E. end extends near three fourths of a mile to the Northeastward; another, off the W. end, extends one mile and a half to the Westward; and the third, off the sandy S. W. point, one mile and a half to the Southward. No marks can be given for clearing these reefs; but the bearing of the land, as shown in the chart, will afford sufficient guidance to the seaman. The reef off the S. W. point is so much in the way of vessels passing between it and the Magdalens, that it may be useful to add, that, from the Southern ridge of this reef, Bryon Island subtends an angle of 97°; so that, with the island subtending any less angle, the reef may be passed. The S. reef assists greatly in turning off the sea from the roadstead Eastward of it, where vessels may safely anchor in six fathoms water and a sandy bottom, at the distance of a mile or more from the shore, and with all winds from N. E. round by N. to W. N. W. Small vessels, in heavy N. W. gales, lie at anchor close under the reef.

There are regular soundings, from nine to eleven fathoms, with sandy bottom, between Bryon Island and the Magdalens, with the exception of an extensive patch of foul and rocky ground, lying between S. W. ½ W. and W. S. W., from the W. end of Bryon Island, and having a clear channel on either side of it, as will be seen in the chart. We could find no less than five fathoms here; and although the fishermen see bottom upon it in calm weather, I have every reason to think there is no less water. Nevertheless, large ships had better not run over it when there is a heavy sea running, for a small point of rock, with a few feet less water, might escape the most rigorous examination.

These rocky places are called fishing grounds, by the inhabitants of the Magdalens, because codfish abound upon them. There is one with eleven fathoms of water, two and a half miles N. of Bryon Island, and which extends a considerable distance parallel to the island. There is sandy bottom, and a greater depth of water, within this ridge, and vessels may anchor, in fine weather and Southerly winds, off the bay on the N. side of the island. The soundings extend so far off Bryon Island to leeward, in every direction, that there is no possibility of a vessel on a voyage being endangered by it, if the lead be used. But great caution is requisite in approaching the reefs, for they are very steep, especially that which extends to the Southward.

The Bird Rocks. THE BIRD ROCKS are of coarse red sandstone, or conglomerate, in strata, dipping very slightly to the S. W., and are constantly diminishing in size, from the action of the sea. They present perpendicular cliffs on every side; yet it is possible to ascend them with great difficulty, in one or two places, but there is no landing upon them except in the calmest sea. Every ledge and fissure of the cliffs is occupied by gannets, and the summits of both rocks are literally covered with them. The white plumage of these birds gives these rocks the appearance of being capped with snow, and renders

them visible through a night-glass, in a clear and moonlight night, from the distance of seven or eight miles.

The two rocks bear from each other N. N. W. ½ W. and S. S. E. ½ E., and are seven hundred fathoms apart. Sunken rocks leave only a boat-passage between them. The Southeasternmost is the largest and highest though scarcely two hundred fathoms long, and not more than one hundred and forty feet high above the sea. The other is divided into two precipitous mounds, joined together by a low ledge. The lesser of these mounds resembles a tower. A reef extends seven hundred fathoms to the Eastward, from the Little or N. W. Bird Rock, and there is a patch of breakers nearly midway between the two, and rather to the S. W. of a line drawn from one to the other. The Great or S. E. Bird Rock is quite bold, excepting in the direction of the other rock. The Little or N. W. Bird Rock, bears N. E. by E. ¼ E., distant sixteen and one fourth miles from the E. point of the Magdalens; and E. ½ S., ten and three fourths miles from the E. end of Bryon Island.

The soundings of the Bird Rocks, to the Eastward, have been already stated in the description of St. Paul. They extend still farther off to the Northward, so as to afford the most ample warning and assistance to vessels at night, or in foggy weather, as will be seen in the chart. Between them and the E. point of the Magdalens, the depth nowhere exceeds sixteen or seventeen fathoms, over a bottom of reddish sand, and sea-eggs are very frequently brought up by the lead.

Between the Birds and Bryon Island there is a ridge of rocky and foul ground, on some parts of which, it has been said, there is as little as four fathoms of water, because bottom has been seen in calm weather. We, however, could not find less than seven fathoms, but it may nevertheless exist, so that a large ship had better not cross this ridge when there is much sea running. The two cliffy points on the N. side of Bryon Island, in one, mark the Northern limits of this rocky ground.

Anticosti Island.

ANTICOSTI ISLAND.—The Island of Anticosti, situated in the entrance of the N. W. arm of the Gulf of St. Lawrence, is one hundred and twenty-two miles long, thirty miles in extreme breadth, and about two hundred and seventy miles in circumference, following the coast from point to point across the bays.

Its shores are everywhere of rock, belonging to one great formation, namely, a very ancient, secondary limestone, affording, in some parts, excellent building stone, of which the two light-houses have been constructed.

Streams of excellent water descend to the sea on every part of the coast. They are generally too small to admit boats, becoming rapid immediately within their entrances, and even the largest of them, Observation River, to the Westward of the S. W. point, is barred with sand, excepting for short intervals of time after the spring freshets or heavy rains.

Many of these streams abound with trout, and are visited periodically by great numbers of salmon, which are taken by the two or three resident families, and salted for the Quebec market.

Anticosti is estimated to be nowhere higher than seven hundred feet above the sea. Its S. coast is low and shelving, with reefs of flat limestone, which dry at low water. There is, however, a range of highlands in the rear of the S. W. point, and extending for some miles both to the Northwestward and Southeastward of it. The N. coast, for seventy or eighty miles to the Westward of the E. point, is bold, precipitous and of considerable elevation. Picturesque headlands, the Eastern termination of parallel ridges of tableland, that rise gently with the strata, from the S. W., end in magnificent cliffs of limestone, which are externally so nearly white, from the effects of weathering, as to resemble chalk. Some of these cliffs are upward of four hundred feet in perpendicular height. The remainder of the N. coast is low, with reefs of flat limestone, like the Southern shore.

It is unusual to find an island so large as Anticosti without a good harbor. Limestone coasts are in general characterized by deep inlets and bays, peninsulated points and detached islets and rocks, but nothing of the kind will be found here, and there is not a single detached shoal off any part of the coasts.

This island has been generally believed to be extremely dangerous. Its reefs of flat limestone, extending, in some parts, to one mile and a half from the shore; the want of anchorage off most parts of the coast, and above all, the frequent fogs, justify this belief, in part, but not in so great a degree as to render reasonable the dread with which it seems to have been occasionally regarded, and which can only have arisen from the natural tendency to magnify dangers of which we have no precise knowledge.

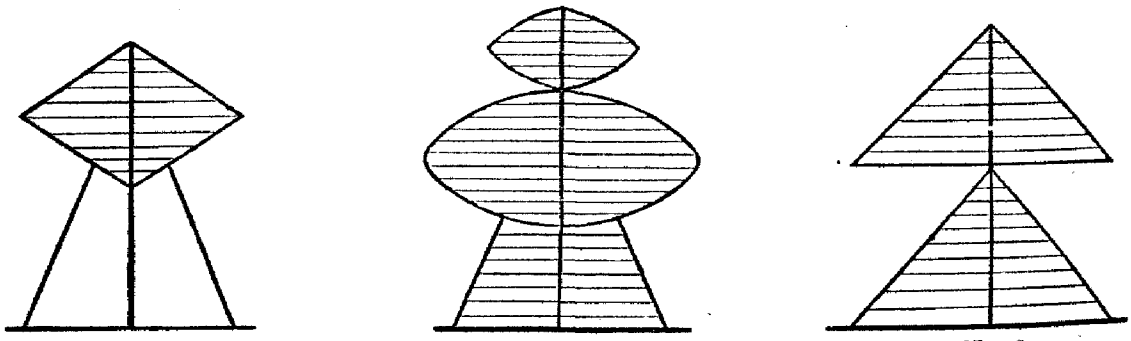
Provision-posts.

The people in charge of the light-houses and provision-posts, and one man at Fox Bay, are the only resident inhabitants of the island. The provision-posts have been established by the government and legislature of Lower Canada, for the relief of the crews of vessels wrecked upon the island. Vessels are more frequently lost here in the bad weather, at the close of the navigable season, than at other times, and their crews would perish from want, and the rigor of a Canadian winter, if it were not for this hu-

mane provision. The first of these posts is at Ellis Bay, the second at the light-house, at the S. W. point, the third at Shallop Creek (sometimes called Jupiter River), and the fourth at the light-house on Heath Point.*

Light-house. The light-house on the extremity of the S. W. point has been built of a very beautiful grayish-white encrinital limestone, quarried on the spot. The tower is of the usual conical form, and seventy-five feet high. The light, which is bright, and revolves every minute, can be seen from N. N. W., round by W. and S., to S. E. by E. The lantern is elevated one hundred feet above the sea, at high water; consequently the light can be seen at a distance not to exceed fifteen miles, when the height of the observer's eye is ten feet above the sea. When the height of the eye is fifty feet, the greatest distance from which the light can be seen will be about nineteen and a half miles; and if the eye be elevated one hundred feet, the light will be visible as far off as twenty-three miles nearly, in the average state of the refraction. Hence, by ascending the rigging till the light just shows above the horizon, and then measuring the height of the eye above the sea, a very near estimate of the vessel's distance at night may be obtained. This light-house, and attached provision-posts, are in charge of Lieutenant Harvey, on the half-pay of the navy.

Light-house. The other light-house, on the Southern extremity of Heath Point, is of the same form, dimensions, and color, as the above, and is also built of the island limestone. It has not as yet been lighted, from want of funds, but it is intended to show a bright fixed light from W. N. W. round by S. to N. E. by N. The lantern will stand one hundred feet above the sea.



Beacons. No. 1. No. 2. No. 3.

Three beacons have been erected on Anticosti Island. That noted above as No. 1, at North Post, No. 2, at the Western extremity of West Cliff, and No. 3, at the Western extremity of Bear Head Cliff. They are whitewashed, and thirty feet above high-water mark.

Having given this general description of the island, I will now notice more particularly its shores, reefs, and anchoring places.

East Cape. EAST CAPE.—The East Cape of Anticosti is a perpendicular cliff of limestone, rising to the height of one hundred feet above the sea. The ridge, of which it is the South-eastern termination, trends to the Westward, inland, and the extremity of the very low land to the Southward of it is Heath Point, on which is the light-house bearing from the E. point S. W. ¼ S., three and three fourths miles. Betwen the two points is Wreck Bay, which is dangerous and affords no anchorage. Off to the S. E. from the East Cape, a reef extends rather more than one third of a mile.

Light-house.

Heath Point. HEATH POINT.—Heath Point is of limestone, about ten feet high, with a superstratum of peat, in which there are several ponds of dark bog water. Being so low, this point disappears below the horizon at a distance of a few miles, the light-house then appears like a sail off the island, and is extremely useful in marking the extent of the low land to vessels, either from the Eastward or Westward, as well as in showing its position from the Southward, from which direction it cannot be made out at night, being hidden by the high land behind, or to the Northward.

The most dangerous reef off this end of the island runs out from Heath Point to the E. S. E., nearly two miles, at which distance there are five fathoms of water. Within that distance the reef is composed of large square blocks of limestone, with very irregular soundings, varying from two to five fathoms. The rocky and irregular soundings,

* There are direction-boards erected on the shore, or nailed to trees, from which the branches have been cut off, near the beach, and on various parts of the coast. These direction-boards are intended to point out to shipwrecked persons the way to the provision-posts. The direction-boards were placed on the following parts of the shore, as I find from Mr. Lambley's remark-book, for I have not seen them all: 1st. On the W. point. 4th. Four leagues Southeastward of Ellis Bay. 3d. Ten leagues Westward of Shallow Creek. 5th. Seven leagues E. of Shallop Creek. And there were formerly others on Heath Point, and the S. W. point, which the light-houses have rendered unnecessary.

from five to seven fathoms, extend nearly three miles off Heath Point, so that I recommend vessels not to approach nearer on any bearing from the point between S. E. and E. by S. With the E. cape bearing N. by W., the vessel will pass just outside of the shallow irregular soundings, in about twenty fathoms of water.

Off Heath Point, to the Southward and Westward, the shoal water does not extend beyond three fourths of a mile, and farther off on that side there is one of the best open anchorages on the island. The best berth is in ten fathoms, over sand and mud bottom, with the light-house E. by N., and Cormorant Point nothing to the Westward of W. N. W. The vessel will then be two miles off shore, and will be sheltered from all winds from W. N. W. round by the N. to E. by N.

CORMORANT POINT.—From Heath Point, Cormorant Point bears W. by N., six miles; and the South Point bears W. N. W., sixteen and a half miles from Cormorant Point. In this distance the coast is low and undulating, with points of low limestone cliffs, and beaches of sand and shingle in the bays, enclosing large ponds or lagoons, into many of which the tide flows, and also small streams from the interior of the island. This part of the coast may safely be approached by the lead, as will be seen in the chart, for the reefs nowhere extend farther off than three fourths of a mile till we come to the South Point. *Cormorant Point.*

SOUTH POINT.—The South Point is a cliff of sandy clay, resting upon limestone. It is estimated not to exceed sixty feet in height, and there is nothing remarkable in its shape; but there is no other clay cliff near it, and as it is an extreme point, there will be little difficulty in distinguishing it by the trending of the land. The reef off it to the Southward runs out nearly one mile and a half, and the sea usually breaks upon it. The light on Heath Point and Cormorant Point in one, bearing E. by S., clear this reef at the distance of two miles, but I fear that the light will seldom be seen up to the reef, which is distant twenty-two miles from it. The leading mark will nevertheless be of use to vessels between South Point and Cormorant Point. *South Point.*

From South Point to the light-house, on the S. W. point, a distance of fifty-six miles, there is such a sameness in the character of the coast, that it is very difficult to make out one part from another.

The houses, however, of Mr. Hamilton, in charge of the provision-post at Shallop Creek, will be seen thirteen miles Northwestward of the South Point, and at the first limestone cliff to the Northwestward of those houses in Pavilion River, twenty-four miles from South Point. In this distance the coast is very low, and may be approached safely by the deep-sea lead, the soundings in moderate depths extending from five to eight miles off, as will be seen in the chart. The coast begins to rise at Pavilion River, there being a high ridge close in rear of the coast all the way to the S. W. Point, and beyond it for some miles. This distance of thirty-two miles between Pavilion River and the S. W. point, comprises the boldest parts of the S. coast of the island, but should be very cautiously approached in foggy weather, as there is little or no warning by the lead. When far enough to the Westward, the light on S. W. point bearing nothing to the Westward of N. N. W., as before directed, will be a sufficient guide.

In the whole distance from South Point to S. W. point, the reefs nowhere extend farther off from high-water mark than one mile, and the island may therefore be safely approached to within two miles.

SALT LAKE BAY.—Eleven miles Southeastward of S. W. point, is Salt Lake Bay, which has fine sandy beaches, enclosing lagoons or ponds, into which the tide flows. Off the centre of this bay, and with its N. W. point bearing N. by E. ½ E., distant one mile and three fourths, there is very indifferent anchorage, in seven fathoms, over sandy bottom. Vessels should be careful not to anchor farther to the Southward and Eastward, since there is some foul and rocky ground about a mile in that direction from the position which I have recommended. There are seven fathoms, rocky bottom, marked in the chart on the spot to which I allude, and there is probably less water between it and the Southeastern point of the bay, so that no one should attempt to pass between it and the shore. *Salt Lake Bay.*

The S. W. point of Anticosti is a low projecting ridge of limestone, having a small cove on its N. side, which forms it into a peninsula. The land rises gradually, in the rear of this, to the summit of the ridge above mentioned. On the S. side of the point there is a beach of limestone gravel, on which boats may land, as well as in the cove on the N. side, when the wind is off the land and the sea smooth. On the N. side of the point, and for several miles along the coast, to Observation River, the cliffs are perpendicular, and washed by the sea. The light-house stands on the Western extremity of the point, and forms a very conspicuous landmark. A reef extends out from the point, to the W. and S. W., not more than half a mile; and two miles off, in the same direction, there are thirty fathoms, over rocky bottom, deepening rapidly to sixty-five fathoms, with sand and shells, at the distance of three miles. At the distance of six miles to the Southward and Westward of the point, the depth is about one hundred and ten fathoms, with mud bottom, and increases to two hundred fathoms nearly midway toward the S. coast. *Light-house.*

There is a bay on the N. side of the point, in which vessels may anchor in twelve or thirteen fathoms, over a bottom of sand, gravel and broken shells, and with the extremity of the point bearing S. S. W. ½ W., distant about three fourths of a mile, when the cliffs to the Eastward will be at the same distance. The shelter is from N. by E., round by E. to S. by W., and small vessels may lie close under the point: but it is a dangerous state to be caught in by Westerly winds, which are preceded by a heavy swell. The ground, I think, is not to be trusted, so that, altogether, I do not recommend any vessel to anchor here, unless in case of necessity.

There is no anchorage from S. W. point to Ellis Bay; and as I have already given directions respecting this part of the Western coast, little remains to be noticed. The reefs of flat limestone extend from it, in most parts, fully a mile, and often have ten or twelve fathoms of water close outside of them; but vessels with the lead going, may safely stand in as near as two miles, or, which will be safer than an estimated distance, had better tack in seventeen fathoms.

Observation River. OBSERVATION RIVER.—Observation River, five and a half miles Northward of S. W. point, is the largest stream on the island, having five or six feet of water in the entrance after the melting of the snows in the spring of the year, but soon becomes barred with sand by the S. W. gales. It becomes shoal and rapid immediately within, though it has a course from the Eastward of many leagues. Its source does not appear to be known to the people of the island. Immediately to the Northward of this river there are very conspicuous and high sandy cliffs. The St. Mary Cliffs, twenty-one miles from S. W. point, are also of sand, less high and less remarkable, but yet not difficult to distinguish.

Bescie River. BESCIE RIVER.—Bescie River is a very small stream, at the head of a small cove, affording shelter to boats, and where there is a hut, at which a hunter and fisherman occasionally resides. It is seven miles Northwestward of the St. Mary Cliffs, and twelve miles Southeastward of Ellis Bay.

Ellis Bay. ELLIS BAY.—Ellis Bay affords the only tolerably sheltered anchorage in the island. Vessels whose draught is not too great for a depth of three fathoms, may safely lie there during the three finest months of summer: namely, June, July, and August, but they should moor with an open hawse to the Southward. Large vessels, whose object is to remain for a few hours only, may anchor farther out, and in three and a half and four fathoms; but neither the ground nor the shelter will be found so good as farther up the bay.

The best berth is in a line between Cape Henry and the White Cliff, bearing W. S. W. ½ W. and E. N. E. ½ E., respectively from each other: Gamache House, N. by E., and Cape Eagle, between S. S. E. ½ E. and S. S. E. ¼ E. The vessel will then be in three fathoms, over muddy bottom, distant about three hundred fathoms from the flats on either side, and about half a mile from those at the head of the bay. The extremities of the reefs, off Capes Henry and Eagle, will bear S. W. by S. and S. ½ E., respectively, thus leaving three and a half points of the compass open, but in a direction from which heavy winds are of very rare occurrence, and never last long. Moreover, when they do chance to occur, the sea is much less at the anchorage than might be expected, although very heavy in the entrance between the reefs. These reefs are of flat limestone, and dry at low water; and as the tides only rise from four to seven feet, the sea always breaks upon them where there is the least swell. The reef off Cape Henry runs out nearly a mile to the Southward, and that off Cape Eagle near three fourths of a mile to the Westward. The entrance between them is six hundred fathoms wide, from three fathoms to three fathoms. Extensive flats project from these reefs quite round the bay, and do not entirely dry at low water, excepting in very low spring tides; but there are immense boulder-stones upon them which always show. These flats occasion the landing to be very bad, excepting at high water, which is the only time that supplies of good water can be obtained from Gamache River.

Ellis Bay can be easily made out from sea, for Cape Henry is a bluff point, and the land being very low at the head of the bay, occasions the opening to show distinctly. On a nearer approach, Cape Eagle and White Cliff on the E. side, and the houses near the head of the bay, will be easily recognized with the assistance of our chart; while two ridges, or hills, will be seen far back in the country, and to the Northward and Eastward.

The long line of breakers on either side, and the numerous large stones so far from the shore ahead, will present anything but an agreeable appearance to those who may approach this bay for the first time; but there will be no danger if the following directions be attended to: In approaching the bay from the Westward, with Westerly winds, run down along the outside of the reefs off Cape Henry by the lead, and in ten fathoms, until the following leading marks come on—namely, the W. side of White Cliff on with the E. side of the Westernmost of two hills, far back in the country, and bearing N. E. ¾ N.; then haul up with these marks on, and they will lead you into smooth water, close under Cape Henry Reef, in three and a half fathoms. Continue running in

with these marks on, until Gamache House bears N. by E.; then haul up for it, and anchor in the berth which I have previously recommended. The lead should be kept going, and the reefs on either side should not be approached nearer than three fathoms. in any part until you arrive at the anchorage.

In running for the bay from the Southeastward, with an Easterly wind, come no nearer to the West point of Cape Eagle Reef, than seven fathoms, until the East side of White Cliff comes on with the East side of the same hill as before; then haul up with this mark on till the houses bear N. E., and proceed as above directed. Take notice that the W. side of White Cliff is used for the leading mark in Westerly winds, and the E. side in Easterly winds, the intention being to keep the vessel, in either case, from going too near the lee side of the channel.

On the outside of Cape Henry, and continuing to the W. point of Anticosti, reefs extend one mile and a quarter from the shore; and vessels approaching it should keep the lead going, and attend to the soundings in the chart.

West Point.

WEST POINT is low and wooded, with reefs which do not extend beyond a mile from the shore, and vessels may pass it in fifteen fathoms, at the distance of one mile and three fourths.

The N. coast of Anticosti, between the W. and N. points, is low, with reefs of flat limestone extending one mile from the shore. There are soundings in moderate depths, for more than one mile out from the reefs. Vessels should not go nearer than twenty-five fathoms. In the rear of the coast, and about halfway between the W. and N. points, are the two hills, or ridges, mentioned as forming one of the leading marks for Ellis Bay. From North Point to High Cliff, a distance of thirteen miles, the coast is rather more bold and elevated, parallel ridges, in an E. and W. direction, and with small streams between them, beginning to abut upon the coast. North Point is wooded, of very moderate height and without any cliff. It is so little remarkable as to be only distinguished by the change which takes place at it in the direction of the coast. High Cliff Cape is easily recognized, being the only cliff on the island, that has a *talus* in front of it, or that has not its base washed by the sea at high water.

From High Cliff to White North Cliff, a distance of twenty-six miles, the coast is low in front, with ridges of considerable elevation a few miles back in the country. This is the most dangerous part of the N. coast, for the reefs extend nearly two miles out from high-water mark, beginning at some low cliffs seven miles Eastward of High Cliff Cape, and continue to do so for four or five miles to the Southeastward, after which they gradually diminish in breadth, till at White North Cliff they are not more than half a mile from the shore. There is, however, less warning by the deep-sea lead all along this part of the coast until we approach White North Cliff. off which there are seventy fathoms, at the distance of one mile and a half from the surf.

White North Cliff is very remarkable, for there is no other high cliff near it. It appears like a white patch on the land, and can be seen from a distance of six or seven leagues.

Low cliffs commence four miles Southeastward of White North Cliff, and continue to Carleton Point, under which vessels may anchor, in fine weather and Westerly winds, and obtain wood and water. Ten miles farther to the Southeastward is Cape Observation, a bold, high, and remarkable headland. On its W. side there is a magnificent range of grayish white cliffs, several hundred feet high. At the extremity of the cape, these cliffs become suddenly much lower, and then rise again to their former elevation for a short distance on the East side. As this is well described in the chart, the cape will be easily recognized. Vessels may anchor under it, with Westerly winds and fine weather, and obtain supplies of wood and water very conveniently. Twelve and a half miles farther Southeastward, along a bold coast, with high grayish white cliffs and small bays between, brings us to Bear Head, also of grayish white cliffs, four hundred feet high, and resembling in some degree Cape Observation. This last-named cliff has no equally high cliffs to the Westward of it, while Bear Head has a difference which will prevent the one from being mistaken for the other.

From the West Cliff to Bear Head the coast is extremely bold, there being in most parts one hundred fathoms of water within three miles of the shore.

Bear Bay.

BEAR BAY is situated between Bear Head and Cape Robert, which are distant nearly six miles from each other, in a N. N. W. ¼ W. and S. S. E. ¼ E. direction nearly. It is by far the best roadstead on the N. coast of Anticosti, and, indeed, the only one in which a large ship would like to anchor, unless she had some particular object in view. It is sufficiently roomy, the bottom is excellent for holding, the depth of water moderate, and the shelter extends from N. N. W. round by W., and S. to S. E. by S. In order to recognize this anchorage, it may be observed that Cape Robert consists of cliffs of the same color and elevation as those of Bear Head; and that there are two other points of cliffs three hundred feet high within the bay, the Southeasternmost of which is named Tower Point. Between Tower Point and Cape Robert, at a distance of one mile from the former, as well as from the Western shore, and in thirteen fathoms of water, over a

bottom of brown mud, is the best anchorage, where Tower Point will bear N. W. ½ W., Cape Robert S. E. ½ S., and Bear Head N. by ¼ W.

Bear Bay is divided into three smaller bays by the two high points of cliff which I have mentioned. In each of these bays there are fine bold beaches of sand and limestone shingle, and streams where water may be easily obtained. But the principal stream is Bear River, which enters the Southernmost of the three bays close to the S. E. side of Tower Point. It is too shallow and rapid to admit boats; but the water is clear and good. The cliffs in Bear Bay are magnificent: they are of grayish white limestone, in thin strata, dipping very slightly to the Southward, and are perpendicular or overhanging. At the extremities of the points the cliffs are rounded by the action of the waves and atmosphere, so as to resemble towers, which resemblance is rendered stronger by the masonry-like appearance of the rock. The trees are of diminutive growth.

From Cape Robert to Table Head, a distance of nineteen miles to the Southeastward, the coast is broken into small bays, with shingle beach and small streams between high headlands, terminating in perpendicular cliffs, the bases of which are washed by the sea. None of these bays afford good anchorage. Table Head is rendered remarkable by the hill whence it derives its name, and which rises immediately from the summit of the cliffs.

Fox Point. FOX POINT is four miles farther to the Southeastward, and much lower than Table Head. Fox Bay, which is a little less than two miles to the Southward of Fox Point, is about one mile wide and deep, with sandy beach at its head, where there is a considerable stream issuing from a small lake. Boats may enter the outlet of this lake at high water. The house and store of M. Godin, are on the N. W. side of the head of the bay, and are the scenes of the dreadful sufferings and melancholy fate of the crew and passengers of the ship Granicus, wrecked on the coast in November, 1828, and who all perished from want of food, after enduring the most horrible misery, before the following spring.

Reef Point. REEF POINT, of very low limestone, is the Southern point of Fox Bay, from which a reef of flat limestone, covered with only a few feet of water, runs out to the distance of fully one mile and a half. There is a depth of ten fathoms close off to the end of this reef, so that it is extremely dangerous. To be sure of clearing it to the Northeastward, a vessel should not be brought nearer by the lead than seventeen or eighteen fathoms; or if any of the land to the Northwestward of Table Head be open clear of it, she will pass in safety.

North Reef. NORTH REEF.—From the Northern point of Fox Bay, which is a cliff of moderate height, another reef runs out more than half a mile to the Southeastward. A point of the Southern reef before mentioned, extends to the Northward in such a way as to overlap the reef off the Northern point, leaving an entrance from the Northeastward between the two only a quarter of a mile wide, and thirteen feet deep at low water. Inside there is a space half a mile wide, from two fathoms to two fathoms, and with sixteen feet in the middle, over muddy bottom. A wind from E. by N. or E. N. E. blows right into the bay: but I am told that the sea does not roll in, but in heavy weather breaks on the reefs and in the entrance. This account I believe to be correct, and that small vessels would be perfectly safe there during the summer months.

Between Fox Bay and East Cape the coast is of limestone cliffs, one hundred feet in height, bold and free from danger. Between Cape Sandtop and East Cape vessels may anchor with all Westerly winds in from sixteen to twenty fathoms, over fine sand, at a distance of one mile from the shore.

Tides, &c. Tides and currents around Anticosti are so irregular that I can add very little to that which has been already stated.

I have seen the stream run along the land for a whole day at the rate of a mile per hour, in either direction, without any apparent cause, and altogether regardless of the change of tide. At other times I have found the tides regular inshore. Under these circumstances, it is evident that the set of the stream, at any time or place, cannot be reckoned upon with certainty.

However, in addition to my previous remarks, I may observe that there is usually very little stream in any direction on the North coast, from White Cliff Southeastward to Table Head. From the latter to East Cape, on the contrary, there is very frequently a stream from the Northward, running at a rate varying from a half to one knot. In one or two instances I have seen this stream commence and end with the flood-tide, so that I have been led to imagine a connection between them; and, if this be the case, it may arise from the circumstance of its being high-water sooner on the N. coast, up as high as the Esquimaux Islands, than at the E. point of Anticosti. The waters having thus attained a higher level to the Northward, may, in consequence, flow to the Southward. On the other hand, it must be mentioned that I have observed this stream during the ebb-tide.

It frequently happens that, when this current from the Northward is running, another from the W. N. W. comes along the South coast; in which case they meet at the reef,

off Heath Point, and cause a great ripple, or irregular breaking sea. When this has been observed by us, there has been, usually, a fresh breeze along the land, on either side of the island; the wind on the N. side of the island being from the N. or N. by E., while that along the S. side was W. N. W. I have seen both these winds blowing a smart double-reefed topsail breeze at the same time, and for a whole day together, and yet never meet round the E. end of the island, which is nowhere more than two hundred feet in height. Between the two winds there was a triangular space of calm and light baffling airs: the base of this triangle extended from Heath Point to East Cape, and its apex from five to eight miles to the Eastward of the island. I mention this circumstance because it would be dangerous for a vessel to stand into the calm space between the two winds, where the high cross-seas and constantly changing light airs might leave her at the mercy of the current, in no small danger of being set on the Heath Point Reef.

I have been for hours endeavoring to go out of this singular space, trimming sails to light airs, which did not remain steady to any one point for a minute of time; and I was finally, in spite of every effort to the contrary, carried over the reef by the current, seeing the rocks distinctly under the vessel's bottom, but fortunately drawing too little water to strike upon them.

THE SOUTH COAST OF THE GULF AND RIVER ST. LAWRENCE FROM CAPE DESPAIR TO THE RIVER MAGDALEN.

CAPE DESPAIR, the N. E. point of the Bay of Chaleur, consists of red sandstone cliffs, without beach, and of a moderate height above the sea. *Cape Despair.*

LEANDER SHOAL bears from Cape Despair S. S. E., distant rather more than one mile and a half. It is about one fourth of a mile in diameter, from four fathoms to four fathoms, and has sixteen feet least water on one spot, which, however, is very difficult to find. It is a rocky shoal, and there is a clear passage between it and the cape. The leading marks are as follows: the line of the White Head is one with the inner or N. W. end of Percé Rock, passes just outside of the shoal, in seven fathoms; therefore the whole of Percé Rock, well open to the Eastward of the White Head, will lead clear outside of all. From a half to the whole of the Percé Rock shut in behind the White Head, will lead clear between the Leander and Cape Despair. *Leander Shoal.*

BONAVENTURE ISLAND has bold and perpendicular cliffs of red sandstone and conglomerate, on all sides except the W. These cliffs, in some parts, attain an elevation of two hundred and fifty feet above the sea, and their ledges and fissures are the habitation of innumerable gannets. From the W. side, shoal water extends to the distance of one fourth of a mile, and there is anchorage in fifteen fathoms between it and the White Head; but the riding is insecure and heavy, in consequence of the swell, which in bad weather, rolls round the island. The channel between Bonaventure Island and the Percé Rock is about one mile and one third wide, and free from danger. *Bonaventure Island.*

The PERCE ,ROCK is two hundre dand eighty-eight feet high, precipitous all round, and bold to seaward. It is narrow, and about one third of a mile long, in a S. E. direction, being an outlier to the range of cliffs on the S. W. side of Mal Bay. It is rendered remarkable by two large holes which have been perforated through it by the waves, and through one of which a boat can pass at high water. Between this rock and the White Head is the Bay of Percé, having a reef at the distance of half a mile to the S. W. of the Percé Rock, and extending out nearly half a mile from the shore, as will be seen in the chart. Small vessels engaged in the fisheries anchor on either side of this reef, with winds off the land, but it is a dangerous place and not to be recommended for large vessels. *Percé Rock.*

The town of Percé, principally inhabited by persons engaged in the fisheries, occupies the shores of the bay, and Mont Percé, or, as it is sometimes called, the Table Roulante, rises immediately from it, to the height of one thousand two hundred and thirty feet above the sea. This mountain is very remarkable, and can be seen at sea from a distance of forty miles. A reef connects the Percé Rock with Point Percé, and off the N. E. side of the latter small vessels anchor with Westerly winds. There is generally a regular tide of flood and ebb, of about a knot, between Bonaventure Island and the main land; the flood running to the S. W., round Cape Despair and up the Bay of Chaleur; and the ebb in the contrary direction. Two or three miles outside or to the Eastward of Bonaventure Island, the current to the Southward out of the St. Lawrence will often be found running regardless of the tides.

MAL BAY is between five and six miles wide, by four miles deep, and entirely open to the S. E. On its S. W. side, and under the Percé Mountains, there are magnificent cliffs, six hundred and sixty-six feet in perpendicular height above the sea. Its N. E. side has low cliffs of sandstone, with occasional beaches. A fine, broad, sandy beach extends right across the head of the bay, and encloses a shallow lagoon. A considerable *Mal Bay.*

river, and several small streams, discharge their waters into the lagoon, which has an outlet in the N. W. corner of the bay, called the Tickle, admitting boats at high water, and in fine weather. There is anchorage all round the shores of Mal Bay, but as a heavy sea and thick fog often precede a S. E. gale, and render it difficult for a vessel to beat out, it cannot be recommended. There is an open cove or small bay on the N. E. side, in which a vessel can be occasionally moored close to the shore, and in three fathoms water, but this is of no use for the general purposes of navigation.

Point Peter. POINT PETER is the N. E. point of Mal Bay, and the S. point of Gaspé Bay; it is of low sandstone, and thickly covered with the white houses of the fishermen. Flat Island lies about four hundred fathoms off Point Peter, and is small, low, and of sandstone. There is a clear channel between the island and the point, but no good anchorage; for although vessels occasionally anchor to the Northward of the island, yet the ground is so foul that there is great danger of losing an anchor from its hooking the rocks.

From Flat Island to Cape Gaspé, across the mouth of Gaspé Bay, the course is N. N. E., seven and one fourth miles.

Gaspé Bay. GASPE BAY.—The admirable Bay of Gaspé possesses advantages which may hereafter render it one of the most important places, in a maritime point of view, in these seas. It contains an excellent roadstead off Douglas Town; a harbor at its head, capable of holding a numerous fleet in perfect safety; and a basin where the largest ships might be hove down and refitted.

The course of this bay from Flat Island to the end of Sandy Beach Point, which forms the harbor, is N. by W. ½ W., rather more than sixteen miles. From the Flowerpot Rock to the same point, the course is N. W. ½ N., and distant nearly eleven and a half miles.

From Point Peter, the land rises in undulations to the chain of mountains, about five miles inland from the Southwestern shore of the bay. These mountains, in some points, attain an elevation of one thousand five hundred feet above the level of the sea, and sweeping round Mal Bay, terminate with the Percé Mountains before mentioned. The Southwestern shore of Gaspé Bay, from Point Peter to Douglas Town, a distance of twelve miles, presents a succession of precipitous headlands; the cliffs, of bituminous shale and sandstones, being in their highest parts two hundred feet above the sea. Shoal water extends nearly a third of a mile from the cliffs, and vessels beating should beware of this, since the water shoals too rapidly to allow of much warning by the lead.

Cape Gaspé. CAPE GASPE—Cape Gaspé is an extremely remarkable headland, of limestone, having on its N. E. side a magnificent range of cliffs, which rise from the sea to the height of six hundred and ninety-two feet. Flowerpot Rock lies close off the S. E. extremity of the cape, and is also a very remarkable object; the base of it being worn so small by the waves, that it appears astonishing that it can resist their force, or the pressure of the ice. It is sometimes called the "Ship's Head," at others the "Old Woman," by the fishermen, and is so bold that vessels may haul around it into the bay within the distance of one fourth of a mile. Boats may pass between it and the cape, when there is no surf. The limestone of Cape Gaspé dips to the S. W., so that the cliffs within the bay are very much lower than those on the outside of the cape previously mentioned.

The N. E. side of the bay is thickly covered with the houses of the fishermen, for a distance of five miles within Cape Gaspé; the principal fishing establishments belonging, as at Percé, to Jersey merchants. There is an anchorage, with good holding ground, but in not less than seventeen fathoms, except within one fourth of a mile of the shore, abreast of St. George's Cove, Grand Grève, and little Gaspé. The word *cove*, is, however, inappropriately applied to any part of the shore between Grand Grève and the cape, for though there are fishing establishments there, there are no coves whatever. This side is bold, and free from danger in every part, with the exception of the Seal Rocks, which are the only detached danger in the bay.

Seal Rocks. SEAL ROCKS.—The Seal Rocks are six and three fourths miles within Cape Gaspé, one mile S. E. by S. from Cape Brulé, and a half mile off shore. The length of this reef, from three fathoms to three fathoms, and in a direction parallel to the shore, is half a mile, and its breadth one fourth of a mile. The least water is four feet, and there are three and a half fathoms between it and the shore. When on the outer edge of the Seal Rocks, Cape Brulé is in one with the next cliffy point up the bay, bearing N. 35 W., by compass; and this only mark is sufficient for the safety of vessels beating, for the rocks are out of the way with fair winds.

At Grand Grève, three and a half miles within Cape Gaspé, the ridge of land dips and narrows so that there is a portage across it, leading to the settlements of Cape Rosier. On the N. W. side of the portage a range of mountains commences, and they continue along the N. E. side of the bay and the N. W. arm, till they are lost to view in the interior of the country. Opposite to the basin of Gaspé they rise to the height of fifteen hundred feet above the sea.

Douglas Town. DOUGLAS TOWN.—Douglas Town is a village of fishermen and farmers, standing on the rising ground at the S. side of the entrance of the river St. John. Its position is

relation to Point Peter has been already mentioned. The water is very deep in the outer parts of the bay, being from thirty to upward of sixty fathoms, over mud bottom; but on approaching Douglas the depth decreases regularly to the anchorage.

ROADSTEAD.—The roadstead off the town of Douglas is extensive; vessels may anchor in any part of it, and in any depth from eleven to six fathoms, over sand and clay bottom; but the best berth is in seven fathoms, with the entrance of the river St. John bearing N. W. by W., one mile and a quarter. The course and distance from Cape Gaspé to this anchorage is N. W. by W., seven and three fourths miles. There is, however, no shelter from winds between S. E. by E. and S. S. E., which blow directly into the bay, and roll in a heavy swell. The riding is, nevertheless, much less heavy on such occasions than might be expected, and as the ground is excellent for holding, a vessel may safely anchor here during the summer months. *Roadstead.*

Water may be obtained by ascending the river S. John to the islands, a distance of two miles. In the spring of the year there are often nine feet of water in the entrance of this river, which is between two points of sand, as will be seen in the chart; and there are twelve feet of water in the narrow channel for some distance within. At the islands the river becomes shallow and rapid.

CAPE HALDIMAND.—Cape Haldimand, two miles Northward of Douglas, is a bluff point of cliff, and the Southeastern termination of the range of hills which separates the harbor basin and S. W. arm from the valley of the river St. John. *Cape Haldimand.*

GASPE HARBOR.—From the N. E. side of Cape Haldimand, Sandy Beach Point runs out to the Northward, and forms the harbor of Gaspé. It is a very low and narrow point of sand, convex to seaward, on which side the water deepens gradually from high-water mark to the depth of three fathoms, a distance of nearly half a mile. On the inside it is as bold as a wall. Thus this spit, apparently so fragile, becomes a natural dam or breakwater, upon which the heavy swell, which often rolls into the bay, can produce no effect, expending its strength in the shoal water before reaching the beach. The water deepens immediately outside of three fathoms, all along the outside of Sandy-beach Point, and also off its N. extremity: so that it is both dangerous and difficult to beat in or out of the harbor at night; the lead giving little or no warning. *Gaspé Harbor.*

To the Northward of Sandy-beach Point, at the distance of nearly a mile, is the peninsula, which is a low sand, covered with spruce-trees, and it has several whale sheds near its W. point. Between the shoal water in the bay to the Eastward of the peninsula, and that which extends from the extremity of Sandy Beach Point, is the narrowest part of the entrance to the harbor, which is four hundred and twenty fathoms wide, from three fathoms to three fathoms, and upward of eleven fathoms deep in the centre.

To run into the harbor of Gaspé attend to the following directions and remarks: On the N. E. side of the N. W. arm, there is a wooded point with low clay cliff, two and three fourths miles above the peninsula. This point appears as if it were the extreme on that side, when seen over the end of the peninsula from a vessel approaching the entrance of the harbor, and is called Point Panard. Now this point (seen over the peninsula) in one with the inner or N. side of the whale sheds before mentioned, is the mark for the Northern extreme of the shoal off Sandy-beach point. The extremity of the spruce-trees is as far within the whale sheds as these last are from the sandy extremity of the peninsula. On the inner side of Sandy-beach Point, and near to its junction with the main land, stands a wooden windmill. Keep Point Panard in one with the extremity of the spruce-trees on the peninsula, bearing N. 47° W., until the windmill just mentioned comes in one with the W. or inner side of the end of Sandy-beach Point, bearing S. ½ W., when you may haul into the anchorage under the point, or steer for the basin, as may be desired. *Directions.*

When beating in, tack by the lead from the N. E. side of the bay and in the board toward Sandy-beach Point, put the helm down the instant the marks for leading in, just given, come in one.

At night, when neither Sandy-beach Point nor the peninsula can be seen, it becomes rather a difficult affair to tack a vessel into the harbor. The only guide then is the lead. There should be a hand in each chains, one heaving when the other cries the soundings. Soundings should be first struck on the N. E. side of the bay, about two miles outside of the entrance of the harbor, and the edge of the shoal water on that side should be followed in from five to seven fathoms, until you judge by the distance run, and the change which takes place in the direction of the edge of the bank which you are running upon, that you are approaching the peninsula, and have passed Sandy-beach Point, and can, in consequence, venture to haul to the Southward into the anchorage. To form this judgment accurately is the difficult part of the process, and as to fail in this would probably cause the loss of the vessel, if the usual heavy swell should be rolling into the bay with S. E. winds, I recommend a vessel rather to trust to her anchors off Douglas Town than to make the attempt. In case of a vessel which has lost her anchors, the directions which I have given may prove of use. Within Sandy-beach Point, that is within the harbor of Gaspé, the shelter is complete from all winds. The bottom is mud, and the depth nowhere exceeds eleven and a half fathoms.

Having now given directions to enable the seaman to take his vessel into a place of perfect security, from which he may proceed to the basin, or to any other part of the harbor, with the assistance of the chart or of a pilot, I shall not swell these remarks by a minute description of the interior of the harbor, which the chart renders unnecessary, and which is not in any way essential to safety.

I shall merely add that the harbor is divided into the N. W. and S. W. arms. The N. W. arm has deep water for nearly three miles above the peninsula, and continues navigable for keeled boats about three miles farther, where the principal river of the harbor enters the arm between Marsh and Meadow islands.

The entrance of the S. W. arm is about one hundred and eighty fathoms wide, and between two sandy points, but the navigable channel is contracted by shoals on either side to about sixty fathoms; and five fathoms of water can be carried in. The deep water part of the S. W. arm, which continues for three fourths of a mile within the entrance, is called the Basin of Gaspé. It has a depth of from five to nine fathoms, over a mud bottom, and is sufficiently capacious to hold a very great number of vessels as securely as in a dock. Boats can ascend this arm by a narrow channel, between shoals, about three miles, as in the N. W. arm, and the navigation, for all but canoes or flat-bottomed boats, is terminated in the same manner, by shallow channels between Marsh and Meadow islands. Above this part of the river it becomes contracted and rapid, and the water fresh. A small rivulet in the bay, on the inside of the S. point of the entrance of the basin, is the most convenient watering place in the harbor. The collector of customs, and the principal families, reside on the shores of the basin. Most of these families, as well as those of the N. W. arm and the harbor generally, are farmers, but several of them are also engaged in the whale fishery, which they prosecute in small schooners. The cod fishery is carried on by the people of the bay outside, for the most part in connection with the Jersey merchants. The great majority of the fishermen are either from Jersey, or descended from the people of that island, whose language they retain.

There are regular but weak streams of flood and ebb in the entrances of the harbor and basin. In the bay the streams of the tides are so irregular, that I can say nothing certain respecting them. They are, however, usually almost imperceptible, excepting near the shores, and even there they are so weak as to be of little or no consequence to a vessel.

The current down the St. Lawrence runs strongly past Flowerpot Rock, over towards Flat Island, especially in the ebb tide, which often increases its rate to two knots, and this should be remembered by vessels making the bay with a Northerly wind. This current, when it meets the swell which so often prevails from the S. and S. E., causes a high, short, and breaking sea, all along the course from above Cape Rozier to Cape Gaspé, and extending across the entrance of Gaspé Bay. When the wind is light, a vessel becomes quite unmanageable in this sea, and it is extremely dangerous to be caught in it, close to the shore, by a light breeze on the land.

In fine summer weather, there is often a sea-breeze blowing right up the bay from about 9 A. M. until sunset. At such times there is generally a light land breeze at night down the arms, which often extends for several miles out into the bay. In the outer part of the bay, however, it will generally be found to be calm even at times when a fresh breeze is blowing outside Cape Gaspé and Point Peter. The wind at sea on such occasions is generally from the S. W.

The soundings of this part of the coast will be seen in our charts for the first time; they will prove of very great use to vessels running up in foggy weather, and had they been previously known, might have saved many vessels. We had an opportunity of judging of this recently, when a large ship, full of emigrants, ran stem on to Whale Island in Gaspé Bay. She was under all sail before a moderate S. E. wind in a thick fog, and steering N. W., from which it appears that she must have been running in soundings from twenty to forty fathoms, for at least four leagues, and probably for three hours before she struck. No lead was hove, the existence of the soundings being unknown. The vessel was conceived to be well to the Northward, and consequently, to be steering a safe course. One cast of the lead would have dispelled this delusion, and might have saved the vessel. Let this be a warning to seamen.

In the prolongation of the line of Cape Gaspé nearly, there are several rocky patches frequented by the fishermen. They all lie in the same direction from Flowerpot Rock, S. S. E. ½ E. The first is a small patch with eight fathoms least water, the second has sixteen fathoms, and the third ten fathoms. Their distances from the rock are seven eighths, one and a half, and thirteen miles respectively. There is deep water and irregular soundings between them, and the last-mentioned is on the bank of soundings which I have already alluded to, as lying off this coast.

The bold and high coast between Cape Gaspé and Cape Chatté, a distance of one hundred and seventeen miles, will require only a brief notice, as it is free from dangers and destitute of harbors.

The mountains everywhere approach the shore, which is steep and rocky, displaying

cliffs, often of great height, and without beach. After heavy rains, waterfalls, which are not to be seen at other times, descend from great heights, and small bays, with sandy beach and rapid streams at their heads, occur occasionally: yet these features are not generally so strongly marked as to enable a stranger to make out one part of this coast from another with facility.

Cape Rozier Light.

CAPE ROZIER.—There is a light on Cape Rozier one hundred and thirty-six feet above the sea, and exhibits a fixed light of the natural color; it must always be kept open Southward of Cormorant Point. Cape Rozier, which is nearly seven miles N. ½ E. from Cape Gaspé, is low and of graywacke, and slate rocks. The shoal water does not extend off it above one third of a mile, but in the bay to the Southward of it, at the distance of one mile and three fourths, there is a reef which runs out half a mile from the shore. Vessels may find shelter under Cape Rozier from N. W. winds, but the ground is not very good, and the Easterly swell that frequently rolls in, renders it a dangerous anchorage. There are fishing establishments on Cape Rozier, and in its vicinity.

Griffin Cove.

GRIFFIN COVE.—Griffin Cove and River are six and a half miles N. N. W. nearly, from Cape Rozier. A small bay here affords shelter to the boats of the fishermen, whose houses will be seen around it. There are from two to three fathoms water in this bay, over sandy bottom. It is of no use to shipping, except to obtain supplies of water, wood, and, occasionally, fresh provisions.

Great Fox River.

GREAT FOX RIVER.—Great Fox River is eleven and a half miles N. N. W., nearly, from Cape Rozier. It is a mere brook, which enters a small bay about three fourths of a mile wide, and half a mile deep. Off each point of the bay there are reefs, which diminish the breadth of the entrance to less than a quarter of a mile, and afford shelter to boats and to very small schooners, in from two to two and a half fathoms, over a bottom of fine dark sand. Round the head of the bay there is a fine sandy beach. Outside the reefs, which extend only a very short distance to seaward, there are fifteen, eighteen, and twenty-four fathoms, over a bottom of sand and broken shells, at the distance of a quarter, half, and one mile respectively. In fine summer-weather a vessel might anchor off this place and obtain water, wood, and supplies of fresh provisions; but it is otherwise of no use to shipping. Seven families of fishermen and farmers resided here when I visited it, in 1829, and had plenty of cattle, sheep, and swine.

Great Pond.

GREAT POND.—Great Pond is a small creek, which affords shelter only to boats, and will be known by the houses and stages of the fishermen. It is sixteen miles N. W. ½ N. from Great Fox River, and there are no more houses along the coast, till we arrive at the river St. Ann.

Magdalen River.

MAGDALEN RIVER.—The next place worthy of notice is the Magdalen River, which is twenty-four miles from Great Pond, in a N. W. ½ W. direction, nearly. The mouth of this river is on the N. W. side of a sandy bay, and close under Cape Magdalen, its N. W. point, which is rocky, with cliffs of moderate height, and juts out a very short distance from the range of hills which form the coast line. A reef of rocks, which dry in part at low water, extends from Cape Magdalen about two hundred fathoms to the S. E., parallel to the coast, and shelters the entrance of the river from the Northerly winds. The river is thirty yards wide at the entrance, and seven feet deep at low water; within, for a very short distance, there are ten feet, over a clean bottom of fine sand. Farther up the river becomes shallow and rapid, winding its way through a romantic valley between the mountains. Thirteen feet of water can be carried into this river at spring tides, so that it is a considerable stream, and is occasionally visited by schooners from thirty to eighty tons, which warp in when the sea is smooth and the weather fine. The bay is not deep, being merely a gentle curve, with a sandy beach for about a mile to the S. E. of the river. Vessels may anchor here in seven fathoms, over a bottom of sand, fine gravel, and broken shells, at the distance of three fourths of a mile from the sandy beach, and from the N. W. point bearing W. N. W. The shelter is from W. N. W. round by S. W. and S. to E. S. E., but it is only a fine-weather anchorage, which may be of use to vessels wanting wood and water.

During two occasions on which I anchored here, I observed a regular alternation of the stream of flood and ebb. The flood extended about one mile and a half from the shore, running one knot, and at the line of junction with the almost constant downward current there was a strong ripple.

We extract the annexed manly testimonial to the merits of Captain Bayfield's predecessor, in his arduous undertaking, from Captain Bayfield's book. (E. & G. W. B.)

"Our survey, from the Straits of Belle Isle Westward, ended at Mistanoque inclusive, and recommenced again at Grand Mecatina. The intermediate coast was surveyed in 1768 by Mr. Michael Lane, R. N. We examined it with his original chart in hand, and although his survey does not possess the exactness which superior instruments and an improved system of hydrography give to modern maritime surveys, yet it is such as to confer honor on his memory, being quite sufficiently correct for the usual purposes of navigation."

Chaleur Bay. CHALEUR BAY.—The magnificent Bay of Chaleur is the largest in the gulf of St Lawrence, being twenty-five miles wide, on the S. W. ½ S. line, across its entrance, from Cape Despair to Miscou Island; but the entrance is more generally considered to be at Point Maquereau, from which the N. point of Miscou Island bears S. S. E, fourteen and a half miles. The depth of the bay, from Miscou to the entrance of the Ristigouche is about seventy-five miles, and its circumference, reckoning from Cape Despair round to Miscou, is one hundred and eighty-five miles.

Easy Navigation. The navigation is by no means difficult; for, although there are some dangerous shoals, yet there is everywhere good warning by the lead.

Tides. The tides are regular within the bay, and seldom amount to the rate of one mile per hour; but outside, off its mouth, and especially on the Miscou Banks, the currents and tidal streams are so irregular, in both strength and direction, that nothing definite can be said of them; and their dangerous effects upon the course of vessels can only be guarded against by the constant use of the deep-sea lead, and attention to the soundings.

Miscou Island Light. On the N. E. point of Miscou Island, there is a fixed red light, seventy-six feet above the sea. A shoal extends about three miles in a N. by E. direction from the light. On other bearings the light may be approached from the Eastward to within a mile from the shore.

Vessels bound for the Bay of Chaleur, and approaching its entrance in a dark night or foggy weather, should not attempt to make Point Maquereau, which is so bold that there is little or no warning by the lead; but should strike soundings on the Miscou banks, which extend nearly twenty-two miles to the Eastward of Miscou Island. A cautious lookout should be kept for the numerous fishing schooners which are generally riding on the banks; and the Northern edge of the latter, being followed in thirty fathoms, will safely conduct vessels past the N. point of Miscou, at the distance of four miles, and form a sure guide up the bay. The bank of soundings off the N. shore is also sufficiently wide to guide vessels everywhere within Point Maquereau; nevertheless, in a dark night and bad weather, vessels had better not approach the shore much nearer than thirty fathoms in any part of the bay to the Eastward of Carlisle Point. The soundings are generally of sand and shells on the banks, while in the central parts of the bay black and brown mud prevail, with depths between thirty and fifty fathoms. Within, or to the Eastward of Carlisle Point, and the opposite Bay of Nipisighit, the depth of water decreases to less than thirty fathoms, but there is still sufficient warning everywhere by the lead, quite up to the head of the bay, as will be seen in the chart.

Soundings in Entrance.

Point Maquereau. POINT MAQUEREAU is of bold and dark-colored craggy rocks. It is also wooded, and rises to about two hundred feet above the sea.

Paspebiac. PASPEBIAC, twenty-one and three fourths miles W. by S. from Point Maquereau, is an excellent roadstead, and the principal fishing establishment in the Bay of Chaleur. A triangular point of sand and shingle beach, enclosing a lagoon, extends out from the main land to the distance of a mile, and has on its west side the extensive white buildings of the establishment of Messrs. Robin & Co., of Jersey, together with numerous huts belonging to the fishermen.

Carlisle. CARLISLE is three and a half miles to the Westward of Paspebiac, and its jail and court-house, standing on the ridge in rear of Carlisle Point, are seen from the anchorage. Carlisle Point, which is wooded, and consists of sand, bears W. by N. three and a half miles from the sandy point of Paspebiac, and the roadstead is between them, but much nearer the latter. In this excellent and convenient anchorage vessels are sheltered from the W. round by N. and E. to S. E.; and although it is completely open to the S. W. winds, which send in a very considerable swell, yet the ground is so good that the Jersey vessels ride here moored all through the season without accident. The best anchorage is in six fathoms, clay bottom, with Robin's flag-staff and Signal Tree Point (the extreme to the Eastward seen over the sandy point) in one, bearing E. and the extremity of the sandy point S. E. A sandy spit extends under water rather more than half a mile to the Westward from the sandy point, and nearly as far to the Southward likewise. This assists in sheltering the roadstead, and is the only danger to be avoided in approaching it.

Paspebiac Roadstead.

Sandy Spit.

Directions. In running along the land from the Eastward, the low sandy point of Paspebiac, with its white stores and numerous huts, will be seen stretching out from the main land to the Southward. When the vessel has passed Nouvelle River, and is approaching within two or three miles of the point, observe the following directions: Keep the Summit of Daniel Hill open to the Southward of Nouvelle Point until the Roman Catholic church opens to the Westward of the S. extremity of the sandy point bearing N. by E. ½ E. Then haul up for Carlisle Point, with the lead going, till the above church and Robin's flag-staff (at his Northmost large white store) come in one, bearing N. E. ½ N. Haul in now boldly for the anchorage, only taking care not to open the same church out to the Eastward of the flag-staff until Single Tree Point (the extreme to the Eastward) is well shut in behind the sandy point, when the vessel will be within the spit, and a berth may be chosen by the lead at or near the position already pointed out. There is an excellent

watering-place at a stream which will be seen falling from the cliffs just to the Westward of the outlet of the lagoon. Supplies of all kinds may be obtained here, but to a limited extent. There is nothing in the way when approaching this anchorage from the Westward, but in standing out from it with a Westerly wind, and especially with a lee tide, the marks for clearing the spit to the Westward must be carefully attended to. The Roman Catholic church should not be opened out to the Eastward of Robin's flagstaff until Single Tree Point is well open to the Southward of the sandy point; nor should the vessel bear up to the Eastward of S. before Daniel Hill comes open to the Southward of Nouvelle Point.

Cascapediac Bay.

CASCAPEDIAC BAY, situated on the Northern side, and near the head of the Bay of Chaleur, is of very considerable extent, being thirteen miles wide, and five or six deep. At its head, is the Cascapediac River, a very considerable stream, but which can only be entered by boats, in consequence of the extensive shoals of sand and mud, which dry out two miles from its entrance, and occupy all the head of the bay.

Black Point.

BLACK POINT, bold and rocky, and rising to the estimated height of four hundred feet above the sea, is the Eastern point of the bay, bearing from Bonaventure Point N. W. ¼ N., sixteen miles. The shoals commence about one mile and a half to the Northward of Black Point, and at Indian Point, on the E. side of Little River, they extend out to the Westward nearly one mile and three fourths, sheltering the anchorage from S. E. winds.

Duthie Point.

DUTHIE POINT, the E. point of entrance to the Cascapediac River, bears N. N. W. ¾ W., five miles from Black Point. One mile to the Eastward of Duthie Point, and in the bay, between it and Little River, stand the church and village of Richmond.

Anchorage.

The anchorage, where the timber-ships moor in three fathoms, is off the village, with Duthie Point bearing N. three fourths of a mile, the church N. E. ¾ E., and Black Point S. E. ¾ S. Vessels may anchor farther out, in four, five or six fathoms, on the same line of bearing from the church, or to the Westward of it, but they will not then be so well sheltered from Easterly winds.

Indian Point Shoal.

Directions.

In running for this anchorage from the Eastward, observe the following directions: The marks of the Southwestern, or outer edge of the shoal off Indian Point (already mentioned as sheltering the anchorage from S. E. winds), are Red Point, a little open to the Southward of Black Point, bearing S. E. ½ E. Keep these marks, therefore, well open, as you run to the Westward, with the lead going, and go no nearer to the shoal than five or four fathoms, until the church bears N. E. by E. Then haul boldly in, steering directly for the church, until you arrive at the anchorage already pointed out.

Carleton Road.

Tracadigash Point and Lagoon.

CARLETON ROAD.—This name has been given to an excellent and capacious anchorage safe in all winds. It is situated on the W. side of Tracadigash Point, which consists of sand, enclosing a shallow lagoon, capable of admitting boats, or very small craft, at high water. On the Northern shore of this lagoon stand the church and village of Carleton, the latter extending to the Westward to the shore of the bay where the sand-beach of the lagoon joins the main land. A small stream, with a bridge across it, there enters the N. W. corner of the lagoon; and one mile farther to the Westward, near the commencement of the clay cliffs, another small stream will be seen, which is the watering place. Immediately in the rear of the village the Carleton Mountain rises abruptly to the height of one thousand eight hundred and thirty feet above the level of the sea—the hills of the range trending from it both to the Northward and Westward for many miles.

Carleton Mountain.

Vessels may choose their berth for anchoring anywhere in from five to six fathoms, remembering that although the sandy beach of Tracadigash Point is quite bold on the W. side within the spit, yet shoal water extends off the main land to the distance of nearly half a mile. The best berth, especially in Easterly winds, is in five and a half fathoms, mud, with Tracadigash Point bearing S. by E. ½ E.; Carleton steeple E. by S.; and the watering-place N. by W. ½ W.

Tracadigash Spit.

TRACADIGASH SPIT, of sand, and running out half a mile to the S. W. from the sandy point of the same name, is the only danger in the way when approaching this anchorage from the Eastward. Observe that Point Maguacha and the summit of Dalhousie Mountain in one, bearing W. N. W. ¾ W., pass the extremity of the spit in three fathoms. Therefore, to clear it, keep the mountain well open, or at night go no nearer than ten or nine fathoms. As soon as Carleton steeple comes in one with the S. W. extreme of Tracadigash Point, bearing N. E. by E., the spit will have been passed, and the vessel may haul in to the Northward, going no nearer than seven fathoms till the point bears to the Southward of E. The tides are weak in Carleton Roads, seldom exceeding one knot. Point Maguacha, of red sandstone cliffs, is the N. E. point of entrance of the River Ristigouche, and bears from Tracadigash Point, W. ¾ N., six and a half miles. In the N. W. corner of the bay between them is Nouvelle Basin and River, nearly dry at low water.

Tides.

Ristigouche River.

RISTIGOUCHE RIVER, from its entrance at Point Maguacha, to where islands,

shallows, and rapids, terminate the navigation for all but canoes or bateaux, is an estuary or inlet of the sea, varying in breadth, for the first seventeen miles, from one mile and a half to three miles. At that distance Campbell Town is situated on the Southern or New Brunswick shore, and at the foot of a remarkable conical mountain called the Sugarloaf.

Campbell Town.

Bathurst Harbor.

BATHURST HARBOR, at the mouth of the Nipisighit, is two hundred fathoms wide at the entrance between Alston and Carron points, which are of sand, with several stores and other buildings upon them. On Carron Point, which is on the S. E. side, there are two beacons, which, if kept in one, bearing S. W. ½ S., will lead in through the narrow channel over the bar in seven feet low water, or in fourteen feet high water in the best spring tides. The distance from the outside of the bar, in three fathoms, to the entrance of the river, is one mile and a half; and for the whole of that distance, the very narrow channel is between sandy shoals, nearly dry at low water, and extending from either side of the river's mouth. In the entrance between the sandy points, or rather just outside it, there are three and four fathoms; and here the vessels usually moor to take in timber, sheltered by the bar and sandy shoals on either side. Some of the smaller vessels load within the entrance; and some of the larger ones complete their loading outside the bar, where the anchorage, in six or seven fathoms, muddy bottom, is considered safe in the summer months, although the N. E. gales send in a heavy sea. Within the entrance there is an extensive and perfectly sheltered basin, nearly three miles long by two miles wide, but nearly all dry at low water, excepting the channels of the four rivers, which, after uniting their streams below Bathurst, flow through it to the entrance, forming by their junction what is called the Main Channel. On the Eastern side of the basin there is an islet called Indian or Bathurst Island. The town of Bathurst is well situated at the head of the basin, two and a half miles within the entrance, and on the point of land which divides the river Nipisighit from the Middle and North rivers.

The Bar.

Inner and Outer Anchorages.

The Basin.

Bathurst Town.

The depth of fourteen feet at high water in spring tides can be carried up to the wharves of the town, and in the main channel there are several places where vessels may lie afloat and load in fourteen feet at low water. The rate of the tides in the main channel is about two knots, and over the bar about one knot and a half. The stream sets fair in and out over the bar. There are good pilots for this river, and no one should attempt the bar without one, excepting in case of necessity.

Tides.

Pilots.

THE COAST OF NEW BRUNSWICK NORTH OF MIRAMICHI.

The course from the E. side of Miscou Island to the beacon on Point Escumenac is S. W. by S., and the distance from the N. point of Miscou to the beacon is fifty-eight miles.

Miramichi Bay.

MIRAMICHI BAY is nearly fourteen miles wide from the sand-bars off Point Blackland to Point Escumenac beacon, and six and a half miles deep from that line across its mouth to the main entrance of the Miramichi, between Portage and Fox islands.

Escumenac Point and Light.

POINT ESCUMENAC, the S. E. point of Miramichi Bay, is of peat, upon a very low sandstone cliff, and is wooded with spruce-trees. On it there is a light-house of wood, painted white, and showing a fixed light seventy feet above the sea, at high water. It is so difficult, especially for a stranger, to distinguish one point of this low coast from another, that this light-house is very useful to vessels bound to Miramichi, and making the land from the sea. It also points out the position of the very dangerous Escumenac Reef, which extends two miles out to the N. E. from the light-house to the three-fathom mark and two and two thirds miles to five fathoms, at low water. In the night-time, vessels should not stand nearer to this reef than ten fathoms.

Escumenac Reef.

Miramichi Bay.

THE BAR OF MIRAMICHI commences from the S. E. end of Portage Island, and extends across the main entrance, and parallel to Fox Island, nearly six miles in a S. E. by S. direction. It consists of sand, and has not more than a foot or two of water over it in some parts, at low spring tides. Near Portage Island there is water enough over it for small vessels, and there is a still deeper part near its S. E. end, where thirteen or fourteen feet could be carried over at the time of our survey; but heavy gales, doubtless, alter the disposition of the sand on this bar, although they are said not to have altered the ship channel within the memory of any of the pilots. The S. E. extreme of the bar will be cleared by keeping the church at French Village in the centre of Fox Gully, bearing W. ½ S., and the church in one with the high-water S. point of Fox Island, bearing W. by S., will lead over the S. E. end of the bar in two and three fourths fathoms, but very close to two fathoms. The church will not be easily made out by strangers, being a wooden building, only distinguished from the barns near it by the belfry. A black buoy is moored in three fathoms at low water on the inner or S. W. extreme of the bar, and must therefore be left to the Eastward, or on the right, going in. About a mile N. N. W. from this black buoy, there is a red buoy moored in the same depth of water on the Lump, which is a shoal with two fathoms least water on the W. side of the chan-

Mark for S. E. Entrance.

Black Buoy.

Lump Shoal and Red Buoy.

nel. There is no passage for large vessels between the Lump and Fox Island, but there are holes with four fathoms water, and a channel of two and a half fathoms at low water, which might be rendered available by buoying if it were requisite but which is too narrow and intricate without such assistance. In its present state, therefore, and for large vessels, the whole of this part may be considered as one shoal, extending one and one fourth miles out to the Eastward, from the shore of Fox Island to the red buoy of the Lump; and thus overlapping the S. W. point of the bar, where the black buoy is placed, it renders the channel crooked and difficult. The narrowest and shallowest part of the channel, until we come to the bar of the Horseshoe, which will be presently mentioned, is in the line from the black buoy to the S. E. end of Fox Island, being less than half a mile wide, with three and three fourths fathoms at low water in ordinary spring-tides. In heavy Easterly gales, in the fall of the year, especially during the ebb-tide, there is a dangerous and heavy breaking sea here, which has in several instances proved fatal to vessels, rendering them unmanageable, so that they have been cast ashore on the islands.

Clear Channel.

Within the Red Buoy of the Lump, which must be left to the Westward, the channel is clear and straight, about five hundred fathoms wide, and from four to seven fathoms deep all the way to another red buoy on the same side of the channel, and moored in four and a half fathoms and seventy fathoms from the edge of the shoal. This is the Red Buoy of the Spit, a sandy shoal with only a few feet of water upon it, extending half a mile from Fox Island. The course and distance from the Red Buoy of the Lump to the Red Buoy of the Spit, is N. W. ¾ N., three miles. Both the Lump and Spit are steep shoals, but between them a vessel may run along, or even work on the S. W. side of the channel, in four or three fathoms by the lead. On the opposite or N. E. side of the channel the bar is extremely steep, and the leading mark for it the Easternmost white house of Burnt Church village (on the N. side of the bay) just open to the S. W. of Portage Island, bearing N. W. ¾ N., is neither certain (since another house may be built) nor readily distinguished by a stranger. The shoal of the Spit trends due W., not quite a mile, from the red buoy toward the N. point of Fox Island, where the shoal water extends only one hundred fathoms off shore. On the N. point of Fox Island two small beacons will be seen on the sand-hills, the one red and the other white; these kept in one, and bearing S. E. ¾ E., lead in the deepest water, from two and one fourth to two and a half fathoms, to the outer red buoy of the Horseshoe.

Spit and Red Buoy.

Fox Beacons

Horseshoe Shoal.

THE HORSESHOE SHOAL consists of sand and gravel, with three feet least water, and not more than a fathom over many parts of it. It is of great extent, being three miles long, N. and S., and two and one fourth miles wide. The N. E. extreme of the Horseshoe is nearly joined to the shoals of Portage Island, there being only a narrow and intricate channel left, which is never used. There is a good anchorage in four or five fathoms between the Horseshoe and the S. end of Portage Island, where vessels which draw too much water to cross the inner bar, may safely anchor during the summer months. To the Southward the Horseshoe is separated from the shoal, which connects together Fox, Egg, and Vin islands, by the very narrow ship-channel, which in one part is only one hundred and eighty fathoms wide, and two and one fourth fathoms deep. This is called the Horseshoe Bar, or Inner Bar, over which eighteen feet of water can be carried in ordinary spring-tides. The S. side of the Horseshoe is marked by three red buoys and one black buoy. The outer or Easternmost buoy has been already mentioned as lying in one with the two beacons on Fox Island. The other two red buoys bear W. by S. from it, the whole three lying in a line in the space of half a mile. The black buoy lies on the S. W. extreme of the Horseshoe, and bears S. W. by W. ½ W., two thirds of a mile from the Westernmost red buoy. These buoys must be all left to the Northward, the best water being within the distance of half a cable from them. Near the black buoy is the usual place where vessels bound to sea anchor to wait for a wind, or for a high tide to cross the Inner Bar. The S. E. point of the Horseshoe extends three hundred and fifty fathoms farther out to the Eastward than its outer red buoy; and there is moreover a patch or mound of sand or gravel, with only ten feet water, lying off the S. E. point of the Horseshoe to the S. E., so as to narrow the navigable channel between it and Fox Island to a third of a mile. The use of the two small beacons on the N. point of Fox Island is to enable a vessel to avoid that mound, which renders the passage of the Horseshoe Bar so difficult for a large vessel: but I believe there is as deep, and a more direct, although a very narrow channel, to the Northward of the mound, and which would be rendered safe by placing buoys upon it, and upon the S. E. point of the Horseshoe.

Horseshoe Bar and Buoys.

Horseshoe Patch.

Horseshoe Bar.

Tides.

The stream of the tides is not strong in the open bay outside the bar of Miramichi. The flood draws in toward the entrance as into a funnel, coming both from the N. E. and S. E. along shore from Tabisintac, as well as from Point Escumenac. It sets fairly through the ship-channel at the rate of about one knot and a half at the black buoy, increasing to two or two and a half knots in strong spring tides between Portage and Fox islands, where it is strongest. The principal part of the stream continues to flow Westward, in the direction of the buoys of the Horseshoe, although some part of it flows to

the Northward between that shoal and Portage Island. The ebb sets out in the opposite direction, being strongest at the buoys of the Horseshoe, and in the entrance between Fox and Portage islands, where in spring tides it often attains to the rate of two and a half miles per hour, and is said to be still stronger when the waters are high in the spring of the year. The ebb sets out to the Eastward from the buoy of the Lump over the tail of the bar, and should be guarded against in light winds.

The winds affected the tides very considerably, and, together with the smallness of the rise, rendered it extremely difficult to make correct deductions from a number of observations so limited as those which we were able to obtain. The Easterly winds always make high tides, and sometimes cause the neap to be higher than the spring tides. The time of high water on the full and change days at the S. W. end of Vin Island was observed to be at about five and three fourths hours, and the pilots say that it is about five hours on the bar. The rise of an ordinary spring tide is five feet, and of neap tides three feet; but the rise is at all times so uncertain that we have observed neap-tides which did not rise above a foot, and spring-tides not above two feet. It must also be remarked that the A. M. tides rose higher, in general, by two feet, than the P. M. tides in the beginning of August, when alone we had an opportunity of observing them.

Miramichi Tides.

The Bar of Miramichi should never be attempted by a large vessel, or by persons not thoroughly acquainted with it, without a branch pilot, if one can be procured.

Pilot.

THE COAST OF NEW BRUNSWICK FROM POINT ESCUMENAC TO BAY VERTE INCLUSIVE.

Sapin Ledge.

THE SAPIN LEDGE, of sandstone, and with twelve feet least water, is very dangerous, lying directly in the way of vessels running along shore. It should not be approached nearer than nine fathoms in the night-time: and at all times it should be remembered, that the five-fathom line is distant from it only about two cables. This ledge is one mile and one fourth long, E. and W., by about half a mile wide, reckoning from three fathoms to three fathoms; and its Eastern or outer extremity bears S., six miles from Escumenac light, and E. S. E. ½ E., two and a half miles from Point Sapin. There is a depth of three and a half fathoms between it and the last-named point.

From Point Sapin to Richibucto Head, the course is S. ¾ W., and distance nearly twenty miles across. There is a fixed light, seventy feet high, on this head.

Light.

Richibucto River.

RICHIBUCTO RIVER is of very superior importance to those which have just been described; being, among the rivers on this side of New Brunswick, inferior only to the Miramichi, either in the distance to which it is navigable, or in the depth of water over its bar. It is annually visited by a considerable number of vessels for cargoes of lumber.

Richibucto Bar very dangerous.

THE BAR of the RICHIBUCTO is extremely dangerous, especially to large deeply-laden and dull-sailing vessels outward bound in the fall of the year. Taking advantage of the highest spring tide, and sailing at high water, if the wind becomes unsteady or too high, they are almost certain to be thrown ashore by the ebb-tide, on the South-eastern part of the bar; and should a N. E. gale occur, to be destroyed before they can be got off again. To take a ship in with a leading wind and flowing tide, is attended with no other difficulty than that which arises from the narrowness of the channel but in all cases the assistance of a pilot is absolutely necessary, since the bar is subject to occasional changes from the effect of heavy gales. We found the branch pilots of Richibucto able, intelligent, and attentive to their duties. They keep a good lookout for vessels from the beacon, at the mouth of the river. The bar extends from the N. beach for two miles to the E. S. E., parallel to the S. beach; there is a rock in the Eastern part of it, but the remainder is of sand, dry at low water. No part of this bar extends to seaward so much as a mile from the shore, and it may be safely approached by the lead to six fathoms, at any time of the tide; but for the purpose of anchorage nine fathoms is a better depth, the bottom being there of fine brown and gray sand, affording far better holding-ground than farther inshore. The situation of the narrow channel over this bar (one mile and a half E. S. E. from the river's mouth) is indicated by two white beacons on the S. beach, and by a large black buoy moored off it in three and three fourths or four fathoms at low water, with the two beacons in one, bearing, (in 1839) W. S. W. ½ W. distant not quite a mile. These beacons in one always lead in over the bar, being shifted as required almost every spring, in consequence of changes in the channel effected by heavy N. E. gales. The N. beacon, which stands on a sand-hill, thirty feet high at the S. extremity of the N. beach, is large and white, being intended to point out the situation of the river to vessels many miles out to sea. The depth of water over the bar is nine feet at low water, or thirteen feet at high water, in ordinary depth.

Pilot.

Anchorage without the Bar.

Bar Beacons.

Bar Buoy.

The ordinary spring tides rise four feet, and the neap tides two and a half feet, at the N. beacon. On the day of the full moon in July there was only one high water, at 3h. 30m. A. M., and one low water, at 4 P. M. But toward the time of neap tides, two high waters in twenty-four hours become apparent for a few days. There would seem

to be two interfering tides, presenting phenomena which it would require accurate and long-continued observations to explain. The rate of the tides in the river is from one and a half to two knots.

CAPE JOURIMAIN, the N. extreme of the Jourimain Islands, forms the extreme point of land to vessels running through the Strait of Northumberland, either from the Eastward or Westward. It bears S. E. by E. ½ E., six and a half miles from Cape Bruin; and there is good anchorage in the bay between them in five fathoms, sandy bottom, and in winds from the S. E. by E. round by S. to W. by N. The islands are connected together, and with the main land, by sand-bars and marshes; but still they appear as islands when seen from a distance sufficient to sink the sand-bars below the horizon. *Jourimain Islands.*

THE JOURIMAIN SHOALS are extremely dangerous to vessels running at night without their leads going; they commence at Peacock Cove, off which there is a patch of three and a half fathoms, two miles off shore, as will be seen in the chart. They extend from Cape Jourimain one mile and a half to the N. N. W.; and there is a patch of four fathoms, one mile and three fourths N. from the same point. From their N. W. extreme they extend four and a half miles to the S. E. They are of sandstone, thinly and partially covered with sand; and their S. E. point, a narrow ridge with only six feet at low water, and distant one mile and three fourths from the shore, is the most dangerous, because the boldest part of the shoals. It should not be approached nearer than nine fathoms in the night-time; but farther Westward the shoals may be approached, with proper caution, to six fathoms at low water. To the Southward of these shoals, and between them and the Tormentine reefs, there is very good anchorage with Westerly winds, in from five to six fathoms, the bottom being of sand, with clay underneath. *Jourimain Shoals.*

THE TORMENTINE REEFS are extremely dangerous, and are rendered doubly so by the strong tides. They extend off Indian Point rather more than three miles to the E. S. E., and there is rocky ground with four fathoms fully a mile farther off shore. The part of these reefs which dries at low water is very small, and bears E. S. E. ½ E., two and three fourths miles from Indian Point. It lies about one hundred and fifty fathoms to the Southward of the line joining Cape Spear and the S. side of Ephraim Island, and the whole of that island open to the Southward of Cape St. Laurent will clear it more than a mile to the Southward: but these marks are not of much use, nor are there any others that can be depended upon, for the N. extreme of the trees of the inner Jourimain Island, and the S. extreme of the trees of the outer Jourimain Island touching, which is the mark that now leads well clear of the reefs to the Northward, will change as the woods are cleared away. The only sufficient guides, therefore, are the lead and the chart. Vessels running through the strait during the night, or at any time, without a commanding breeze, should not approach the reef from any direction between N. and E. nearer than nine fathoms; for the flood-tide sets over it to the Southward, into the Bay Verte, at the rate of three knots, causing a great rippling over the part that dries, and generally indicating its position. Nearly midway between the dry part of the reef and Indian Point there is a patch of rocks with seven feet at low water. Small craft carry a depth of two and a half fathoms, at low water, through between that patch and Indian Point, and often take shelter under the latter in Northerly winds; but large vessels, wishing to do the same, must run round outside the whole of the reef, and will find the soundings indicated in the chart a sufficient guide for the purpose. *Tormentine Reefs.*

BAY VERTE is nine miles wide across its entrance, from Indian Point in New Brunswick to Coldspring Head in Nova Scotia, but contracts to the breadth of two and a half miles near its head. *Bay Verte.*

THE RIVER TIGNISH is the most considerable stream in the Bay Verte, which it enters on the S. side, near its head. It has only three feet depth of water, in a very narrow channel, when the tide is out; and it is approached by a narrow channel, from three to seven feet deep, through flats of mud and weeds, which dry out a mile from its mouth. *Tignish River.*

There are thriving settlements on either side of the Bay Verte.

SPEAR SHOAL has a patch of rocks with ten feet least water near its E. end, and from fifteen to eighteen feet in other parts; it is a bank of sand and stones, resting on sandstone, about a mile long, in an E. and W. direction, and a third of a mile broad. From the shoalest part Cape Spear bears N. W. by N., one mile and two thirds, and Indian Point N. N. E., two and one fourth miles. The lead gives little warning in approaching this dangerous shoal from the Eastward, on which side there are from three and three fourths to four and one fourth fathoms close to it; but vessels will avoid it by coming into no less water than four and a half fathoms, as they pass it to the Southward. There are three and one fourth fathoms of water between it and Cape Spear. *Spear Shoal.*

About a mile W. N. W. from Spear Shoal, and S. W. by S. one mile and one fourth from Cape Spear, is Heart Shoal, with nine feet least water, and fifteen feet between it and the shore; but as it lies within the three-fathom mark, it will be sufficient to refer to the chart in addition to having pointed out its position. *Heart Shoal.*

Laurent Shoal.

LAURENT SHOAL, of rock and sand, with sixteen feet least water, is about three fourths of a mile long by half that breadth. On the shoalest part Cape St. Laurent bears N. W. by N., two and a third miles, Ephraim Island N. W. ½ W., Indian Point N. E. by E. ¼ E., and Coldspring Head S. S. W. ½ W. This shoal is also most bold on the E. side, where there are four and one fourth fathoms close to it.

Aggermore Rock.

Ephraim Island.

Ephraim Banks.

THE AGGERMORE ROCK, with eighteen feet least water, and bearing N. E. ½ E., two and two thirds miles from Coldspring Head, is, like Laurent Shoal, merely one of the shallowest points of an extensive rocky bank, which is thinly covered with mud and sand, and which extends out from Cape St. Laurent and Ephraim Island in a S. E. by S. direction, so as to leave a deep channel about two miles wide between it and Coldspring Head. At low water not more than three and a half fathoms could be safely reckoned upon in running between the Aggermore Rock and Laurent Shoal, or between the latter and the Ephraim Banks, extending off the Northern shore; and even that depth could only be insured by the assistance of the chart, for there are not more than nineteen feet in several parts of the banks.

Direction for Bay Verte.

Vessels bound up the Bay Verte, should therefore keep the Nova Scotia coast on board, running up in six and three fourths and seven fathoms, till they arrive off Coldspring Head, where, at the distance of about a mile and a half from the shore, they will find the water deepen to eight or nine, and even nearly to ten fathoms, as they pass to the Southward of the banks and shoals which have been described. After passing Coldspring Head about three miles, the depth of water decreases to less than five fathoms, and continues to shoal gradually, with mud and sand bottom, to the head of the bay. A reference to the chart will show the general extent of the shoal water off the shore; but the Boss Spit, which stretches three fourths of a mile out from the S. shore between Boss and Jackson points, and three and one fourth miles within, or to the N. W. of Coldspring Head is so dangerous as to require particular notice. It dries out to its edge, and is so steep to, that there is seventeen feet of water close to its outer point. Vessels should be careful not to go into less water than three and one fourth fathoms, until they have passed this sand-spit. Farther up the bay there is nothing in the way, excepting two patches of stone, with three and five feet water, at the distance of half and three fourths of a mile N. N. E. ½ E from Tignish Head. These are perhaps ballast heaps, of which there are several at the entrance of the channel of the river; but as these are all within the two-fathom line, they require no further notice.

Boss Spit.

Stony Patches.

GULF OF ST. LAWRENCE—NORTHUMBERLAND STRAIT—COAST OF NOVA SCOTIA.

Eastward from the Bay Verte there is no place of use to shipping for a distance of ten miles, or until you arrive at the contiguous rivers Philip and Pugwash, into which runs the bay between Lewis Head and Pugwash Point. The last-named point bears from the former E. by S., two and one fourth miles; and there are reefs off both of them, which render the approach extremely perilous to strangers, and which, therefore, we shall first notice.

Lewis Reef.

LEWIS REEF extends to the N. E., two and a half miles from Lewis Head; its outer part is composed of detached rocky patches, on which there are from fourteen to eighteen feet of water, with a greater depth between them; but the inner part is very shallow, and has as little as six feet of water at the distance of a mile and a half from the shore.

Pugwash Reef.

PUGWASH REEF stretches out from the point of the same name three fourths of a mile N. W. by W., and dries out about half that distance. There are rocky patches, with eleven and twelve feet of water three fourths of a mile off the point to the N. and N. E.; and others farther to the Eastward, a full mile out from the shore; moreover, there is an uneven, rocky ground, with a less depth than four fathoms, two miles off shore, and which renders it unsafe for a stranger in a large ship to go within the five-fathom line.

Pugwash Road.

PUGWASH ROAD, in the entrance of Pugwash Bay, affords excellent anchorage, in from sixteen to nineteen feet at low water, with sand and clay bottom, being sheltered by Philip Bar and Lewis Reef from W. and N. W., and by Pugwash Reef from E. and N. E winds. This anchorage is exposed to winds between N. N. W. and N. N.E., but the shallow water outside prevents any sea from coming in sufficient to endanger a vessel during the summer months.

To run for Pugwash Road from the Northward, the ship being in not less than five fathoms, proceed as follows: Bring the English Episcopal Church steeple at Pugwash so as to be seen over and only just within the W. extreme of the low cliff off Fishing Point (the E. point of the bay), bearing S. by E. ½ E.

Run toward these marks, taking care not to open out the church in the least to the Westward of the point until Bergeman Point (the S. point of entrance of the River Philip

bears S. W. by W., or until the depth decreases to three and a half fathoms at low water. The vessel will then be close off the N. W. end of Pugwash Reef, and the course must be changed to S. S. W. for three fourths of a mile, when she will be in from sixteen to nineteen feet at low water, with clay bottom, directly in the line joining Bergeman and Pugwash points, and with Fishing Point E. by S. ½ S., distant nearly half a mile. This is the best anchorage; but vessels may lie half a mile farther in to the Southward, or close off the bar, and in fourteen feet at low water. Still farther in the bay is all shoal, excepting the narrow channel which curves round its Eastern side, and leads to the harbor. To run for Pugwash Road from the Eastward, the vessel being in more than the low-water depth of five fathoms, bring Bergeman Point to bear S. W. by W., and steer for it until the church opens out to the Westward of Fishing Point, when immediately change the course to S. S. W., and, having run nearly three fourths of a mile, anchor in the same berth as before directed.

PUGWASH HARBOR, at the head of the bay and entrance of the river of the same name, is small, but perfectly secure, and has more than a sufficient depth of water for any ship that can pass the bar, on which the depth is fourteen feet at low water, in ordinary spring tides. Pilots are indispensable. *Pugwash Harbor.* *Pilots.*

It is high water at Pugwash, on the full and change days, at 10h. 30m., the ordinary spring tides rising seven feet, and the neap tides four feet. The rate of the tidal streams, which is greatest in the entrance of the harbor, does not exceed two knots, unless it may be the ebb in the spring after the melting of the winter's snows. In the roadstead it seldom exceeds a knot. *Tides.*

Nine miles E. S. E. from Pugwash Point brings us to Cape Cliff, and three miles farther S. E. to Oak Island, formerly called Fox Island.

WALLACE HARBOR is the finest on this coast, excepting Pictou, having sixteen feet over its bar in low water, in ordinary spring tides, which rise eight feet, so that it is capable of admitting very large ships. The entrance, two and a half miles W. S. W. ½ W. from Oak Island, and between two sandy spits, named Palmer and Caulfield points, is nearly two cables wide and six and a half fathoms deep; but the approach to this entrance over the bar, and through the bay for a distance of three miles, is by a crooked channel, which, although nowhere less than one hundred and sixty fathoms wide, is nevertheless difficult without the aid of buoys or sufficient leading marks. *Wallace Harbor.*

SADDLE ISLAND is low, wooded, three fourths of a mile long, in an E. S. E. ½ E. direction, and joined to the shore, from which it is distant in one part only one hundred and thirty fathoms, by shoals at low water. Its Eastern point bears S. E. by E., and is distant a long six miles from Oak Island. *Saddle Island.*

SADDLE REEF runs out from the E. point of the island one mile to the three-fathom mark, and is very dangerous, having on it a round-backed rock called the Washball, dry at low water, and distant one third of a mile from the island. There are only a few feet of water much farther out. In approaching this reef from the Northward, the soundings give little warning, but an excellent leading mark, namely Treen Bluff, just opens to the Northward of Saddle Island, and bearing W. ½ N., just clears it in four fathoms. The lead affords the only guide for clearing it to the Eastward, where it may be safely approached to six fathoms with care. *Saddle Reef.* *Washball Rock.*

MULLEGASH POINT, the N. point of Tatamagouche Bay, is one mile to the Southward of Saddle Island; shallow water extends from the one to the other, and off the point to the distance of a long half mile. *Mullegash Point.*

TATAMAGOUCHE BAY, two and one fourth miles wide at its entrance, between the last-named point and Brulé peninsula, runs in seven miles to the Westward, affording everywhere good anchorage, over a bottom of soft mud, but with insufficient depth of water for large ships far up the bay. For five fathoms at the entrance the depth decreases to three fathoms at the distance of one mile and a half up the bay, and to two fathoms at four miles, the remainder being all shallow, and in part dry at low water, with the exception of boat-channels leading to the basin and to Mill Brook. The only detached danger in this bay is a rock with seven feet least water, three hundred and fifty fathoms off the Northern shore, and two miles in from Mullegash Point. Amet Island and Mullegash Point touching, and bearing E. N. E., clear it to the Southward at the distance of one hundred and twenty fathoms. The extent of the shallow water off shore in other parts will be seen in the chart. *Tatamagouche Bay.*

A stranger may safely approach to the low-water depth of three fathoms in the outer part of the bay, and to two and a half fathoms farther in, but in entering should keep well over to the Northward to avoid the Brulé shoals, which will be presently mentioned.

TATAMAGOUCHE RIVER, in the S. W. corner of the bay, and five miles from its entrance, is approached by a very narrow channel through the flats, obstructed by oyster-beds, and only one foot deep at low water, in ordinary spring tides; nevertheless new ships of considerable burden are brought down it occasionally. *Tatamagouche River.*

BRULE PENINSULA is wooded, rather low, and united to the main land at its W. end by a low and marshy isthmus. *Brulé Peninsula.*

Peninsula Point. Its N. W. extreme, named Peninsula Point, bears S. ½ E. two and a four h miles from Mullegash Point, and has a reef extending from it four hundred fathoms to the N. W., in great part dry at low water, and so bold that there is little warning by the lead.

Brulé Point. BRULE POINT is one mile and a half farther to the Eastward, the intermediate Northern shore of the peninsula being nearly straight, and of clay cliffs eight or ten feet high, the whole appearing to a vessel in the offing like a low island in the centre of Amet Sound.

Brulé Shoals. THE BRULE SHOALS extend from Brulé Point one mile and one third to the N. They are rocky, with very irregular soundings, and nine feet least water not far from their outer edge. The N. and N. W. sides of these shoals should be approached very cautiously, for they are there extremely steep, having four or five fathoms close to the edge, and no good clearing mark. On the N. E. side the English Episcopal steeple at the River John just open to the Northward of Long Point, bearing S. E. ½ E., clears them in three fathoms; while on the E. and S. E. vessels may safely approach by the lead to three and a half fathoms.

Long Point.

Brulé Harbor. BRULE HARBOR runs in within the peninsula, two and one fourth miles, in a W. S. W. direction, and is nearly a mile wide, but the far greater part of this large space is occupied by flats of mud and weeds. There are fourteen feet on the bar at low water, and nineteen feet for a short distance within, but the channel soon becomes very narrow and divided into several branches. The anchorage outside of the bar, in three and one fourth fathoms and mud bottom, is the best sheltered of any in the sound, and a ship or two usually lie there to take in lumber every year. In the best berth Brulé Point will bear N. W. by N., with the Eastern end of Saddle Island showing open one point to the right of it; Conn's large white house* S. W., and Cape John N. E.

Anchorage.

John Bay. JOHN BAY, the next place in order to the Eastward, runs in nearly four miles to the S. E. from Cape John to Murphy Point, which is the sandy E. point of entrance of the river. It is free from detached dangers, but the shoals extending out from its shores are often very steep, and should not be approached nearer than the low water depth of three and a half fathoms, nor without due caution. Sandy shoals occupy the head of the bay, drying out nearly half a mile, and extending one mile and one fourth from the entrance of the river to the three-fathom line.

John River. THE RIVER JOHN has only one foot at low water over its bar of sand, and an irregular depth, from three to eleven feet, in a very narrow channel up to the bridge, a distance of nearly a mile.

Cape John. CAPE JOHN, the Northern point of John Bay, will be easily recognized by its sharp-pointed cliffs of sandstone forty or fifty feet high; and by two high rocks, always above water, on the inner part of the reef, which extends from it four hundred fathoms to the N. W. This reef is very steep, especially at its Western point, where there are nearly seven fathoms at low water, quite close to it, being a greater depth than occurs anywhere else near. Off the Northern side of Cape John, shallow water extends nearly half a mile, and as there are only fifteen or sixteen feet close within the three-fathom mark, large vessels should not approach nearer than the low-water depth of four or three and a half fathoms.

Amet Sound. AMET SOUND is very extensive, affording excellent anchorage for any number and class of vessels. The places described in the last article are all within this sound, Tatamagouche Bay being its Southwest, and John Bay its Eastern arm. Mullegash Point and Cape John, its Western and Eastern points of entrance, are more than four miles apart, but there are detached dangers outside, or off the entrance, which require to be described before directions can be given for entering by either of the three channels which they form.

Waugh Shoal. WAUGH SHOAL, from its position and steepness extremely dangerous, was not generally known before our survey. It is a rocky bank, nearly one mile and a fourth long by half a mile broad, with very irregular soundings, from three and a half to five fathoms, excepting toward its Northern end, where there is a patch of considerable extent with from two to two and three fourths fathoms; twelve feet being the least water, unless it may be in unusually low tides. In this shallowest part the shoal is very steep, and should not be approached from the Northward nearer than seven fathoms, but in all other parts vessels may approach to five fathoms at low water. There are no clearing marks for the Western side of this shoal, the lead and the bearing from the E. end of Saddle Island, N. E. ¾ N., are there the only guides. The N. E. side is just cleared in five and six fathoms, either by the Eastern extremes of Amet Island and Cape John in one, bearing S. E. ½ S., or by the Western side of Cape John and the English Episcopal steeple at the River John in one, bearing S. S. E. ¾ E. The S. E. side is cleared in four fathoms, by the Eastern extremes of Mullegash and Chambers Point in one, bearing

* Conn's House stands a short distance back from the Southern shore of the harbor, and about fifty feet above the sea; it is at present the only two-story house in that place, and has a large barn close to the E. end of it. It bears S. by W. one mile and three fourths from Brulé Point.

S. W. ¾ S. All these objects will be easily made out excepting Chambers Point, which, being very low, is at times difficult to distinguish from the high land behind it.

AMET ISLAND is very small, covering a space of two hundred and thirty fathoms E. and W., with an extreme breadth of forty fathoms. It is divided into two parts, of which the Western is the largest, presenting clay cliffs, on every side, excepting where they are joined together by a sandy neck. It is flat at top, bare of trees, covered with a coarse grass, and about twenty feet above the sea at high water. It was formerly much larger than at present, and the cliffs still continue to be undermined by every heavy gale and high tide; the frosts also aid in the work of destruction, so that the time cannot be very distant when there will only remain a reef of the highly-inclined sandstone which at present forms the base of the island, and dries out to the distance of about two cables, excepting on the Southern side, where boats can generally land at all times of the tide. Shallow water extends off this island three hundred fathoms to the Westward and will be cleared in not less than three and a quarter fathoms, if the English steeple at River John be not shut in behind the Western side of Cape John; but large ships should stand in only to six fathoms, and will take notice, that in every other direction shallow water extends from the island to far greater distances. *Amet Island.*

THE AMET SHOALS are rocky, with very irregular soundings, and are much more extensive and dangerous than have hitherto been represented. They extend nearly four miles from the island to the Eastward, and also to the S. E. two miles toward Cape John. In both directions there are rocky patches, with no more than five or six feet, a long mile out from the island; at a greater distance than two miles there are not less than sixteen feet, but there is a patch with that depth fully three miles to the Eastward of the island. The marks for this Easternmost patch are the N. extremes of Amet Island and Treen Bluff in one, bearing W. ¼ N. and Cape John S. W. ½ S. *Amet Shoals.*

Conn's House and Cape John bearing S. W., clear it about a quarter of a mile to the S. E., and in four fathoms; but to clear the extreme E. end of the shoal in a greater depth, Cape John must bear to the Westward of S. W. by W. The Northern side of these shoals is very steep, and should not be approached in a large ship, especially at night, to a less depth than ten fathoms. Treen Bluff and Saddle Island, touching, and bearing W. by N. pass along the Southern side in two and three fourths fathoms, but if kept distinctly open will clear it in three and one fourth fathoms. The dangers which have just been described form three passages into Amet Sound, all of which are wide, and deep enough for the largest ships.

THE WESTERN PASSAGE, between Saddle Island and Reef and the Waugh Shoal, is a mile wide, with irregular soundings, from five to eight and a half fathoms, the lesser depth being to the Southward of Waugh Shoal, where the bottom is rocky and uneven, while farther Westward it is of mud. The description of the dangers already given, with the bearings and leading marks for avoiding them, will enable any vessel which is furnished with the chart to safely run through this wide and clear passage with a fair wind. I shall add only the caution to beware of the E. end of Saddle Reef when hauling round it to the Southward; six fathoms is near enough until Treen Bluff is seen through between Saddle Island and the main, after which Mullegash Point may be rounded by the lead in any depth that may be convenient. The anchorage is everywhere good in Tamagouche Bay, regard being had to the size of the vessel and consequent depth required; but over toward the Mullegash side will be found best sheltered from N. E. winds. *Western Passage.*

If bound to Brulé Harbor, after rounding Saddle Reef, steer for Brulé Point, or a little to the E. of it, until the mark for clearing the Northeast side of the Brulé Shoals, namely, the English steeple, John River a little open to the Northward of Long Point, comes on; then change the course, and run toward those marks till Brulé Point bears S. W. by W., when you may haul in S. by W. or S. S. W., and run by the lead along the southeast side of the Brulé Shoals, in from three and a quarter to three and a half fathoms, until you reach the position which has been pointed out as the best anchorage outside the bar. A pilot, or a previous buoying of the channel, would be necessary to take the vessel into the harbor. If bounded to the anchorage off the bar of River John, it is only necessary to run up the middle of John Bay till the water shoals to three and a half fathoms, which is as near as a large ship should go, although distant one mile and a half from the river's mouth. Vessels of less but of considerable burden lie moored in two and a half fathoms half a mile farther in, for the convenience of taking in lumber. In beating through the Western Passage, the W. end of Saddle Island may be approached in five fathoms, but seven fathoms is near enough to its Eastern end. In the board toward Saddle Reef, take care to tack with Treen Bluff open to the Northward of Saddle Island, and in the board to the Northward, toward Waugh Shoal, in five fathoms. When standing toward Amet Island, let the leading marks for clearing the shallow water off to the N. W. and S. W. be attended to. Within the sound, the directions and remarks already given, together with the chart, will afford sufficient guidance.

THE MIDDLE PASSAGE, between Waugh Shoal and Amet Island, is a long mile *Middle Passage.*

wide, from five fathoms to five fathoms on either side, clear of all danger, and from si to ten fathoms deep, with sand and mud bottom. An excellent leading mark for run ning through this passage with a fair wind, is Conn's House and Brulé Point in one bea ing S. by W.

With beating winds, the leading marks and directions already given for clearin Waugh Shoal and Amet Island, will divest this passage of all difficulty or danger.

Eastern Passage. THE EASTERN PASSAGE, between Amet Shoals and Cape John, is a long thre fourths of a mile wide, from three fathoms to three fathoms on either side, wit very irregular soundings, from three and a half to six fathoms, and with rock, re sand, broken shells, and mud bottom.

It is difficult to carry more than four fathoms through at low water. To safely tak this passage from the Eastward with a fair wind, bring Cape John to bear to the West ward of S. W. by W., or bring that cape and Brulé Point to touch, bearing S. W. by W ¼ W., and steer for them till Treen Bluff opens to the Southward of Saddle Island, whe change the course to W. ¾ S., which is for the mouth of the Tatamagouche Bay, and th vessel will sail nearly through the middle of the passage. There will be no dange from the Amet Shoals, if Treen Bluff be kept open to the Southward of Saddle Island nor yet from the shallow water off Cape John, if it be not approached nearer than fou fathoms, or at the utmost three fathoms and a half.

These last remarks apply also to the case of a vessel beating through this passage and in taking it from the Northward, with a scant Easterly wind, the clearing marks fo the E. end of the Amet Shoals will safely guide her.

Tides. It is high water on the full and change days, in Amet Sound, at about ten hours and the rise is from eight to five feet, according as it be spring or neap tides. The tida streams are very weak within the sound, setting regularly up the bays and rivers. I the Western Passage both tides in general set fairly through, the flood about W. by N and the ebb about E. by S., at rates never exceeding one knot and a half, and usually muc less. In the Middle Passage the ebb sets out to the Northward and Eastward less tha a knot; and the flood to the Westward, at the same rate, over the Waugh Shoals. I the Eastern Passage the ebb sets out to E. N. E., and the flood in the opposite directio the rates varying from half a knot to a knot and a half.

From Cape John to the West Gully of Caribou (fifteen miles S. E. by E. ½ E.) the coas is nearly straight, unbroken, and free from danger, the shoal water nowhere extendin beyond one third of a mile off shore. Cliffs of clay and sandstone, not exceeding th height of fifty feet, and in general very much lower, form the predominating feature but there is, nevertheless, good landing for boats almost everywhere in fine weathe From the West Gully to Caribou Point, four and one quarter miles farther to E. S. E., th coast is formed by the Northern shore of Caribou Island, appearing from a distance lik several islands; but on a nearer approach the wooded parts are found to be joined to gether by sand-bars. The shallow water extends off shore here to the distance of half mile, and five fathoms is near enough in a large ship.

Caribou Reef. CARIBOU REEF, of large stones, which dry out to the distance of three hundre fathoms from the shore, is very dangerous, the deep water approaching very near its N point and Eastern side. It stretches out from Caribou Point, to the N. N. E., half a mil to the three-fathom, and two thirds of a mile to the five-fathom line.

Doctor Island. DOCTOR ISLAND lies to the Southward of Caribou Point, forming two entrance into Caribou Harbor, of which the Northern, between two sandy spits, is four hundre fathoms wide but only four feet deep at low water.

Doctor Reef. DOCTOR REEF is very dangerous, stretching out from Doctor Point to the East ward one mile and a quarter, to the depth of three fathoms, and showing rocks dry a low water to the distance of half a mile.

Seal Rocks. To the Southward of this reef, and two thirds of a mile S. E. from Doctor Point, li the Seal Rocks, dry at low water, and from which the shallow water, forming the bar o Caribou Harbor, extends to Logan Point, the N. point of Pictou Bay.

Caribou Harbor. CARIBOU HARBOR, between Caribou and Doctor islands, is too difficult and dan gerous to be attempted without some special object, and then a pilot should be em ployed.

Tides. It is high water at Caribou, on the full and change days, at about ten hours; th *Diurnal Inequality.* *diurnal inequality* causing at times a difference of nearly two hours in the two tides o the same day, and also several feet in the height of the water. The rise of the highes of the two ordinary spring tides of the same day is six feet, and of neap tides four feet there are, therefore, fifteen feet over the bar at high water, ordinary spring tides.

Caribou Channel. CARIBOU CHANNEL has sufficient depth of water for the largest ships, and i breadth, at the narrowest part, exceeds a half or one third of a mile, according as w conceive it to be bounded on either side by the three-fathom or the five-fathom line but it is nevertheless difficult, because so crooked that no marks can lead through it whole extent.

The safest mode of running through this channel to the Westward, is to strike soun

ngs in six or seven fathoms on the edge of the shoal water off Doctor Island, and follow it to the N. W. until Mackenzie Head is shut in behind Logan Point, bearing S. ¼ W. Then steer from those marks, keeping the head just shut in, and they will lead across the deep water, and afterward along the Western edge of the Pictou Island bank out to sea. If the wind were strong from the S. W., with an ebb tide, it would be preferable to keep on the weather side of the channel, in which case the edge of the shoal water off Doctor Island should be followed farther to the N. W., until Logan Point is only a little open to the Eastward of Doctor Point, bearing S. ¼ E. Those points in one lead along the E. side of Caribou reef at the distance of a cable, and in four fathoms. Keep Logan Point a little open, and it will lead clear out to sea in not less than four and a half fathoms. The same marks and directions, taken in reverse order, will enable a vessel to take this channel from the Northward or Westward, it being only necessary to add, that she should not haul to the Eastward until the Hawk's Bill is well shut in behind Caribou Point, nor open out the former again after having shut it in, until the light-house at Pictou is open to the Southward of Cole Point: the light-house and Cole Point in one, bearing S. W. by W. ¾ W., being the mark for clearing the S. extreme of the Pictou Island Bank in five fathoms.

Pictou Island Bank. PICTOU ISLAND BANK extends from Pictou Island to the W. and S. three and one fourth miles, and was supposed to reach across the whole distance of four miles to Caribou Point, before the channel last described was known. It is of a very irregular outline, of great extent, and of sandstone thinly covered with sand, gravel, mud, and broken shells. The depths are as irregular as the nature of the bottom, being from two and three fourths to six fathoms, excepting on the shoal now to be mentioned.

Middle Shoals. THE MIDDLE SHOALS are a chain of rocky patches, with eleven feet least water, stretching across the Northern part of the bank a mile and one fourth, in a W. by S. direction: so as to approach within half a mile of the Caribou channel on the one hand, and within a mile and one fourth of the W. point of Pictou Island on the other. I have little doubt that at least three and one fourth fathoms at low water can be carried through between these shoals and Pictou Island, although the very irregular soundings forbid absolute certainty. Rogers Point, and West Point (Pictou Island) bearing E. S. E. ¼ E., will clear them to the Northward in four fathoms, but large ships had better not approach them on that side nearer than seven fathoms.

Pictou Island. PICTOU ISLAND, four and a fourth miles long E. and W., and one mile and a fourth wide, is of clay and sandstone, rising in the central parts to the extreme height of one hundred and fifty feet above the sea. It is wooded on the Northern side, but there are settlements and farms along its Southern shore. Low cliffs form its outline, with the exception of several small bays, and Rogers Point, on the S. side, which is of sand, and affords the best landing for boats.

West Point. WEST POINT may be passed in three fathoms within half a mile; but on either side of the W. end of the island there are rocks nearly dry at low water, just within the three-fathom line, and extending to the distance of three hundred fathoms off shore. The shallow water runs out occasionally to the same distance off the N. shore of the island, which should not be approached nearer than eight or nine fathoms in the night-time. The Southern shore may be approached to five fathoms; but off the E. point a dangerous reef, in great part dry at low water, runs out half a mile to three fathoms, and nearly a mile to the five-fathom line. There are nine fathoms not far off this reef, both to the Northward and Eastward; it should therefore be approached with caution at all times, but especially at night, and with a flood tide. In most of the old charts a shoal is laid down about four miles to the Eastward of Pictou Island, but we have not yet been able to discover any indications of its existence.

Light. On the E. end of Pictou Island there is a light-house fifty-two feet high; it is a square white tower. The light is fixed; below it is a small red light.

Pictou Harbor. Coal. PICTOU HARBOR, in every respect the finest on the Southern shore of the gulf Eastward of Gaspé, derives additional importance from the coal mines, valuable quarries of building stone, and finely settled country in its neighborhood. It is situated five miles to the Southward of Caribou Point, and at the bottom of a bay, which is one mile and three fourths wide at its entrance, from Logan to Mackenzie Head, and one mile and a half deep. Mackenzie Head will be recognized by its sharp pointed cliff of clay and sandstone, forty feet high, and by its bearing nearly S. from Logan Point.

Mackenzie Shoal. MACKENZIE SHOAL lies off the head to the N. E. by E., its outer edge being distant seven eighths of a mile. It is a rocky bank, nearly one third of a mile in diameter, with sixteen feet least water, and with nineteen or twenty feet between it and the shallow water to the Westward. Large vessels should not attempt to pass within or to the Southward or Westward of it. The marks for clearing it to the Eastward at the distance of a cable, are Caribou and Doctor points in one, bearing N. by W. ½ W., and the light-house in one with the Town Point at Pictou bearing W., will clear it to the Northward at the distance of two hundred fathoms. The shallow water extends along half mile out to the Northward from Mackenzie Head, and its edges in three fath-

oms, trends thence to the Westward toward the light-house, the whole bay on that sid being shoal, with ridges of sand drying out to a considerable distance from the shore a low water. In the bay, between Mackenzie Head and the light-house, and on the W side of Powell Point, is Boat Harbor, the entrance of an extended inlet or lake full o mud and weeds, and which boats can traverse only when the tide is in. On the opposit or Northern side reefs extend off Logan Point to the E. and S. E., a long half mile to th line of three fathoms. The light-house and Cole Point in one, bearing S. W. by W. W., lead over the Southeastern extreme of these reefs in fourteen feet at low water, bu vessels should not go nearer than four fathoms. Cole Point, which is of clay and sand stone cliff thirty feet high, and lies a short mile farther in or to the S. W. from Logan Point, has also a reef stretching out to the S. E., one third of a mile, and the shallow water continues from it Westward to the commencement of London Beach, on the N side of the entrance of the harbor.

Boat Harbor.

Cole Point.

Pictou Light-house. The Light-House, of wood, painted vertically with red and white stripes and show ing a fixed light sixty-five feet above the sea, stands close to the water, at the extremit of the sandy spit forming the S. side of the entrance.

It is lighted when the bay is free of ice, and has below the lantern a small re light.

Pictou Bars. The distance across the harbor's mouth from the sandy spit to the London Beach is tw hundred and twenty fathoms, and seven fathoms deep; but the channel over the inne bar is much narrower, and has, besides, a turn in it, which, together with the necessit of knowing exactly the set of the tides, renders a pilot indispensable in a large ship. Ve sels running for the harbor must first pass the Outer Bar, which stretches from Logan Point to Mackenzie Head, and has twenty-one feet at low water, over a bottom of sand After passing this bar, the depth increases to four, five, and six fathoms in the distanc of about a mile, and then suddenly decreases to nineteen feet on the Inner Bar, which i also of sand, and distant about four hundred fathoms from the light-house. After pass ing this inner bay, which is not above a long cable wide, the water continues deep to th entrance of the harbor. There is very good anchorage between the bars, although ex posed to N. E. winds, and also in Pictou Road, which is outside of the outer bar, an where the depth is five fathoms, with clay and mud bottom. Vessels running or beatin up to Pictou Road at night, will find the soundings indicated in the chart sufficie guidance, when keeping the Southern shore aboard with the prevailing S. W. winds and on the opposite sides, or with Northerly winds, will have the advantage of the fol lowing excellent leading marks: Pictou light can readily be seen in a clear night fro a distance of twelve or fourteen miles, and when in one with Cole Point bearing S. W by W. ¾ W., clears the reef of the E. end of Pictou Island, at the distance of a long hal mile; and also the Southern extremity of the Pictou Island Bank in five and one fourt fathoms; therefore, if beating, tack in the board to the Northward the instant the ligh begins to disappear behind Cole Point, and if running keep the light just open to th Southward of Cole Point bearing W. S. W., until you strike soundings in the low-wate depth of five fathoms, on the edge on the bank off Logan Point; then follow the sam depth about a mile and a half to the S. W., taking care not to bring the light to bear t the Northward of W., and the vessel will be in safe anchorage in the road, where sh may wait for daylight, or a pilot, according to circumstances. The branch pilots o Pictou are for the most part able and experienced men, and are always on the lookou for vessels. Although nineteen feet at low water, in ordinary spring tides, *can* be carrie over the inner bar, yet the aid either of buoys, or of an able and experienced pilo would be required to insure that depth; but seventeen feet may be safely reckoned upo if the following brief directions are strictly followed; and the greater depth will be ca ried in, if the endeavor to follow them exactly has been successful: Having a fair wind and being farther out than Mackenzie Shoal, the position of which has been pointed ou bring the light-house in one with Town Point at Pictou, bearing a degree or two to th Southward of W.; or, which will be the same thing, with Smith Point the extreme o the land on the same side beyond the town. Run with those marks on until Logan an Cole points come in one, bearing N. E., when instantly sheer a little to the Northwar sufficiently to bring Town Point in one with the N. extreme of the Sandy Spit. Kee the last-named marks exactly in one, until the Roaring Bull comes in one with Macken zie Head, bearing S. E. by E. ½ E., when change the course smartly and run from tho marks, keeping the Roaring Bull only just in sight until the N. extreme of Moodil Poin (the first point on the S. side within the light-house) opens out to the Northward of th Sandy Spit; then haul to the Westward, at first toward the S. W. extreme of Londo Beach, and afterward so as to pass midway between it and the Sandy Spit into th harbor.

Pilots.

Inner Bar.

A pilot would be indispensable in a large ship, with beating winds, and even smalle vessels must know the tides and the place well to beat in or out with safety.

Pictou Tides. It is high water at Pictou light-house, on the full and change days, at 10h.; and th rise is six feet in ordinary spring tides, and four feet in neap tides. With a good tide

is possible to carry twenty-five feet over the bar, and twenty-three feet may generally be reckoned upon; the harbor, therefore, is capable of admitting very large ships, but it must be remembered that I always speak of the best of the two tides in the twenty-four hours, for the diurnal inequality in the rise of the tides, which occurs more or less in all parts of the strait, is very strongly marked in this harbor. I may add, that in the month of August, when our observations were made, the A. M. tides were always the highest, following the inferior transit of the moon with N. declination in the first part of the lunation, and the superior transit with S. declination in the latter part. The true or corrected establishment, as nearly as we could deduce it from the observations of one complete semi-lunation, was at 9h. 45m., mean time.

From the light-house to the usual anchorage (in six or seven fathoms, mud bottom), off the Easternmost wharves at Pictou, the channel of the harbor is direct, nearly one third of a mile wide, deep enough for the largest ships, and clear of danger; the chart will therefore afford all further information that may be necessary; for the vessel will be in safety, and may anchor anywhere within the light-house.

Sufficient water may be obtained here to supply the largest ships. The best watering place is on the S. shore of the harbor, three fourths of a mile within its mouth, and there is another opposite the coal-loading place in the East River. *Water.*

THE TOWN OF PICTOU stands on the N. shore of the harbor two miles within the light-house. *Pictou Town.*

Resuming our survey of the coast to the Eastward, the Roaring Bull, mentioned in the direction for Pictou, and distant four miles from the light-house, first claims our notice. It is the cliffy N. point of a small peninsula, united to the main land at its Western end, by a sandy beach, and having at the other extremity the gully or entrance to Chance Harbor, dry, or nearly so at low water. A reef of sandstone runs out to the N. E. from the Roaring Bull, three hundred fathoms to the three-fathom line. *Chance Harbor.*

In the shoal bay between Evans and Colquhoun points, which are distant five and six and a half miles respectively from Pictou light-house, are two narrow, dangerous, and intricate channels, leading through shoals into Little Harbor. Of these channels the Eastern, and best, turns sharp in to the Eastward; within Roy Island, and close round the Sandy Spit at its S. W. extreme. The other is only a foot or two deep, and leads into the Western part of the harbor, which is several miles in extent, and broken into bays, coves, and picturesque points, but only fit for boats, being nearly all dry at low water, excepting the intricate and narrow channels. *Little Harbor.*

Off the N. shore of Roy Island, at the distance of three hundred and fifty fathoms, and three quarters of a mile N. W. ½ W. from Colquhoun Point, its E. extreme, lies Roy Ledge, a small rocky shoal, with nine feet, least water. There is also a reef of sandstone in great part dry at low water, running out from Colquhoun Point, half a mile to the Eastward; and as all these dangers have five fathoms close to them, vessels should be careful not to stand in less than six fathoms along this part of the coast. Roy Island, so called, is united at its East end to the main land by a long narrow sand-bar, stretching to the S. E. across the E. end of Little Harbor, to within three fourths of a mile of King Head, which is the W. point of entrance to Merigomish Harbor, and eight and a half miles to the Eastward of Pictou light-house. *Roy Ledge.*

MERIGOMISH HARBOR has fourteen feet at low water over its bar, and sufficient depth within for large ships; but it is so intricate and difficult of entrance, that no directions would enable a stranger to take his ship in safely; and the Northerly winds send so heavy a sea over the bar, that to get on shore going in would probably be attended with the loss of the vessel. The outer entrance of this harbor (three fourths of a mile wide) is between King Head and Merigomish Point, the latter being the W. extreme of Merigomish Island. The bar is formed by rocky shoals running out from these points of entrance, three fourths of a mile to the Northward. The channel over the bar, and leading in from it between the shoals, is a long cable wide; but the shoals are so steep that the lead affords little guidance, and there are no leading marks. The course running in is at first to the Southward, and then by a sharp turn to the Eastward close past Savage point (the sandy spit at the S. W. extreme of Merigomish Island) into the harbor. *Merigomish Harbor.*

This inner entrance of the harbor, between Savage Point and the E. end of Olding Island, is two hundred and forty fathoms wide; but the navigable breadth is reduced to fifty-five fathoms, by the shoal off Olding Island, and the tides frequently run there at the rate of five miles an hour. Before the timber was exhausted, this harbor was frequented annually by shipping, which usually lay moored close to the sandy S. E. point of Olding Island; but at present it is seldom visited by anything larger than a coasting schooner. The pilots are, therefore, incompetent from want of practice, and the channel is no longer buoyed as it used to be formerly. The harbor is of great extent, running in five or six miles to the Eastward, within Merigomish Island, and the sand-bar which joins it to the main land; and also four miles to the Westward, up a bay full of islands, coves, and precipitous headlands, which, together with well-cultivated fields,

backed by mountains eight or nine hundred feet in height, form scenery of unusual beauty. Several small streams enter the harbor, of which, French River, opposite the East end of Olding Island, is the principal. It is approached by a very narrow channel through flats of mud and weeds, and can be ascended by boats to the bridge, about a mile within its entrance.

French River.

Tides.

It is high water at Betty Point, the S. E. extreme of Olding Island, on the full and change days, at 10h. 6m.: and the rise is from five and one fourth to three and one fourth feet, according as it may be spring or neap tides; but the diurnal inequality is strongly marked here as well as at Pictou, causing a considerable difference in the times and the heights of the two tides on the same day.

Merigomish Island. Coal.

MERIGOMISH ISLAND, three and one fourth miles long by one mile and one third broad, is of clay and sandstone, belonging to the coal formation: rising to the estimated height of one hundred and fifty feet above the sea. Thin seams of coal can be seen at Coal Point, where the cliffs, which form the Northern shore of the island, are thirty-five feet high. Its Southern shore, where there are increasing settlements, is broken into coves, cliffy islets, and peninsulated points, similar to the Western part of the harbor. A sand-bar, two and a half miles long, unites the island to the main land, to the Eastward, excepting in unusually high tides, when the water washes over one part of it into the harbor.

From Merigomish Harbor to Cape George, a distance of twenty-seven miles to E. by N., the coast is bold and free from danger. The land, rising from the sea to the summit of a ridge two or three miles in the rear of and parallel to the coast line is well settled, the cultivation extending occasionally to the summit of a ridge, which attains the extreme height of one thousand one hundred feet above the sea.

There is no harbor in this distance, the wooden pier at the village of Arisaig affording shelter only to boats and shallops in Easterly winds, but none in winds from between N. and W.

The remarkable rock called the Barn, is nearly a mile to the E. of this pier, and half a mile N. E. from Arisaig church, which last is fourteen miles from the entrance of Merigomish.

Malignant Cove.

Malignant Cove, which has a small stream at its head, affording good landing for boats, is three miles farther to the Eastward, and will be known by the Sugarloaf Hill, a mile in rear of it, and six hundred and eighty feet high above the sea at high water.

NORTHUMBERLAND STRAIT.

Prince Edward Island.

PRINCE EDWARD ISLAND, separated from the Southern shore of the Gulf of St. Lawrence by Northumberland Strait, is one hundred and two miles long, and in one part about thirty miles broad; but the breadth is rendered extremely irregular by large bays, inlets, and rivers, or rather sea creeks, which penetrate the island, so that no part of it is distant more than seven or eight miles from navigable water. Its shape is an irregular crescent, concave toward the gulf, the Northern shore forming a great bay ninety-one miles wide and twenty-two miles deep, out of which the set of the tides and the heavy sea render it very difficult to extricate a ship when caught in the N. E. gales which frequently occur toward the fall of the year, occasionally blowing with great strength and duration, and at such times proving fatal to many vessels.

West Coast of Prince Edward Island.

THE WEST COAST OF PRINCE EDWARD ISLAND, from the N. to the W. point (a distance of thirty-three miles S. W. by W.), is unbroken, and formed of red clay and sandstone cliffs, with intervening sandy beaches, affording landing for boats in fine weather. There are several ponds where boats can be secured, such as Nail and Black Ponds, and North and South Minimegash, but their outlets through sandy beeches, are all nearly dry at low water, and of no use to vessels. The shallow water runs out to considerable distances off various parts of this coast; and as a general rule for large ships, it should not be approached nearer than the depth of eleven fathoms at night or in thick weather.

Light.

North Point Light, is a fixed light, eighty feet high.

North Point.

THE NORTH POINT, which is of low red cliffs, has a reef extending from it to the Northward and Eastward, one mile and a fourth, to the depth of three fathoms, and nearly two miles to five fathoms; moreover rocky and irregular soundings from ten to six fathoms continue for several miles farther out to the N. E., causing at times a dangerous breaking sea. Vessels should, therefore, always give this reef a wide berth in thick weather, or at night, and this the soundings in the chart will enable them to do. It is, therefore, only necessary to add, that it is most steep on the W. side, where there are ten fathoms at the distance of one third of a mile. The inner part of the reef dries out half a mile from the point, affording shelter to fishing schooners, which shift from side to side as the wind changes.

Off Nail Pond on Nail Head, six miles S. W. by W. from the N. point, the shallow water extends two miles from the shore.

MINIMEGASH REEF is a ledge of rocks nearly dry at low water, and nearly a mile in length parallel to the shore, from which its outer edge is distant half a mile. It lies directly off the sandy beach, and across the outset of North Minimegash Pond, which is fifteen miles from the N. point. There are two and a half fathoms of water between the reef and the shore, and vessels have, in one or two instances, been moored there during the summer months to take in cargoes of lumber, but it is a very unsafe place. *Minimegash Reef.*

THE WEST REEF is a narrow and rocky ridge, four miles long N. and S., and with very irregular soundings, from two and three fourths to five fathoms. The least water, sixteen feet, is near the middle of the reef, and there are eighteen feet near its Southern extreme, which bears from the W. point N. W. ½ W. three and a half miles, and is distant two and a half miles from the nearest part of the shore. Its Northern end is three and a half miles off shore at the highest part of the cliffs between Macwilliam Cove and Cape Wolf. There are no leading marks for this reef, and as there are thirteen fathoms in one part close to its outer edge, it is very dangerous to ships rounding the W. point, and can only be certainly avoided at night or in thick weather, by following the edge of the bank of soundings off the main land in nine or ten fathoms, which will lead past it at the distance of three miles to the Westward. There is a passage within the reef, between it and the West Spit, but it is narrow, with irregular soundings and strong tides, and should therefore never be attempted in a large vessel. The strength and direction of the tidal streams about this reef are very irregular, being influenced by winds, varying also with the time of tide and probably with the age of the moon; as may be inferred from the peculiar tides at Richibucto and Shediac; and which also occur in Egmont Bay. In the deep water channel passing close on the outside of the West Reef, the rate of the stream sometimes amounts to two and a half miles per hour, causing a heavy sea when running against the wind. The usual strength and direction are shown by the arrows on the chart. *West Reef.* *Tides.*

THE WEST SPIT of sand upon sandstone, covered in some parts with only a few feet of water, runs out from the W. point three miles to the N. N. W., and then turns up N. by E. within the W. reef, so that the latter overlaps it at the distance of half a mile. There is a "cul de sac" between the spit and the shore, open to the Northward, and in which there are from six to four fathoms of water. The only way to avoid getting into this opening, or within the West Reef, when running down from the Northward, is not to approach the island nearer than the low-water depth of eleven fathoms. *West Spit.*

THE WEST POINT consists of sand-hills twelve feet high. Excepting in the direction of the spit, the shallow water does not extend from it very far, and there is very good anchorage under it in winds from between N. and E., and in four fathoms, fine sand bottom. *West Point.*

EGMONT BAY, is seventeen miles wide and eight miles deep, the course across it from the West Point to Cape Egmont being S. by E. ¾ E. It affords excellent anchorage with off-shore winds, in from four to seven fathoms, over sand and clay bottom; but vessels should not anchor in less than five fathoms anywhere, excepting on the N. W. side of the bay, because there is rocky ground, with only three and a half fathoms water off the river at its head, lying just within the five-fathom line, and at the distance of three miles from the shore, while along the Eastern shore, five fathoms would be too near the edge of the shoals. *Egmont Bay.*

On the Northern shore of the bay, Wolfe and Brae rivers are sandy places, dry at low water.

PERCIVAL AND ENMORE RIVERS, at the head of the bay, are only useful to boats and very small craft, having a depth of only from four to seven feet, at low water, and being approached by exceedingly narrow and intricate channels, through flats of sand, clay, and oyster-beds, which are dry in part at low water, and extend one mile and a half from the shore. The tides flow about five miles up these rivers, between low and marshy banks. The Eastern side of Egmont Bay should not be approached to less depth than five and a half fathoms in a large vessel, for the shallow water off Rocky Point and the Bar of St. Jacques extends a mile from the shore. The church of St. Jacques is conspicuously situated five miles to the Northward of Cape Egmont, having the French or Acadian settlement along the ridge to the Northward of it, and the small river St. Jacques, with its saw-mills, half a mile from it in the opposite direction. Haldimand River, shallow and running in to the Southward about two miles, is about halfway between the church and Cape Egmont, and has sand-hills on its W. or outer point of entrance. From those sand-hills a sand-bar, dry at low water, extends three or four miles to the Northward, parallel to the shore, having very narrow channels through it, which are said to shift at times during heavy Westerly gales. At the time of our survey, the principal channel was pointed out by two small beacons on the shore, about a mile to the Southward of the church. The course in, with those beacons in one, was S. E. ¾ E., turning short to the Southward within the bar into a harbor for small schooners, five feet deep at low water, and extending to the entrance of Haldimand River. *Percival and Enmore Rivers.*

Cape Egmont. CAPE EGMONT is a remarkable headland, with cliffs of sandstone fifty feet hig About a mile to the Northward of it will be seen the Dutchman, an insulated ro thirty feet high, and lying at the distance of a cable from the shore. The cape its is quite bold to the Southward; but to the Westward there is shallow rocky groun half a mile off shore, and which should not be approached nearer than six fathoms low water.

Egmont Bank. EGMONT BANK, of fine red sand, and with four fathoms least water, is very narro and two and a half miles long in a S. S. E. and N. N. W. direction. Its Northern en bears W. N. W. ¼ W., five miles from Cape Egmont; its Southern end W. ¾ S., fou miles from the same headland, and there is as much as eight and a half fathoms and clear channel between it and the cape.

From Cape Egmont to Seacow Head, the course is S. E. ½ E., and distance fourtee and one fourth miles. A bank of comparatively shoal soundings commences at th former, and terminates at the latter headland; curving to the Southward, so as to ex tend to the distance of three and a half miles off shore; its Southern edge, in five fath oms, forms an excellent guide for vessels at all times; but very large ships should be careful of venturing within that depth, since there are only three and one fourth fath oms, with rocky bottom, in one part, as will be presently mentioned.

Fifteen-Point Church. FIFTEEN-POINT CHURCH and village, stand near the shore, four and a fourth miles to the Eastward of Cape Egmont, and can be seen at great distances, either from the Eastward or Westward. At the extremity of the point, one mile to the Eastward of the church, there is a low rock above water, called the Little Dutchman, and shallow water to the distance of a long mile off shore; the depth then increases to near four fathoms for two miles farther off, and then decreases again to three and one fourth fath oms over sandstone bottom, not far from the edge of the bank, the church bearing from the shallow part nearly S., and being distant three miles.

Sandbury Cove. SANDBURY COVE, nine miles to the Eastward of Cape Egmont, is an extensive place, but nearly dry at low water, excepting a narrow channel through the flats, only fit for boats or very small craft. Miscouche Point is the Eastern point of this cove; and Miscouche church will be seen to the N. E. of it, at the distance of two or three miles inland.

Miscouche Shoal. MISCOUCHE SHOAL, off the point of the same name, dries out to the distance of one mile and one fourth, and extends two and three fourths miles to the Southward, to the depth of three fathoms, sheltering the roadstead in Bedeque Bay, outside Bedeque Harbor, from Westerly winds. The Northern extremes of Indian Head and Indian Island, in one, bearing E. ½ N., clear the S. point of the shoal in fourteen feet water, but the lead will be sufficient guide when a greater depth is required.

Bedeque Bay. Light. BEDEQUE BAY.—A fixed white light, is now shown on Seacow Head, S. E. side of the entrance. It is eighty feet above high water, and should be seen in clear weather fourteen miles.

Bedeque Harbor. BEDEQUE HARBOR, in the bay N. of Seacow Head, runs in to the Eastward between Indian Head and Phelan Point; the former, the S. point of entrance, will be easily distinguished, being faced by sandstone cliffs twenty-five feet high, and rising to double that height a short distance back from the shore, while the other is comparatively low and wooded. The entrance between those points is one mile and one fourth wide; but Indian Spit, which dries out half a mile from the head, and shallow water off the opposite shore, leave only a narrow channel into the harbor. Indian Island is a mile within the entrance, having no passage to the Southward of it, and the Island shoal extending from it four hundred fathoms in an opposite direction. The channel passes to the Northward of this shoal, and then turns to the Southward, within or to the Eastward of the island, where vessels may lie perfectly land-locked in five fathoms water. A depth of twenty feet at low water, ordinary spring tides, can be carried into the harbor, and since the tides rise from five to seven feet, there is water enough for the largest ships; but the channel is rendered se intricate by the Island shoal and Middle ground, which lies a little farther out on the opposite side of the channel, that no directions would enable a stranger to enter this harbor without great risk of accident. The assistance of a pilot and of buoys becomes therefore indispensable; and it would be advisable to anchor in the bay or roadstead outside, until the former could be obtained. The anchorage in the roadstead is twenty-two feet at low water, sand and clay bottom, and is quite safe during the summer months, although open to S. W. winds; the shallowness of the water, and the land at the distance of four or five leagues, preventing any very heavy sea from coming in. Should, however, any extraordinary circumstances render it expedient to attempt running into the harbor, the best mode of proceeding would be, to run along the Southeastern edge of the Miscouche Shoal, and then Eastward along the Northern side of the channel, by the lead in the low-water depth of eighteen feet, until Indian and Graham heads come in one, bearing S. S. W. ¼ W., when the vessel should be immediately rounded to, with her head to the Southward, and anchored in about four fathoms, mud bottom; she will then be about four hundred fathoms within Indian Spit, and in perfect safety. If the vessel be approaching from the Eastward with an Easterly

wind, Seacow Head may be safely rounded at the distance of two or three cables, Graham Head may be passed at twice that distance, and then the edge of the shallow water off Salutation Cove may be safely followed by the lead, till we approach Indian Head, where the shoal becomes very steep, as is also Indian Spit, which, however, can frequently be seen, being dry at low water. At a short distance within Indian Island, the harbor is divided into two arms, of which the Northern, Wilmot River, is only two or three feet deep, obstructed by oyster-beds, and crossed by a bridge two miles from the island. Vessels can ascend the Southern arm one mile and one fourth beyond the island, the channel then becomes obstructed by oyster-beds, so as to leave only an intricate channel four feet deep at low water; through which the new vessels built at Mr. Pope's building-yard, one mile and a half higher up on the S. shore, are taken at high water. Half a mile above Pope's wharf, this arm, which is called Dunk River, divides into two narrow and shallow channels, crossed by bridges at the distance of a mile.

Light. Bedeque Tides.

It is high water, on the full and change days, at Green's Wharf, on which there is a fixed light, a lantern on a pole, on the N. side of Bedeque Harbor, opposite Indian Island, at 10h., the rise being seven feet in spring tides, and five feet in neap tides.

From Seacow Head to Carleton Head, S. S. E. ½ E., six miles, and from the latter to Cape Traverse, S. S. E. ¾ E., nearly three miles, the points are formed of red sandstone and clay cliffs, with coves between, affording shelter and landing for boats, and also anchorage for small craft, with the wind off the land, or in fine weather. The shallow water does not extend beyond three hundred fathoms off either of the three above-named headlands; but in the bay its three-fathom edge is sometimes twice that distance from the shore; and as the line of five fathoms is sometimes quite close to it, the general rule for vessels at night should be not to approach nearer than the depth of seven fathoms. In the old charts a shoal of three fathoms water is shown off Carleton Head; but a diligent search has convinced us that it has no existence.

Provost and other Coves.

In the first four miles Eastward from Cape Traverse there are three coves, namely, Provost, Augustin, and Cumberland coves, which are separated by points of cliff, and are dry at low water.

Tryon River.

TRYON RIVER lies a mile farther in the same direction, between Tryon Head and Birch Point, and is approached by a very narrow channel through the Western side of the Tryon Shoals. There is one foot of water over the bar of this channel at low water in spring tides; but the depth increases to eleven or twelve feet for a short distance within, and then the channel becomes still narrower, winding through flats of sand, mud, and weeds, to the bridge, a distance of nearly three miles, following the channel. Small schooners enter Tryon with the assistance of the tide, which rises from six to eight feet; and there are flourishing farms on each side of the river.

Tryon Shoals.

THE TRYON SHOALS, of sand upon sandstone, dry out one mile and a third off shore, between Tryon and Brockelsby rivers; and their S. W. extreme, in three fathoms, bears S. by W. ½ W., and is distant fully two miles from Tryon Head, the nearest part of the shore. At the distance of one third of a mile N. E. from the S. W. point of the shoal, there are only two feet of water over rocky bottom, and at twice that distance the sands are dry at low water. The S. W. point is steeper than any other part of these shoals, having four and a half fathoms close to it; but there is, nevertheless, sufficient warning by their lead, since the depth of five fathoms is nowhere less distant than half a mile from their ledge. There is, moreover, an excellent leading mark, namely, Cape Traverse and Carleton Head in one, and bearing N. N. W. ¾ W., which clears the S. W. point of the shoals in five fathoms, and at the distance of a long half mile. Farther Eastward these shoals may be safely approached by the lead to any convenient depth, so that it will be perceived that they are by no means so dangerous as they have generally been considered; nevertheless, the lead should never be neglected when in their vicinity, for the tides round the island meet off them, causing variations in the strength and set of the streams, which it would require long-continued observations to understand or account for. The stream of ebb out of Bay Verte frequently sets over toward these shoals, so that a vessel standing along the land, with a scant Southerly wind, will often find herself dropping to leeward toward them much faster than her usual amount of leeway would lead her to expect.

Crapaud Road.

CRAPAUD ROAD is a small but secure anchorage off the mouth of Brockelsby River, and between the Eastern part of the Tryon Shoals and the land. The space in which vessels may ride in from twelve to fifteen feet at low water, is about half a mile long by two cables wide; but the anchorage for small craft, in from seven feet to nine feet, is more extensive, continuing nearly a mile farther to the Westward in a narrow channel or cove in the sands that dry at low water. The entrance to this road, between the Eastern point of the Tryon Shoals and the shallow water off the shore to the Eastward, is only ninety fathoms wide, and nine feet deep at low water, spring tides.

To run for Crapaud Road, proceed as follows: Bring the two white beacons that stand on either side of the entrance of Brockelsby River in one, bearing N. ¼ E., and run toward them until Wright's barn comes on with the West side of Paul Bluff, bearing N. W. ¼ N.; when change course toward the last-named objects, keeping them exactly

in one; and when the vessel has run a cable's length, the marks for the steep Northern edge of the Tryon Shoals will come on, namely, Richard Point (the extreme to the Westward) in one with Birch Point, bearing N. W. by W. ½ W. Let the course toward Paul Bluff and Wright's barn be continued for the distance of two cables farther; then change course toward Birch Point or W. N. W.; and when you have run a cable's length, let go the anchor, and the vessel will be in the best berth, and in from thirteen to fifteen feet water, over sand and mud bottom that holds well. No sea of consequence ever comes into this anchorage, the sands outside being covered only to the depth of a few feet at high water, and the shallow water to the Eastward, off Inman Point and Brockelsby Head, overlapping the entrance.

rapaud ides. It is high water on full and change days at 10h., and the rise is eight feet in spring and six feet in neap tides; there is, therefore, a depth of from fifteen to seventeen feet at high water in the entrance or on the bar of the roadstead. The tidal streams are weak and irregular; in general, their rates do not exceed half a knot at the anchorage, but they sometimes amount to one knot and a half for a short time along the edge of the shoals and in the entrance.

rockelsby iver. BROCKELSBY RIVER is all dry at low water, excepting a very narrow winding channel through mud flats, by which boats can ascend to the bridge, one mile and one fourth from the entrance. The land rises to the height of two hundred and fifty feet from the Eastern bank of this river; and the neighboring country is pleasing and well settled.

rockelsby 'ead. BROCKELSBY HEAD, nine miles S. E. by E. from Cape Traverse, is the Eastern point of the bay in which the river and roadstead last described are situated. It has clay cliffs, fifteen feet high, based upon sandstone, which run out a mile to the Southward, forming a dangerous reef, which must be carefully avoided by vessels approaching Crapaud from the Eastward.

nman Rock. INMAN ROCK, with four feet least water, lies near the outer point of the reef just mentioned, two thirds of a mile due South from Brockelsby Head, and with from thirteen to nineteen feet of water around it. Large vessels should not approach it nearer than the low water depth of four and a half fathoms.

Iarle Head. MARLE HEAD, two and a half miles S. E. from Brockelsby Head, has also a reef running out from it nearly a mile, and which should not be approached nearer than five fathoms.

able Cove. SABLE COVE, between the last-named two headlands, is nearly dry at low water, and crossed by a bridge one mile from its entrance.

From Marle Head to St. Peter's Island, a distance of nine miles to the Eastward, the coast is straight and unbroken, and may be approached by the lead to five fathoms; bearing in mind that the depth is occasionally within two cables' length of shallow water, extending in some places three fourths of a mile out from the shore.

Iillsborough Iay. HILLSBOROUGH BAY, having in it the principal harbor and capital town and being the outlet of an extensive inland navigation, is the most important, as well as the largest, of any in the island.

t. Peter's sland. ST. PETER'S ISLAND will be recognized by its position; but I may add that it is rather more than three miles in circumference, and of very moderate height, having cliffs of red clay and sandstone, thirty-five feet high along its Eastern shore. There are several farms on either side; but the central parts of the island are thickly wooded. It is joined to Rice Point, the N. W. point of the bay, and from which it is distant one mile and one fourth, by sands dry at low water; boats, therefore, can only pass between it and the shore with the assistance of the tide.

Shallow water extends off the island one mile and one fourth to the S. W. and S.; but the soundings, deepening out gradually, afford ample guidance in that part. Farther Eastward the St. Peter's Shoals become much more extensive, stretching out three and one fourth miles E. by N. from the N. E. point of the island. For the first two miles of that distance St. Peter's Spit of sand dries out, affording shelter to St. Peter's road, fit only for small vessels, having only from nine to twelve feet at low water. Off the end of the spit lies the Spit Head, a rocky shoal, with eight feet least water, which extends to within one fourth of a mile of the E. extreme of the St. Peter's Shoals, where the Spit Head Buoy is moored in five fathoms, with the following bearings, viz.: the W. side of the Government House in Charlotte Town in one with Battery Point, bearing N. ½ E.: the N. side of St. Peter's Island W. ¾ S. and Gallows Point just opened to the Northward of the dry spit of Governor's Island, S. E. ½ E.; but this dry spit can seldom be seen, and bearings alone to such distant objects are insufficient; therefore a beacon should be placed on the flat off the end of the dry spit, so as to form with Gallows Point a cross-mark, to insure the same position for the buoy every year. The five-fathom edge of the bank, forming the Western side of the channel, trends due N. two and one fourth miles from the Spit Head Buoy, to about a cable's length off Blockhouse Point, at the entrance of Charlotte Town Harbor. The edge of the St. Peter's Shoals may be safely followed by the lead in five fathoms as far in as the Spit Head Buoy; after which the bank becomes steep, and must be approached with caution in a large vessel.

St. Peter's Shoals.
St. Peter's Spit.
Spit Head.

THE TROUT ROCK, with seven feet least water, lies two cables within the edge of the bank, and a long half mile out from Blockhouse Point, which, kept in one with Government House, bearing N. by E. ¼ E., will just clear the rock to the Eastward in about fourteen feet water. *Trout Rock.*

On the opposite or Eastern side of the channel the shallow water is continuous, from Sea-trout Point, at the entrance of the harbor, to Governor Island, there being only a passage for boats or small craft between that island and the land to the N. E. of it. The edge of the bank, in five fathoms, runs to the S. from Sea-trout Point to opposite the Spit-head Buoy: consequently parallel, in this part, to the bank on the opposite side, leaving a channel from seven to twelve fathoms deep, and either one third of a mile or half a mile wide, according as we conceive it to be bounded by the five-fathom or three-fathom line. The bank is most steep opposite the Spit-head Buoy, where the rocky Squa Shoal, with ten feet least water, approaches close to its edge. Battery and Sea-trout Points in one, bearing N., form an excellent mark for this side of the channel, leading along the edge of the bank, in four and a half fathoms least water, from near Sea-trout Point to a quarter of a mile beyond the Spit-head Buoy on the opposite side; but it had better not be followed farther to the Southward in a large ship, although smaller vessels may do so, until Governor Island and Gallows Point are touching; bearing in mind, that it finally leads over the reef off the W. end of the island. *Squa Shoal.*

GOVERNOR ISLAND lies four and a half miles, E. by N., from St. Peter's Island; and four miles, S. by E. ½ E. from Blockhouse Point. It is low, in great part wooded, based upon sandstone, and has dangerous shoals round it on all sides; but Governor Shoals, extending from it to the S. W., and adding greatly to the dangers of the navigation, more especially claim our attention. Stretching out from the W. end of the island, the sandstone reef is dry at low water for the first half mile, and has less than three fathoms for an equal distance farther; after which, rocky and irregular soundings continue to the W. extreme of the shoals, in five fathoms, distant two miles from the island. Fitzroy Buoy is moored in four fathoms, a cable's length within the W. extreme of the shoals; with the square tower of the Presbyterian church at Charlotte Town and Battery Point in one, bearing N. by E. ¼ E.; and the N. W. extreme of Governor Island and Powell Point touching, and bearing E. by N. *Governor Island.* *Governor Shoals.*

FITZROY ROCK, with twenty feet least water, lies about a cable's length to the Eastward of the buoy, and was considered the principal danger off the island until our survey led to the discovery of the much more dangerous rocky patches which are scattered over these shoals farther to the Southward. *Fitzroy Rock.*

Of these patches, Huntly Rock, bearing S. by W. ½ W., one mile and three fourths from the W. end of the island, has the least water, namely, twelve feet at low water; but there are others, with from seventeen to twenty-two feet of water, as far out as two and a half miles, and the S. W. extreme of the shoals in five fathoms is distant three and a half miles from the island. The mark for Fitzroy Buoy, namely, the Presbyterian church and Battery Point, bearing N. by E. ¼ E., clears the W. side of Governor Shoals in five fathoms, excepting the small portion of the W. extreme to the Westward of the buoy. *Huntly Rock.*

Prim Point, the S. E. point of Hillsborough Bay, is low, with cliffs of sandstone ten to fifteen feet high.

THE LIGHT-HOUSE, of brick, and of the usual conical form, shows a fixed light, sixty-five feet above the sea at high water, and which can be plainly seen from the deck of a vessel at the distance of four or five leagues. It is of the greatest use to vessels, especially when approaching from the Eastward, guiding them by its bearing, clear of the Riflemen and Pinetta Shoals, enabling them to enter the bay in the darkest night. It stands fifty fathoms within the S. W. extremity of the point, the W. extreme of St. Peter's Island bearing from it N. W. ½ W., seven and three fourths miles; the W. end of Governor Island N. ¾ E., five miles; and Bell Point (the extreme to the Eastward) S. E. ½ S. ten miles. *Light-house.*

PRIM ISLAND, which has also low cliffs, is distant one mile and a quarter E. N. E. from the extremity of the point, and is united to its north side by sand beaches, enclosing marshy ponds. *Prim Island.*

THE PRIM REEF, of sandstone, runs out to the Westward, both from the island and the point, so as to form a forked reef, with very uneven soundings; its Northern point, in three fathoms, bears N. W. by W. ½ W., two miles from the light-house, and the other point W. by S., one mile and a quarter; but if we consider the reef as bounded by the depth of five fathoms (which we must do for a large ship) it is much more extensive, reaching out to the distance of three miles. *Prim Reef.*

The square tower of the Presbyterian church at Charlotte Town, in one with Battery Point, bearing N. 30° E., will clear three fathoms extreme of Prim Reef; and the same church tower, in one with Blockhouse Point, bearing N. by E. ½ E. will clear the whole of the reef; but it is only in very favorable weather that such distant objects can be seen, and, therefore, the lead must be the main dependence; the soundings, com-

bined with the bearing of the light, being amply sufficient for rounding the reef, as will be seen in the chart. Having thus described the dangers of the approach through Hillsborough Bay, I must add a brief description of the harbor, and then give the requisite directions.

Charlotte Town Harbor. Light.

CHARLOTTE TOWN HARBOR.—There is a fixed light at Charlotte Town Harbor. This harbor is four hundred and twenty-eight fathoms wide at entrance, between the cliffs of Blockhouse and Sea-trout points; but shallow water extending from both shores, reduces the navigable width of the channel, reckoning from three fathoms, to two hundred and thirty fathoms; and as the shoals are very steep, it would require to be well buoyed before a large ship could beat in or out with safety. Cliffs of red sandstone, from ten to thirty feet high, form the shores on either side, the land rising gradually from them in undulations, and being partly cultivated and partly wooded. An old blockhouse and signal-post stand on Blockhouse Point, the W. point of entrance. The next point of cliff on that side as we proceed in is Alchorn Point, and at the distance of half a mile from the blockhouse, and the remains of Fort Amherst may yet be seen on the hill, ninety-three feet above high water. We have next Warren Cove and Farm, with Ringwood, the place of Captain Cumberland, and lastly, Canseau Point, with its white beacon one mile and a quarter from the blockhouse.

Canseau Shoal.

CANSEAU SHOAL extends off Canseau Point to the distance of three hundred and fifty fathoms, and will be cleared by keeping the blockhouse just open, clear of Alchorn Point; observing that the extremes of the cliffs of Blockhouse and Alchorn Point in one, lead over the point of the shoal in sixteen feet at low water. On the opposite or Eastern side of the entrance, and less than a mile within Sea-trout Point, we have Battery Point, with its shoal; the latter running out two hundred fathoms, and having on its extreme point a buoy moored in three fathoms at low water. Outside that depth, on either side, the water deepens abruptly, and there are thirteen fathoms in the middle of the channel. The red beacon and Presbyterian church tower at Charlotte Town, clear the shoal off Battery Point in ten fathoms, and at the distance of sixty fathoms. Within the harbor, in addition to the flats of mud and weeds extending off shore, there is the MIDDLE GROUND, with seventeen feet least water, and for the situation of which I must refer to the plan of the harbor, remarking here, that the white beacon on Canseau Point and M'Kinnon's log-house in one, lead through midway between it and the flat off the Southern shore.

Middle Ground. White Beacon.

Immediately within Canseau and Battery points, which are the inner points of entrance, the channel expands into one of the finest harbors in the world, having depth and space sufficient for any number and description of vessels. In sailing in, we see before us York River, running in to the Northward; on our right the Hillsborough, stretching away to the E. N. E. as far as the eye can reach; and on our left Elliot River, running in to the Westward. The confluence of the streams of these three rivers, between Canseau Shoal and the mouth of York River, form THE THREE TIDES, where there is excellent anchorage, used occasionally by laden vessels preparing for sea, the usual anchorage being off the wharves of the town, where the channel is two hundred and eighty fathoms wide, and nearly ten fathoms deep.

The Three Tides.

Charlotte Town.

CHARLOTTE TOWN is advantageously situated on the Northern bank of the Hillsborough, a short distance within its entrance, and at the point where the deep water approaches nearest to the shore; its wharves, however, still requiring to be one hundred and twenty fathoms long to reach the edge of the channel.

Charlotte Town Tides.

It is high water on the full and change days, at 10h. 45m., and the rise in ordinary spring tides is nine and a half feet, and in neap tides seven feet. Their rise is considerably influenced by the winds, so that we have seen spring tides during N. E. gales rise eleven feet, and neaps, during S. W. gales, only six feet; but these were extraordinary cases. The duration of the two tides is nearly equal, and their streams continue about a quarter of an hour after high and low water by the shore; running usually at the rate of one knot and three fourths off the town, and two and a half knots in the entrance of the harbor.*

Hillsborough River.

Of the three rivers that unite in the harbor, the HILLSBOROUGH is the largest, being navigable for the largest ships to the distance of seven or eight miles, and for small vessels fourteen miles, above Charlotte Town; where there is a bridge two miles from

* As we continued our observations here hourly, through eleven semi-lunations, with an accurate tide-gauge, it may be useful to put on record the following resulting particulars:—

The Corrected Establishment was 10h. 18m. The A. M. tide being 10h. 24m., and the P. M. tide 11h. 7m. after transit; the mean being 10h. 45m. The mean duration of the flood (by 294 observations) was 6h. 14m., and of the ebb 6h. 11m., the flood being rather the longest; as if the evaporation more than compensated for the trifling supply of fresh water afforded by the small streams which discharge into the sea-creeks or inlets. It is worthy of remark that the diurnal inequality in the heights of the alternative flood tides, so strongly exhibited at Picton, &c., is here only slightly shown, but may be plainly observed in the ebb tides, or in the difference of the levels to which the alternate tides descend.

the head of the river. There is a portage of less than a mile across, from the Hillsborough, near its head, to Savage Harbor, on the N. coast of the island.

YORK RIVER, the smallest of the three, is crossed by Poplar Island Bridge, two and three fourths miles from its mouth. Elliott River may be ascended four or five miles by large ships, and nine or ten miles by small craft and boats. The shores of all three rivers are settled, and the country generally fertile. *York River. Elliot River.*

POWNELL BAY is shallow and open to the westerly winds; it affords shelter to small craft and boats near its head, which dries extensively at low water. *Pownell Bay*

GALLOWS POINT, separating Pownell and Orwell bays, has a long reef of sandstone, and extensive shoals off it, on which are scattered rocks covered with only a few feet of water. These shoals extend in the direction of Governor Island, to the distance of two miles, and also a long mile toward Point Prim. There is, moreover, a detached shoal, with thirteen feet least water, bearing W. ½ N. two miles from Gallows Point. *Gallows Point.*

ORWELL BAY, leading to Orwell, Vernon, and Seal rivers, is two miles wide at its entrance, between Gallows and Buchanan Points; the latter, on the Southern shore, being five miles within or to the Eastward of Prim Point. *Orwell Bay.*

PINETTE HARBOR, four miles Eastward from Prim Point, has only two feet at low water over its rocky and exceedingly dangerous bar. The bar is nearly a mile out from the entrance, and the PINETTE SHOALS reach to double that distance; their outer point in three fathoms, extending several cables' length beyond the line joining Prim Point, and the extreme to the Southeastward, and bearing from Pinette Point W. S. W. two miles. There are only nine feet of water just within this point and only three feet at no great distance, the bottom being rock. These shoals are therefore very dangerous, and should not be approached nearer than the low water depth of six fathoms. It is high water on the full and change days, at Pinette, at 10h., and the rise is eight feet in spring and five in neap tides. *Pinette Harbor. Pinette Shoals. Tides.*

FLAT RIVER, which is only fit for boats, is three miles to the S. E. from Pinette. Shallow water extends off Macdougal Point, its Eastern point of entrance, to the distance of a mile. *Flat River.*

THE RIFLEMAN REEF of sandstone, stretches out to the distance of two miles from Stewart Point, which bears from Prim Point S. E. ½ S., nine miles. On the extreme outer point of this reef, in three fathoms, Prim light bears N. N. W. ½ W., eight miles, Macdougal Point N. N. E., and Stewart Point E. ¼ S., two miles. Just within this point there are eight feet of water, and halfway between that and the shore only five feet, while between those and other shallow patches there are twelve feet at low water. The very irregular soundings off this reef, and the deep water close to it (sixteen fathoms within less than half a mile), while there is a much less depth farther out, render it one of the greatest dangers in the strait. The bearing of the light on Point Prim will greatly assist vessels in avoiding it: but at all times, either by night or by day, and especially in thick weather, it should be approached with care. There are no leading marks for its west extreme, which has seven fathoms close to; but the soundings give better warning there than farther to the Southward. The wooded point within and opposite the Wood Islands, in one with Black Point, the extreme to the Eastward, bearing E. S. E., just clear the Southern side of the reef; but the safest plan, when approaching it from the Southward, will be to tack, as soon as the extreme of the land to the Eastward appears within the Wood Islands, bearing E. S. E. ¾ E., when the vessel will be one mile and a quarter from the reef. *Rifleman Reef.*

When standing toward the reef, at night, take care that Prim light is not brought to bear to the Westward of N. N. W. If the light is not seen a close attention to the soundings can alone insure safety. Observe, in standing across the strait from the Southward toward the reef, that after having upward of twenty fathoms toward the Southern shore, the soundings will decrease to between eleven and nine fathoms for several miles, and then suddenly increase again to from fourteen to sixteen fathoms. When the vessel arrives at this deep water she will be less than a mile from the reef, and if she ventures across it to ten fathoms, she will be distant only three hundred fathoms from its edge.

BELL POINT, a mile S. E. of Stewart Point, and the extreme from Prim Point, is a cliff of sandstone forty feet in height. The shallow water is continuous from the Rifleman Reef to this point, from which it extends a mile to the three-fathom line, having nine or ten fathoms close to its edge. *Bell Point.*

THE INDIAN ROCKS, considering them to be bounded by the depth of three fathoms, occupy a space of one mile and a half in length, parallel to the shore between Bell Point and the Wood Islands, and half a mile in breadth. They are of sandstone, dry to a considerable extent at low water, and their Southern edge is one mile and a half off shore. The S. E. extreme of these rocks bears S. W. by W., nearly a mile from the W. end of the Wood Islands, and will be cleared to the Southward if the S. E. point of those islands be not brought to bear to the Eastward of E. N. E. The Western extreme *Indian Rocks.*

of the rocks bears from Bell Point S. by E. one mile and three fourths, and Macdougal and Pinette points in one, bearing N. by W. ½ W., will clear it to the Westward at the distance of three fourths of a mile; but Pinette Point cannot always be distinguished. The want of sufficient leading marks, and the deep water so close to the Southward, would render these rocks exceedingly dangerous by day as well as by night, if there were not almost always breakers or a rippling to be seen on the part that dries. In standing toward them at night, observe that there are ten fathoms within a quarter of a mile of their Southern edge; and that thirteen fathoms is near enough to their S. E. extreme, and ten fathoms to their S. W. point, taking care not to get between the latter and the Bell Point Reef, where there are also ten fathoms. There is a channel between the Indian Rocks and the shore more than half a mile wide, and from four to sixteen fathoms deep; but it is of no use to shipping, the soundings being irregular, with rocky or gravelly bottom and strong tides. It may as well be added that the extreme of the land to the Eastward and the inner side of the Wood Islands in one will lead in between the Bell Point Reefs and the rocks, and clear their Northern edge in five fathoms; and that the line of Stewart and Bell points in one, bearing N. W. ½ N., passes along their N. E. side in three fathoms; the former of those points must therefore be shut in behind the latter to pass between the rocks and the Wood Islands.

Tides. The tidal streams are strong in the deep water just outside these rocks, frequently running at the rate of three miles per hour. It is high water on the full and change days at nine and three fourths hours nearly, the rise being six feet in spring and four feet in neap tides.

Wood Islands. THE WOOD ISLANDS are now only in part covered with timber, there being at present two families residing on them, who have cleared the greater part of their surface.

They are two small islets, and, with their connecting sand-bar, are seven hundred fathoms in length, parallel to the shore, from which they are distant about half a mile. The Eastern or larger islet is three hundred and fifty fathoms long, and about fifty feet high. They both present cliffs of sandstone to seaward, and are united to the shore by a long sand-bar at their Western extremity. The space between the islets and the shore forms a secure boat-harbor, having an entrance from the Eastward; but it is all nearly dry at low water. The shallow water does not extend off these islands to the Southward beyond two cables; but continues from them across the bay to the Eastward as far as Little Sands, a distance of three miles. The anchorage to the Eastward of the islands, within the distance of a mile, and at any depth from three to nine fathoms, is good in N. W. winds, the Indian rocks breaking the sea.

From Little Sands to White Sands, six miles E. by S., the sandstone cliffs are forty to fifty feet, and quite bold.

White Sands. WHITE SANDS is a settlement, receiving its name from the sandy beach of a small bay, nine miles Eastward from the Wood Islands. There is a sand-spit there, just covered at low water, which affords some shelter to boats, and a sandy shoal extending to the distance of half a mile off shore. The edge of this shoal is so steep, and the water near to it so deep, that the lead gives no warning; but if Blackrock Point (the extreme to the Eastward) be kept open to the Southward of Guernsey Point (the W. side of Guernsey Cove), the shoal will be cleared; for those points in one, bearing E. by N. ½ N., lead along its Southern edge. Guernsey and Blackrock points, distant one and a half and three miles respectively to the Eastward of White Sands, have each large rocks above water close off their cliffs; and so also has Cape Bear, which is six hundred fathoms farther to the Eastward; but the rock off the cape is much higher than the others, its summit being about twelve feet above the sea at high water, while Blackrock is only seven feet, and others still lower.

Blackrock Point.

The shore to the Eastward of White Sands is formed of sandstone cliffs, which are in some places forty feet high without beach or landing, except at Guernsey Cove, and from which the shallow water does not extend beyond three hundred and fifty fathoms until we arrive at Cape Bear.

NORTHUMBERLAND STRAIT—THE EAST COAST OF PRINCE EDWARD ISLAND FROM CAPE BEAR TO THE EAST POINT—THE NORTH COAST OF PRINCE EDWARD ISLAND.

Cape Bear. CAPE BEAR will be known by the large rock, twelve feet high, which lies close under its cliffs of red sandstone; and MURRAY HEAD, a mile farther to the Northward, by its forming the extreme Northeastern point of the cliffs, where they turn abruptly to the Westward toward Murray Harbor. At the distance of three hundred and fifty fathoms to the Southward of Murray Head, there is a fine little stream of fresh water, worthy of notice, because there are so few places on the island where a large ship

Murray Head.

Fresh Water.

can readily water. Boats can land there in Westerly winds, when vessels will find good anchorage under the head.

BEAR REEF runs out to the Eastward, from between Cape Bear and Murray Head, three fourths of a mile, to the depth of three fathoms, and one mile to five fathoms; and is composed of sandstone and large stones. There is very little water over the greater part of this extensive and irregularly-shaped reef, which has seven or eight fathoms close to its edge, and is therefore very dangerous to vessels rounding the cape at night or in foggy weather, when they should not approach nearer than ten fathoms, either to the Eastward or Southward of the reef. *Bear Reef.*

There are no close leading marks for passing to the Eastward of this reef; but Panmure Head and Terras Point in one, and bearing N. ½ E., clear it at the distance of one mile in that direction.

To clear its Southern side Guernsey Point must be kept well open to the Southward of Blackrock Point.

FISHERMAN'S BANK, which was first examined and laid down by us in 1844, is of sandstone, thinly covered with stones, gravel, and broken shells. Within the depth of ten fathoms, it is three miles long E. and W., by one mile and a half broad; but the shallow central part, with from four to five fathoms at low water, covers scarcely half that space. The least water, four fathoms, bears from Murray Head, the nearest land, E. S. E., seven and a half miles; and there is another patch with five fathoms three fourths of a mile farther E. There are irregular soundings from ten to twenty fathoms, between this bank and Bear Reef, and in every other direction around it from fifteen to twenty fathoms. It is very dangerous to large ships when there is a heavy sea running, and should not then be approached nearer than thirteen fathoms, which, in most parts, is close to its ten-fathom edge, and little more than half a mile from the shallow water. The steeple of the English church at George Town in one with Panmure Head, bearing N. N. W. ½ W., leads over the bank in five fathoms; but the church can seldom, if ever, be seen from the bank, being distant from it fifteen miles. *Fisherman's Bank.*

MURRAY HARBOR has an exceedingly dangerous bar of sand, over which ten feet can be carried at low water in ordinary spring tides; but strong Easterly winds send in so heavy a sea as to render it at times impassable, a line of breakers extending then completely across the bay from Murray Head, Northward to Cody Point, a distance of nearly two and a fourth miles. *Murray Harbor.*

On the outer edge of the bar a buoy is moored in three fathoms with the white beacon on Oldstore Point (the sandy S. point of entrance) in one with the black ball on the white gable of the Transit Barn, bearing W. S. W. ¾ W. The barn stands on the Southern shore of the harbor three fourths of a mile within the entrance, and when in one with the beacon leads in through the deepest water. There is, moreover, an inner buoy in the fairway, half a mile from the outer one, which is intended to enable vessels to run in when hazy weather prevents the leading mark from being seen.

Proceeding in from the bar, the channel, between sandy shoals extending from the shore on either side, contracts gradually in breadth to sixty fathoms, and expands again to two hundred fathoms within the entrance. The depth also gradually increases, after crossing the bar, to six fathoms, as we pass close to the steep sandy beach of Oldstore Point, on which the beacon stands. To run in, proceed as follows: Look out for the inner buoy, or being in not less than five fathoms, bring the white beacon and the black ball on the white gable of the Transit Barn in one, bearing W. S. W. ¾ W., and keep them so exactly until the vessel arrives within two hundred or one hundred and fifty fathoms of the beacon; when haul a little to the Northward so as to pass Oldstore Point at the distance of twenty or thirty fathoms, and anchor within, or to the West of it, at any distance not exceeding a fourth of a mile; because, farther in, the channel which passes to the Southward of all the islands, becomes very intricate, and would be difficult to follow without a pilot. The depth in the anchorage recommended, is from three to five fathoms, with sand and clay bottom, and a tide of two knots. It is high water, on the full and change days, at nine hours six minutes after the moon's transit, and the rise is six and one fourth feet in spring tides, and three and one fourth feet in neap tides. *Tides.*

The entrance of Murray Harbor, between Oldstore Point and the long sandy spit that runs out to the S. W. from Cody Point, is more than half a mile wide, but it is all nearly dry at low water, excepting the channel already described. Within this entrance the harbor is of great extent, containing five wooded islands, and several rivers or sea creeks on either side, besides the main inlet, Murray River, which is much larger than the rest, and navigable to the distance of six miles from the entrance, or nearly to the dam which has been constructed across it near its head. There are flourishing settlements all around, the principal one being at South River, where the English Episcopal church, distinguished by its steeple, will be seen on the Southern shore, two miles within the entrance of the harbor. *Murray River.*

Proceeding with our survey of the coast from Murray Head, a distance of four and a half miles, N. N. E. ¼ E., brings us to Graham Point, from which Graham Ledge runs *Graham Point and Ledge.*

out one mile to five fathoms, and three fourths of a mile to three fathoms. The shallowest part of this ledge, with six feet least water, bears E. N. E. four hundred fathoms from the extremity of the point. There is also a rocky shoal one mile farther to the Northward, which runs out two thirds of a mile from between Terras and Smith points, and foul ground with from four to five fathoms at low water extends off the latter to the distance of one mile and a half. The surroundings are very irregular off this part of the coast, between Graham Point and Panmure Head, varying from thirteen fathoms, mud, to five and a half fathoms, rock, until we get beyond three miles out from the shore.

George Town Harbor. GEORGE TOWN HARBOR, sometimes called Three Rivers, is situated on the S. W. side of Cardigan Bay, three miles within, or to N. W. by N. from Panmure Head, which is distant nine miles to the Northward from Cape Bear. It is the finest harbor in the Southern part of the gulf, excepting Charlotte Town, having depth of water and space sufficient for the largest ships. The rise of ordinary spring tides being only five feet, is a great advantage as compared with Charlotte Town Harbor, but on the other hand, the ice does not, in general, form in it so soon in the fall by several weeks, and also breaks up earlier in the spring, so that vessels can enter it later and leave it earlier, which is an important advantage in a climate where the navigation is closed by ice for so long a portion of each year. The channel leading to the entrance of the harbor passes between the shoals of Panmure Island and Cardigan Point. A brief description of these shoals and the objects for avoiding them, will be useful in illustration of the chart, and to render the directions intelligible.

Panmure Ledge. PANMURE LEDGE, of sandstone, covered by only a few feet of water, runs out six hundred fathoms from Panmure Head, the extreme E. of Panmure Island, to the depth of three fathoms: and its outer extreme, in five fathoms, and nine hundred fathoms off shore, will be just cleared by keeping Graham Point and Murray Head in one, bearing S. S. W. ¼ W.

Panmure Head Light. On PANMURE HEAD there is a fixed light eighty-nine feet above the level of the sea. The light should be kept open of Terras Point, to clear the reef off Cape Bear.

Panmure Island. PANMURE ISLAND is about two miles long by one mile broad, in great part wooded, and has cliffs of red sandstone forty feet high along its Northeastern shore. It is joined to the land to the Southward by a narrow sand-bar, always above water, and more than a mile in length. Within this bar is St. Mary bay, and farther Westward Sturgeon and Livingston bays; all three having a common entrance to the Northwest of the island, between Panmure spit and the shoal off Grave Point, and which, although very narrow, has depth of water sufficient for the largest ships.

Panmure Shoal and Spit. PANMURE SHOAL extends to the distance of two thirds of a mile off the Northern shore of the island; and PANMURE SPIT, which forms the Western side of the shoal and is of sand, dry at low water, equally as far to N. N. W. from Billhook Point, the N. W. extreme.

The Panmure Buoy (white) is moored close to the steep edge of the shoal, in five and a half fathoms, with M'Donald's house and store, on the West side of the island, just open to the Westward of Billhook Point, bearing S. by W. ¼ W., two thirds of a mile; and the English Episcopal steeple at George Town on with the E. side of the Thrumcap, bearing N. by W. ½ W. The Panmure Shoal and Spit, and farther in the equally steep shoals off Grave and St. Andrew's points, form the danger on the S. side of the entrance channel to George Town Harbor.

Cardigan Shoal. On the opposite side we have the CARDIGAN SHOAL, extending to the S and E. from Cardigan Point, which separates Cardigan River from the harbor. This extensive shoal is of sandstone, and has only one fathom at low water, three fourths of a mile out from the shore. At the distance of one cable farther out there are three fathoms, and the red buoy, moored on its S. E. extreme in five fathoms, is distant one mile and one eighth from the low cliffs at the extremity of the point. At this buoy Panmure Head (distant one mile and one fourth) should be in one with Terras Point, bearing S. ¼ W.; and French Point should be seen over the sandy spit of Aitkin's Point, and in one with its wooded extreme, bearing N. W. by W. ½ W. At the distance of one mile W. by N. from the red buoy, and on the S. W. extreme of Cardigan Shoal, a black buoy is moored in four fathoms, with Cardigan Point bearing N. N. E. ¾ E.; Brudenell Island and Guadin Point touching and bearing N. W. ¾ N.; and the White Buoy on Panmure Shoal S. W. ¼ W., distant one fourth of a mile. In a direct line from the red to the black buoy of the Cardigan Shoal, there is not less than three and a half fathoms, and the Southern edge of the shoal in five fathoms, may be followed by the lead from the one to the other. From the black buoy the Western edge of the shoal trends Northward to within one cable of the shore, sheltering the outer anchorage (in five fathoms, mud bottom) between it and the knoll.

The Knoll. THE KNOLL, a small sandy shoal, probably based upon sandstone, and with nine feet least water, lies just outside of the entrance of the harbor, and directly in the way of vessels. To enable vessels to beat in and out with safety, a buoy should be placed on its S. W. extreme, with the following marks and bearings, namely: Boughton island and

Cardigan Point touching, and bearing E. ½ N.; Grave and Thornton Points in one, S. W. ½ W.; the W. side of the Thrumcap N. N. E., four hundred and twenty-five fathoms; Cardigan Black Buoy S. E. ½ E. nearly one mile; and lastly the Thrumcap Black Buoy (if properly placed), N. N. W., three hundred and seventy fathoms, and in one with Guadin Point.

Thrumcap Shoal.

THE THRUMCAP SHOAL runs out from the Thrumcap (which is a small wooded and cliffy islet joined to the Eastern point of entrance of the harbor by a sand-bar) three hundred and five fathoms, in a W. by S. direction. On its S. W. extreme, in three fathoms, a black buoy is moored with the cupola of the Roman Catholic church, and the steeple of the English Episcopal church in one, bearing N. ¾ E.; the N. W. side of the Thrumcap, E. by N., and the beacon at Whiteman's wharf S. W. ¾ S. This shoal, which is of sand, and dry at low water nearly all the way out to the buoy, completes the shelter of the harbor, preventing any sea of consequence from rolling in. The entrance, between the Thrumcap and St. Andrew's Point on the Southwestern shore, is two thirds of a mile wide, but the shoals diminish the breadth of the channel to two hundred and thirty fathoms, and it is still narrower at the knoll, where it is scarcely two hundred fathoms; while farther out still between Cardigan and Panmure shoals, it is not more than two hundred and fifty fathoms, considering it to be bounded by the depth of three fathoms on each side. Within the Thrumcap the Northern shore of the harbor forms a bay three fourths of a mile wide, the N. W. point of which is Guadin Point, having a sandy spit running out from it one fourth of a mile to S. W. The usual and best anchorage for large vessels is between this spit and the Thrumcap Shoal, in five fathoms, mud; but smaller vessels may anchor farther within the bay, and will find two and three fourths fathoms within the distance of one cable from the wharf at the town.

George Town.

GEORGE TOWN, the capital of King's county, is well situated on the Northern shore of the harbor, just to the Eastward of Guadin Point.

From what has been said of the narrowness of some parts of the channel, it will appear manifest that a competent pilot, acquainted with the set of the tides, &c., would be required to beat a large ship in or out, but, with a leading wind and fine weather, the intelligent seaman will find no difficulty, with the aid of the chart, the foregoing description, and the following brief directions.

Observe that, in addition to the aid afforded by the buoys, there is a beacon at the inner end of Whiteman's wharf on St. Andrew's Point, which kept in one with the centre of his house, bearing N. W. by W. ½ W., leads in between Panmure and Cardigan shoals nearly in mid-channel, until Brudenell Islet and Doctor's Point come in one, bearing N. N. W. ¾ W.; when the last-named objects kept touching lead into the harbor.

Having, therefore, a fair wind, that is, any wind from S. W. round by S. and E. to N. E., proceed as follows:

Directions.

Approaching from the Eastward, pass Boughton Point, the S. E. extreme of Boughton Island, at the distance of one mile: steering W. N. W. ½ W., and looking out for the beacon and Whiteman's house, which will be a little on the starboard bow. As soon as the vessel arrives within one mile of Panmure Island, bring the beacon and house in one, and steer for them N. W. by W. ½ W., or as may be necessary to keep them so. When Panmure Head and Terras Point come in one, the red buoy on the Cardigan Shoal should be seen bearing N. ¼ E., and distant half a mile, and the vessel should be in seven or eight fathoms water. At the same time, the black buoy of the Cardigan and the white buoy of the Panmure Shoal should be seen on her starboard and port bows respectively, and at the distance of one mile. Continue to run toward the beacon and house exactly in one (passing between the last-named buoys) until you have approached within half a mile of the beacon, when Brudenell Islet and Doctor's Point will be seen (up Brudenell River to the N. W. of the town) touching and bearing N. N. W. ¾ W. If you can now see the Thrumcap Buoy, which should bear N. by W. ½ W. two thirds of a mile, you will have only to steer so as to give it a berth of one cable as you pass to the S. W. of it into the harbor. But, if the buoy be not seen, run toward Brudenell Islet and Doctor's Point touching, until the Roman Catholic church cupola is seen well to the N. W. of the English Episcopal church steeple, or until the latter bears not less to the Eastward than N. by E. ½ E., where you may haul toward it, and choose your berth in from six to three fathoms, over mud bottom.

Approaching from the Southward, round Panmure Ledge by the lead in seven fathoms, or by keeping Murray Head open to the Eastward of Graham Point till the N. side of Panmure Island bears as far to the Westward as N. W. by W. ½ W., when the vessel may haul in to the Northwestward, following the Northern edge of the Panmure shoal until the beacon and house can be made out, and brought in one, as before directed. If it should so happen that, from thick weather, or other cause, the beacon and house cannot be seen, the Northern edge of Panmure Shoal may safely be followed by the lead, in six fathoms, to within half a mile of the white buoy, when the shoal becomes too steep to be safely followed farther. In like manner the Southern edge of Cardi-

gan Shoal may be followed, from the red buoy to the black buoy on its S. W. extreme, as I have already remarked; and the vessel may either bring up in the outer anchorage, half a mile within the latter in a line toward the Thrumcap, or proceed into the harbor, as may be expedient. Between Guadin Spit and Aitkin's Point the channel of the harbor is only one hundred and seventy-five fathoms wide, from three fathoms to three fathoms, and six and a half fathoms deep; but it expands again immediately, affording excellent anchorage all the way to Brudenell Point, one mile above the town.

Almost all kinds of supplies may be obtained at George Town, but fresh water in large quantities only from wells, as in most parts of the island.

Tides. It is high water on the full and change days at 8h. 40m. after the moon's transit, by the means of the morning and evening tides: the latter being generally the latest by about an hour in the summer months. The rise is five feet in spring, and three and one sixth feet in neap tides.

The rate of the tidal streams does not exceed three fourths of a knot.

Boughton Island. BOUGHTON ISLAND, not quite so large as Panmure Island, is united on the N. E. side to Bruce Point by a dry sand-bar one mile in length, and is divided into two parts, of which the Southern, one third of a mile long, is joined to the remainder by a double bar of sand and shingle enclosing a large pond.

Boughton Ledge. BOUGHTON LEDGE runs out at this bar to the distance of six hundred fathoms to the Eastward, and has rocks near its outer extreme which always show. Boughton Point, the S. extreme of the island, is a cliff of red sandstone, thirty feet high, and has a rock that dries off it, and shallow water to the distance of half a mile.

Rocky and irregular soundings four to five fathoms, run out to E. S. E. still farther, and therefore a large ship, at night, or in thick weather, should not round the point in less than nine or eight fathoms.

Off the W. side of the island, a bank, with from three to five fathoms, extends to the distance of one mile and one fourth; and farther to the Westward there are dangerous shoals, which, together with Boughton Spit, and the Mosquito Sands, extend along the N. E. shore of the bay nearly to Maitland Point at the entrance of the Cardigan. There are narrow and intricate channels between these shoals and the land to the Northward, which lead into Launching Bay. Large ships should not stand in to less than five fathoms at low water on this side of the bay.

Off Boughton sand-bar and Bruce Point, the shallow water extends two thirds of a mile, and in Boughton Bay the line of three fathoms is a mile out from the shore.

Boughton or Grand River. BOUGHTON or GRAND RIVER, five miles N. N. E. from Boughton Point, has a dangerous bar of sand one mile out from its entrance, and over which six feet, at low water, ordinary spring tides, can be carried in a very narrow channel marked out by three buoys.

Little and Fortune Rivers, Rollo Bay, and Colville River. LITTLE RIVER, FORTUNE RIVER, ROLLO BAY, and COLVILLE RIVER, occurring in order as we proceed along the coast to the N. E., are tide inlets nearly barred up with sand, and having small streams at their heads; they are places only fit for small craft and boats, having from three to five feet over their bars at low water.

Colville Bay. There is good anchorage in Colville Bay with off-shore winds. Sharp cliffy headlands and points of red sandstone separate the bays in which these rivers are situated, the cliffs being from twenty-five to fifty feet high, and the shallow water off them not extending beyond the distance of three hundred fathoms, excepting at Eglington Point (separating Bay Fortune from Eglington Cove), where the reef is very shallow for the first four hundred fathoms, out from the shore, and continues six hundred fathoms farther, with from three to four and one fourth fathoms, over rocky bottom; but this is within the line joining Howe Point and Souris Head, and therefore out of the way of vessels running along the coast. To the Eastward of Colville Bay the coast is bold and free from danger, excepting Harvey Reef, which extends four hundred fathoms from Harvey Point, and has on it Shallop Rock, which always shows. Harvey Point is five miles from Colville Bay, and will moreover be known by its being the Eastern point of Harvey Cove, in which there are some very remarkable and high sand hills. At Basin Head, one mile farther to the Eastward, the cliffs terminate, and sand hills and sandy beach form the shore nearly all the way to the East Point, a distance of nearly nine miles.

Harvey Reef and Shallop Rock.

East Lake. In this distance the East Lake is all that requires notice. It is a shallow and narrow pond, within the sand-bars, extending from Basin Head to within two miles of the East Point, and having a narrow outlet (two miles from the head), which is nearly dry at times at low water. Boats and small craft enter it for produce, the country being well settled along its Northern shore. It is high water, full and change, at eight and a half hours, and the rise is three and three fourths feet in spring tides, and two and one third feet in neap tides.

Tides.

East Point. THE EAST POINT is a cliff of red sandstone, from thirty to sixty feet high, from which a reef runs out two thirds of a mile to three fathoms, and not quite a mile to five fathoms. In vessels approaching the reef at night, it should be remembered that the

flood tide comes from the Northward, setting strongly upon and over it, and afterward Southwestward, between it and the Milne Bank, at the rate of two and a half knots. There is frequently a great rippling off the point, but the reef does not extend farther than has been stated. The depth of twenty fathoms is as near as a large ship should approach when the land cannot be seen at night or in foggy weather. The anchorage is not good to the Northward of the point, the ground being either loose or rocky; but to the Southward of it there is good riding with Northerly winds as far Westward as the East Lake Outlet in a moderate depth of water, and over a bottom of red sand. The tides run at the rate of two and a half knots between the N. end of Milne Bank and the point, but are not nearly so strong farther to the Westward.

Milne Bank.

MILNE BANK, if we consider it to be bounded by the depth of ten fathoms, is five and three fourths miles long, N. N. E. and S. S. W., and one mile and three fourths broad; the bottom being of sandstone, thinly covered here and there with red sand. The soundings are irregular; between six and nine fathoms, over the Northern part of the bank; but toward the Southern end, and close to the outer edge, there is a shallower part one mile and a half in length, on which there are less than five fathoms; and it is here that the least water is found, namely, four and a half fathoms at low water in spring tides. The shallowest part of the bank lies between S. by E., and S. from the E. point, and is distant from it four and one fourth to five and three fourths miles. Souris Head and Dean Point in one, bearing W. by N., pass over its N. extreme in five fathoms; and Swanton and Chepstow points, bearing W. N. W. ½ W., just clear to the Southward in the same depth; but those points are so distant, that fine weather and a person very well acquainted with the coast would be required to distinguish them. The extreme S. end of the bank, in ten fathoms, bears from the E. point S. six and one fourth miles; and the N. extreme E. S. E. two miles. Between the Northern part of the bank and the E. point there are from ten to eleven and a half fathoms, red sand bottom, the deepest water being close to the bank. The eastern or outer edge of the bank is very steep, there being from twelve to fifteen fathoms close to it, and there is very frequently a great rippling along it, caused by the abrupt opposition which it presents to the flood tide from the N. E. The sea is very heavy here, and also off the point, in strong N. E. gales.

THE NORTH COAST OF PRINCE EDWARD ISLAND.

The great bay formed by the Northern coast of Prince Edward Island, and the difficulty of beating a ship out of it in heavy and long-continued N. E. gales, have been already mentioned. That difficulty seems to be caused by an acceleration in the rate of the current so frequently found running past Cape Gaspé, Bonaventure Island, and the Miscou Banks, and which doubtless continues farther S.; or it may arise from an extension of that general set to the Southward so often experienced by vessels crossing from the Bird Islands toward Anticosti or Cape Rozier, and which has been observed to be increased by strong N. E. winds; as might have been inferred from the great rise of water which they cause in all the Southern ports of the gulf.

Current.

The set of the tidal streams may also at times be very unfavorable to a vessel under the supposed circumstances, for the stream of flood is known to set to the Southward into the bay, in conformity with the progress of the reflux tide wave, from the N. point Southeastward to St. Peter's, while farther Eastward the tide that comes from the N. E., from between the Magdalens and Cape Breton, also sets toward the shore, especially near the E. point.

Tidal Streams and Tides.

The reflux course of the tide-wave on this course, has been inferred from observations made during the surveys of all the harbors: from which it appears, that the time of high water on the full and change days becomes later in succession, as we proceed Southeastward from the N. point to Cascumpeque, Malpeque, Grenville Bay, Rustico, Tracadie, and St. Peter's. At St. Peter's the time of high water, full and change, namely, eight and two thirds hours, is rather later than at the E. point; and as there is also a considerable increase in the rise of the tide, there seems reason to conclude that the two tide-waves meet somewhere about this harbor, the Western being twelve hours older than the Eastern wave.

With the exception of a few places off the bars of the harbors, the anchorage is, generally speaking, very bad all along the Northern shore of the island; the bottom being of red sandstone, thinly covered occasionally with sand, gravel, and broken shells.

Anchorage.

From the N. point to Cape Kildare, eleven miles S. by W. ½ W., there is little requiring notice, excepting the River Tignish, two feet deep in its narrow sandy entrance at low water, and affording shelter to fishing boats; and where also there is a Roman Catholic church and settlement, principally of Acadians. About a mile to the Northward of the entrance a rocky ledge runs off to the distance of one mile and one third, with no more than three fathoms at low water.

Tignish River.

The shallow water extends to the same distance off Cape Kildare, which is a cliff of

sandstone thirty feet high; and generally, it must be borne in mind, that there are rocky and irregular soundings, between three and five fathoms, all along this part of the coast, frequently extending near two miles off shore.

Cascumpeque Harbor Light.

CASCUMPEQUE HARBOR.—There is a fixed light at Cascumpeque Harbor. This harbor, sometimes called Holland Harbor, is distant five miles S. W. ½ W., from Cape Kildare, and at the bottom of the bay, where the land begins to trend to the Eastward. It will be known also by the very remarkable high sand-hills, three and a half miles to the Southward of its entrance: these are the remains of a range of sand-hills formerly known as the Seven Sisters, and are fifty feet high. There are no high sand-hills to the Northward of the harbor.

The entrance is one hundred and eighty fathoms wide, between two sand-bars resting upon the sandstone which forms the Inner Bar, over which there are ten feet at low water. The Outer Bar, of sand, lies one mile and one fourth out from the entrance, and has the same depth, namely, ten feet at low water, in a very narrow channel, indicated by a white beacon (on the S. extreme of the Northern sand-bar), in one with a white mark on a log-hut, bearing W. by N.

The channel, from the one bar to the other, and between sand covered by only a few feet of water, is one hundred fathoms wide, and affords tolerable anchorage in from two and a half to three and a half fathoms, sand bottom; the best berth being just outside the entrance, where the sands on each side dry at low water.

Tides.

It is high water at the beacon, on the full and change days, at 5h. 40m. after the moon's transit; and the rise in ordinary spring tides is three feet, and in the neap tides two feet; but this is not regular, and therefore twelve feet over the bar at high water is all that can be safely reckoned upon on any particular day, unless in strong Easterly winds, which cause a rise of a foot or more in all the harbors of this coast.

It must also be observed that the rise given is always that of the best tide in the twenty-four hours; and that the morning spring tides are the highest during the summer months. It frequently happens at or near the springs, that the evening tides rise only a few inches, and sometimes they entirely disappear, causing single day tides for a short time, as at Richibucto and Shediac.

The morning spring tides are also the earliest during the summer months, as, for instance, at Cascumpeque Beacon, at the full and change in July, when the morning high water occurred at 4h. 22m. and the evening tide at 6h. 58m., after the moon's transit; the mean being 5h. 40m., as given above and in all similar cases.

At or near the neaps, the two tides of the same day become nearly equal in time, and rise for a short time. There is reason to believe, that the diurnal inequality of the tides ceases for a time soon after the equinox, and that it is reversed in winter, but the ice has hitherto prevented observations during that season. These remarks apply to all the harbors of this island, and of the neighboring provinces: their importance to vessels seeking refuge and taking the dangerous bars in bad weather will be evident. The rate of the tidal streams in the entrance of Cascumpeque Harbor is in general one knot and a half, and it seldom, if ever, exceeds two knots.

A pilot would be indispensable to a stranger visiting this place for the first time. I shall therefore only observe, that the white mark on the house must not be opened in the least to the Northward of the beacon since those objects in one lead in close along the Southern edge of the Northern sand. In strong Easterly gales the bar is covered with a continuous line of heavy breakers.

There is good anchorage off it in fine weather, of five or six fathoms, sand bottom. Within the entrance, the harbor has plenty of water and a clear channel, which, after running in one mile to the Westward, turns to the Southward, within Savage Island, and between it and Hill's Point, where there is a wharf at which vessels generally load.

Cascumpeque Bay.

CASCUMPEQUE BAY is of great extent, and broken into inlets or rivers which penetrate the country in a variety of directions, and to the distance of many miles.

Richmond Bay.

RICHMOND BAY is of great extent, running in ten miles to the S. W., and crossing the island to within two and a half miles of the waters of Bedeque Harbor. It contains seven islands, and a great number of creeks or rivers, some of which are navigable for vessels of considerable burden, and all of them by small crafts and boats. Grand River, which is the principal inlet, can be ascended in boats to the bridge, a distance of seven or eight miles. On Billhook or Fishery Island, the N. side of the entrance to Richmond Harbor, there is a lantern on a pole twenty feet high.

Grand River.

Light.

Malpeque Harbor.

MALPEQUE HARBOR is very superior to any other on the Northern coast of the island, having sixteen feet over its bar at low water, and from eighteen to nineteen at high water in ordinary spring tides, together with depth and space enough within for any description and number of vessels. The principal entrance is to the Southward of Billhook or Fishery Island, and between it and Royalty Sand, which dries out a long half mile from Royalty Point.

The ground is good, in the usual anchorage, just within this entrance; the bar outside preventing any sea from coming in, and the Horseshoe Shoals sheltering them from

Westerly winds down the bay. The other entrance to the N. W. of Billhook Island, is called the WEST GULLY, and is so narrow and intricate as to be only fit for boats, or very small craft, although it has a depth of nine feet over its dangerous bar of sand, which is one mile and one fourth out from the shore. There will be no probability of this being mistaken for the main entrance, even if the beacon or buoys were gone, if it be remembered that the main or ship channel is to the S. E. of all the sand-bars, including Billhook Island, and between them and the red-sandstone cliffs of Cape Aylesbury, the S. E. point of the bay. *West Gully.*

THE BAR OF MALPEQUE runs out from Billhook or Fishery Island two and one fourth miles to E. by S., and then turns to the Southward so as to join the shore to the Eastward of Cape Aylesbury. It is of sand thinly and irregularly spread upon sandstone; the rock being in many places quite bare. It is exceedingly dangerous in bad weather, when all signs of a channel are obliterated by heavy breakers. The Northern part of the bar, to the distance of one mile and a half out to the Eastward from Billhook Island, is very shallow, there being in some places only four feet at low water: but the extent of this shallow part is well known by a good cross-mark, namely, the Scotch church, Malpeque, and Darnley Point, in one, bearing S. W. by S. To the Eastward of this cross-mark, and to the Northward of the line of the beacons, there is more than twelve feet at low water. *Malpeque Bar.*

The narrowest part of the ship-channel is just within, or to the Westward of the above-named cross-mark, and is one cable wide and four fathoms deep. The Inner Bar, of sandstone, and with nineteen feet at low water, is one fourth of a mile farther in, and has in general a buoy upon it. The two white beacons, on the S. E. end of Billhook Island, kept in one bearing W. N. W. ¼ W., will lead through the narrows of the ship-channel and over the inner bar; but not over the outer bar in more than thirteen feet at low water. To enable vessels to cross the outer bar in the deepest water, namely, sixteen feet at low water in ordinary spring tides, the outer buoy is moored in three and one fourth fathoms and at the distance of one cable to the Northward of the line of the beacons: the intention being, that a vessel by running from the outer to the inner buoy should carry the deepest water, but I do not think that more than fifteen feet could be insured in that way, or without the assistance of a third buoy between the other two; and therefore a stranger without an experienced pilot, should not reckon upon more than that depth. As the buoys are at present so insecurely moored as to be liable to drift from their positions, the directions I shall give will be irrespective of them, as follows. *Ship Channel.*

Being off the bar, in five fathoms, bring the beacons in one, bearing W. N. W. ¾ W.; then sheer to the Northward of their line to the estimated distance of one or two cables, and the Westmost beacon will appear a little to the Northward of the other. Steer now so as to make a direct course toward the beacons, keeping the Westmost beacon open a little to the Northward, and the vessel will pass the bar in not less than fifteen feet, and probably in sixteen feet of low water, in ordinary spring tides, or a corresponding depth at other times of the tide. *Directions.*

The water will deepen immediately within the bar to eighteen feet or more, and as soon as it does so sheer at once to the Southward, and bring the beacons exactly in one, taking care that this be done before the Scotch Church, Malpeque, opens out to the Westward of Darnley Point; for if not, the vessel will be on shore on the shallow part of the bar on the N. side of the channel. Keep now the beacons in one, running toward them, and they will lead through the narrows, and over the inner bar, in nineteen feet at low water; after which they may either still be kept in one, or the Westmost one a little open to the *Southward* of the other, until the vessel is half a mile within the inner bar, or within three fourths of a mile of the beacons, when the course must be changed to W., and the sandy S. point of Billhook Island must be passed at a distance of one cable, steering that course into the harbor.* The vessel should anchor with the beacons bearing between E. by N. and E. N. E., and distant from one fourth to three fourths of a mile, but not farther for fear of the Horseshoe Sands, which commence at a distance of one mile from the beacons. There is less sea farther to the S. W., within or to the Westward of Royalty Sand, but a stranger will have less difficulty and risk in taking up the birth first recommended. The channel passes to the Southward of the Horseshoe Sands and between them and Grover Island, but the principal object aimed at in these directions being to enable a vessel to run into a place of safety, I shall refer to the chart for the navigation within the bay. Vessels may anchor outside the

* Grover Island, being distant five miles from the bar, can with difficulty be distinguished from Aylesbury Island behind it; but those who can be certain of not mistaking the one island for the other, may proceed as follows: Being off the bar, in five fathoms, open the N. point of Grover Island a little (not more than two degrees) to the Northward of Royalty Point, bearing W. by S., and keeping it so opening toward it, until the beacons come in one, when change course toward the latter, keeping them in one, and they will lead in through the narrows and over the inner bar, when the vessel must proceed as already directed.

bar, in from five to seven fathoms, sand bottom, to wait for a pilot; and in the event of the wind or tide failing, the anchorage is considered tolerably safe between the inner bar and the entrance, and probably is so with any wind that would prevent a vessel from running in, but the holding ground is not good there, and should only be trusted in fine summer weather. Within the harbor the bottom is of sand and clay, and a vessel may choose any depth from three to ten fathoms, the greatest depth being close off the point of Royalty Sand. It is high water in the harbor, on the full and change days, at six hours after the moon's transit; the rise being three feet in spring, and two feet in neap tides; but the rise is so irregular, that it would not be safe to count upon a rise of more than two feet on any particular day. N. E. winds cause high tides, Westerly winds produce the contrary effect. The morning tides are the highest during the summer months. The rate of the tides is strongest in the entrance, and off the point of Royalty Sand, running in spring tides two and a half knots. In the ship-channel from the entrance to the bar, the rate is one and a half to two knots. Within the bay the tides are in general much weaker, seldom amounting to one knot.

Tides.

The coast between Richmond Bay and Cape Tryon is nearly straight, and free from detached dangers; but the shallow water runs out a considerable distance, and a large ship should not approach nearer than the depth of seven fathoms.

Cape Tryon. CAPE TRYON, distant seven miles, S. E. ½ E. from Cape Aylesbury, is a remarkable cliff of red stone, one hundred and ten feet high.

Grenville Harbor. GRENVILLE HARBOR, one mile and a half S. S. E. from Cape Tryon, has its entrance at the Northwestern extremity of a long range of sand hills, the highest of which is fifty-five feet above high-water mark. The entrance of this harbor is one third of a mile wide, and three fathoms deep, but it is nevertheless only fit for small vessels in consequence of its dangerous and shifting bar of sand, which is only five feet at low water.

Cape Turner. CAPE TURNER is the highest cliff on the island, being of red sandstone and conglomerate, one hundred and twenty feet high. It is distant eight miles S. E. ½ E. from Cape Tryon, the harbor last described lying between.

Great Rustico Harbor. GREAT RUSTICO HARBOR has two narrow sandy entrances, on either side of M'Auslin Island, and which are distant three and five miles respectively to the S. E. of Cape Turner. It is a place only fit for small schooners; for its shifting bars of sand are exceedingly dangerous, having a varying depth of from four to six feet, and extending out three fourths of a mile from the shore; at which distance there are three fathoms at low water.

Stanhope Point. STANHOPE POINT, on which there is a sand hill thirty feet high, half a mile to the Eastward of the entrance of Little Rustico, and nine miles S. E. from Cape Turner, has a dangerous reef running out from it three fourths of a mile to the depth of three fathoms, and one mile to five fathoms. On some parts of this reef there is only one foot of water, at the distance of half a mile from the shore. Between Stanhope Point and Cape Turner the coast forms a curve or bay, in which are situated the entrance of the Rustico already described; and where the three-fathom edge of the shallow water is seldom less than three fourths of a mile off shore. Farther out the holding-ground is bad, being of red sandstone, with an occasional thin covering of sand.

Tracadie Harbor. TRACADIE HARBOR, or Bedford Bay, is distant four miles from Stanhope Point and thirteen miles S. E. by E. from Cape Turner. Its entrance is at the Western extremity of a remarkable range of sand hills, fifty or sixty feet high. The bar of sand which shifts occasionally in heavy gales, extends out to the distance of three fourths of a mile from the entrance, and has a varying depth of from five to nine feet over it at low water in a channel only forty fathoms wide.

St. Peter's Harbor. ST. PETER'S HARBOR has only five feet at low water. St. Peter's will be recognized by its magnificent range of sand-hills, which, near the entrance, attain the elevation of seventy feet above the sea, and continue for several miles to the Eastward; after which there are no more high sand-hills till we arrive at Surveyor's Inlet, within four miles of the East Point.

East Point. From St. Peter's to the East Point, a distance of thirty-three miles E. S. E. the coast is unbroken, formed of red sandstone cliffs, with occasional patches of sandy beach at the mouths of small streams, where boats can land only in fine weather, or off shore winds.

NORTHUMBERLAND STRAIT.

A full description of Prince Edward Island, and of the opposite coast of New Brunswick and Nova Scotia, having been given in illustration of the charts, it now only remains to offer a few general remarks respecting the Strait of Northumberland which appears to have been hitherto avoided by large ships, as much from a want of that precise knowledge which a good chart and directions are calculated to convey, as from any supposed amount of danger or difficulty in its navigation. There are, how-

ever, few places in which such precision of knowledge is more requisite than in this strait, which presents a confined navigation one hundred and sixty miles in length; and which at Cape Tormentine, the narrowest part, is only seven miles wide from shore to shore; and only five and a half miles, if we reckon only the navigable breadth between the shoals.

The description of the dangers and of the soundings have been made very full in consequence; and the times of high water, and the rise of the tides in the various harbors, together with the strength of the tidal streams in their entrances, have also been given; but the tides of the straits are so very peculiar, that it will be both interesting and useful to add a general view of the course of the tide-waves, and of the strength and direction of the streams which they occasion.

To this will be added briefly the mode of proceeding recommended to be adopted in a vessel running through the strait in a dark night or in thick weather, when the soundings alone can safely guide her.

For the purpose above stated, it will be convenient to divide the strait at Cape Tormentine into two nearly equal portions, distinguished by the different set of their tidal streams, and by different tide-waves, which advancing from opposite directions, meet in the central part of the strait. The course of these waves appears to be as follows: The principal tide-wave after entering the gulf between Cape Breton and Newfoundland, sends off, laterally, waves to the S. W., on either side of the Magdalen Islands. The first of these, which I shall call the Eastern wave, coming from between those islands and the Western shore of Cape Breton Island, arrives at the Eastern entrance of the strait soon after eight o'clock, and proceeds to the Westward, making high water later in succession from E. to W. as far as Pictou, which it reaches at ten hours. At the same nominal hour, but twelve hours later, the other or Western wave arrives at Cape Tormentine, having been retarded by the long detour which it has taken to the Northward and Westward of the Magdalens, and by the great extent of comparatively shallow water which it has passed over in its subsequent progress to the S. W. This wave makes high water later in succession at places along the Eastern coast of New Brunswick, as we proceed to the Southward; and, after entering the strait, from N. W. to S. E., contrary to the course of the other or Eastern wave. *Tidal Streams.*

Thus, it is high water on the full and change days at Miscou, at about two and a half hours; at Point Escumenac and the N. point of Prince Edward Island, forming the Western entrance of the strait soon after four hours; at the W. point of Prince Edward Island at six hours; at Schediac, at eight hours; and at Cape Tormentine, at ten hours.

When, therefore, the Eastern wave arrives between Pictou and the Wood Islands, the Western part of the preceding tide-wave arises between Cape Tormentine and Cape Traverse. They then meet and combine to make high water at the same hour, namely, ten hours or a little later in the harbors, all over the central portion of the strait, from Pictou to Cape Tormentine; causing also an amount of rise of the tides everywhere more than double, and in some of the harbors nearly three times as great as that which occurs at either entrance of the strait.

The direction of the tidal streams correspond generally, and in fine weather, with the progress of the tide-wave, but is disturbed occasionally by strong winds. The Eastern flood-stream enters the strait from the N. E., running at the rate of two and a half knots round the E. point of Prince Edward Island, but is much weaker in the offing and over toward the Southern shore. It runs round Cape Bear, and with an increasing rate along the land to the Westward; is strongest in the deep water near the land, and runs at its extreme rate of three knots close past the Indian Rocks and Rifleman Reef.

Losing strength as it proceeds farther to the N. W., it is quite a weak stream when it meets the other flood-stream off the Tryon Shoals.

This Eastern flood-stream is not so strong along the Southern or Nova-Scotian shore, unless it be in Caribou channel for a short space near Caribou Reef, and it is weak, not generally exceeding half a knot in the middle of the strait.

The other or Western flood-stream comes from the Northward, along the W. coast of Prince Edward Island, sweeping round the W. point, and running strongest in the deep water near the W. reef, where its rate is two and a half knots Over toward the New Brunswick shore its rate seldom exceeds one knot and a half, and this is its average rate as it pursues its course to the S.-E., until we arrive near Cape Tormentine, where the strongest part of the stream runs near the Jourimain Shoals, and thence to the Southward round and over the dangerous Tormentine Reefs, with a great ripple, and at the rate of three knots.

After passing these reefs, part of it curves round to the S. W., with decreasing strength, and unites with the other flood-stream in the Bay Verte, while the remainder is lost in the central part of the strait. The ebb-stream, generally speaking, pursues a contrary course to the flood, and at nearly the same rates.

From this account of the tidal stream, it appears that a fast-sailing vessel under favorable circumstances, might enter the strait with the flood, and arriving at Cape Tormentine soon after high water, might there take the ebb, and thus have the stream with her, with but slight interruption, from one end of the strait to the other. Or, a vessel beating with the flood, might so time her arrival at the same point, as to be able to continue her voyage in the same direction with the ebb.

The tidal streams were observed in general to change their direction soon after it was high water, or low water by the shore; but not unfrequently there were exceptions to this, which it would be difficult to account for with certainty. Strong winds in the gulf greatly influence the strength and directions of the streams in the strait, as well as the height to which the tides rise; moreover, as the two tide-waves that meet in the central part of the strait are twelve hours different in age, so they are in consequence of unequal heights, owing to the diurnal irregularity; each of them being alternately and in turn the highest, and probably occasioning the stronger stream.

But it would require a long series of simultaneous observations at different points, and continued through the different seasons of the year, to reduce to order, or to explain satisfactorily, the seeming irregularities thus produced. Nevertheless, enough remains of general occurrence during the summer months, which is highly useful for the seaman to know, and which has been stated in consequence.

Directions. Vessels bound to Miramichi, and the ports in the strait to the Westward of Cape Tormentine, after entering the gulf on either side of the Island of St. Paul, usually pass to the Southward of the Magdalens, and round the N. point of Prince Edward Island. The reef of this last-named point is exceedingly dangerous, and the lead should be kept constantly going when approaching it at night, or in foggy weather; bearing in mind the probability of having been previously set to the Southward in crossing from the Magdalens, especially if the wind has been from the Northward.

Under the same circumstance, after rounding the N. point, the course should be shaped well to the Westward, so as to insure the W. reef, which should be passed by the lead, running along the edge of the bank off the New Brunswick shore. Proceeding Southeastward, after having passed the W. reef, the lead will afford sufficient guidance along either shore, reference being had to the soundings in the chart, until we arrive near the narrow part of the strait at Cape Tormentine.

There, if the vessel be bound farther to the Eastward, the shore of Prince Edward Island should be preferred, the soundings on that side being quite sufficient to guide the vessel past Carleton Head, Cape Traverse, and more particularly the Tryon Shoals, if the irregular tides off the latter and the frequent set of the ebb-stream toward them be remembered. The tides, however, in this narrow part of the strait, are not very strong along the Prince Edward Island shore, off which the anchorage is good, in the event of the wind failing; while on the opposite side there is deep water, and very strong tides close to the Jourimain and Tormentine reefs.

If the wind be adverse, or scant from the Southward, with the ebb-tide running, a stranger had better not attempt this narrow passage at night, or when the land cannot be seen. Under such circumstances, it is recommended to anchor to the Westward of Cape Tormentine, till daylight or a change of tide renders it less hazardous to proceed. Vessels bound to ports in the Eastern division of the strait, enter the gulf either through the Gut of Canso or by the Island of St. Paul. In the first case the bearing of the light at the Northern entrance of the Gut will guide them up to Cape George from which, if bound to Pictou, there will be no difficulty in running along the land to the Westward, if due attention be paid to the soundings in the chart, and afterwards to the bearing of Pictou light. If the weather be thick, or the light not seen, beware of the reef off the E. end of Pictou Island, which should not then be approached nearer than the depth of ten fathoms, especially if the flood-tide be running.

Vessels approaching from St. Paul's and entering the strait at the E. point of Prince Edward Island, should not approach the latter nearer than twenty fathoms in dark nights or thick weather.

Cape Bear and its reef should not be rounded in less than fifteen fathoms, under the same circumstances; and then, if bound anywhere to the Westward of Pictou, the vessel should be kept more over toward Pictou Island and the Southern shore, where the soundings will guide her, till the Indian Rocks and Rifleman Reef are passed. The light on Point Prim will greatly assist in passing the last-named danger, after which the lead will again afford sufficient guidance along the Prince Edward Island shore past the Tryon Shoals, and through the strait to the Northwestward.

On the opposite or Nova-Scotian shore, Westward of Pictou, the principal dangers to be avoided are the Middle Shoals, between Pictou Island and Caribou, Amet Island and Shoals, and the Waugh Shoal. The approach to all these is sufficiently indicated by the soundings, and therefore a constant use of the lead, and a careful reference to the chart, will enable the intelligent seaman to pass them at all times in safety; and also

to conduct his vessel to any of the harbors of the coast, where pilots will readily be obtained.

From the account which has been given of the tides in this strait, it will be perceived that they are very different from anything that can be gathered from preceding publications: and the charts will show that the soundings are no less so, for they vary greatly, in both the nature of the bottom and the depth of water; thus affording much more assistance to vessels than they would have done, if they had been of the more uniform character which has been erroneously attributed to them.

CAPE GEORGE BAY, THE GUT OF CANSO, AND THE LENNOX PASSAGE.

CAPE GEORGE (see chart), the N. W. point of the bay, is a bold and precipitous headland, composed principally of slate, conglomerate, and trap-rocks, attaining the elevation of six hundred feet above the sea. The shallow water does not extend off it beyond a quarter of a mile, but as there is a depth of twenty fathoms at double that distance, the lead affords but little warning, and it should therefore be approached with caution in dark nights or thick weather. Off Ballantyne Cove, on the Eastern side of the cape, there is anchorage in Westerly winds, but the ground is not very good. *Cape George.*

CAPE GEORGE LIGHT is a revolving light; time of revolution, thirty seconds; four hundred feet above the level of the sea. *Light.*

MAC ISAAC ROCK, with nine feet least water, is the centre of a small detached shoal, distant nearly three hundred fathoms from the shore, between Mac Isaac Point and a remarkable patch of white gypsum cliff. This rock, which is the only danger on the W. side of the bay, bears from the gypsum patch E. N. E. ½ E., two thirds of a mile; it is distant two and one fourth miles to the Northward of Antigonish, and is shown occasionally by heavy breakers. *Mac Isaac Rock.*

ANTIGONISH HARBOR, eleven miles S. S. W. from Cape George, and midway between Mac Isaac Point and Monk Head, is ninety fathoms wide at entrance, between low points of sand, from which a dangerous bar extends to the distance of half a mile Two beacons, on the Northern point of entrance, kept in one, and bearing W. by N. Northerly, led over this bar, at the time of our survey, in six feet at low water; but both the depth and direction of the very narrow channel are said to change occasionally. The anchorage off the bar is not very good, and would be quite unsafe in a gale of wind from the N. E. It is high water in the entrance on the full and change days, at about nine hours; the rise being four feet in ordinary spring tides, and two feet in neap tides. Northerly winds cause high tides, and Southerly winds the contrary. The rate of the tides in the entrance seldom exceeds two knots, unless it may be in spring, after the melting of the winter snow. *Antigonish Harbor.* *Tides.*

MONK HEAD is a cliff of gypsum forty-five feet high, two and three fourths miles S. E. from the entrance of Antigonish Harbor. It has a rocky bank, with three fathoms least water, extending off it three fourths of a mile to the Eastward: and there are no more than four and a half fathoms at double that distance out from the shore. *Monk Head.*

POMQUET HARBOR has its narrow entrance at the Eastern extremity of a range of low sand hills and sand beach, two and a half miles S. S. E. from Monk Head, and in the bay between it and Pomquet Point. It is an extensive place, branching into two principal and many smaller inlets, coves, and islets. It is navigable for small craft and boats nearly three miles in from the sea, but it is of no use to shipping, having usually only a depth of two feet at low water over its shifting bar of sand. The principal settlements and the Roman Catholic church are on the Western shore of the N. W. arm. *Pomquet Harbor.*

POMQUET ISLAND, which bears S. ½ E., distant fourteen and one fourth miles from Cape George, is of red sandstone, low, wooded, about half a mile long, and is joined by a reef to Pomquet Point, from which it is distant one hundred and seventy-five fathoms. The reef dries out from the point more than halfway over toward the island, and leaves a passage only three or four feet deep at low water. Shallow water runs out from the island nearly four hundred fathoms to the E. N. E., and a reef, with a large rock near the end of it, dries out from its Eastern shore to the distance of one hundred and fifty fathoms. The island and its reefs shelter Pomquet Road from all points excepting between N. E. by N. and E. This roadstead, which is considered safe during the summer months, but where the riding must be very heavy in N. E. gales, is in the bay between Pomquet Point and Little River; which last admits boats only at high water, and with its English church and settlement will be seen bearing S. by W. at the distance of a long mile from the island. Vessels may anchor in any depth from three to six fathoms, over sandy bottom; but the best-sheltered berth is in four fathoms at low water, with the S. point of the island bearing N. by E. ½ E., distant half a mile. To run for this anchorage from the Northward pass the Eastern shore of the island at the distance of half a mile, or in not less than eight fathoms, until Pomquet Point comes in sight to the Southward of the island, when haul to the Westward into the bay. Approaching from the Eastward, the *Pomquet Island.*

Bowman Bank. Bowman Bank must be avoided in a large vessel, either by the lead, or by not bringing the N. point of the island to bear to the Westward of W. S. W. until the N. point of the bank is passed. The bank is of great extent, running off fully two miles to the Northward from Quarry Point and Bowman Head; and has rocky patches on it, with thirteen, sixteen, and nineteen feet at low water, at various distances, from three fourths to a mile and a half off shore.

Pomquet Banks. THE POMQUET BANKS, discovered by Captain Bayfield, lie off Pomquet Island to the N. N. E., distant from three to six miles. The soundings on them are rocky and irregular, the least water (six fathoms) having been found on the outer and smaller of the two banks, when the church at Little River was shut in behind the E. side of the island bearing S. by W. ½ W., five and a half miles.

Tracadie Harbor. TRACADIE HARBOR,* three and three fourths miles E. S. E. from Pomquet Island, has its narrow entrance about half a mile to the Eastward of Bowman Head. It is extensive, and fourteen feet deep in some parts within; with many coves, islets, and small streams, the principal of which, called the Tracadie River, is at the head of the Eastern arm, two and a half miles in from the sea. The depth over its dangerous bar of gravel and stones is only two feet at low water, in a narrow and crooked channel; it therefore only admits boats or very small vessels at high water. The village of Tracadie and the Roman Catholic church will be seen about a mile within the entrance. The church is large and can be seen from a great distance out at sea.

Little Tracadie. LITTLE TRACADIE, a similar but much smaller harbor, with only one foot at low water over its bar, lies two and three fourths miles farther to the Eastward. Its entrance is in the bay between Barrio Head and Blue Cape, the former being a cliff of red sandstone one hundred and ten feet high; the latter remarkable from being of limestone and sheltering the entrance from N. E. winds.

Cape Jack. CAPE JACK, a cliff of red sandstone, forty-five feet high, is the most prominent headland on this part of the coast, forming the extreme point all the way from Pomquet Island, from which it bears E. ¾ S., seven and three fourths miles.

Jack Shoal. JACK SHOAL runs out from the cape N. E. by N., one mile to three fathoms, and a mile and a half to five fathoms. Between the distances of half and three fourths of a mile off shore, there are two large patches of rock that dry at half tide; leaving a passage for small craft, eleven or twelve feet deep, between them and the cape. This shoal has often proved dangerous to vessels in thick weather, when it should be approached with great caution, especially from the Eastward; soundings on that side being irregular and deep near the shoal, but nevertheless quite sufficient to insure safety if the lead be kept going, with reference to the chart. On the outer point of the shoal in three fathoms, the light-house at the N. entrance of the Gut of Canso bears S. E. ½ E. three and a third miles; therefore a vessel will be clear of this danger if the light be now brought to bear to the Eastward of S. E. ½ S. If the light cannot be seen, the shoal should not be approached nearer than the low-water depth of ten fathoms.

Havre Bouche. HAVRE BOUCHE is a small but convenient harbor for schooners, lying between Cape Jack and the light-house. It has four feet at low water, in its narrow entrance between stony points, having no bar outside; and it is thirteen or fourteen feet deep within. There is a small stream at its head. The shores and neighborhood are well cultivated, and the Roman Catholic church will be seen near the shore, and a mile to the Westward of the entrance, being halfway toward Cape Jack.

Tides. It is high water, on the full and change days, at this and the other three small harbors last described, at about nine and a half hours, and the rise, unless increased by Northerly winds, is from four to two feet, accordingly as it may be spring or neap tides.

Canso Light. The light-house at the N. entrance of the Gut of Canso stands on the Western or Nova Scotia shore, fifty fathoms within the high water-mark. It is a square building of wood painted white; standing on the bank so that the lantern is elevated about one hundred and ten feet above the sea. It exhibits a fixed light. Half a mile to the S. E. of the light-house, and on the same side of the Gut there is tolerable anchorage in all but Northerly winds.

Vessels frequently stop there and wait tide.

The approach in this direction, through George Bay, is unattended with difficulty or danger, excepting where fogs or snow-storms hide from view the light that has been judiciously placed at its Northern entrance. The soundings are then the only guides, and they will be found sufficient, in all ordinary cases for the safety of vessels prudently conducted, with their leads going, and furnished with the charts. In vessels so circumstanced, the endeavor should be to strike soundings on the bank off Long Point, and then to follow its edge along the shore of Breton Island in the low-water depth of ten fathoms, to the entrance of the Gut. It is seldom so thick, especially in a breeze of wind, but that some part of the shore will be seen before the vessel has run far after entering so narrow a strait. With a beating wind she should board off and on the same

*See Plan.

shore, until soundings are struck (in the board to the Westward, and after crossing the deep water), on the edge of the bank off Cape Jack, where, if it be night, and the fog so thick that the light cannot be seen, or if the tide be nearly done it will be advisable to anchor, and wait for a change. The ground there is not good, but it is out of the strength of the tides, and an anchor will hold in moderate weather. The anchorage half a mile to the S. E. of the light-house, and on the same side of the channel, should be preferred, if attainable; there are some spots of mud there, in which an anchor holds well in from seven to nine fathoms, and where the strength of the tide is not great.

Tides. The establishment or mean time of high water, on the full and change days, at the N. and S. entrances of the Gut of Canso, is nine and one fourth hours and eight hours respectively. The rise at each, in ordinary spring and neap tides, is four and a half and three feet, but extraordinary tides may rise six or seven feet, or only two feet, owing to the irregular influence of unknown causes—probably strong winds at a distance. The rise and fall of the tides on the shore usually continue through nearly equal periods of time, but the duration of the tidal streams (the flood being to the Northward and the ebb to the Southward) varies from one to four hours after it is high or low water by the shore, even in the fine weather of summer; while in the blowing weather, so frequent on the approach of winter or in early spring, they are reported to be still more irregular, running at times in the same direction for several days in succession; but this never occurred during the survey.

The rate of these streams off Cape Porcupine, where it is most rapid, is ordinarily about four knots; but is increased occasionally to five knots by strong winds.

Eddies. At most of the anchorages, and under almost every point, there are eddies, usually running in the opposite direction to the main stream outside, but at a much inferior rate; and they render greater attention necessary to insure a clear anchor.

The length of the passage through the Gut of Canso, from the light-house at the N. entrance to Eddy Point, is fourteen and a half miles; and its least breadth, between Balache Point and Cape Porcupine, is four hundred and fifty fathoms. The depth of water in the channel is seldom less than fifteen fathoms, and in the deepest part, off Cape Porcupine, amounts to thirty-two fathoms. This great depth, the strength of the tides, and the rocky or gravelly bottom, render the anchorage unsafe, excepting at the places hereafter to be described.

Ghost Beach. Excepting at Ghost Beach, and for a short distance below Ship Harbor, the general character of the shore on either side is high; the land rising from it, more or less abruptly, to the summits of ridges of considerable elevation.

Cape Porcupine. CAPE PORCUPINE, a precipitous headland on the Western shore, six hundred and forty feet high above the sea, is the most remarkable feature, and the scenery in its vicinity is of very great beauty.

Dangers. Generally speaking, the shore on either side is bold, but there are nevertheless several small rocks and shoals, which, although at no great distance off shore, have often occasioned serious accidents, and therefore require particular notice. The dangerous Jack Shoal, outside of the Northern entrance, has been already described.

I shall now describe the dangers *within* this passage, as they occur in proceeding through it to the S. S. E.

Balache Rock. BALACHE ROCK is nearly dry at low tides, but, as it is within the line uniting Balache and Mackeen points, it is not much in the way of vessels. It lies one hundred fathoms E. S. E. from the end of Balache Point, and fifty fathoms off shore.

Madagascar Rock. MADAGASCAR ROCK, dry at low water, lies directly opposite to the rock last described, and not quite fifty fathoms off shore under the highest part of Cape Porcupine. The rippling of the tide over this rock can in general be seen; nevertheless, its situation, off a projecting point in the narrowest part of the passage, nearly in the full strength of the tide, and at a part celebrated for sudden flaws of winds from various directions, renders it extremely dangerous, especially to strangers, who are accordingly recommended to give it a wide berth.

Dixon Rock. DIXON ROCK, reported to have only six or eight feet over it at low water, but on which we could find no less than twelve feet, bears S., distant seventy fathoms from Mackeen Point, and W. by S. one hundred and twenty fathoms from the Western point of Plaster Cove, which will then appear in one with Martel's house, low down on the Eastern shore of the cove, and just outside of the bridge. This rock is very much in the way of vessels approaching or leaving the anchorage off Plaster Cove, but will be avoided if the whole of the bridge over the cove be not shut in behind its Western point.

Premier Shoal. PREMIER SHOAL, of rock and sand, with thirteen feet least water, is a middle ground in the entrance of Ship Harbor. Ships may pass on either side of it, but to the Northward is the widest and deepest channel. Ship Harbor Point and the Western extremity of Pirate Island in one, bearing S. W. by S., will lead clear outside or to the Westward of this shoal, in five fathoms; therefore, vessels standing in toward Ship Harbor,

or anchoring off its mouth, should be careful not to shut in the whole of the island behind the point.

Stapleton Shoal. STAPLETON SHOAL is rocky, and extends from Ship Harbor and Stapleton points one hundred and fifty fathoms to the S. W. and W. At that distance off shore there are only sixteen feet at low water, but the depth increases almost immediately to five fathoms, the edge of the shoal being very steep.

Cahill Rock. CAHILL ROCK is on the opposite side of the Gut to the last, distant three fourths of a mile to the S. E. from Holland Cove, and six fathoms off shore. It is dry at low water, but becomes dangerous when covered. Roger Point in one with the N. E. side of Pirate Island (the latter being seen over the low shingle neck of Pirate Point) and bearing N. W. ¾ N., leads clear outside of it at the distance of sixty fathoms.

Ship Rock. SHIP ROCK is on the Eastern shore, rather more than halfway from Stapleton Point to Bear Head. It has six feet least water, and is distant one fourth of a mile Northward from Ship Point, and seventy fathoms off shore. Ship Point and Bear Head in one, bearing S. E. ½ S., lead outside of it at the distance of only twenty or thirty fathoms, and therefore, in standing toward it, tack before the head and point come in one.

Bear Reef. BEAR REEF has from six to nine feet at low water over large rocks, and extends one hundred and forty fathoms Southward from Bear Island. Off Bear Head also there is shallow water, extending one hundred and ninety fathoms to the S. E. Great caution should be used in approaching these dangers, for the water is too deep near them for the lead to afford much warning, and there are no good clearing marks.

Crossing again to the Western shore of the Gut, at Critchet Cove, there is a shallow bank of mud and sand, on which small vessels frequenty anchor, but of which large vessels should beware. Its outer edge, in five fathoms, is nearly one fourth of a mile off shore.

Martin Shoal. MARTIN SHOAL, two miles farther to the S. E., and one mile and three fourths N. W. from Eddy Point, is of rock, and extends one hundred and seventy fathoms off shore. Melford and Critchet points in one, bearing N. W. ¾ N., just clear its edge in four fathoms.

Eddy Spit. EDDY SPIT, of sand and stone, runs out one fourth of a mile N. W. from high-water mark to the N. E., and is almost always shown by the rippling of the tide. Ship Point and Bear Island in one, bearing N. W. ¾ N., just clear it to the N. E., at the distance of about a cable's length.

Eddy or Sand Point Light. EDDY OR SAND POINT LIGHT.—A beacon light is on Eddy or Sand Point, on the W. side of the S. entrance to the Strait of Canso, and is distinguished by two white lights horizontally placed twenty-five feet above sea level—rise and fall six feet. The building is square, painted white, with a black diamond on the seaward side. The point is shoal Eastwardly of the light nearly two hundred fathoms, but the Northwest of it is bold water and good anchorage. The tides are irregular, and very rapid round the point.

The following bearings by compass may assist vessels passing through the strait:

From the Light to Cape Hogan	S. 50°	E.
" " to Western headland, which intercepts the light	S. 10	E.
" " to Bear Island	N. 32	W.
" " to Pirate Cove	N. 34	W.
" " to Mill Creek	N. 39	W.

Eddy Point. EDDY POINT, from which the spit extends, is of sand and gravel, enclosing a small pond.

Dangers in South Entrance. The deep channel of the Gut of Canso continues to the Southward, between Nova Scotia and Janvrin Island into Chedabucto Bay, and being the course of the main stream of the tides from the Gut, as well as of all vessels that use this passage, we shall continue the description of the dangers on either side, as belonging to the same line of navigation.

Argos Shoal. ARGOS SHOAL consists of rock, and extends to the distance of two thirds of a mile E. by N. from Cape Argos. The least water found on it was twenty feet. It is shown by heavy breakers when there is a swell from the S. E.

Cape Argos. CAPE ARGOS, distant two and a half miles to the Southward of Eddy Point, will be easily recognized, being a small but high peninsula, bare of wood, with red cliff, and united to the main land by a low isthmus of shingle. Off the point of cliff next to the N. of the cape, and distant a third of a mile from it, a reef runs off toward Argos Shoal, which it so nearly joins as to leave no passage for large vessels. Eddy Point and Flat Head touching, and in one with the E. side of a hill behind the latter, bearing N. by W. ½ W., clear these dangers in seven or eight fathoms, and at the distance of one hundred and fifty fathoms to the Eastward. Flat Head is the N. E. point of Bear Cove, and if it be wished to pass outside of Argos Shoal, at a greater distance, let the above-named marks be kept proportionately open.

At Cape Argos the coast turns to the S. W. into Chedabucto Bay: we now cross to the Eastern side of the passage, where the shoals off Janvrin Island are exceedingly dangerous.

THOMAS SHOAL runs out from Thomas Head (the N. W. point of Janvrin Island), three fourths of a mile to the Westward, with rocky and irregular soundings, from eleven to twenty-one feet at low water. The clearing mark for the Western extremity of this shoal, is the Eastern end of Wasting Islet touching the S. end of Peninsula Point, and bearing S. S. E. ½ E.; and for its Northern side, the two points forming the N. side of Janvrin Island in one, and bearing E. ½ S., when Campbell Island will appear just open to the Northward of them. *Thomas Shoal.*

JANVRIN SHOAL runs out from Janvrin Point two thirds of a mile to the Westward. This bank of sand and stone dries out half that distance, and has a large rock near its edge. At the distance of five hundred and fifty fathoms out from the point there is another rock, with six feet least water, from which the S. W. extremes of Wasting Islet and Peninsula Point appear in one. The marks for clearing this dangerous shoal on the S. W. side, at the distance of one hundred fathoms, and in five fathoms water, are, the S. W. side of Wasting Islet in one with the N. end of Peninsula Point, and bearing S. E. ½ E. On the N. W. side, where there are no clearing marks, it should be approached with great caution, for the water is too deep for the lead to afford much warning. *Janvrin Shoal.*

WASTING ISLET and PENINSULA POINT, appearing like two small islands, on the edge of the bank, that dries out from the S. W. side of Janvrin Island, will be easily recognized, the islet being most to the N. W. They both have few red cliffs to seaward, and long gravel spits at their N. points; but a long bar of shingle unites the peninsula at its E. end to Janvrin Island. The very shallow water extends only two hundred fathoms off Wasting Islet, with a depth of four or five fathoms for an equal distance, farther out to the S. W.; but the Peninsula Point shoals are much more extensive and dangerous, running off both S. and S. E. In the latter direction the reef dries out three hundred fathoms, and under water extends to double that distance; while to the Southward there are six, sixteen, and twenty-five feet, at the distance of one fourth, one half, and three fourths of a mile out from high-water mark. Ship Point and Bear Head in one, bearing N. W. ½ N., clears these shoals to the S. W. in six fathoms; and the Roman Catholic steeple at Arichat, and the S. extremity of Creighton Island in one, bearing E. S. E. ¾ E., will clear them to the Southward at a distance of a third of a mile. *Wasting Islet and Peninsula Point.*

The foregoing brief description of the dangers on either side of the channel of the Gut of Canso, is intended to illustrate and to be used with reference to the chart: and with the same design the anchoring places shall now be pointed out.

Vessels may anchor for a tide, and in fine weather, near the light-house, at the N. entrance, as already remarked; and also off Mill Creek, which is another occasional stopping place; but neither of these can be recommended, since they are both exposed to Northerly winds, which often commence suddenly and send in a very heavy sea. Moreover, off Mill Creek, irregular eddies render it very difficult to keep an anchor clear. *Anchorage in the Gut of Canso.* *Mill Creek.*

PLASTER COVE, on the Eastern shore, and distant five miles from the light-house, is the first safe anchorage after entering the Gut from the Northward. It will be known at once by the conspicuous cliffs of white gypsum, which are one hundred and twenty feet high, on the N. E. side, and a short distance within the bridge, near its entrance. The cove itself is dry at low water, but the anchorage off its mouth is convenient and safe in all winds. In Northerly gales the swell, deflected by Cape Porcupine, causes rather uneasy riding, but it does not endanger vessels well anchored in a clear berth. *Plaster Cove.*

The only directions necessary, both for avoiding Dixon Rock, and choosing a good berth are, to keep the cove open, so that the whole of the bridge, as well as the plaster cliffs above it, may be seen. Large ships should keep Blanche Point well open, and go no farther in than seven or eight fathoms; but smaller vessels may anchor in four or five fathoms, with mud bottom. The bottom is more and more sandy as we proceed farther out toward the steep edge of the bank, in ten fathoms, after which it becomes rocky in the deep water and strength of the tide. *Dixon Rock.*

The tidal streams at this anchorage are eddies, running often irregularly, but generally in a contrary direction to the main stream in the channel, and at a rate seldom exceeding one knot. These eddies render it advisable to moor, especially in large vessels having occasion to remain some time (to water, for instance), in which case one anchor should be laid well out to the Southward in nine or ten fathoms water. *Tides.*

It is high water here on the full and change days, at 9h. 10m., M. T.; the rise in ordinary spring tides being four and one half feet, and in neap tides three feet, but extraordinary tides sometimes rise six or seven feet, and at other times only two feet.

There is an excellent watering place directly opposite this anchorage, in the bay, between Cape Porcupine and Keaton Point. The post-office is at Mackeen's store, on the Western side of the Cove, and the mails from Sydney, Arichat, &c., to Halifax and other places, cross the Gut thence to Mill Creek. *Water.*

Ship Harbor. SHIP HARBOR is on the same side of the channel as the anchorage last described and two and a half miles farther to the S. E. It is a large cove terminated by a bridge nearly a mile in from the sea. It is completely open to the N. N. W. winds, which blow directly through the Gut, causing at times a very heavy sea, excepting when well in toward the head of the harbor, where the anchorage is quite secure, out of the stream of the tides, and in three and a half fathoms, mud bottom.

There is a fine settlement, with a Roman Catholic and a Wesleyan chapel, on the N. E. side of the harbor, together with stores and wharves where vessels may receive repairs, or winter in safety.

Premier Shoal. Vessels of less than twelve feet draught may run in without difficulty, passing over the PREMIER SHOAL at all times; but larger vessels should prefer the channel to the N. of that danger, and attend to the following directions.

Being outside the shoal, bring Cavanagh Point, composed of low sandstone and sandy beach, on the N. E. side of the harbor, to bear S. E. ½ S., when a large store, built on piles, and farther up the harbor, will appear in one with it, and the end of the wharf will be just in sight. Run in with these marks on until Ship Harbor point bears W. S. W., when you will be within the Premier Shoal, and may sheer to the Southward into the middle of the harbor. The channel to the Southward of the shoal is neither so deep nor so wide as the other, but it is more convenient for entering the harbor with Southerly winds: in which case the chart and the lead will afford sufficient guidance.

The roadstead off the mouth of this harbor, and outside of the Premier Shoal, is much frequented by vessels detained by S. E. winds, but the riding is very rough there in winds from the opposite quarter. The depth is from seven to nine fathoms, over sand, gravel, and mud bottom, and the only direction necessary is to keep Pirate Island in sight to the Westward of Ship Harbor Point.

Venus Cove. VENUS COVE, on the Western shore and nearly opposite to Ship Harbor, is an excellent anchorage, especially in N. W. winds. The best berth is in six or seven fathoms, with mud bottom, directly off the mouth of the cove. Macnair Point in one with Plaster Cove, and bearing N. by E., should then be distant about two hundred fathoms. There is a good watering place here, with wharves for landing at all times of the tide; also a fine settlement, near which a small English Episcopal church has been recently erected.

Holland Cove HOLLAND COVE is one mile and three fourths farther to the Southward, and also on the Western shore. The anchorage off its mouth, although deep enough, is inconveniently small for large ships; but safe and good for small vessels. The best berth, for anything larger than a fishing schooner, is in seven or eight fathoms, mud bottom, with Pirate Island bearing [illegible]. E. by S., and distant a cable's length.

Pirate Island. PIRATE ISLAND, small, rocky, and united to the main land by a beach of shingle, forms the S. E. point of the above-mentioned cove; and all within it and a line drawn across to the wharves on the N. W. side is dry at low water, excepting a narrow boat channel, three or four feet deep, which leads to the bridge across this cove, about one fourth of a mile from its entrance.

The remaining anchorages are less secure, either from exposure to particular winds, or loose holding ground. On the Eastern shore, off Malden Cove, and Doolan Pond, N. W. of Bear Island, and E. of Bear Head, vessels frequently anchor to wait for wind or tide, in fine summer weather; as they do also at Byres, Critchet, and Eddy Coves, on the opposite side of the channel. There will be no difficulty in choosing a berth at any of these with the aid of the chart.

Habitants Bay. HABITANTS BAY lies to the N. E. of the Gut, and is about two and a half miles wide at the entrance, between Bear and Turbalton heads. In addition to the harbor at its head, it contains the two following useful anchorages: Seacoal Bay on the Western shore, and one mile and a half from Bear Head, will be readily known by the high cliffs of Carlton Head, which forms its N. E. point. This spacious anchorage, secure in all winds excepting those from between S. and S. E., is very convenient for vessels bound in through the Gut, and detained by strong N. W. winds. The depth in the mouth of the bay is five fathoms, mud bottom, and there is no danger in the way.

Seacoal Bay.

Turbalton Bay. TURBALTON BAY, opposite to and distant two miles from the last, is a small but secure anchorage, to the Northward of Turbalton Head, and between it and Evans Island. In approaching this anchorage, the only danger to be avoided is the reef off Turbalton Head, which is partly dry at low water, and runs out two hundred and seventy-five fathoms to the Westward. Janvrin and Peninsula points in one, bearing S. by E. ½ E., or the two extreme points on the Western side of Evans Island in one N. N. E., will just lead clear off this reef in four and a half fathoms. There is no other danger in the way, excepting the shallow water extending from the shore on either side and from the small islets in the bottom of the bay. To avoid the latter, in a large vessel, go no farther in than the line of Turbalton Head and Cape Argos, touching where the depth is four and a half fathoms at low water. With the cape a little open to the Westward of the head, the depth is five fathoms; and in either case, the bottom will be of mud, and the reef will break off the swell from the Southward.

HABITANTS HARBOR is not at present much frequented, being out of the line of general navigation; but it has space and depth of water sufficient for any number and any class of vessels, and is perfectly secure at all seasons. The Southern side of the harbor is formed by islands enclosing the basin, in which vessels may securely winter, but of which a minute account would only confuse a stranger. Referring, therefore, to the exact graphical representation of the chart, as far superior to any written description, it is only necessary to remark, that the channel leading into the harbor, between Long Ledge on the N. W. and Evans Island on the S. E., is nowhere less than one hundred and fifty fathoms wide, from three fathoms to three fathoms on either side, and ten or twelve fathoms deep with mud bottom. *Habitants Harbor.*

To avoid LONG LEDGE, which is distant about three hundred fathoms from Evans Island, and to run in far enough for safe anchorage, proceed as follows:— *Long Ledge.*

Approaching from the S. W. through Habitants Bay, and with a leading wind, steer so as to pass the W. end of Evans Island, at a distance between one hundred and fifty and two hundred fathoms, or by the lead in six fathoms; remembering that the bank on either side is very steep for vessels drawing more than ten feet water. Follow the shore of the island round to the N. E., but approach it at the same time very gradually so as to pass Steep Head, its Northern extremity, at the distance of one hundred or one hundred and fifty fathoms. Having passed Steep Head, the vessel will be in safe anchorage, but she may go farther in without danger, by simply keeping in the mid-channel as she runs toward Bumbo Island, which will be seen (small, round, with low clay cliffs) bearing E. ½ N., and distant nearly a mile from her track while passing Steep Head as just directed. As the vessel proceeds, the channel between Round and Freeman islands, leading into the basin, will be passed; and when she has arrived within a third of a mile of Bumbo Island, the main channel between it and the Indian Point, and leading into the harbor to the N. and E., will appear open as well as the entrance of Habitants River, which lies three fourths of a mile to the Northward. The shallow water extends one hundred fathoms off Bumbo Island, and the main channel, which, passing to the N. W. of it, leads into the wide expanse of the harbor to the Eastward, may be followed without difficulty, with the aid of the chart. It is, however, not necessary to go beyond Bumbo Island, for good anchorage, as that may be found everywhere in the channel; and if the depth of water there be considered inconveniently great, the bight to the Southward of Bumbo Island, between it and Freeman Island, affords a good berth in a moderate depth of water. The tides in this harbor are weak, seldom exceeding a knot in the entrance where they are strongest. *Bumbo Island.*

It is high water, on the full and change days, at 8h. 20m.; the rise in ordinary springs being six and a half feet, and in heaps four and three fourths feet. *Tides.*

HABITANTS RIVER enters the harbor from the N., and is navigable for vessels by a narrow and winding channel for several miles, while boats can ascend to the bridge, a distance of seven miles. There are some good farms on the banks of this river; but the shores of the harbor are as yet very thinly settled, and present a very barren appearance. There is said to be a workable coal at Little River, just outside the harbor's mouth. *Habitants River.* *Coal.*

With the foregoing description of the dangers and anchorages, and the aid of the chart, it is presumed that little or no difficulty will be experienced in the passage of the Gut of Canso, either with a leading or a beating wind. In the latter case, and when bound to the Northward into the Gulf, the aim should be to gain the anchorage at Plaster Cove, and to start thence with the turn of the tide; so as to secure a good offing in George Bay before the ebb makes. The set of the flood-stream from the Gut is nearly toward Cape George, diminishing rapidly in strength as it expands in advancing to the Northward. It is weak in the Western part of the bay, sweeping round it to the N. W., with slight indraughts toward Pomquet, Antigonish, &c. The ebb-stream will be found setting in the contrary direction. *Canso Gut.* *General Remarks.*

On the Eastern side of George Bay, the flood-stream from the Gut is usually met by a much weaker and contrary stream of flood, coming from the N. E., along the W. coast of Cape Breton. These opposing flood-streams will be found, in general, to unite somewhere off the Judique Shoals, and then to set toward the N. W. The two corresponding ebb-streams as generally diverge from about the same place; the one setting toward the Gut, with increasing strength as it proceeds to the Southward; and the other in the contrary direction, toward Port Hood. All, however, that has been said respecting these streams, must be understood as of usual, and not of constant occurrence, since they must necessarily partake of the irregularity in the strength and duration of the tidal streams of the Gut of Canso. Nevertheless, it will be highly useful, and may materially aid the progress of the vessels, to bear in mind the usual set of these streams.

Vessels outward bound, and proceeding through the Gut to the Southward, very frequently meet a S. or S. E. wind, with its usual accompaniments of fog and rain; in which case the roadstead of Ship Harbor will be found the most roomy and convenient anchorage. Eddy Cove, from its more advanced position at the entrance of the Gut,

offers, to vessels sailing with the first of a fair wind, a better chance of clearing Chedabucto Bay and the Canso Ledges before dark; but it can only be recommended in fine settled summer weather, for the ground is not good, and the anchorage is much exposed, on the occurrence of a sudden change of wind. Turbalton Bay is much more secure, but it is rather small for a large and weakly-manned vessel to weigh from, in the event of a strong wind setting in suddenly from the Westward.

Lennox Passage.

LENNOX PASSAGE, between Breton Island and the islands Janvrin and Madame is very intricate, and fifteen miles in length, with a low water-depth of eighteen or nineteen feet in the shallowest part. There are seldom less than twenty-three feet at high water; nevertheless, a great part of the channel is so narrow, crooked, and full of shoals, that it would require to be well buoyed before it could be safely navigated by large vessels.

It is, however, a safe and convenient channel for coasting vessels; avoiding the heavy swell in Chedabucto Bay, and affording them an advanced anchorage, from which to start with a fair wind when bound out to sea. These vessels, usually not exceeding the draught of ten or twelve feet, frequently run through with a leading wind, choosing their time of tide; but large vessels seldom attempt it, even with the assistance of some persons there who profess to act as pilots, but whose knowledge of the channel is far from perfect. It will be enough to notice very briefly the intricate parts of the channel; a written description would avail but little, and be far less effectual, than a faithful representation afforded by a chart on a sufficiently large scale; but for some distance in from either entrance, the passage is not so difficult; and as a knowledge of the anchorages there may often prove highly useful to vessels desirous of shelter on the approach of bad weather, those places shall now be described.

Western Entrance. Macdonald Shoal.

THE WESTERN ENTRANCE, between Rabbit and Janvrin islands, is a mile wide, but the navigable breadth is reduced to half a mile by Macdonald Shoal, a bed of rocks with five feet least water, and extending nearly three fourths of a mile along the Northern shore of Janvrin Island, from which it is separated by a narrow and shallow channel. This dangerous shoal, as well as the reefs off Turbalton and Thomas heads must be carefully avoided in entering the passage. The W. end of the shoal is distant half a mile N. N. E. from Thomas Head, which in one with Janvrin Point will just clear it to the Westward. These marks are distinct and good; but when they are in one, it may be observed that a small part of Wasting Islet will be seen to the Westward of Janvrin Point, and must not be mistaken for it. In standing toward the shoal, keep the last-named point in sight, and there will be no danger. The mark for clearing the N. side of the shoal is the high-water and sand beach of Strawberry Point kept open of Macrea Point, bearing E. S. E., but it is not very clearly defined, and therefore on that side the shoal should be approached with great caution, and no nearer than the low-water depth of six fathoms.

Anchorage.

The anchorage in this entrance of Lennox Passage is capacious and secure, in from five to seven fathoms, anywhere to the Northward of Macdonald Shoal; but the best berth is off Carey Pass, at the E. end of Rabbit Island, in seven fathoms, mud; and where the main channel is a mile wide and free from danger. It is only necessary to observe, that the shallow water extends a cable's length off the S. shore of Rabbit Island, and two cables' length off the E. point of entrance of Carey Pass, where there is a rocky patch, with ten feet least water, one hundred and fifty fathoms off shore.

Campbell Island. Fish Shoal.

From the anchorage just mentioned, Campbell Island will be seen at the distance of one mile and a half to the Eastward. The navigable breadth of the passage is there reduced to three hundred fathoms by Fish Shoal, which is rocky, with ten feet least water, and lies one fourth of a mile off a small cove of Breton Island. Thence the passage becomes intricate. The following leading marks, with brief directions, will enable any person, who can recognize the objects named, to take a vessel through with a fair wind.

Approaching from the Westward, and before arriving at Fish Shoal, open out Burnt Point a little to the Southward of Low Point, bearing E. ¼ N.; keep them so, and they will lead to the Southward of that shoal, and for a mile farther to the Eastward. When Thorn Island is just about to disappear behind Glasgow Point, bearing S. S. W. ¼ W., change the course, and steer E. S. E., or toward Martinique Cove, where there are several houses, until Burnt and Seal islands close and appear to touch, when they will bear E. ½ N. These last-named points kept exactly touching, will lead through between the shoals as far as Burnt Point, where the channel turns to the N. E., between that point and the Burnt islands, and where the deep water is only half a cable wide. Passing midway through this narrow opening, and with the aid of the chart, rounding the Burnt Islands to the N. and E., steer S. E. between them and Seal Island, until the Eastern point of Burnt Island comes in one with Heron Point, about W. S. W. ¼ W.; then change course instantly to E. N. E. ¾ E., keeping the last-named points astern and exactly touching, and they will safely lead through between the Middle Ground and Seal Island, where the channel is again only half a cable's length wide. The Middle Ground

Middle Ground.

is rocky, with four feet least water; and when the channel between it and Seal Island is fairly entered, steer half a point more to the North, E. N. E. ¼ E., so as to keep Heron Point only just shut in behind the Eastern point of the Burnt Islands, until Grande-digue Point (the *land*, not the shingle spit) and Hawk Islet are touching, upon the bearing of E. S. E. ¼ E. Now keep to these last-named marks, and they will lead to the excellent anchorage off the ferry at Grande-digue, where there is room enough for the largest ships in from five to eight fathoms, mud bottom. The long spit of shingle, from which the name is derived, runs out from Grande-digue Point one hundred and eighty fathoms across the channel, to about N. E. by N., and shelters the anchorage completely from the Eastward. A great part of the spit is covered at high water, but can generally be discerned by the rippling of the tide. The only other danger here is the Ferry Reef, which lies to the N. W. of the spit, leaving a deep and clear channel, two hundred fathoms wide. This reef is nearly dry at low water, and very much in the way here, as it may be said to extend halfway across the passage, being separated from the Northern shore by a channel so narrow as to be only navigable by boats or very small craft. On the Southern edge of this reef, and also on the Northern extremity of Grande-digue Spit, Birch and Ouetique islands are just touching, on the bearing of E. ½ S., and therefore, to clear the reef, keep Ouetique Island *open;* and to clear the spit, partly *shut* in behind Birch Point. The ship-channel, after passing to the Southward of the Ferry Reef turns to the N. E., between it and Grande-digue Spit, and then round the latter to the E. and S. forming a crooked, and, for a stranger, a difficult pass. At Grande-digue, there are extensive gypsum quarries, several tolerable farms, and the ferry by which the mail crosses the passage, on its way to Arichat.

Grande-digue Road.

Ferry Reef.

Grandé-digue.

It is high water, on the full and change days, at Grande-digue, at 7h. 55m., mean time; the rise at spring tides is six and one third feet, and at neap tides four and a half feet. The tidal streams are often irregular, but when not so, change about three quarters of an hour after high and low water by the shore; the flood coming in from the Eastward, they are stronger round the spit at Grande-digue than in any other part of the Lennox passage; but their rate, even there, seldom exceeds two knots.

Tides.

With a beating wind, an intimate knowledge of the place and the set of the tides is indispensable; but to run through the Narrows at Grande-digue to the Eastward, with a fair wind, proceed as follows:

Approaching the anchorage at Grande-digue from the Westward, steer for Grande-digue Point and Hawk Islet touching as already directed, until the S. point of Cascarette Island opens out a very little to the Southward of Birch Island; and then E., on this last-named mark, which will lead well clear of the Ferry Reef; and when the Tickle channel to the Westward of Birch Island becomes open, and bears to the Northward of N. E., steer toward it until the Southern extremity of Ouetique Island is seen over the beach of Birch Point, bearing E. ½ S. Run toward the last-named marks till Grande-digue Spit is passed, which will be when the W. end of Birch Island bears due N.; then change the course instantly to S. S. E., or so as to make a direct course toward the middle of the Western entrance of Poulament Bay, and continue on that line until the N. ends of Crow and Eagle islands come in one; then E. toward Ouetique Island until the Roman Catholic steeple at Discousse is in one with the N. E. point of Hawk Islet; and lastly E. S. E., or so as to pass Hawk Islet at the distance of one hundred or one hundred and fifty fathoms. The vessel will then have arrived at the comparatively wide and open part of the passage off the Eastern entrance of Poulament Bay, hereafter to be described.

By following the directions just given, the vessel will have taken the ship-channel round to the Southward of Birch Shoal, which lies one hundred and thirty fathoms S. W. by W. of Birch Point. Not less than thirteen feet were found on that shoal; but as boulders may occasionally be dropped upon it by the ice, or a small point of rock might possibly, although not probably, have escaped discovery, it will be best to follow the example of the country vessels, and avoid running over it. To the Eastward of Hawk Island the passage becomes much wider, and is navigable for the largest ships; but as our main object is to guide vessels into a safe anchorage, we shall now reverse the order of description, and give it as the objects would appear in succession from E. to W. to a stranger running in from seaward.

Birch Shoal.

THE EASTERN ENTRANCE OF LENNOX PASSAGE, between Cape Round and Mark Point, is two and three fourths miles wide. The shoals off St. Peter's Bay occupy much of that space, but still leave a clear channel, a mile wide, between them and Cape Round. As this channel leads to the only anchorage which a stranger could venture to run for on the approach of bad weather in this very dangerous neighborhood, an accurate knowledge of it becomes of very considerable importance.

Eastern Entrance.

First, taking the dangers and objects on the N. side of the channel.

HORSEHEADS SHOAL is rocky, irregular in shape, and of great extent, and the outermost danger off St. Peter's Bay. Besides several shallow patches, occasionally shown by breakers, there are three rocks near its Northern side which only just uncover

Horseheads Shoal.

in low tides, and on which the sea usually breaks heavily. These were formerly known by the name of the Three Stones. On the N. point of this shoal, in eighteen feet water, the Northern faces of Cascarette and Ouetique islands are in one, bearing W. N. W. Its Western side will be cleared in five fathoms, if the *beach* of Beak Point be not opened out to the Eastward of Cape Round. The S. side of the Horseheads is most in the way of vessels running in from the sea, and is just cleared by bringing the S. W. extremity of Ouetique Island and Savage Point in one, when Cascarette Island will appear just open to the S. W. of them, and bearing N. W. ¾ W. If Savage Point cannot be clearly made out, take care to keep Cascarette Island open two degrees at least to the S. W. of Ouetique, and to keep the lead going; remembering also that there can be no occasion to approach this dangerous shoal nearer than the depth of ten fathoms, as the channel between it and Cape Round is a full mile wide, and from five to nineteen fathoms deep.

With the aid of the chart, there will be little difficulty in distinguishing Ouetique and Cascarette islands by a vessel entering this channel. They lie four or five miles to the N. W. of Cape Round, and will be seen toward the Breton Island shore. Ouetique, especially, is very remarkable, being small, precipitous, dark-looking, comparatively high (about fifty feet), and with a few pine-trees upon it; and Cascarette is the next island to the Westward of it, much larger, not so high, wooded, with low cliffs at its N. E., and a sandy point at its S. W. extremity.

Samson Rocks. The SAMSON ROCKS lie half a mile N. from the Horseheads, and nearer the mouth of St. Peter's Bay, bearing from Mark Point W. S. W. ½ W., nearly three fourths of a mile. Two of these rocks dry at low water, and have a considerable extent of shoal around them. The N. point of Cascarette and Ouetique islands in one, lead to the Northward of them, in three and a half fathoms. They may be safely approached by the lead, referring to the soundings in the chart.

Reserving St. Peter's Bay for the present, and crossing its mouth, we observe immediately to the Westward of it several remarkable cliffs of red clay; the Westernmost of them are on Bisset Island, which forms the E. point of the narrow entrance to

Bourgeoise Inlet. Bourgeoise Inlet, an extensive arm of the sea, with twelve feet at low water in its mouth. The stores and wharves at Mr. Bisset's establishment, and the Roman Catholic chapel on the E. side, a short distance within the entrance, will point out this place to strangers. The fisheries, ship-building, and as yet limited agriculture, give employment to a number of people, principally Acadians, who are settled around the inlet.

Ouetique Island. OUETIQUE ISLAND, already described, lies one mile to the S. W. of this inlet; the passage between them is full of dangers, among others, the Philip Rocks, which are

Philip Rocks. almost always uncovered.

Cascarette Island. Cascarette Island lies a long half mile to the Westward of Ouetique. The shallow water does not extend farther than a cable's length from the S. point of either of these islands, but there is a half-tide rock between them, from which shoal water extends two cables' length to the S. W.

Middle Rock. The proper passage here, is between Cascarette and Bernard islands, and three fourths of a mile wide; but in the middle lies a rocky bank, with eighteen feet least water, which contracts the deep water channel to the Southward of it to two hundred fathoms in breadth.

Goillon Reef. The GOILLON REEF lies half a mile farther to the N. W., and about the same distance W. S. W. of Cascarette Island, leaving a clear channel into the extensive inlet of Couteau, off the mouth of which it lies. This reef dries at half tide. The marks for clearing it to the Southward, and likewise the eighteen-foot bank previously mentioned, is to keep Moulin Point open to the Southward of Birch Point, bearing W. N. W. ½ W.

Indian Creek. Couteau Inlet. The common entrance to Indian Creek and to Couteau Inlet is seven eighths of a mile wide between Cascarette Island and the E. end of Birch Island. The inlet runs in three miles to the N. W., and is navigable for large vessels.

Birch Island. BIRCH ISLAND forms the N. side of the main passage for the remaining distance of a mile to Grande-digue, in which interval the only detached danger, is Birch Shoal, off Birch Point.

Cape Round. Returning again to the Eastern entrance, we commence the review of its S. side, of the passage from Cape Round, a remarkable cliff of red clay, sixty feet high, and forming the Northeast point of Madame Island. The shallow water, which here runs off only a fourth of a mile, widens as we proceed to the N. W., a long shingle beach of Goulet, and for a large vessel must be considered continuous to the N. E. extremity of

Gabion Shoal. Gabion Shoal, distant two miles, N. N. W., from Cape Round. The Gabion Shoal is rocky, and its least water is five feet, on the Morris Rock, near its N. W. angle. It is three fourths of a mile in length, and so lies across the extremely intricate anchorage called the Goulet, that small craft only can pass between it and the Goulet Beach, from which it is distant three fourths of a mile to the Northward.

The marks for clearing the Eastern end of this dangerous shoal, together with the shoal water off Goulet Beach, are the Roman Catholic chapel steeple at Bourgeoise Inlet and the Eastern point of Bisset Island in one, bearing N. by W. ½ W.; Cascarette and Ouetique islands touching, and bearing N. W. by W., clear its N. E. point; and lastly, Eagle and Bernard islands touching, and bearing W. ¾ N., will lead clear along its N. side but must not be followed much beyond it because of the Discousse Shoal, which is separated from the Gabion Shoal by a channel only a fourth of a mile wide. This channel, which is eight or nine fathoms deep, leads toward the Goulet anchorage, which, as above-mentioned, lies to the Westward of Goulet Beach, and which is accessible to small vessels only through narrow channels between the shoals.

DISCOUSSE SHOAL extends half a mile out to the Eastward of Bernard Island, and stretches across to Gabion Point, so as to form the bar of Discousse Harbor. It is rocky, with three feet least water, and the marks for clearing its N. point, which is much in the way, are Poulament Islet and Bernard Island, touching and bearing W. *Discousse Shoal.*

DISCOUSSE HARBOR is formed by Bernard Island, the several parts of which united by beaches, extend for nearly a mile along the shore of Madame Island. The entrance from the Eastward is by a very narrow channel, seven feet deep at low water, and passes close to the flagstaff, stores, and wharf, at the N. W. extremity of Gabion Point. *Discousse Harbor.*

The steeple of the chapel, and the other buildings of the village on the shore opposite the island, will immediately point out this place to strangers. It is a secure and very pretty little harbor for the small vessels by which the fisheries are extensively prosecuted, and generally belonging to Jersey merchants residing at Arichat.

POULAMENT BAY is a secure and capacious harbor, with three entrances formed by Eagle and Crow islands, which lie nearly in a direct line from Bernard Island to Grande-digue, a distance of two miles to the Westward. Poulament Islet, small, low, round, and wooded, lies within Eagle Island, and together with the shallows, divides the bay into two parts, of which the Eastern division leading to Poulament Creek, and containing most of the houses, and affording the most roomy anchorage, in four or five fathoms, with mud bottom, is the most frequented. An equal depth might be carried into the bay if the channel were buoyed, but the shoals extending in opposite directions from Bernard and Eagle islands so overlap as almost to form a bar over which from thirteen to seventeen feet, according as it may be low or high water, are all that can be insured to a stranger, running in with the leading marks astern; namely, Cascarette Island and Cordeau Point touching, and bearing N. E. ½ N. Vessels drawing too much water, or not wishing to run in, may safely anchor in the roadstead outside the bar, as will be presently directed. *Poulament Bay.*

It is high water on the full and change days, in the entrance of Poulament Bay, at 7h. 50m.; the rise in ordinary spring tides is six feet, and in neap tides, four feet. The tidal streams are weak in the bay, and seldom exceed a knot in the channel off its mouth. *Tides.*

HAWK ISLET, united at low water to the E. end of Eagle Island, and distant three fourths of a mile, W. N. W. from Bernard Island, forms the N. W. point of the Eastern entrance to Poulament Bay; it is bold to the Northward, but to the Eastward a shoal runs off toward Bernard Island to the distance of two cables' length. In the remaining distance of one mile and one fourth to Grande-digue, the principal dangers in the way are, the shoal which runs out E. by N., from Crow Island one fourth of a mile, and which is cleared by bringing the N. point of Hawk Islet and the steeple at Discousse in one; and secondly, the Birch Shoal already described. *Hawk Islet.*

To the foregoing brief description, which should be read with reference to the charts, the following directions are added for the use of vessels desirous of shelter on the approach of bad weather; and especially at the commencement of winds from between the S. and E., as they seldom continue beyond a very few hours without bringing thick fog and rain. In a vessel so circumstanced, and approaching the Lennox Passage from the S. E., proceed as follows:—

Pass Cape Round at any distance between half and three fourths of a mile, steering N. N. W. until Ouetique and Cascarette islands touch; then change the course, and steer toward those islands, N. W. by W., or so as to keep them touching, until Poulament Islet appears just open to the Northward of Bernard Island; and then W. or toward the last-named marks, keeping the islet just open until the chapel at Bourgeoise Islet becomes in one with the Eastern point of Ouetique Island, bearing N. E. The vessel will now be in about nine fathoms, with mud bottom; and if she bring up with the last-mentioned marks on, will be distant a long cable's length from the shallow water off the N. side of Bernard Island, and in safe anchorage, being sheltered from the S. E. winds by Discousse and Gabion shoals, and by land in every other direction. *Sheltered Anchorage off Bernard Island;*

If the anchorage off the Eastern entrance of Poulament be preferred, then instead of anchoring when the steeple at Bourgeoise Islet and the Eastern point of Ouetique Island *off Poulament;*

come in one, change the course to W. N. W., or as may be found necessary, to open out the N. point of Crow Island a little to the Northward of Hawk Islet. Having done so, run toward them, W. by N. until the steeple at Discousse comes in one with the *high-water* Western extremity of Bernard Island, when the vessel will have arrived within one hundred or one hundred and fifty fathoms of her intended anchorage. Continue the W. by N. course until Poulament Islet and Eagle Island close, and when they touch, bearing W. by S., Cordeau Point will either be touching, or only just shut in behind the Western end of Cascarette Island, bearing N. E. ½ N. Round to, to the Southward, with these last-named marks on, and bring up in seven fathoms, with the Northern extremity of Crow and Hawk islands in one; or a little farther in, with the two points on the N. side of Bernard Island in one; there the depth will be six fathoms, and the bottom in both places mud. If the vessel does not draw more than thirteen feet water she may safely run into Poulament Bay by keeping the leading marks on astern, as she runs from them (namely, Cordeau Point and Cascarette Island touching, or very slightly open, and bearing N. E. ½ N.) and when the S. side of Crow Island appears in sight to the Southward of Eagle Island, she will be within the bar, and may bring up in four and a half fathoms mud, and in a perfectly secure harbor.

Anchorage in Poulament Bay.

With an accurate chart on a sufficient scale, and off Grande-digue, and in competent hands, there would be little difficulty in taking a large vessel to the anchorage at Grande-digue; but written directions would avail but little in such a narrow and difficult channel, where there are neither buoys nor beacons, and where the least mistake in making out the objects named as leading marks would almost instantly run her on shore.

St. Peter's Bay.

ST. PETER'S BAY,* which is two miles wide, opens immediately to the Northward of the Samson Rocks and of Horseheads Shoal, and may be approached either East or West of those dangers. It has excellent anchorage for any class of vessels, especially at Grande-grève on its Eastern shore; but it is rendered almost inaccessible by the numerous rocky shoals scattered over the bay, and which could scarcely be avoided in a large ship, without the assistance of buoys. Vessels not exceeding ten or twelve feet draught may run in without difficulty, with the aid of the chart, on which they must rely, for no directions would avail in so intricate a place.

The principal settlements are at the Grande-grève and along the S. side of Jerome Point, a high headland projecting from the N. E. side of the bay, and rising to the summit of Mount Granville, on which the remains of an old fort may be seen, one hundred and ninety feet above the sea. Vessels usually anchor in the N. E. corner of the bay, within Jerome Point, where there are the remains of another old fort, and a wharf at the *Haulover*, across to the Bras Dor Lake.

Haulover.

On the N. side of the Haulover there is a wharf at the ship-building establishment of Mr. Handley, and there is also a post-office.

A canal has been more than once proposed at this place, and will probably be formed at no very distant day. A survey has recently been made for it by Mr. Wm. Fairbanks, an intelligent civil engineer of Nova Scotia. The distance across the neck of land is two thousand four hundred feet; its greatest height, extending only for a small part of the distance, forty-five feet; and the cutting easy. The advantages of such a canal to the numerous vessels engaged in the coal trade to and from the Sydney mines would be very great, as they would thus be enabled to substitute for the long and comparatively dangerous circuit by Scutari, a short and safe route through the Bras Dor. Scarcely less would be the benefit it would confer upon the settlers along the shores of the Bras Dor, by opening for them a way to markets for agricultural produce at Arichat, Canso, and other places where the fisheries are almost exclusively prosecuted.

Tides.

* It is high water on the full and change days, in St. Peter's Bay, at 7h. 30m., the rise being six feet in spring, and four feet in neap tides.

The main level of the Bras Dor, at the Haulover, was found to be rather more than two feet below the high water of ordinary spring tides in the bay of St. Peter, but the influence of the tides is imperceptible in that part of the former, though winds cause a fluctuation of level to the amount of about two feet.

CHEDABUCTO BAY.

Chedabucto Bay, North Coast.

CHEDABUCTO BAY, through which all vessels entering or leaving the Gulf of St. Lawrence by the Gut of Canso, must pass, is seventeen and a half miles wide at the entrance from Michaux Point to Cranberry Island light-house; but the entrance is generally considered to lie between Green Island and the Canso Ledges, in which case the breadth is only seven and a half miles. The whole depth of the bay, from the Easternmost of the Canso Ledges to Guysborough, is twenty-six miles. The following descrip-

* Formerly Port Toulouse.

tion of its shores, with the dangers and anchorages and harbors on either side, is given from East to West, or as they would be passed by a vessel running in from sea:—

MICHAUX POINT, the N. E. point of the bay (in some charts Cape Hinchinbroke, in others Peninsula Point, names unknown to the inhabitants), is a peninsula, united to the main land by a double beach, enclosing a pond; and Red Point and Red Islet are distant from it two and three fourths miles to the W. N. W. Off these points, and extending across the bay between them, lie the Michaux Ledges, dry at low water, and usually shown by heavy breakers. Lying nearly a mile from the shore, with deep water close to them, they are extremely dangerous in dark nights or foggy weather. The S. W. extremities of St. Peter's Island and Mark Point in one, lead close outside of them, in four fathoms; therefore, in standing toward them, tack while the point is well open to the W. of the island. *Michaux Point.*

ST. PETER'S ISLAND lies three and a half miles farther to the N. W.; and in the shoal bay, between it and Red Point, will be seen the Roman Catholic church steeple and the village of Ardoise. The island is low and about three fourths of a mile long. The cove on its inner or N. side affords shelter to numerous small craft and boats; this being one of the principal fishing stations in these parts. The island is bold to seaward, but off its N. W. side is Haddock Rock, at a distance of one fourth of a mile; and in the bay between it and Mark Point, there is much shoal water, leaving, however, a clear channel within the Horseheads and Samson Rocks into St. Peter's Bay. The distance across the Eastern entrance of the Lennox passage, from St. Peter's Island to Cape Round, is three and three fourths miles W. ½ N. *St. Peter's Island.*

All objects of importance on the N. side of Madame Island having been noticed, we have now to review the Eastern and Southern shores, commencing at Beak Point, distant one mile and a quarter S. W. by S. from Cape Round. The shoal water runs out from Beak Point only to the distance of two cables' length, but off it there is much rocky and irregular ground, on which the sea is said to break occasionally in very heavy gales. The least water we could find there was four fathoms, which bears from the point S. E., and is distant one mile and a half. Another rocky patch, with four and a half fathoms, lies E by S., a mile from the point. A large ship should pass outside this rocky ground, especially when there is a heavy sea running. *Madame Island.*

There is a fixed light on the Southern part of Madame Island, thirty-four feet high. *Light.*

THE BAY OF ROCKS, lying between Beak Point and the Grosnez, a rocky islet at the N. E. extremity of Petitdegrat Island, is three miles wide, and deep. It is a dangerous place, affording no safe anchorage for ships, being open to all Easterly winds, which send in a heavy sea. Bewes Shoal, with twenty-one feet least water, lies nearly in the middle of the bay, and beside the low rocky islets near its head, there are many other rocks around and off its shores. *Bay of Rocks.* *Bewes Shoal.*

RED HEAD, the S. E. extremity of Petitdegrat Island, is a remarkable cliff, seventy feet high, and two miles S. W. from Grosnez. Shallow water runs out from it one fourth of a mile, to clear which, keep Beak Point open to the Eastward of Flat Point. *Red Head.*

GREEN ISLAND.—There is a fixed white light on Green Island, near the S. E. end of Madame Island. It is seventy feet above high water; the tower is thirty-one feet high. Green Island, of slate, with precipitous shores, ninety feet high, and a third of a mile long, lies off Red Head, a mile to the S. E. It is bold all round, and there is a clear channel three fourths of a mile wide between it and Red Head. *Green Island Light.*

ORPHEUS ROCK (called Boss by the fishermen), is one mile and two thirds S. S. E. from Green Island. It is awash at low water, and the sea consequently almost always breaks on it: otherwise it would be still more dangerous than it is. It is small, with deep water all round, at the distance of a cable's length to the S. W., there being fifty fathoms. Heath Head (the Southern extremity of Petitdegrat Island, and distant a mile West from Red Head) will lead clear of this rock, either to the Northward or Southward, according as it may be kept open to the N. or to the S. of Green Island. *Orpheus Rock.*

PETITDEGRAT INLET, separated from Madame Island by a very narrow channel, through which boats may pass at high water into the Bay of Rocks, is three miles long, and has water enough for large vessels, but the rocks are so numerous, and the channel between them so narrow, as to render the aid of a native pilot indispensable. The fisheries are extensively prosecuted from this inlet; and its shores, as well as almost every cove in the island, are occupied by the fishermen and their employers. *Petitdegrat Inlet.* *Fisheries.*

CAPE HOGAN, the Southern promontory of Madame Island, separates Petitdegrat from Arichat, and is a bold and remarkable headland, with cliffs one hundred feet high. *Cape Hogan.*

ARICHAT HARBOR is sheltered by Jerseyman Island, which stretches across the Bay. It is a spacious and secure harbor, capable of containing any number of the largest ships. It has two entrances, of which the Western is the least difficult for strangers, although only a cable's length wide. The Eastern entrance is three cables' length wide, but it lies between shoals, which, with the other dangers and the marks for clearing them, must first be briefly described; referring as usual to the charts for the objects named. *Arichat Harbor.* *Eastern Entrance.*

Hautfond. Shoals. THE HAUTFOND SHOALS are a chain of rocky patches, now for the first time correctly shown in any chart. The least water, ten feet, is on the outermost patch, and bears from Moyac Point, N. W. by W., from Marache Point, W. S. W. ½ W., and is nearly a mile from each of them. The other patches lie in a line from the outer one to the N. side of Forest Cove; the least water on them is twenty-one feet, and there is deep water between them; but the safe channel for ships is outside, or to the Westward of them all. Cape Hogan and Green Island in one, lead past these shoals at the distance of a third of a mile to the Southward; and Hubert's white house and flagstaff, seen over the Eastern extremity of the *cliffs* of Jerseyman Island, bearing N. E., will just clear them to the N. W.

Marache Point. MARACHE POINT is quite bold to the Westward, with the exception of two small rocky patches which lie off it at the respective distances of three hundred and four hundred fathoms to the N. W., and on which the least water is four fathoms. To the Northward of the point, and for some distance to the Eastward, the shoal water extends one hundred and fifty fathoms off shore.

Arichat Beacon Light. ARICHAT BEACON.—A beacon light is on Point Marache, on the E. side of the Southern entrance to Arichat Harbor. The building is square, painted white, and shows a white light, thirty-four feet above sea-level—rise and fall six feet. The point is bold to, and the following are the bearing of the principal head-lights:

From the Light to Cranberry Island Light over Winging Point, S. 3° E.
" " to Winging Point.....S. 5 W.
" " to Ragged Head, North shore, Chedabucto Bay, N. 79 W.
" " to Madame Island, E. side of entrance to Strait of Canso in one with Jerry Island Reef....N. 48 W.
" Little Arichat Head.....N. 40 W.

Capodiette Bay. CAPODIETTE BAY, one mile and a half wide, between Marache and Kavanagh points, although open to Westerly winds, and to the heavy swell rolling in at times round the point from the Southward, nevertheless affords a tolerably good occasional anchorage in ten or twelve fathoms, and mud bottom: the best ground being in the deepest water.

Fiddle Shoal. FIDDLE SHOAL has ten feet least water at the outer end of the rocky bank which extends from Kavanagh Point, three hundred fathoms to the W. N. W. There is no passage for larger vessels between it and the point, which has several dry rocks off it and shoal water all along its S. W. side, to the distance of one hundred and fifty fathoms off shore. On the N. side of the point within the harbor, a reef, with only three feet at low water, runs off one fourth of a mile, which is halfway across the wharves of the town of Arichat. This danger must be carefully avoided when hauling to the Eastward toward the head of the harbor.

Henley Ledges. On the opposite side of this Eastern entrance lie the Henley Ledges, forming the S. W. extremity of the rocky bank of Jerseyman Island, and a mile from Marache Point, from which they bear N. W. by W., though the breadth of the deep water between them is three fourths of a mile. They are black rocks, covered only at high water, and almost always shown by breakers. To seaward, the shallow water extends from them only one hundred and fifty fathoms, but there is a rock awash a third of a mile from them to the N. N. W. ½ W., and two others between them and Jerseyman Island, thus leaving no passage for ships. There are no good leading marks for passing to the S. W. of these rocks; but vessels will pass well to the S. E. of them, if the English church steeple at Arichat be not shut in behind the Eastern extremity of Jerseyman Island.

Pilot Rock. PILOT ROCK is on the N. W. side of the channel, and the extremity of the shallow water off the E. end of Jerseyman Island, from which it is distant three hundred fathoms to the S. E. It is small, with four feet least water, and quite bold to the Southward. There is no channel between it and the island for larger vessels. The leading mark to clear it to the S. E. is De Carteret's flagstaff, near to the E. end of Arichat, seen over Kavanagh Point; but this mark leads very close to the rock.

Poul Reef and Islet. POULE REEF, with seven feet least water, lies two hundred fathoms E. by N. from Poule Islet, which is nearly united to the E. end of Jerseyman Island at low water. There is a narrow channel, fit only for small craft, between the shoal and the islet; but the ship channel to the Eastward of this shoal, between it and the Fiddle, is three hundred fathoms wide, from three fathoms to three fathoms on either side, with depth sufficient for the largest ships.

Directions. If bound to Arichat, with a leading wind, that is any wind from S. S. E. round by S. and W. to W. N. W., proceed as follows: If the approach be from the Westward, avoid the Cerberus Rock by attending to the marks which will be presently given: if from the Eastward, pass the Hautfond Shoals by keeping some part of Green Island in sight to the Southward of Cape Hogan, until Arichat church appears only a little open to the Eastward of Jerseyman Island, bearing N. E. by E. ½ E. Having brought the church steeple on the line of bearing, steer for it, but keeping it a little open, until the beacon on Marache Point bears S. E. by E., or until the Henley Ledges are in one with Ari-

chat Head, the Western extremity of Creighton Island bearing N. W. by N., and are distant one fourth of a mile. Then change the course to E. ¼ N., or so as to make a direct course toward Little Barachois at the head of Capodiette Bay; and as soon as the Roman Catholic church steeple opens a little to the Eastward of the priest's flagstaff, bearing N., run toward it until the Southern extremity of Creighton Island is seen through the Crid Pass. The vessel being then within Poule Reef, may safely haul to the Westward, and select her berth at pleasure, in the most roomy part of the harbor, anywhere to the N. of the line from Poule Islet to Beach Point. South of that line, the Eastern bight of Jerseyman Island contains Cage Shoal, with only seven feet water and much foul ground.

If the vessel should have occasion to go to the Eastern part of the harbor, she should stand well over to the N. shore before bearing up to the Eastward, and run along it at the distance of a cable's length from the ends of the wharves, until after Marache Point has disappeared behind Kavanagh Point, when she will be to the Eastward of the reef, off the last-named point, and will find bold shores and plenty of water to within one hundred and twenty fathoms of the entrance of the cove at the head of the harbor.

The foregoing are safe and simple directions for a stranger in a large vessel, but with an Easterly wind it would not be desirable to run so far to leeward as would be required to bring the English church steeple in one with the Eastern extremity of Jerseyman Island; and for persons sufficientty acquainted with the place to be certain of distinguishing the leading marks, it would not be necessary. They could pass either outside of the Hautfond Shoals, upon the leading marks given for clearing them to the N. W., namely, Hubert's house and flag-staff shut in behind the Eastern extremity of the cliffs of Jerseyman Island; or inside of them, by steering for the Roman Catholic steeple and Marache Point exactly in one, bearing N. N. E. ¼ E., until within one fourth of a mile of the point; then, after keeping away a little to pass the point and the shoal water mentioned off its N. side, they will have to beat up Capodiette Bay until the marks for running in, namely, the Roman Catholic church, open a little to the Eastward of the priest's flagstaff bearing N., come on.

Western Entrance to Arichat.

In approaching Arichat from the Westward, the only outlying danger, besides the Cerberus Rock, is Creighton Shoal; and this last will be avoided if, after passing the Peninsula Shoals, Bear Head be not shut in behind Peninsula Point, until the Roman Catholic Church at Arichat is seen to the Southward of the Crid Islands; a mark which also leads clear of Picard Reef, and of all the shoal water off Creighton Island. The Crid Islands, which are small and rocky, form the N. side of Crid Pass, the whole breadth of which across to Beach Point is one hundred and sixty fathoms; but there are half-tide rocks off both ends of those little islands, which reduce the navigable breadth of the channel to one hundred fathoms. The extremity of Beach Point, which is all shingle, may be safely passed as near as thirty fathoms; but on the outside of the point the shoal water commences immediately, and continues increasing in breadth from the shore to the Western extremity of the island, where it extends a third of a mile out from the cliffs to the N. W. and W.; and still farther to the S. W. and S.; in which last direction it unites with the Henley Ledges.

Crid Islands.

Crid Pass.

With the necessary leading wind, that is, any wind from S. round by W., and N. to N. N. E., proceed as follows: Having cleared Creighton Shoal, as already directed, bring the Roman Catholic steeple to appear through the middle of the pass, or a little to the Northward of Beach Point, when it will bear E. ½ S. Keep it so while running toward it, and when the vessel has arrived within half a mile of the point, if Robin wharf and stores (on the S. side of the harbor) be not already seen to the Northward of Beach Point, sheer a little to the Northward till they are so, and then steer for them E. S. E. ½ E., or so as to pass the point at any distance between thirty and one hundred fathoms, into the harbor, where a berth may be selected as already directed.

Tides of Arichat.

It is high water at Arichat, on the full and change days, at 8h. 10m. after the moon's transit; and the ordinary rise is from four to five feet; but extraordinary spring tides may rise six feet. The stream of flood comes in by the Eastern entrance, running through the harbor to the Westward, and the ebb stream to the contrary; but these streams are not very regular, and seldom exceed the rate of one knot.

Arichat Town.

The straggling but well-placed town of Arichat extends nearly three miles along the bold and steep N. shore of the harbor, where there are many wharves and stores. Of the two churches, the Roman Catholic is the largest and the Westernmost; and the only other public building at all remarkable is the court-house, standing more to the Eastward, and distinguished by its cupola.

Fisheries.

Population.

Arichat is the headquarters of the fisheries in its neighborhood, and the most important seaport, both in commerce and population, on the Atlantic coast of Nova Scotia Eastward of Halifax.

Water.

The usual watering-place is at a spring near Hubert's wharf, where good water may be obtained on payment of a small sum. Water may also be obtained at Irish Point, from the outlet of the chain of small lakes in rear of the town.

Cerberus Rock.

THE CERBEBUS ROCK, just awash at low water, with deep water all around, and lying directly in the way of vessels to and from the Gut of Canso, is exceedingly dangerous in dark nights and foggy weather. In the daytime either breakers or a rippling over it can almost always be seen. It bears from Arichat Head, the nearest land, S. S. W., two and a half miles; and is rather more distant from Jerseyman Island, on a W. S W. line of bearing. The clearing marks are as follows: Cape Hogan and Green Island in one, bearing E. S. E. ¾ E., will lead clear to the Southward of the Cerberus at the distance of four hundred fathoms. The English church steeple at Arichat and the Eastern extremity of the *Western* peninsula of Jerseyman Island in one, bearing E. N. E. ½ E., will lead a cable's length to the S. E. of it. Carleton Head opens to the Westward of Wasting Islet, or Eddy Point and Ship Point in one, will, either of them, lead clear to the Westward of this rock at the distance of a mile; but those objects are too distant to be often clearly distinguished, therefore, to avoid this danger in a vessel bound to the Westward, keep some part of Green Island in sight to the Southward of Cape Hogan until the English church at Arichat is seen over the shingle isthmus uniting the two peninsulas of Jerseyman Island, or until Arichat Head bears N. E. by N.; then the course may be safely shaped direct for the Gut of Canso. In a vessel outward bound, take care that the course made good from the middle of the Southern entrance of the Gut of Canso is not more to the Eastward than S. S. E. until Green Island appears to the Southward of Cape Hogan; or until the English steeple at Arichat is seen over the Jerseyman isthmus, when the course may be safely shaped more to the Eastward and out to sea.

Little Arichat.

LITTLE ARICHAT is a small and secure harbor, where the fisheries are extensively prosecuted. It lies inside of Creighton Island, and two miles N. W. from Arichat. The approach is from the Westward, and over a bar, with seventeen feet at low water, which extends across to the Northward from Arichat Head, the W. extremity of Creighton Island. The entrance of the harbor, half a mile within this bar, is one hundred and fifty fathoms wide between Creighton and Bosdet points; the former being a long spit of sand and shingle, with stores and a wharf, on the N. side of Creighton Island. The vessels lie immediately within the entrance in three and a half fathoms, and as securely as in a dock, the harbor being closed at the E. end by a bar of shingle, which dries at low water. A stranger might require the aid of a pilot, but the chart, with the following brief directions, would enable any intelligent seaman to take a ship into this small but very pretty harbor:

Bring the wharf on the N. side of Bosdet Point to bear between E. by S. and E. ½ S., and steer for it, the vessel will then pass the bar in not less than fifteen feet at low water. Continue the same course until the shingly S. W. extremity of Bosdet Point and the N. E. extremity of Creighton Island (at the E. end of the harbor) are touching, and bearing S. E. ½ S., when change the course, and keep the last-named marks in one exactly, running toward them until Bosdet Point is distant only one hundred and fifty fathoms ahead, and the shingly S. E. extremity of Creighton Point bears S. W. by S., and is distant one hundred fathoms; then change the course to the Southward, so as to be two thirds of the distance over from Creighton Point toward Bosdet Point, as you pass between them into the harbor.

Leblanc Harbor.

LEBLANC HARBOR has its entrance half a mile from Little Arichat, and in the Northeast corner of the same bay. Six feet at low water can be carried in through its very narrow entrance, and there is much more within. It is an extensive place, containing a population of fishermen and small farmers. At the N. W. extremity of this harbor is the Mousselier Pass, very narrow, between muscle-beds, and only one foot deep at low water. Boats pass through it into Haddock Harbor, the principal entrance to which is by the Lennox Passage, by a very narrow channel, to the Eastward of Campbell Island, but twenty feet deep at low water. Both these last-named harbors are occasionally resorted to by small vessels in the fishing season, but they are of no use to large ships.

Mousselier Pass.

Creighton Shoal.

CREIGHTON SHOAL is the only danger outside of the line joining Arichat Head and Peninsula Point, if we except the Peninsula Shoal. It is rocky, and the least water eleven feet, lies with the Roman Catholic church at Arichat, just shut in behind the Southern extremity of Creighton Island; it bears W. three fourths of a mile from Arichat Head. The marks for passing to the Northward of it will be useful to vessels bound to and from Little Arichat, and are, Bosdet Point and wharf, just open to the Northward of Creighton Island, and bearing E. ¼ N. Bear Head and Peninsula Point in one, bearing N. W., lead past it at the distance of a third of a mile to the S. W.; and the Roman Catholic church at Arichat open to the Southward of the Crid Islands, bearing E. ¾ S., not only leads one fourth of a mile to the Southward of Creighton Shoal, but also clears Picard Reef, which extends from the S. point of Creighton Island two hundred fathoms to the Westward.

Janvrin Harbor.

In the bay between Arichat Head and Peninsula Point, which is three and a half miles across, in a N. W. by W. ½ W. direction, are Deep Cove and Janvrin Harbor, barred by

Dorey Ledge, and only useful to small craft and boats. In the entrance of Janvrin Harbor, and one mile and a half Eastward from Peninsular Point, lies Delorier Island, from which extend the rocky Bentinck Shoals seven hundred fathoms out to the S. W. The least water on these shoals is four feet, but, as they lie in a bay, they are not much in the way of vessels. They join the Peninsular Shoals to the Westward.

Cape Argus.

In order to complete the description of the N. side of Chedabucto Bay, we must now cross the Gut of Canso to Cape Argos, and proceed thence to the Westward. From Cape Argos to Guysborough, at the head of the bay, a distance of twelve miles, the prevailing features are peninsulated points of drift sand, clay, and boulders, resting on sandstone, and presenting low cliffs to the sea. These are united to the main land by beaches of shingle, enclosing large ponds, several of which admit boats at high water when the surf is not too heavy. In the rear of these ponds are the houses of a scattered population, subsisting by fishing and farming, and situated on the Southern slope of ridges rising to the height of two hundred feet above the sea.

Murdock Ledge.

Hydra Rock.

Proceeding from Cape Argos, two miles S. W. by W. bring us to Oyster Point, whence Grady Point bears W. by S. one mile and three fourths. Midway between the two last-named points lies Murdock Ledge, dry at low water, and half a mile off shore. Hydra Rock, one of the greatest dangers in the bay, lies directly off Grady Point, from which it bears S. S. E. ½ E., and distant one mile and a half. It carries twelve feet least water. The part of the shelf on which there is less than three fathoms, is only a cable's length in diameter, but there is less than five fathoms over a much larger space. There are eight or nine fathoms between it and the land, and eleven or twelve fathoms outside of it at the distance of one fourth of a mile.

During the heavy swell from the Eastward so frequent in this bay, its position is shown by heavy breakers; at other times it is exceedingly dangerous, especially to vessels approaching it from the S. W., as on that side there are no good leading marks. The mark for passing one fourth of a mile to the S. E. of it, is Cape Argos and Thomas Head touching, and bearing N. E ½ N.

Ragged Head.

Moose Bay.

RAGGED HEAD, four miles W. ¼ S. from Grady Point, is a rocky peninsula, forming the apex of a triangle, whose sides are long shingle beaches, enclosing a large pond five or six fathoms deep, but which boats can enter only at high water by a narrow outlet on its Western side. This remarkable headland, which appears like an island when seen from a distance, forms the Eastern point of Moose Bay, which is two and one fourth miles across to Moose Point, in a W. by N. direction, and three fourths of a mile deep. In shape, this bay is a semicircle, with shingle beach, unbroken, excepting by the shallow outlets of ponds. It affords anchorage in from five to seven fathoms, sand and mud bottom; but it can be considered safe only in fine summer weather, on account of the heavy swell which accompanies Easterly gales at other seasons. The only danger to be avoided is the flat of sand which extends nearly half a mile off the Eastern side of the bay. In the remaining distance of two and a half miles, from Moose Point to Guysborough, all that requires particular notice is a rocky bank, extending half a mile out from the shore midway between them, and on which there are nineteen feet at low water.

South Coast of Chedabucto Bay.

From Cape Canso to Guysborough, a distance of twenty-five miles, the S. coast of this great bay is composed of primary rocks, partially covered with drift sand, clay, and boulders.

Canso Harbor.

The harbor is formed by Piscataqua and George islands on the E., and by the main land and Durell Island on the W. Cutler Island, together with the shallow water between it and Durell Island, shelter it from the N.; while Grave Island and the bar uniting it to Lanigan Beach, protect it from the S. E. Grave Island is very small, with steep clay banks fast wasting away by the action of the sea. The entrance to the harbor is between the latter and Cutler Island, toward the wharves of the town, off which the anchorage is perfectly secure, with water for the largest ships: but the ship-channel which runs through into Chedabucto Bay, passes to the Eastward of those islands, between them and Piscataqua. The least water in this channel, four fathoms, is on a bar which stretches across from Grave Island to Piscataqua Island.

Canso Town.

The town of Canso is on the main land, the more ancient part standing on hills of red sand, clay, and large boulders. The Roman Catholic church, built on the summit of a ridge one hundred feet high, is a conspicuous object, seen over the islands from a great distance at sea. The newer part of the town, together with the Baptist and Wesleyan chapels, are farther Westward, along the shore of the Tickle, a narrow boat-channel, separating Durell Island from the main land. The whole forms a long straggling village, with a population of about six hundred souls. Near the N. point of Durell Island, which is a mile and a half long, is Flag Hill, one hundred and five feet high, and mentioned hereafter as an important leading mark.

Tickle Channel.

The following description of the objects and dangers on either side of the ship-channel, in the order in which they would be passed by a vessel running in from sea, will sufficiently elucidate the chart, without which, or the aid of an experienced fisherman of

the place, to whom the appearance of every rock and breaker is familiar, no one shoul attempt a navigation so hazardous.

Canso Ship-Channel. Approaching from the Southward, the entrance of the ship-channel between Cap Canso and Cranberry is a mile wide.

Cape Canso. CAPE CANSO is a low islet, nearly joined to the E. point of Andrew Island; an the Cape Rock, small, and eight feet high, will be seen off it, one hundred and twent fathoms to the S. E. by S. Crossing the entrance of Glasgow Harbor, a distance o a mile and one fourth to N. W., we arrive at Glasgow Head, a remarkable red cla cliff fifty feet high. An equal distance farther in the same direction, along an unbro ken shore, brings us to the town and harbor of Canso.

The Patch. The outermost danger on this side is the Patch, a rock, on which we found no less tha thirty feet water, but on which the sea is said to break occasionally; it bears from Cap Canso S. S. E. ½ E. one mile and three fourths.

Boom Rock. Next to the Patch comes the Boom Rock, with twelve feet least water, bearing S., mile and a half from Cape Canso; and E. S. E., a mile and a half from the S. poi of Andrew Island. It has obtained a melancholy celebrity, by the loss af a schooner o it, with all hands, while this survey was in progress.

Cape Breaker. THE CAPE BREAKER, with sixteen feet least water, bears from Cape Canso S. by E. one mile, and is cleared to the Eastward by Crow and Cranberry islands touc ing, on a N. by W. bearing. As it can be seen only when there is a heavy sea, this roc is extremely dangerous, and would be still more so were it not that the Roaring Bu four hundred fathoms to the Westward, almost always shows, and therefore points o the position of its treacherous neighbor.

Roaring Bull. THE ROARING BULL has two feet least water, and bears from Cape Canso S. ½ S., two thirds of a mile.

Keeper and Kirby Rocks. KEEPER and KIRBY ROCKS, with twenty-four and fifteen feet least water, are di tant half a mile and one mile respectively, N. W. by N. from the Cape Breaker; an Kirby Rock bears from Cape Canso E. N. E., three hundred fathoms. The Roman Cat olic steeple at Canso, open to the N. E. of Glasgow Head bearing N. W. ½ N., leads ju clear to the N. E. of the Cape Breaker, and of the other dangers above mentioned.

Black Rocks. THE BLACK ROCKS lie half a mile N. N. W. from Kirby Rock, the passage in Glasgow Harbor being between them. They are two masses of trap rock, about five fe high above spring tides; they can therefore always be seen, and, as the shoal water e tends from them only a cable's length to the Eastward, they are of great use in pointi out the Western side of the channel.

Bootes and Man-of-War Rock. THE BOOTES, with six feet least water, and the Man-of-war Rock, which covers a half tide, lie farther N. by W., the latter, the most distant, being a long half mile fro the Black Rocks. There is no safe channel for ships between these three last-name dangers, which all stand on a shoal and rocky bank, that stretches across the entranc of Glasgow Harbor; but there is a navigable channel between them and Glasgow Hea though narrow and difficult.

Man-of-War Rock. MAN-OF-WAR-ROCK bears from Glasgow Head E. N. E., about half a mile. It lie much in the way, but is usually shown by breakers, and the marks for it are distinct an good. The Eastern ends of the Black Rocks and of the Cape Rock, when in one, bearin S. ½ E., lead just to the Eastward of it, and, of course, clear the Bootes; therefore let th Cape Rock be kept open to the Eastward of the Black Rocks until Man-of-war Rock i passed; which will be the case when Flag Hill comes in one with the steep bank (not th beach) of Fort Point, bearing N. W. The last-named marks lead just clear to the N. E of this dangerous rock.

Mackerel Rock. THE MACKEREL ROCK lies half a mile farther to the N. W. Having ten feet lea water, it seldom shows, and is therefore the more dangerous. When on it, the Easter extremities of Oliver Island and of Derabie East Rock are in one, and just open to th Eastward of Petit-pas, which bears from it N. E. four hundred fathoms. The sam marks that clear Man-of-war Rock, namely, Flag Hill and the *steep bank* of Fort Poin as above mentioned, lead to the N. E. of this rock, also, at the distance of half a cable' length. There is a clear channel on either side of the Mackerel Rock, but that to th Northeastward of it has the advantage of leading marks.

South Shoal. SOUTH SHOAL is the last danger on the W. side of the channel until we arrive a Grave Island, and the entrance of Canso Harbor. It has seven feet least water, and ex tends three hundred fathoms off shore, or halfway across toward the Eastern extremit of Grassy Island, leaving a clear channel between it and Grass Reef, of one hundred an eighty fathoms in breadth.

The shoal water extends only fifty fathoms off Grave Island, leaving a channel be tween it and Piscataqua Island one hundred fathoms wide, and four fathoms deep at lo water.

Cranberry Island. CRANBERRY ISLAND, with its most useful lights, marks the E. side of the en trance of the channel, as already mentioned. The island is low, rocky, and one fourt of a mile long. The light-house stands near its Northern end, and is of wood, octag

l in shape, painted red and white horizontally, and displays two lights vertically. e upper light, seventy-five feet above high water, can be seen from a distance of fifteen iles; the lower only from a distance of nine miles. They bear from Cape Canso N. E. N., a mile and a fourth; but dangers on either side reduce the breadth of the clear annel to half a mile.

On Cranberry Island, there is a fog trumpet. Each blast of the trumpet will be of e seconds' duration, with intervals of twenty seconds, and in calm weather may be ard at a distance varying from six to ten miles.

THE FRYINGPAN, a low islet of shingle, one fourth of a mile N. by W. from the ght-house; and Crow Islet, a low rock, covered with dark spruce bushes, not exceed- g twenty feet in height, and distant three fourths of a mile farther in the same direc- on, will easily be distinguished. Still more remarkable is Petit-pas, a small, round, assy islet a cable's length in diameter, with red clay cliffs fifty feet high, and a mile d one fourth N. W. ¼ N. from the light-house. *Fryingpan and Crow Islets. Petit-Pas.*

OLIVER ISLAND, wooded and separated from the E. end of George Island by a nar- w boat channel, must also be noticed. Its Eastern extremity, Lock Point, forms a ading mark, and bears from Petit-pas N. E. ½ E., one fourth of a mile. *Oliver Island.*

GRASSY ISLAND, a third of a mile to the Westward of Petit-pas, is a hill of drift- nd, clay, and boulders, half a mile long, and sixty-six feet high. It is covered with ass, and displays the only other clay cliff besides that of Petit-pas on this side of the annel. It is no longer insulated, being now united to George Island by a bar of shin- e, which is never covered. The remains of an extensive redoubt give the name of Fort oint to the high Western extremity of the steep, grassy bank of this island, which, as is used for a leading mark, must be carefully distinguished from the edge of the shin- e beach, extending from it one hundred fathoms to the N. W., and also be used for a ading mark. There is a narrow channel for boats between the Grassy Island beach d Piscataqua Island; which last forms the Eastern side of the channel for the remain- g distance to Canso Harbor. *Grassy Island.*

Confining our attention at present to the dangers bordering on the ship-channel, we ve first to notice Stanley Shoals—three small rocky patches one fourth of a mile apart. e least water on them, four fathoms, is sometimes shown by a breaker, and lies with ag Hill and Fort Point in one, and with Cranberry light-house, bearing N. N. W. ¾ one mile and a half. The Eastern extremities of Crow and Cranberry islands in one aring N. by W. ½ W., lead clear to the Westward of this shoal at the distance of a ble's length. From Nickerson Rock, with four fathoms least water, the light-house ars N. W. ½ W., one mile and one fourth, and lying half a mile N. N. E. ½ E. from anley Shoals, it is less in the way than them. The same remark applies to David ck, with thirteen feet least water, it being half a mile nearer to the light-house, which ars from it N. W. ¼ N., three fourths of a mile. *Stanley Shoals. Nickerson & David Rocks.*

THE WASHBALL, a rocky patch, dry at low water, lies two hundred fathoms S. W. from David Rock, and seven hundred fathoms from the light-house, which ars N. N. W. ¾ W.; it is, therefore, halfway out from the light-house toward the anley Shoals, and, as it can almost always be seen, is of great use in guiding vessels. ese two last-named rocks lie so near the edge of Cranberry Island bank as to leave safe passage between them. *Washball Shoal.*

THE PINK, a rock with four feet least water, lies half a mile to the Southward of light-house; but an arm from it with eighteen feet water extends one hundred and y fathoms W. by N. From this rocky arm which forms the extreme Southern edge the Cranberry Island bank, the light-house bears N. N. E. half a mile. Flag Hill and S. W. extremity of *the beach* of Fort Point in one, and bearing N. W. ¼ N., lead just ar to the Southward of this danger; but the beach cannot always be made out, in ich case Flag Hill should be kept four or five degrees open to the S. W. of For int, until the bearing of the light-house shows that the rock is passed. The shallow ter, less than three fathoms, including two rocks awash called the Cow and Calf, does extend off the West side of Cranberry Island beyond two hundred fathoms, but there several rocky patches farther off which carry four and a half fathoms, and therefore ly dangerous to large ships when the sea is heavy; from the outermost of them the ht-house bears S.E. by E. ¾ E., four hundred and sixty fathoms. Proceeding to the North- rd, the next danger bordering the channel is Fryingpan Reef, running out N. W. by four hundred fathoms, from the low Fryingpan Islet, and separated by a narrow annel from Pas Reef, which runs out half a mile in the opposite direction, or S. E. by from Petit-pas. From Pas Reef the edge of the shoal continues to the Westward, ring Petit-pas at the distance of one hundred and fifty fathoms, and then crossing bay, between it and Grassy Island, where it joins the shoal water off the latter. *Pink Rock. Pas Reef.*

GRASSY REEF is very dangerous. Projecting from the S. E. extremity of Grassy and, one fourth of a mile S. by E., it diminishes the breadth of the deep water, between and the equally dangerous Mackerel Rock, to one hundred and thirty fathoms, and as channel is crooked there and narrow, they form a difficult pass for large vessels. *Grassy Reef.*

We have now only to notice the shallow water extending one hundred fathoms off the

S. W. side of Grassy Island, before we arrive at the beach of Fort Point, which is quite bold; and after which the channel, although much narrowed by Grave Island, is direct and clear to the harbor.

Canso Harbor.

To enter Canso Harbor from the Southward, with a leading wind, proceed as follows, having first studied the foregoing description with reference to the chart, for the nature and appearance of the objects and dangers on either side:

At any distance not less than three miles, bring Cranberry Island light-house to bear N. by W. ½ W., when Crow Island will be in one with and seen over it. Steer for the light-house on that line of bearing, taking care not to open the whole of Crow Island out to the Westward of Cranberry Island (for fear of the Cape Breaker) until the Roman Catholic church steeple at Canso is seen to the N. E. of Glasgow Head (bearing N. W. ½ N.). As soon as that steeple opens to the N. E. of Glasgow Head, steer N. N. W. ½ W., or so as to make a direct course toward the S. W. side of Petit-pas; and there will be no difficulty in passing between the Black Rocks, which can always be seen, and the shoals off Cranberry Island, if attention be paid to the leading marks for clearing the last-named dangers. Continue the course toward Petit-pas, taking care that the Cape Rock is kept open to the Eastward of the Black Rocks, until Flag Hill comes in one with the *steep bank* of Fort Point, bearing N. W. Then steer N. W. on the last-named leading marks, taking care not to open Flag Hill in the least to the S. W. of the *steep bank* of Fort Point until the Eastern extremities of Petit-pas and Oliver Island come in one, bearing N. E. ½ E. Then change the course instantly, and steer W. N. W. for the Roman Catholic church at Canso, until Petit-pas and Crow Island are touching, and then N. W. ¼ W., for the S. W. end of Grave Islet, keeping Walsh's house (on Durell Island, on the N. E. side of the entrance of the Tickle) just open to the S. W. of it, by which the vessel will pass midway between Grassy Reef and South Shoal, and clear of the shoal water off Grassy Island. As soon as the N. W. extremity of *the beach* of Fort Point bears N. E., change course to N. N. W. ½ W., or for the wharf and stores on the W. side of Cutler Island, until Cranberry light-house and the Southern extremity of *the beach* of Fort Point come in one. Then steer N. W. ¾ W., keeping the last-named leading marks in one astern, and they will lead clear of the shoal off Grave Islet, round which, and at any distance from the islet between sixty and one hundred and twenty fathoms, the vessel may haul to the Westward into the harbor.

The intelligent seaman, after having once become acquainted with the appearance of the various objects, dangers, and leading marks, would find little difficulty in varying his mode of proceeding, so as to suit the cases of a scant wind from either side, or even in beating in, if his vessel were not too large, and the weather favorable: but the risk of being surprised by the prevalent fogs, among so many dangers, should always be borne in mind, when about to take this channel.

Canso Harbor, N. W. Entrance.

The difficulties of the N. W. entrance of Canso Harbor arise principally from the narrowness of the channel between Cutler and Piscataqua islands, where the deep water is less than forty fathoms wide; and from the position of the Starling Rock being so much in the way. It is a passage that should not be attempted in a large vessel without a fair and steady breeze; for although the dangers about to be described are for the most part visible, yet there is no safe anchorage in the event of the wind failing, the bottom being of rock.

Net and Whitman Rocks.

On the Western side of the entrance the dangers are, the Net Rocks, dry at one fourth ebb; and Whitman Rock, with two feet least water. They both lie off the E. side of Durell Island, at the distance of two hundred fathoms; the first being distant five hundred and sixty fathoms and the second three hundred and fifty fathoms from the N. end of Cutler Island, from which shoal water extends one hundred fathoms toward them. The marks that just lead clear to the Eastward of both these rocks, and the shoal water around them, are the Roman Catholic steeple at Canso and the Western extremity of Cutler Island in one, bearing S. ¼ W. On the Eastern side of the entrance, and distant one hundred and fifty fathoms from the N. end of Piscataqua Island, will be seen Bald Rock, of bare granite, seventy fathoms long, and thirty feet high. It lies directly opposite to Whitman Rock, and the channel between them is two hundred fathoms wide. There is a rock, dry at low water, one hundred fathoms outside or to the N. N. E. of Bald Rock, and shoal water fifty fathoms farther off in the same direction; but off the W. side the shoal does not extend beyond fifty fathoms, and is cleared by the above Roman Catholic steeple and the house on Cutler Island in one, bearing S. ¾ W.

Bald Rock.

The only other danger on this side of the entrance, is the reef off the N. W. point of Piscataqua Island, which is partly dry at low water, and extends seventy-five fathoms out to the N. W. This reef will be cleared if the steeple be kept open to the Westward of the house on Cutler Island; or by Glasgow Head and Piscataqua Island touching, and bearing S. S. E.

Starling Rock.

STARLING ROCK, lying one hundred and fifteen fathoms S. E. by S. from Cutler Island, and sixty fathoms off the Western shore of Piscataqua Island, and in the very line of the narrow channel between those islands, with only four feet over it at low water,

renders this entrance extremely dangerous to strangers, for the channel between this rock and the shoal water, which extends one hundred and twenty-five fathoms off the S. end of Butler Island, is only forty fathoms wide. Lanigan's old house, only just open to the Eastward of Grave Islet, will lead through this narrow pass; but to render it safe and easy to strangers, two beacons are much required; one on Grave Islet, and the other should be properly placed on the hill to the Southward.

To enter Canso Harbor by this N. W. channel, proceed as follows: Being outside the Net Rocks, bring the Roman Catholic church steeple at Canso to bear S. ½ W., when it will be seen over Cutler Island, midway between the house on the island and its Western end. Steer S. ½ W. for the church steeple so seen, and it will lead in nearly midway between Bald and Whitman rocks; and when the red clay cliff of Glasgow Head is seen through the channel between Cutler and Piscataqua islands, bearing S. S. E., steer for the head, keeping in mid-channel until the S. end of Cutler Island bears W. S. W.; then again change the course, and steer for Grave Islet, keeping Lanigan's old house only just open to the Eastward of it, and after running two hundred fathoms, or no farther than when Cranberry light-house appears in one with Fort Point, haul to the Westward into the harbor.

Tides. It is high water, on the full and change days, in Canso Harbor, at 7h. 48m. after the moon's transit: the rise in ordinary spring and neap tides being six and a half feet and four and a half feet respectively. The duration of the rise and fall, and, still more, of the streams, is influenced by winds or other causes; but the rate of the streams in the N. W. entrance of the harbor, where they are the strongest, does not often exceed one knot. The flood comes from the Southward, the ebb from the opposite direction.

Hog, Cook, Welsh, and Derabie Islands and Rocks. The small islands lying outside Canso Harbor, and not previously mentioned, have the names of Hog, Cook, Welsh, and Derabie, and, with many nameless rocks, form a chain one mile and a half long in an E. S. E. direction, terminating with the East Rock, which is of bare granite, twenty feet high, and distant a long half mile N. N. E. from Crow Island. Rocks awash, and shallow water, continue from the East Rock four hundred fathoms to the Eastward; but on the N. side these islands are bold to within a cable's length, excepting at their W. end, where Black Rock and the shoal around it extend two hundred fathoms from Hog Island to the Northward. Black Rock, which is seldom if ever entirely covered, is half a mile E. N. E. of Bald Rock, and between them lies the entrance to a channel between Piscataqua and George islands, which is full of rocks, and only navigable by boats and very small fishing vessels. The outer islands are occupied by fishermen during the season, but the N. shore of George Island by the more permanent residents. All these islands are formed of granitic rocks, excepting Grassy Island and Petit-pas, and most of them are sparingly wooded with dwarf spruce-trees.

Black Rock

East Rock. The East Rock bears from Cranberry light-house N. ½ W. one mile and three fourths; and to the E. of the line joining them lie a number of dangerous rocks with deep water between them. The innermost of these, the Fanning and Scott Rocks, with twelve and nine feet least water, respectively, lie on the Eastern edge of the Cranberry Island bank, and at the distance of half a mile from the light-house; while Park Ledge, always above water, Crow Reef, and Budget Rock, are in like manner nearly united by shoal water to Crow Island. There is a deep channel between Budget Rock and the Fryingpan, but it is narrow, and destitute of good leading marks. Next outside of the dangers which have been mentioned, are the Kelp Rocks, Inner Bass, Middle Rock, and Broad Shoal; of these, the first and last have twelve and nine feet least water, respectively, and only show when there is a sea running; but the Inner Bass is awash at low water, and the Middle Rock, having only four feet water, can almost always be seen.

Middle Rock. From the Middle Rock, the light-house bears S. W. by W. ¼ W. one mile and a half; and the Roman Catholic steeple at Canso is seen over Petit-pas, and open a little to the Southward of Park Ledge. The breakers on this rock and the Inner Bass, which lies three hundred and forty fathoms from it to the N. N. W., often serve as a guide to fishing and coasting vessels, which prefer passing close to them to going round outside all; but this cannot be recommended for large ships, for although the passage between the Middle Rock and Bass Rock is a mile wide, yet the Sand Shoal and White Rock, with five and four fathoms, respectively, and another nameless patch of the same depth as the latter render it unsafe in the heavy swell which so frequently prevails.

Sand Shoal. White Rock

Bass Rock. BASS ROCK has six feet least water, and therefore breaks frequently. From it the light-house bears W. by S. two and one fourth miles; and the Roman Catholic steeple at Canso and the Southern extremity of Petit-pas appear in one.

Grime Rock. GRIME ROCK has twelve feet least water, and is therefore only shown by breakers when the sea is heavy. It lies farther out than the Bass Rock, from which it bears N. E. three hundred and seventy fathoms; and there is a patch of twenty-eight feet of water one fourth of a mile to the Eastward of it. From Grime Rock the light-house bears W. S. W. ¾ W., distant two and a half miles, and the Roman Catholic steeple at

Canso, the Southern extremity of Grassy Island, the Northern end of Petit-pas, and Park Ledge, all appear in one, and open a little to the Southward of Crow Island.

Pope Rock. POPE ROCK has five feet water; from it the light-house bears W., five miles distant.

These last-named rocks are the outermost of the Canso Ledges, lying off a great headland, which so many vessels are continually rounding, and in a region celebrated for fogs, they are exceedingly dangerous; but they have been rendered even more so by the errors of the charts hitherto in general use, in which they are represented fully half a mile too near the light-house.

In passing round these dangers in thick weather, great caution and the constant use of the lead are indispensable. If the approach be from the Northward, remember that they lie only four hundred fathoms within the thirty-fathom edge of the bank; if from the Southward and Eastward, go into no less than twenty-five fathoms until the soundings indicate that the vessel is off the bank to the Northward; and lastly, in clear weather, do not haul to the Westward into Chedabucto Bay until the high land of Black Point opens to the Northward of Derabie Island, bearing W. N. W.

Fox Rocks. Proceeding Westward from Canso, we have first to notice the Fox Rocks, lying between Durell and Fox islands, and dry at low water. They lie off Lazy Head, the Outer Fox being half a mile off shore, and the same distance Eastward from Fox Island. Neither of these rocks lie outside the line joining the N. extremities of the islands, and are therefore not much in the way of vessels running along the coast. The N. point of Fox Island and the pitch of Black Point in one, clear the Outer Fox in five fathoms; and also the shoal off Tickle Island.

Fox Island. FOX ISLAND, four and a half miles to the Westward of Canso, is granitic, half a mile long, and forty feet high. There are rocks above and under water, off both ends of this island, to the distance of two cables' length; and it is connected with a shingle point of the main land, distant three hundred and fifty fathoms, by a bar of sand and stone nearly dry at low water. The shingle beaches on the main land and on the S. W. side of the island are covered with the huts of the fishermen, who resort here in great numbers during the season; this being one of the greatest fishing stations in these seas, especially for mackerel and herrings. The fishing vessels lie in Fox Bay to the Westward of the island, in four to seven fathoms, sandy bottom; but this anchorage is insecure, being exposed to Northerly winds, and also to the heavy Easterly swell which occasionally rolls in round the reef. In N. W. winds and fine weather, these vessels sometimes shift round to the Eastward of the island, but the ground there is rocky and the anchorage unsafe.

Fisheries.

Half-Island Cove. HALF ISLAND COVE, four and a half miles from Fox Island, affords a small and unsafe anchorage, being open to the winds and swell from the N. and E. Off the small island on the W. side of this cove, there is a dangerous rock, lying one hundred fathoms from it out to the Eastward.

Philip Cove. PHILIP COVE, two miles farther to the Westward, affords shelter to boats, the sea being kept out by rocks in the entrance, that become dry soon after high water.

Crow Harbor. CROW HARBOR, celebrated for its mackerel and herring fisheries, is a mile from Philip Cove, and twelve miles to the Westward of Canso. It has excellent holding ground, and water enough for the largest ships; but there is not room for many large vessels in the Eastern part of the harbor, where alone they would be secure from the heavy Atlantic swell that occasionally rolls in.

Fisheries.

Rook Island and Rock. ROOK ISLAND is a rock one hundred fathoms long, lying nearly in the middle of the entrance; and Rook Rock, with three feet least water, lies thirty-five fathoms off the N. W. extremity of the island, with deep water close to it. The channel to the Westward of the island is seventeen fathoms deep, and three hundred fathoms wide at the entrance, between Rook and Corveau rocks, which last are dry at low water, and form part of the reef off Lamb Point.

Brodie Rocks. The channel to the Eastward of the island, between it and the Brodie Rocks, is generally preferred with Easterly winds, although only twenty-three feet deep, and one hundred fathoms wide. The Brodie Rocks, which become dry at low water, form part of the reef that extends two hundred and twenty-five fathoms from Lazy and Brodie points toward Rook Island, giving security to the Eastern part of the harbor. The mark for clearing these rocks and the shoal water within them on the N. E. side of the harbor, is Lamb Point and the extreme land to the Westward in one, bearing N.W by W. In the absence of buoys and beacons, vessels wishing to enter this harbor should proceed as follows: First, in approaching from the Eastward, to avoid the shoal that extends one hundred and fifty fathoms off Lazy Point, bring the E. end of Rook Island to bear nothing to the Westward of S. W. by W., and steer for it until within the distance of two cables' length; then change course to S. S. W., or as may be necessary, to pass between fifty and one hundred and fifty fathoms to the Eastward of that island. When the vessel has run one hundred and fifty fathoms past the island, the marks already given for clearing the Brodie Rocks, and the shoal water on the N. E. side of the harbor, will

ome on, and enable her safely to haul in to the S. E., and choose her berth in six or even fathoms, on a mud bottom. Secondly, in approaching from the Westward, to avoid he shoal off Lamb Point, as well as the Corveau Rocks, bring the W. end of Rook sland to bear nothing to the Eastward of S. E. by S., and steer for it until within the istance of one fourth of a mile; then change course to the Southward, so as to pass a able's length or more to the Westward of the island; and steer about S. E., passing at he same distance from the island, and having regard to the leading marks for clearing Brodie Rocks, she may take a berth as before.

It is high water, on the full and change days, in Crow Harbor, at eight hours, and he rise is from six to four feet, as it may be spring or neap tides. There is little or no tream of tide within the harbor. *Tides.*

Proceeding Westward at the distance of half a mile beyond Lamb Point, we arrive t the first of three remarkable high clay cliffs, which point out the position of Crow Harbor from a distance; after which, there is nothing deserving particular notice along he hilly, bold, and rocky coast, until we arrive at Salmon River, unless it may be Halfway Cove, as affording a landing place for boats. *Crow Cl* *Halfway Cove.*

SALMON RIVER, eight and a half miles from Crow Harbor, is navigable for boats the distance of two miles in from its very narrow entrance, on the bar of which the epth is only three feet at low water. Shoal water extends one fourth of a mile out om the entrance, and a rocky ridge, with four fathoms least water, projects three urths of a mile farther to the Eastward. Bigby Head, a remarkable cliff one hunred feet high, separates this river from Toby Cove, another place for boats, with four et on its bar at low water. *Salmon River.*

GUYSBOROUGH HARBOR, at the head of Chedabucto Bay, lies a mile N. N. W. nm Bigby Head, and ten miles from Crow Harbor. It is an extensive inlet, running to the Northward, with a depth of water sufficient for large ships; but with such a angerous bar, an entrance-channel so narrow and crooked, and such rapid tides, that no ritten directions could be available. The assistance of a pilot acquainted with every cal peculiarity of the tides and winds, is indispensable for the safety of a vessel, even very moderate size, either in entering or leaving this harbor; as will appear from an pection of the chart, and the following brief description: *Guysborough Harbor.*

The light-house stands on the Southern end of the shingle beach of Peart Point, which rms the W. side of the entrance. It is a temporary structure of wood, small, square, d painted white; it shows a fixed light, thirty feet above the sea, and visible from a tance of seven or eight miles. The entrance-channel between Peart Point and Stony tch, is forty fathoms wide, and six fathoms deep; but farther out, and stretching ross from Toby Point to Hadley Beach, there is a bar of sand, with seventeen feet on at low water, and which is rendered impassable at times by heavy breakers. This called the Outer Bar. *Guysborough Light.* *Outer Bar.*

THE INNER BAR lies across the inner entrance, which is one hundred and fifteen homs wide, between Eliza Point and Hadley Beach. The depth that can be carried er it is thirteen feet at low water, in a channel only forty fathoms wide. Before riving at this bar, there is room enough for a vessel or two to anchor in the mouth of gersol Creek, out of the strength of the tide, and sheltered from the sea by Stony Patch. e course across the Outer Bar, in the deepest water, is W. N. W., steering for the lightuse until within the distance of one hundred fathoms; then curving gradually to the rthward and Eastward, as the vessel passes the beach at Peart Point, to the distance thirty fathoms, and crossing the mouth of Ingersol Creek to the Inner Bar. The urse then becomes E. N. E. for a cable's length, while crossing that bar; and then rtherly, through a clear and deep channel, for three fourths of a mile, to the safe and cious anchorage of the town. *Inner Bar.*

GUYSBOROUGH is advantageously situated on the Western side of the harbor, the p water approaching close to its wharves. The hills attain a height of five hundred on either side of this beautiful inlet, which is navigable for ships up to the Narrows, ere the depth is eight feet at low water, at four miles from the entrance. Small vesmay proceed three miles still farther, and boats to the bridge, where the tide ends, ight and a half miles from the entrance; and where Guysborough River, a small am, enters the inlet, flowing through rich meadows called the Guysborough Inval. *Guysborough Town.*

t is high water on the full and change days, on Hadley Beach, at 8h. 20m. after the on's transit; the rise in ordinary spring tides being six and a half feet, and in neap three and a half feet. The rate of the streams, in the narrow entrance of the har is from four to five knots. *Tides.*

BRETON ISLAND, WEST COAST.

he Northern entrance of the Gut of Canso, from the light-house to Breton Island, Hefferman Point, is a distance of one mile and a third. For the first seven miles *Breton Isl and, W. Coast.*

we meet with no detached dangers, nor does the shallow water anywhere extend to the distance of half a mile from the shore. The land is high, and rather barren-looking, rising at the distance of half a mile from the shore, to the summit of a ridge eight hundred and fifty feet above the sea, and which continues parallel to the coast line for five or six miles. The only remarkable object in this interval is the Roman Catholic church at Craignish, which will be seen bearing N. E. ½ E., and distant two and three fourths miles from the light-house. At Long Point, a low cliff of red sandstone, the coast becomes dangerous of approach, and continues so to Emersion Head, a distance of seven or eight miles.

ie JUDIQUE SHOAL, the greatest danger in the bay, is of rock, and about half a mile in length, if we reckon only the very shallow part; but there are patches with two and three fathoms, and much rocky ground both to the N. and S. of it, as will be seen in the chart.

On the outer and N. W. point of the shoal, the church at Port Hood is only just shut in behind Susan Point, bearing N. N. E.; Long Point bears S. by E. two and three fourths miles; Campbell Point (the nearest part of the shore) E. ½ S. one mile and a fourth; and Judique church (a large wooden building without a steeple) N. E. by E. The least water (four feet) is close to the outer point of the shoal, and when on it, the Western extremity of the high land of Cape Porcupine will appear in the same line as Flat and Hefferman points, which form the right extremity of Breton Island at the entrance of the Gut of Canso, and which bears S. ¾ W. If the whole of the high land of Cape Porcupine be kept open to the W. of Hefferman Point, the shoal will be cleared in six or seven fathoms; or if the church at Port Hood be kept open to the W. of Cape Susan, the shoal will be cleared in not less than four fathoms. There are four fathoms of water between this shore and the land, but only small craft should attempt the passage.

Judique Bank. JUDIQUE BANK lies two and three fourths miles N. N. W. from the shoal, with four and a half fathoms least water, on a small rocky patch, with a great deal of foul ground around it. When on this patch, Portsmouth Point (the S. end of Smith Island) and Cape Linzee will appear touching, and bearing N. N. E. ½ E.; Judique church, E. S. E. ½ E., three and one fourth miles; and the left or Eastern termination of the high land of Cape Porcupine just shut in behind Hefferman Point. This bank, which is only dangerous to very large ships when there is a heavy sea running, will be cleared by keeping Cape Linzee shut in behind Smith Island; or the whole of the high land off Cape Porcupine open to the Westward of Hefferman Point.

Judique Pond. JUDIQUE POND, close to the N. of the church, is barred by a sandy ridge, so as only to admit boats at high water. The shallow water extends off it to the distance of one mile and a fourth. Catherine Pond and Susan Creek, distant three and five miles, respectively to the N. of Judique church, are similar places; the latter admits boats at high water, and is situated just to the N. of Cape Susan, rendered remarkable by the white gypsum in its cliffs.

Port Hood. PORT HOOD,* the only safe anchorage on the W. coast of Breton Island to the N. of the Gut of Canso, was formerly a much more secure harbor; Smith Island being then a peninsula, united to the main land by a range of high sand-hills, which have since been entirely swept away, and the sand widely spread over the Northern parts of the harbor. The first breach in this sand-bar was formed by the sea about twenty years ago, during a heavy gale from the N.; it was at first a very narrow channel, and might perhaps have been easily closed; but being neglected, the tidal streams enlarged it with increasing rapidity, until the present channel, six hundred fathoms wide, and nine feet deep at low water, was formed between the island and the main land. The combined action of the waves and tides is said to be still widening and deepening this passage, thus admitting more and more the heavy swell from the N., and thereby rendering the harbor insecure, excepting over toward Smith Island, the Eastern side of which forms a bay, where the anchorage is still perfectly safe with all winds. At this anchorage, in which vessels may choose any depth from three to four and a half fathoms, the bottom is of mud that holds well, and the heavy swell is prevented from rolling in round the N. E. extreme of the island by a long shoal, derived from the ruin of the sand-hills, and which runs to the Southward from Smith Point, with only four feet of water for the first three hundred fathoms, and less than three fathoms for an equal distance farther. This shoal must be carefully avoided in hauling in to the anchorage. The shelter from all S. winds is complete, being afforded by the Spithead, which is a sandy flat nearly dry at low water, extending six hundred fathoms to the Eastward from Portsmouth Point, the S. extremity of the island. The Spithead, which is very steep, and can usually be seen, will be cleared at the distance of fifty fathoms, by keeping the small fish-shed on the wharf next within Smith Point, exactly in one with the chimney of the house behind it, bearing N. ¼ W.

Spithead.

Dean Shoal. On the opposite, or the main-land side, there is also a steep sandy flat, called the Dean Shoal, which runs off from the sandy beach at Mill Creek to the distance of three hun

* See Plan.

dred fathoms; this, and the shallow water on that side, as far out as opposite Portsmouth Point, but not farther to the S., will be cleared at the distance of one hundred fathoms, by the line of Cape Linzee and Isthmus Point in one, bearing about N. by E. ¼ E. On the same side, but outside the entrance of the harbor, a rocky shoal, with thirteen feet least water, runs out three hundred and sixty fathoms from the shore, half a mile to the Northward of Ragged Point. This being very steep, must be carefully avoided by a large vessel. Cape Susan and Kate Point in one, bearing S. by W., just clears it, but may not be easily made out by strangers.

Smith Island.

SMITH ISLAND is two miles long and two hundred and ten feet high; it possesses much fertile land, and the two Smiths, father and son, have flourishing farms on the inner side of the island. The elder Smith's house and barn will be seen in the bay, and those of the younger, together with his fish-shed and wharf, farther to the N. E., near the other end of the sandy beach, and a quarter of a mile within Smith Point. These objects are mentioned because they form leading marks for the anchorage. With the exception of the sandy beach in the bay above-mentioned, the island is everywhere surrounded by cliffs of various heights up to one hundred and twenty-three feet. They are formed of soft reddish sandstones, shales, and marls, containing occasionally thin seams of coal, limestone, and trap, which last are well shown at the N. W. end of the island.

Henry Island.

HENRY ISLAND, or Just au Corps, lies about a mile outside, or W. S. W. from Smith Island. It is much the smaller of the two, being one mile long, and its greatest height is one hundred and ninety-five feet above the sea at high water. It is of the same rock formation, and also nearly surrounded with cliffs, which yield rapidly to the action of the waves and of the atmosphere; and which, on the other side, attain the elevation of one hundred feet above the sea. It has no permanent inhabitants, but is much frequented by fishermen during the fishing seasons.

This island is bold to seaward, but shallow water runs out from Fishery Point, its S. E. extremity, one third of a mile to three fathoms, and three fourths of a mile to five fathoms.

The passage between these islands is rendered so extremely intricate and dangerous by rocky shoals, that it should never be attempted, unless in a very small vessel and with fine weather.

Port Hood Village.

The village of Port Hood will be seen on the main land opposite the Northern part of Smith Island; it is well situated, and will be recognized by the steeple of the Roman Catholic church, and the court-house of stone.

Light.

On the south entrance of the harbor there is a light-house fifty-two feet high; it is a fixed light with a small red light below it.

Directions.

The following directions, with reference to the plan, and to the foregoing description of the dangers and leading marks, will enable the intelligent seaman to take his vessel in or out of Port Hood with safety: Having a fair wind, pass to the Southward of Henry Island, at a distance of one fourth of a mile, steering E. by S. till the Roman Catholic church at Port Hood opens out to the Southward of Portsmouth Point, then change course so as to pass the latter at the distance of three or four hundred fathoms, or in not less than five fathoms of water; taking notice that the shallow water off it extends to the distance of two hundred and ten fathoms. This course should be a little to the Northward of E. N. E., and directly toward a house rendered remarkable by its lower story being of stone, while the upper part is of wood, and which should be nearly in one with, or only just open to the Northward of, a hut near the entrance of a small brook at the N. end of a range of cliffs. Continue the course thus indicated, until Henry Point (N. end Henry Island) and Portsmouth Point come in one; when change the course immediately, and steer directly for the Roman Catholic church, or N. E. ½ N. until the younger Smith's fish-shed (on the wharf next within Smith Point) comes in one with the chimney of his house, bearing N. ¼ W. Keep these marks exactly in one, running toward them (they will lead in clear of the Spithead bank, as already mentioned) and when the S. W. end of the elder Smith's barn comes in one with the chimney of his house, bearing N. W. by N., change the course, and steer directly toward them, until Cape Linzee comes in one with Smith Point; when the vessel will be in the best anchorage, and in four fathoms at low water with mud bottom.

Anchorages.

If any difficulty be experienced in distinguishing the younger Smith's fish-shed, let the N. E. ½ N. course toward the Roman Catholic church be continued, until Isthmus Point and Cape Linzee are in one, then change the course, and keep them so, running toward them until the S. W. end of the elder Smith's barn comes in one with the chimney of his house, bearing N. W. by N.; and these last-named marks will lead to the anchorage as before stated.

Tides.

It is high water here, on full and change days, at nine hours. The rise in ordinary spring tides is four and one half feet, and in neap tides two feet. The tidal streams are weak at the anchorage, and their rate does not ordinarily amount to one knot anywhere within the harbor. The flood comes from the N., and the ebb from the S. The flood-

stream from the N. meets that which comes in through the Gut of Canso off Long Point whence they set to the N. W., curving round the bay toward Cape George.

At Cape Linzee, one mile and a half Northward from Port Hood, the W. coast of Breton Island trends away to the N. E. by E., continuing in that direction to Cape St. Lawrence, a distance of seventy-three miles, without either harbor or safe anchorage for ships. The general character is high and bold, the dangers being few and close inshore, but it is, nevertheless, a dangerous coast to be near in autumn or early winter, when the prevailing N. W. winds send in a heavy sea, and the set of the current is often in the same direction. The swell frequently precedes the wind by many hours, and, as there is no good holding-ground, becomes dangerous to vessels caught close inshore. Even with a smooth sea, and in fine summer weather, vessels are set in toward this coast; an effect which seems to be due sometimes to the general current from the N. W. coming from between the Magdalens and Prince Edward Island, and at other times to the direction of the ebb-stream from the strait of Northumberland inclining toward these shores. These streams, being inconstant and irregular, in both strength and direction, are therefore the more dangerous, and require the more to be guarded against. In the summer months, however, the rate of the current or tide will not be found to exceed one knot, even close inshore; excepting round Cape St. Lawrence and Cape North, where it sometimes runs at the rate of two or three knots, causing a heavy breaking sea. Its direction for three fourths of the time is from the Westward; this appears to be due to the combined action of the current and ebb-tide predominating over the flood-stream from the N. E., so as to render it nearly imperceptible, excepting at or near the spring tides. There is no doubt that winds, present or at a distance, also influence these streams, as they have been observed to do in all parts of the gulf.

Fisheries. The fisheries are valuable. Salmon are taken in all the principal streams, and Margaree is so celebrated for its salmon-fishery that it has sometimes been called Salmon River. Herring, mackerel, cod, &c., abound in their seasons, and are frequently taken in large quantities.

Mabou River. MABOU RIVER,* five miles from Port Hood, admits small schooners, having four feet at low water over its bar of sand. The bar shifts occasionally during heavy N. W. gales, but is seldom disturbed during the summer months, when those gales are of rare occurrence.

Tides. The entrance, at the Southern end of a low sand-bar, is only fifty fathoms wide, and the tides frequently run there at the rate of four knots; it is therefore a dangerous place to enter, excepting with a flowing tide and a smooth sea. It is high water there, on the full and change days, at about nine hours; the rise in ordinary spring tides is four feet, and in neap tides two feet. N. E. winds often cause high tides, and S. W. winds the contrary.

The scenery is very beautiful, the mountains rising immediately from the Northern shore to the height of eight hundred and seventy feet.

Mabou Highland. THE MABOU HIGHLAND is a very remarkable feature of the coast, seen from great distances out at sea. It extends eleven miles along the coast to the N. E., forming a lofty and precipitous shore, and rising to the height of one thousand feet above the sea. After passing this highland, the coast becomes less elevated, the beaches and landing places more frequent, and the settlements are continuous until we pass Chetican Island.

Sea-Wolf Island. SEA-WOLF ISLAND, distant twenty-three miles N. E. from Port Hood, is of an oval shape, eleven hundred fathoms long, parallel to the shore, three hundred fathoms broad, and two hundred feet high. It is of sandstone, precipitous, and quite bold all around, excepting at the N. E. point, where the shallow water extends only to the distance of one cable. It affords some shelter to small fishing vessels and boats, which can land upon it only in fine summer weather; at other times the sea rolls completely round it, and the anchorage is never safe, the ground being everywhere rocky.

The depth between this island and the shore, from which it is distant rather more than two miles, is seven fathoms, over a bottom of rock, with loose sand and gravel occasionally. The neighboring sea abounds with fish.

Margaree River. MARGAREE RIVER,* which is seven and one half miles farther to the N. E., has five feet over its rocky bar at low water, in a very narrow and intricate channel, through which the tides run at the rate of four knots. It is only under favorable circumstances of wind and weather, and with a smooth sea, that schooners can safely attempt to enter it. The surf on the bar is at times very heavy and dangerous to boats, especially when the strong tide is running out against the wind and sea. The shores of this river are well settled, principally by Acadians and Scotch Highlanders, who, besides farming, prosecute the salmon and other fisheries.

Tides. It is high water on the full and change days, at 8h. 40m., the rise in ordinary spring

* See Plan.

tides being three and one half feet, and in neap tides two feet. Boats can ascend five or six miles from the entrance, at which distance the tide ends.

Between Margaree and Chetican there are several places where boats can land in fine weather, especially at Squirrel Pond, distant three miles from the last-named place. There are farms all along this part, the mountains running parallel to the shore, at a short distance back, and attaining, at Mount Squirrel, in rear of the pond of the same name, the elevation of twelve hundred and twenty feet above the sea.

On Sea-Wolf or Margaree Island, there is a light-house fifty-five feet high. It shows a red light on the Northern side, a bright light on the Southern side. *Light.*

CHETICAN ISLAND, distant ten miles N. E. from Margaree, is only an island when high tides overflow the low and narrow beach of sand and shingle, which, at other times, unites it to the main land at its Southern extremity. This beach forms the shore of the bay, within the S. W. point of the island, where the Jersey brig, employed in the fisheries, usually lies moored in the summer months; receiving some shelter from the shoal which runs out half a mile to the Southward from Chetican Point, but completely exposed to winds from between S. W. and N. W. which send in a heavy sea. The depth of water in this roadstead is four and one half fathoms, but the bottom, of sand and gravel, is so loose and bad for holding, that the anchorage becomes quite unsafe after the month of August; as was experienced by one of the Jersey vessels several years ago, when she was driven from both anchors, and completely wrecked on the beach: since which accident they endeavor to leave before the commencement of the gales of September. *Chetican Island.*

At no time is this anchorage to be recommended, and therefore vessels merely wishing to communicate with the shore had better anchor outside at the distance of a mile or two, where they will have room to get under way in the event of the wind coming in from the Westward.

CHETICAN HARBOR,* between the island and the main land, is entered from the N. E. between the shingle spit at Gros Cape, the N. E. extreme of the island and Caveau Point. Within this entrance, but outside the bar, which is half a mile farther in, small fishing vessels sometimes anchor, but the Northerly winds send in so heavy a sea that this is considered even less secure than the unsafe anchorage at the S. W. end of the island. There is a depth of three and a half fathoms within the harbor, but only two feet at low water over its bar of sand, which is then in great part dry. *Chetican Harbor.*

It is high water here on the full and change days, at eight and one fourth hours; the rise in ordinary spring tides is three and a half feet, and in neap tides two feet. N. E. winds cause high tides, and S. W. winds the contrary. *Tides.*

THE CAVEAU SHOALS are two rocky patches, with eleven feet least water, lying at the distance of half a mile off Caveau Point, and from one third to three fourths of a mile from Gros Cape, on a N. E. by E. line of bearing. They are much in the way of vessels wishing to anchor off the entrance of the harbor. *Caveau Shoals.*

THE JEROME LEDGE, with five feet least water, lies in the same direction from Gros Cape, and at the distance of one mile and three fourths. It is of considerable extent, being two thirds of a mile long, and its N. E. point reaches to the distance of a mile out from the shore. The line of ten fathoms water is only three hundred fathoms outside this ledge and the Caveau Shoals; there is, therefore, little warning from the lead; but vessels beating along shore, and standing toward them, will avoid them by tacking when the points on the outside of Chetican Island, namely, Enragee Point and the Capes, come in one, bearing S. W. ¾ W. *Jerome Ledge.*

At PRESQU'ILE, three miles E. N. E. from Gros Cape, the mountains come close down upon the shore, after which there are no inhabitants, nor any good landing place till we arrive at Grandance fifteen miles from Chetican, where there is a settlement of seven families, and a small river silted up by a shingle beach, on which boats can land, and be hauled up in case of need. From Grandance to Cape St. Lawrence, a distance of thirteen miles, the coast is mountainous, with precipitous shores, affording an indifferent landing for boats at one or two places, and there only with a smooth sea. *Presqu'ile.* *Grandance.*

CAPE ST. LAWRENCE, which forms the termination of the W. coast of Breton Island, is of slate rock, affording no landing excepting on the W. side, where there is a brook, and a steep stony beach, on which a boat can be hauled up with difficulty. Proceeding round this headland to the S. E., we first observe the remarkable Bear Hill, a sugarloaf, seven hundred and fifty feet high, and close to the shore. This is distant less than a mile from the cape; and at an equal distance farther on Black Rock will be seen, always above water, and about one hundred and sixty fathoms off shore. Meat Cove, where there is a settlement, and good landing for boats, lies three hundred fathoms farther in the same direction, and one mile N. W. from Black Point. *Cape St. Lawrence.* *Bear Hill.* *Black Rock.* *Meat Cove.*

ST. LAWRENCE BAY, between Black Point and Cape North, is four and a half miles wide, and one mile and three fourths deep, with bold shores, and a depth of water *St. Lawrence Bay.*

* See Plan.

not too great for anchoring; but the bottom is not to be trusted, being either of rock or loose sand. Vessels requiring supplies may anchor there in the summer months, when strong Northerly winds are of rare occurrence, and will find nine or ten fathoms water at the distance of half a mile off shore in the bottom of the bay, but they should be ready to weigh immediately on the approach of a wind from the sea. At Wreck Cove and Deadman Pond there are settlements and good landing, the principal fishing establishment being at the last-named place.

Wreck Cove. Deadman Pond.

Cape North. CAPE NORTH, the N. E. extremity of Breton Island, is a very remarkable, bold, steep, and rocky headland, of slate, in nearly vertical strata, rising abruptly from the sea to the height of about eleven hundred feet. There is no shallow water off it, only some rocks above water, which at Money Point, a mile to the S. E. of the cape, run off to the distance of a long cable. The passage between this headland and the Island of St. Paul is thirteen miles wide, with very deep water, and no other danger than that which arises from the frequent and heavy squalls which prevail off this great promontory.

BRETON ISLAND, NORTHEAST COAST.

Breton Island, N. E. Coast. The N. E. coast of Breton Island, from Cape North to St. Anne's Harbor, a distance of forty-seven miles, is bold, mountainous, and free from outlying dangers, until we arrive near Ciboux Island, hereafter to be noticed. The mountains attain the elevation of one thousand three hundred and ninety feet above the sea.

Notwithstanding the bold nature of this coast, wrecks have not been unfrequent upon it in the dense fogs which accompany the Easterly winds. They have generally occurred to vessels running and steering, as they supposed, a safe course, to pass St. Paul's Island into the Gulf of St. Lawrence. Unaware of, or not allowing for, the current so frequently found running out of the Gulf from the Northward, and which had been acting upon their starboard bows for many hours, setting them many miles to the S. W. of their reckoning, they ran on shore under full sail. On one occasion we found this current running out of the gulf for many successive hours, at the rate of two knots from N. N. E.; at another time its rate was one knot from N. N. W.; and at a third it was imperceptible. After long-continued winds from the E. or N. E., which raise the level of the water in the Bras Dor and neighboring harbors, it is not unusual to find a current of one knot running for several successive days along the land from off St. Anne to near Cape North, where it meets the current out of the gulf, and is turned to the Eastward with a great rippling. The fishermen affirm that it as often runs in the opposite direction; and again, that at other times there is a regular alternation of the flood and ebb streams.

Currents.

These remarks are intended to show the inconstant nature of these currents, and the consequent great care required for the safety of a vessel when approaching this neighborhood in the fogs which so often hide the light on St. Paul's Island.

There are only two anchorages, and those unsafe in the portion of coast under review. The first of these, Aspee Bay, is eight miles wide, and four and a half miles deep. On its N. side, and distant five and three fourths miles, S. W. by W. from Cape North, is Wilkie Sugarloaf, a remarkable conical hill, twelve hundred feet high.

Aspee Bay.

To the Southward of this, and occupying the head of the bay, are three ponds with narrow entrances through sandy beaches, and into which boats can only pass at high water. The Northernmost and largest of these ponds has several islands in it, and a depth of three fathoms; it extends three miles inland, and has at its head a large brook called Aspee River. It has often a depth of three feet in its entrance after the melting of the winter's snows, but in summer seldom more than a foot at low water. There are settlements at all these ponds, where fresh provisions and water may be obtained. The best anchorage with N. W. winds is off the North Pond, in eight or nine fathoms sand bottom, and with S. winds off the South Pond, or in the cove under White Head, which, with a small island lying close off it, forms the S. E. point of the bay. In this cove there is a settlement for prosecuting the fisheries, and a good landing for boats in all but Northerly winds. It is the anchorage generally preferred, especially by small vessels, as being the least embayed, and the most sheltered from the prevailing swell from the S. E. To vessels unable to beat round Cape North, or in want of supplies, this bay affords convenient anchorage; but it is only safe in fine weather, and with Westerly winds; a vessel should therefore be in readiness to weigh instantly on the approach of a wind from the opposite quarter.

Aspee River.

Cape Egmont. CAPE EGMONT, distant twelve miles to the Southward from Cape North, and three miles S. S. E. from White Head, is a comparatively low headland of granite, and nearly bare of trees. The coast there turns to the S. S. W., and at Neal and Blackbrook coves which are distant two and a half and four miles, respectively, in that direction, there is a good landing for boats. Off South Point, between those coves, there is a sunken rock two cables' length off shore; and there is also a rocky shoal, with two fathoms less

water, half a mile from the shore at Rocky Bay where there are several buildings, two miles to the Northward from Inganish.

INGANISH ISLAND is distant ten miles from Cape Egmont, and half a mile S. E. from Archibald Point, the N. point of Inganish Bay. The island is of rock, half a mile in diameter, and two hundred and six feet high. The East Rocks, twelve feet high, lie off it to seaward, and extend out to the distance of nearly four hundred fathoms. There are several high rocks close to the outer shores of the island, and one small one off its S. W. extremity at the distance of eighty fathoms. The N. W. side of the island forms a small bay, in which there are several buildings, and where the small fishing vessels and boats are sheltered from the swell from the Southward, and from all but Easterly winds. *Inganish Island.* *East Rocks.*

From the W. point of this small bay, a spit and reef extend nearly halfway across to Archibald Point, leaving a channel of eighteen or twenty feet in depth, but so narrow and crooked that only fourteen feet can be relied on at low water.

Inganish Bay, between Archibald Point and Cape Smoke (Cape Enfumé) is three and three fourths miles wide, and two and three fourths miles deep. It is divided into North and South Bays by Middle Head, a long, narrow, rocky, and precipitous peninsula, off which lies Fisherman Rock, at the distance of a cable's length to the S. E. At the head of South Bay are two ponds having a common outlet, which boats can enter only at high water. There are several houses near these ponds, as well as on the tongue dividing the two bays, and at some parts of North Bay; but the principal settlement of Inganish is on the N. side of the bay, where, besides the establishment of Mr. Archibald, on the inner side of the point, which bears his name, there is a small Roman Catholic chapel, together with most of the houses and fish-stages. Vessels usually anchor on the N. side of the bay, within Archibald Point, shifting their berths as the winds may render necessary; but the bottom is in general only a thin coating of sand over rock, and the anchorage consequently unsafe, especially with Easterly winds, which send in a very heavy sea. *Inganish Bay.* *Fisherman Rock.*

The mountains in rear of Inganish are the highest on this coast, attaining an elevation of one thousand three hundred and ninety feet; and Cape Smoke, its S. point, rises precipitously from the sea to the height of nine hundred and fifty feet. The squalls from these islands are at times very violent. *Cape Smoke.*

It is high water, full and change, at Inganish, at 8h. 11m., M. T.; the rise in ordinary spring tides is three feet eleven inches, and in neaps two feet nine inches. *Tides.*

Proceeding to the S. W. from Cape Smoke to Bentinck Point, a distance of twelve and a half miles, the coast assumes a less sterile appearance; the mountains receding a short distance from the shore, so as to leave space for scattered farms. At a brook called French River, and especially at Breeding Cove, there is good landing for boats. At the first-named of those places, the thirty-fathom line of depth turns off to the S. E., and passes outside the Ciboux Shoal: thus affording sufficient guidance to those vessels that do not neglect the duty of sounding at night or in foggy weather. *Bentinck Point.* *French River.*

In the next distance of five and a half miles, which brings us to Island Point, the shallow water extends four hundred fathoms off shore; as it does also in the remaining distance of three and a half miles to St. Anne's Harbor. At the distance of one mile and a half past Bentinck Point there are cliffs of white gypsum; and at Indian Brook, one mile N. from Island Point, there is good landing. *Island Point.*

Island Point looks like an island, but is a small wooded peninsula, joined to the main land by stony beaches enclosing McDonald Point.

ST. ANNE'S HARBOR* (formerly Port Dauphin) is capable of containing any number of vessels in security; but the entrance is very narrow, with a tide of four knots; and there is a dangerous bar outside, over which a depth of sixteen feet can be carried at low water, with the aid of the chart and these directions. Without such assistance, a stranger unacquainted with the leading marks, could only safely rely on finding twelve feet instead of four and a half fathoms, as erroneously stated in the charts and directions heretofore generally in use. *St. Anne's Harbor.*

In a strong N. E. wind, and especially when the tide is running out, the bar is covered with heavy breakers. The harbor is completely sheltered by Beach Point, which is lined of large rolled stones and shingle, and reaches across from the Northern to within ninety fathoms of the Southern shore; it is quite bold at its Southern extremity, the entrance channel between it and Weed Pond Shoal is thirteen fathoms deep, but sixty-five fathoms wide. Within the entrance on the N. side of the channel, lies Port Shoal, of mud, extending half a mile in from Beach Point, and just cleared to Southward by the line of Weed Pond Beach and Bar Point in one. *Beach Point.* *Port Shoal.*

On the Eastern side of the entrance the small green mound of the old fort will be easily recognized: its summit forms with the plaster, or white gypsum cliff of Macleod Point, in the head of the harbor, a leading mark for crossing the bar in the best water. *Bar Mark.*

* See Plan.

Weed Point Ledge.

Immediately outside of Old Fort Point the stony Weed Point Beach commences, from which a rocky ledge, with two feet least water, extends to the distance of forty fathoms and continues Eastward to Bar Point, half a mile from the entrance.

The marks for clearing this ledge, which is much in the way of vessels in this narrow channel and rapid tideway, are Lead-in Point and Conway Point in one: these are the two points next within Old Fort Point, on the S. shore of the harbor. Proceeding out along the Southern shore, Wilhausen Point will be easily distinguished, being the first point of cliff outside the entrance; and so also will Fader Point which is likewise a cliff, and just beyond the beach of Oyster Pond. These points are distant three fourths and one mile and three fourths, respectively, from the entrance, and, together with the objects previously mentioned, form the principal leading marks for entering or leaving the harbor.

Farther out, the Southeastern shore of the bay is quite bold all the way to Cape Dauphin, and the only remarkable object is Monroe Beach and Store, where there is good landing for boats with off-shore winds.

Vessels bound to St. Anne's Harbor with a fair wind should proceed as follows, referring, for the leading marks, to the chart, and the preceding remarks:

St. Anne's Harbor Entrance.

Approaching from the Northward, pass to the N. W. of Ciboux and Hertford islands avoiding, if it be wished, the rocky six-fathom fishing-ground, in the mouth of the bay by keeping well over toward Cape Dauphin. Go no nearer to the shore between Bentinck and Island points than the depth of seven fathoms. Observe that the line of Bentinck Point and Cape Smoke in one clear the shore off Island Point in five fathoms and that in approaching the bar, Cape Smoke should be kept open. Before arriving at the steep outer side of the bar, which is distant one mile from the entrance, bring the white gypsum cliff of Macleod Point in one with the summit of Old Fort,* and steer for them until Fader Point is seen only just open clear of Wilhausen Point (the vessel will then be only forty or fifty fathoms from the shore near Bar Point): then port the helm instantly, and run from the last-named leading marks, keeping Fader Point a little open, until Conway Point makes its appearance to the Westward of Lead-in Point, and until the gypsum cliff of Macleod Point is open only half a point to the Southward of Beach Point, or until the latter bears S. W. by W., and is distant one fourth of a mile; then again change course, and keeping Conway Point in sight (to avoid Weed Point Ledge), steer so as to pass Beach Point at a distance between thirty and fifty fathoms.

Port Shoal.

Having now entered the harbor, avoid Port Shoal, by not opening out Bar Point to the Northward of Weed Pond Beach, until the shingly Price Point bears to the Northward of N. W.; the vessel will then be within the shoal, and may haul to the Northward, and anchor to the Westward of it in eight fathoms, mud, and out of the stream of the entrance.

North Arm Anchorage.

But the best-sheltered anchorage is in the entrance of the North Arm: the rising elsewhere in so large a harbor being at times rather rough for a small vessel. The N. E. gales, on entering the harbor, between mountains of one thousand feet high and only two miles apart, blow with concentrated force. They may be expected at any time after the middle of August, and a vessel should be well moored to withstand the fury.

Tides.

It is high water, within the harbor, on the full and change days, at 8h. 42m., M. The rise in ordinary spring tides is five feet, in neap tides three and one fourth feet. Extraordinary tides rise six feet.

It is high water ten minutes earlier on the bar, and the rise there is less by about a foot. The rate of the tidal streams in the entrance is from three to four knots. The best watering place will be found on the Northern side of the harbor, one mile and three fourths from the entrance, where a torrent descends a ravine in the mountains of St. Anne, which rise precipitously to the height of one thousand and seventy feet above the sea.

Monroe Cove.

A reference to the chart will show the North Arm, which boats can ascend, N. E., three miles; also Monroe Cove, with Shipyard Rock in its entrance; the gypsum cliff and the reef at Macleod Point, which divides the head of the harbor into two arms. The Kirk, or Presbyterian chapel, stands near the head of a convenient boat cove on the S. side of Macleod Point, and near the Manse, or residence of the Presbyterian minister, whose flock of highlanders form the greater part of the inhabitants of the harbor. They subsist by very indifferent farming, aided by occasional employment in the fishery and in getting out lumber for ship-building.

Cape Dauphin. Ciboux Islands.

CAPE DAUPHIN, the dividing point between St. Anne's Bay and the Bras D'Or, is a high and precipitous headland, and the Northeastern termination of the range of mountains that separate them. Hertford and Ciboux islands, lie off in a straight line N. E. by E.; and, including Ciboux Shoal, extend to the distance of four and a

* If the gypsum cliff of Macleod Point cannot be made out, pass Wilhausen Point, at the estimated distance of one hundred or one hundred and twenty fathoms, steering for Old Fort, until Fader Point is only just open; then proceed as already directed.

miles. They are long and narrow islands of sandstone, precipitous on every side, nearly bare of trees, and half a mile apart. There is no passage for ships between them, but boats, or small craft, can pass through a narrow channel, which is distant from fifty to one hundred fathoms from Hertford Island, and between it and the middle rock. Hertford Island is the highest, and one hundred feet above the sea. It is distant from Cape Dauphin one mile and a half; but the dangerous Hertford Ledge, which has five feet least water, extends from it nearly halfway across to the cape, leaving a channel six hundred fathoms wide and seven or eight fathoms deep. To avoid this ledge, vessels should keep well over toward the cape, from which the shallow water does not extend beyond two cables' length. From the outer point of Ciboux Island a reef runs off half a mile to N. E. by E.; and Ciboux Shoal, with fifteen feet least water, lies five eighths of a mile farther out in the same direction. This dangerous shoal, on which the sea at time breaks heavily, was only known to the fishermen previously to Captain Bayfield's survey. *Hertford Island and Ledge.* *Ciboux Reef and Shoal.*

CIBOUX ISLAND.—There is a revolving light showing alternately red and white every minute on Ciboux Island. It is seventy-seven feet high, and can be seen fourteen miles. *Light.*

The GREAT BRAS DOR is the principal of the two channels, on either side of Boulardrie Island, leading to the interior sea called the Bras Dor Lake. Its entrance between Carey Point and Noir Point, is only one hundred and seventy fathoms wide, with deep water; and, at a short distance outside the channel, is still farther contracted by shoals to one hundred and ten fathoms; measuring from the depth of three fathoms on either side. Carey Point, the N. W. side of the entrance, is a shingle beach, quite bold at its Southern extremity, but having a dangerous shoal running out from it E. N. E., so as to form the Northern side of the channel outside for seven eighths of a mile. On many parts of this shoal the depth is only three feet at low water, so that it is shown by breakers when there is any sea running; and a wide bar commences immediately outside of it, and continues one mile farther out, with irregular soundings, from three to six fathoms, over gravel and sand bottom. The shallowest part (three fathoms), called the Middle Shoal, lies on the N. side of the channel, one mile and a half out from Carey Point. Nearly opposite to this, and on the S. side of the channel, is Blackrock Shoal, extending from the red cliffs of Blackrock Point two hundred fathoms to the N., and half a mile in a N. E. direction. *Great Bras Dor Entrance.* *Carey Point Shoal.* *Blackrock Shoal.*

These are the principal dangers of the entrance; they render the channel indirect as well as narrow; and, together with the rapid tides and the want of buoys and beacons, make this a very dangerous pass for a stranger to attempt; except under favorable circumstances of weather, wind and tide. Farther out it is only necessary to observe, that the shallow water extends one hundred and fifty fathoms off Table Islet, which will be seen lying close off the cliff of Table Head, and distant three miles from the entrance. Haddock Bank has four fathoms least water, and lies from a mile to a mile and a half off shore, midway between Table Head and Cunet Point; the last being the remarkable N. E. extremity of Boulardrie Island, formed of cliffs of the coal formation, which are fast yielding to the waves; and from which a rocky shoal extends two thirds of a mile. *Haddock Bank.*

Within the entrance, off the small bight between Duffus and Mackenzie points, lies Eddy Rock, with one foot least water, and which will be cleared by keeping Blackrock Point open to the Northward of Noir Point. On the opposite or Northern side of the channel, from Carey Point to Kelly Cove, a distance of one mile, the shore is quite bold. To this cove, which is a convenient anchorage, we shall restrict our present notice of the Bras Dor, the object of this chapter being the Northeastern seaboard of Breton Island, leaving the description of its noble inland waters to a future page. *Kelly Cove.*

Off the mouth of Kelly Cove, in five or six fathoms, sand bottom, the anchorage is good, and out of the strength of the tide; but it is still more secure farther in, within a cable's length of its head, where the bottom is mud, and depth three to four fathoms.

If the entrance-channel of the Great Bras Dor were buoyed, a large ship might back and fill in against the wind, with the aid of the strong tide; but without that guidance, a fair wind, and weather clear enough to allow the leading marks to be seen, are indispensable. Having those requisites, proceed as follows: observing first, that Duncan Head, four miles within the entrance, shows like a well-defined point on the Southeast side of the channel. Pay a due regard to the dangers which have been pointed out, off the points of the bay; and, before advancing farther in than Table Island, bring Carey Point and Duncan Head to touch, bearing S. W. by W. ½ W.; and steer for them until Cape Smoke and the N. end of Hertford Island are in one; then change the course to the Southward, and keep those marks in one astern, running thence (for about one hundred and fifty or two hundred fathoms) until Mackenzie and Duffus points come in one, when change course again and steer S. W. by W. ½ W. for them, so as not to open out Mackenzie Point until Blackrock Point and Table Head come in one. These last-named well-defined points kept in one astern, or as the vessel runs from them, on a W. by W. ½ W. course, will lead nearly in mid-channel through the narrow entrance between Carey and Noir points; after which there is nothing in the way of a vessel hauling *Bras Dor Entrance.*

up for Kelly Cove. Should, however, the strong flood-tide carry her above the cove, she will find good anchorage two miles farther in on the same side, in five fathoms, and to the Westward of Jane Point.

If the weather should be so hazy that Cape Smoke cannot be seen, run in upon the S. W. by W. ½ W. course, with Carey Point and Duncan Head touching, until Black-rock Point is abeam; then sheer to the Southward until Mackenzie and Duffus points come in one, and proceed as before directed.

Tides. It is high water on the full and change days, at Carey Point, at 7h. 30m. M. T.; the rise in ordinary spring tides being three feet, and in neap tides a foot and two thirds. The usual rate of the tidal streams in the entrance is from four to five knots; but in the spring, or after long-continued N. E. gales, which have previously raised the level of the Bras Dor, they may amount to six knots. They form strong ripples and eddies, especially off Carey Point.

In fine settled weather the stream runs out until half an hour before high water by the shore; and in, until half an hour before low water; but strong winds cause great irregularities. It will be observed, therefore, that the stream ran out nearly all the time the water was rising; and in nearly all the time it was falling.

The rise of the tide diminishes rapidly as we proceed into the Bras Dor, and beyond the strait of Barra becomes nearly or altogether insensible.

There are houses and farms on either side of the entrance of the Great Bras Dor, at which supplies of fresh provisions may be obtained; water is easily procured.

Boulardrie Island. THE GREAT BRAS DOR, separating the coal-bearing strata of Boulardrie Island and the country farther to the S. E. from the older rocks, forms the boundary of a great change in the character of the coast. Instead of mountains we have now a coast of moderate elevation, characterized by cliffs of sandstone, and shale of the coal formation, until we arrive at older rocks on the S. shore of Mira Bay, and at Scatari Island; the latter being distant from the Great Bras Dor thirty-six miles. The dangers of this coast are such as to render great caution necessary at night or in fogs, when thirty fathoms, or at least twenty fathoms, is as near as a stranger should approach; the latter depth being in some parts within two miles of the shore.

Little Bras Dor Pass. THE LITTLE BRAS DOR is the narrow and winding passage on the Eastern side of Boulardrie Island; which, at the distance of five miles from its entrance, expands into the wide and deep channel of St. Andrew.

It can only be entered by small craft and boats under favorable circumstances, the entrance being closed with breakers when there is a heavy sea running, and especially when the strong tide is running out against the wind. The depth at low water, over the rocky bar, is seven feet, in a channel between reefs, and only twenty-five fathoms wide.

Tides. It is high water, full and change, at seven and three fourths hours; and the rise in ordinary spring and neap tides is three and two feet respectively. The usual rate of the stream in the entrance is four knots. There is a fishing establishment on the shingle point just within the entrance, and scattered houses and farms on either side. The approach to the Little Bras Dor is rendered dangerous to strangers by the shoals on the E. side of Cunet Point, extending six hundred fathoms off shore; and by the reefs off Alder Point and Mope Head to the E. of the entrance.

Bird and Bonar Rocks. THE BIRD ROCK, six feet high, will be seen on the reef four hundred fathoms S. E. from Mope Head; and the Bonar Rocks, dry at low water, at the same distance off Bonar Head. In addition to these dangers, observe that in the distance of six miles from Cunet Point to Cranberry Head, the shoal water for a large ship frequently extends to nearly a mile off shore.

Sydney Harbor. SYDNEY HARBOR* is one of the finest ports in the world, being equally easy of access and egress, and capable of containing any number of the largest vessels in perfect safety. It is three miles wide at the outer entrance; but the navigable channel contracts rapidly to the breadth of half a mile between the two bars, which are of sand and shingle, and extend from the shore on either side, at five miles within the light-house on Flat Point. Inside these bars the harbor divides into the West and South arms; the former being open to the E. N. E. winds, except at the coal-loading ground, where the vessels anchor under shelter of the N. W. bar; and at North Sydney, where they may lie in like manner under Allen Point. The South Arm, being completely sheltered from the sea by the S. E. bar, affords safe anchorage in every part. The town of Sydney, three and a half miles up this arm, is exceedingly well situated on the W. side and summit of a peninsula, fifty-five feet high.

It has deep water close to its wharves, and the arm continues navigable for vessels to Sydney Bridge, a distance of two miles; and for boats to the Fork's Bridge, where the tide ends six miles above the town, and from which a road leads across to the East Bay of the Bras Dor.

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* See Plan.

The light-house on Flat Point is octagonal in shape, painted red and white, vertically, and shows a fixed light seventy feet above the sea. Leaving this on the left, on entering the harbor, the high and conspicuous colliery chimneys, the Episcopal, Scotch, and Roman Catholic churches, together with the other buildings at the mines, will be seen on the opposite shore, at the distance of a mile and a half within the cliffs of Cranberry Head; as will also the Sailors' and Roman Catholic churches, with the stores, houses, and wharves at the loading ground, which is two miles farther in along the same side of the harbor. *Sydney Light.*

Vessels bound to this harbor should observe the following directions: *Approach to Sydney Harbor.*

First. When approaching from the Northward with a leading wind, steer so as to pass the reef off Cranberry Head (on which lies Cran Rock, with sixteen feet water, half a mile off shore) in ten fathoms; and when the high cliff of Mine Point opens out to the Eastward of Swivel Point, haul into the harbor. If bound to the loading ground, run along the N. W. shore, in not less than five fathoms, until past Mine Point, then steer off to the Southward sufficiently to bring Jackson and Allen points (two shingle points, up the West Arm) in one; or until the light-house comes into one with Petre Point; either of which, or at night the depth of six and three fourths fathoms, will lead clear of the N. W. bar, which is very steep, having five and a half fathoms close to it. *Coal Loading Ground.* *N. W. Bar.*

When the wharves at the loading ground bear N. W., the vessel will be well within the bar; and may haul in and choose her berth in five or six fathoms, mud bottom, and at the distance of one hundred and fifty or two hundred fathoms from the wharves.

If the vesssel be bound up the South Arm, run in as before, or in mid-channel, until the Easternmost of the high colliery chimneys appears to the Westward of the Episcopal church, which is the Easternmost church on Mine Point; then run from those marks, keeping the Easternmost chimney a little open to the Westward of the church, and they will lead clear of the S. E. bar; the Western extremity of which will be passed when the W. point of its shingle beach begins to bear to the Northward of E. *South Arm.*

The vessel may then either haul to the Eastward, and anchor in Fishery Cove, in six or seven fathoms, mud bottom, or proceed on to the town of Sidney. In the latter case, it will only be necessary to consult the chart for the extent of the shallow water off either shore; not failing to observe that the reef off Battery Point extends a fourth of a mile out N. by E. The anchorage is good anywhere off the wharves of the town if outside a line joining the English church and Shingle Point: within that line there being shoals, as will be seen in the chart. The depth of this anchorage is from five to eight and a half fathoms, with mud bottom; and there is sufficient depth of water for large vessels all the way to the bridge, between which and the town is the most secure part of the harbor. *Fishery Cove.*

Secondly. When approaching from the Eastward, pass the light-house no nearer than half a mile, or in not less than seven fathoms; and to avoid Petre Reef (dry at low water, a mile within the light-house) do not haul into the harbor until Daly Point opens out to the Northward of Gillivray Point: and to clear the shoal at Petre Point, and farther in, do not approach nearer than half a mile, or than five and a half fathoms, as you run along the Eastern shore. When the light-house and Petre Point come in one, keep them so as you run from them, and they will lead to the loading ground as before. If bound up the South Arm or to Sydney, run with the light-house and Petre Point in one, or with the former only just shut in, until the marks for clearing the S. E. bar, namely, the Eastern colliery chimney and the Episcopal church on Mine Point, become in one, when proceed as before directed.

In beating into this harbor, great care must be used, especially when between the N. W. and S. E bars, both of which are so steep that the lead will afford little or no warning. *Turning in.*

There is, however, plenty of room; and, with the aid of the chart, the intelligent seaman will experience no difficulty even in the largest ship.

It is high water at the S. E. bar, and also at the town of Sidney, on the full and change days, at eight and three fourths hours after the moon's transit, the rise at ordinary spring and neap tides being, at the bar, three and three fourths feet and two and a third feet respectively; and at the town, five and four feet. The ordinary rate of the streams is half a knot off the town, but much weaker farther out into the wider parts of the harbor. *Tides.*

The most convenient watering place is at the creek, which discharges the waters of the Sawmill Lake, a short distance to the Westward of the loading ground; but good water may be obtained on the E. side of the South Arm, also opposite the town, and in several other places where brooks enter the sea. The country is well settled around the harbor, and supplies of every kind may be readily obtained.

INDIAN BAY, five miles S. E. from Sydney light-house, is open to the wind and swell from the Eastward, and therefore affords a safe anchorage only in off-shore winds and fine weather. *Indian Bay.*

It is three miles wide by one mile and a half deep: at its head a dry sand-bar, a mile

long, extends across from the Southern to within seventy-five fathoms of the Northern shore; leaving an entrance of that breadth into Bridgeport Harbor, a shallow pond, extending two miles inland. The depth of eight feet at low water is all that can be carried into this harbor, the interior of which is occupied by flats of sand and weeds, partly dry at low water; except in a narrow and winding channel from seven to fifteen feet deep, and which leads into a wide expansion eight feet deep at low water.

Lingau or Bridgeport Harbor.

In approaching this bay, in order to anchor, give its points, which are cliffs of the coal formation, a berth of full half a mile, or pass them in not less than five fathoms; and observe that shallow water extends to the same distance from the N. shore and head of the bay, as well as farther Eastward toward Table Head.

The best anchorage is near the middle of the bay, and within the depth of five fathoms; in greater depths the bottom is in general rock, and not to be trusted.

Tides.

It is high water in the entrance of the harbor, on the full and change days, at eight hours; and the rise is from three and three fourths feet to two and one third feet accordingly as it may be spring or neap tides. The ordinary rate of the stream in the entrance is two knots.

Glace Bay.

GLACE BAY, five miles farther to the S. E., affords no safe anchorage. At its head is Dyson Pond, extending two miles inland, and having a narrow outlet, through sand-hills and sand-beach, which is usually dry at low water. On the N. W. side of this bay, at Glace Cove, the shallow water extends three fourths of a mile off shore; and on the opposite side at Macrea and Dyson points, the reefs run out fully half a mile from the cliffs.

Cape Percy.

Proceeding four miles farther to the Eastward we arrive at Cape Percy, a precipitous headland, where the cliffs of coal-bearing sandstone rise to one hundred and ten feet above the sea. Off its N. side lies Schooner Rock, with five feet least water, being the shallowest part of a reef which extends four hundred fathoms out from the shore. Percy Rock, with seven feet least water, lies two hundred fathoms off the N. E. shoulder of the cape. Flint Island, on which there is a revolving light, is of sandstone, broken by the waves, precipitous, sixty feet high, and three hundred fathoms long, in an E. by N. direction. On its N. point there is a fish store where alone boats can land. It lies sixteen hundred fathoms E. by S. from Cape Percy. Shallow water extends only a third of a mile from it in any direction; but off its W. end, to the distance of four hundred fathoms, there are very irregular soundings, four and a half to twelve fathoms in a cast of the lead; which cause, with the tide, a strong rippling, and at times a heavy breaking sea.

Schooner Rock.
Percy Rock.
Flint Island.
Revolving Light.

Between these dangers and the cape there is a clear channel a mile in breadth through which an irregular tidal stream runs at times two knots.

At Cape Percy the direction of the coast changes from S. E. to S. S. W., and continues in the latter direction for about fourteen miles, across the mouths of Morien and Mira bays, to Cape Breton, to the Eastern extremity of Breton Island.

Morien Bay.
Cow Reef.

MORIEN BAY is two and a half miles wide at its entrance, between Capes Percy and Morien. On its N. side just within Cape Percy, lies Cow Reef, dry in part at low water, and extending to half a mile from the shore. The head of the bay is occupied by flats of sand and mud, partly dry at low water, and through which a narrow shallow channel leads to False Bay Beach, on the N. side of Mira Bay. Being completely open to Easterly winds, Morien Bay affords no safe anchorage.

Cape Morien.

CAPE MORIEN is a bold headland, the shoal water extending only one hundred and fifty fathoms from its sandstone cliffs; which abound in coal, and rise, on its S. side, one hundred and fifty feet above the sea. It is the N. E. extremity of a peninsula, which forms the precipitous N. shore of Mira Bay, for a distance of five miles, and terminates at the shingle isthmus of False Bay Beach, already mentioned.

Mira Bay.

MIRA BAY is also open to winds from the Eastward, and affords no safe anchorage. It is of great extent, stretching in nine miles to the Westward of Cape Morien; and being seven and one fourth miles wide at the entrance between that cape and Moque Head. Mira River, after flowing for several miles between precipitous banks, enters the head of the bay between points of sand and shingle, forty fathoms apart. It discharges the waters of Mira Lake and Salmon River, and is the outlet of an interior navigation of about twenty miles; but the ordinary depth on its bar of sand and stones is only four feet at low water, and seldom exceeds eight feet, except in extraordinary spring tides.

Mira Lake.

Catalogne Lake.

CATALOGNE LAKE has only one foot at low water in its very narrow outlet, through a sand and shingle beach, two miles S. of Mira River. It is broken into coves, peninsulas, and islets, forming picturesque scenery. There is a Presbyterian church at its head, three miles in from the entrance, and its shores are occupied by farmers and fishermen.

Menadou Harbor.

MENADOU HARBOR, on the N. side of Menadou Bay, three fourths of a mile within Moque Head, is a semicircular cove, a fourth of a mile wide. Its shingle beach

s occupied by fish-stages, and its shores by a busy village of fishermen and traders. t has a Roman Catholic and an English Episcopal chapel, the former only being distinguished by a steeple; and the population, including those scattered around the bay, mounts to about three hundred souls. The depth at low water in this small harbor s from ten to fourteen feet, over sandy bottom. It is sufficiently sheltered by the numerous rocks in the bay, and by the island of Scatari, to afford safe anchorage to ishing schooners and coasting vessels, drawing less than ten feet water; but larger essels would be endangered by the swell or *under-tow* that accompanies a gale from he Eastward, and which would cause them to strike the ground at low water. The pproach to this harbor, between numerous rocks above and under water, is so difficult nd dangerous, that no written directions could avail; the plan of the bay on a large cale, or the assistance of a fisherman of the place, would be indispensable to any tranger.

It is high water at Menadou, on the full and change days, at eight and one fourth ours; the rise in ordinary spring tides is five and a half feet, and in neap tides three nd a third feet. *Tides.*

THE MENADOU PASSAGE is a mile wide between Moque Head and the W. point f Scatari Island, and has a clear deep-water channel of nearly half that breadth, in the arrowest part, which is between the Great and Little Shag Rocks in the Northern art of the entrance. Nevertheless, it should only be used in cases of emergency, or n such circumstances of wind and weather as would insure the not being surprised by he prevailing dense fog, in a channel rendered indirect by numerous dangers, destitute f good holding ground, and in which there is no shelter from the heavy sea that accompanies all Easterly and Southerly winds. The principal dangers of this passage re the Shag Rock and Bar Reef, the other rocks in the mouth of Menadou Bay being ss in the way of vessels. *Menadou Passage.*

THE SHAG ROCK is black, thirty fathoms long and fifteen feet high; it will therepre readily be seen; but a rocky shoal extends from it four hundred fathoms E. N. E., nd one hundred and eighty fathoms E. S. E. In this latter direction there is a patch ith twelve feet least water on the extreme edge of the shoal. The Little Shag and e Cary Rocks, half a mile to the Eastward of it and seventy fathoms off shore, can lso be seen, being small black trap rocks, respectively six and four feet above high ater. The Little Shag lies one hundred and fifty fathoms N. from the W. point of catari, and the shoal water outside of it does not extend beyond the distance of fifty thoms; leaving a clear channel four hundred and fifty fathoms wide, and nine fathoms eep, between it and the Shag Shoal. *Shag Rock.* *Little Shag.* *Cary Rocks.*

This is the main channel, that to the W. of the Shag being rendered dangerous by eering Rock, which, with nine feet least water, lies three hundred and fifty fathoms . W. from the Shag Rock; also by Duck Rock awash at high water, and lying one ndred and seventy-five fathoms S. from Moque Head; and by Mad Dick, which, with ree feet least water, lies two hundred fathoms farther to S. W. To these dangers on e W. side of the channel, we may add the Black Rock, which can always be seen, and e other rocks in the mouth of Menadou Bay, but they are out of the way of passing ssels. There remains the Bar Reef, which runs out from Bar Point, to the Southward Menadou Bay, and more than halfway across to the Island of Scatari. It was forerly a dry bar, covered with sand and grass; at present the only part uncovered at gh water is the Bar Stone, a single mass of rock, about four feet high; but at low wa the reef still dries extensively, and completely shelters Menadou from the S. wind d swell. The Bar Stone lies three fourths of a mile off shore, and the reef continues quarter of a mile farther out, toward the W. point of Scatari, which it approaches to ithin three fourths of a mile, and then turns to the S. E. *Neering Rock.* *Duck Rock.* *Mad Dick.* *Black Rock.* *Bar Reef.* *Bar Stone.*

In this last-named direction, the reef continues three fourths of a mile and terminates the Helen Rocks, in only four and six feet at low water, on which the sea often breaks avily. The Eastern extremity of this dangerous reef, in five fathoms, bears S. by W. mile and a half from the W. point of Scatari; and N. N. E., two miles from Cape reton. A line from one of those points to the other passes over the E. end of the reef six feet at low water; and vessels will clear it to the Eastward, if Portnova Island be t entirely shut in behind Cape Breton. *Helen Rocks.*

CAPE BRETON, the extreme Eastern point of Breton Island, is low, rocky, and vered with grassy moors. It is bold to the Eastward, with the exception of a rocky elve-foot patch bearing S. S. E. ½ E. a quarter of a mile. On the N. side of the cape ree fourths of a mile, lies Lansecoin* Island, in the mouth of a shallow bay. This and, which is about two cables' length in diameter, and fifty feet high, is bold to seard; but there is a rock dry at low water between it and the cape. *Cape Breton.* *Lansecoin Island.*

PORTNOVA† ISLAND lies off the S. side of the cape from which it bears S. S. W. ½ *Portnova Island.*

* From L'Anse au Coin.

† From Porto Nuevo, a very inapplicable name, there being no port near.

W., three fourths of a mile. It is rocky and precipitous, one hundred and fifty fathoms in diameter, and fifty feet high. It is bold to seaward, but Chameau Rock, which is awash, and on which a French frigate was lost, lies nearly midway between it and the cape; leaving no passage for ships.

Chameau Rock.

On the opposite side of the passage, the reefs off the W. side of Scatari can always be seen, and do not extend more than two cables' length off shore. We need only mention here the Hatch Rocks and Ragged Rocks; the former being most in the way, will be cleared, as long as Shag Rock is not shut in behind the W. point.

Hatch and Ragged Rocks.

Menadou Passage.

MENADOU PASSAGE has hitherto been considered too dangerous for any but fishing and coasting vessels; but with the aid of the chart, and the description and directions here given, the largest ship may take it without danger in case of need, and under favorable circumstances of wind and weather. All Southerly and Easterly winds are unfavorable, because either accompanied by or liable to the sudden arrival of dense fogs. Winds from between the W. and N. are constantly free from fogs, and being, moreover, smooth-water winds, are favorable for this passage.

From the Southward,

In a vessel approaching from the Southward, with a Westerly wind, and wishing to avoid running to leeward to pass outside of Scatari, proceed as follows: Pass Portnova Island and Cape Breton, at the distance of half a mile or more, steering for a remarkable hill called Steering Hummock, which stands six hundred fathoms to the Eastward of the West Point of Scatari. Take care not to shut in Portnova Island behind Cape Breton, until sure that Bar Reef has been passed; and when the West Point of Scatari bears a point or more to the Westward of North, steer so as to pass round it at a distance between a quarter and a half a mile; keeping gradually away to the Northward and Eastward so as to pass between the Little Shag Rock and Shag Shoal. When the Shag Rock comes in one with West Point, or when the latter bears to the Westward of South, the Shag Shoal will be past, and the vessel may be steered for Cape Morien.

and from the Northward.

If coming from the Northward, with a fair wind, bring the West Point of Scatari to bear to the Westward of South, and steer for it until the Eastern extremity of Shag Shoal is past, which will be when the Shag Rock and Moque Head come in one; then change course so as to pass the Little Shag and West Point at the distance of two or three hundred fathoms; which having done, steer out S. E. by S.: remembering the marks for clearing the Hatch Rocks and the E. end of Bar Reef.

Tides.

The ordinary rate of the tidal streams in Menadou Passage is from one to two knots, the flood from the Southward, and the ebb in the opposite direction; but they are often very irregular.

Scatari Island.

SCATARI ISLAND, forming the extreme Eastern dependency of Breton Island, is in shape of a triangle; the longest side of which faces the N., and extends five and a half miles; while a line at right angles to it, and terminating at Howe Point, the Southern extremity of the island, gives an extreme breadth of two and a half miles.

The natural features of this island are similar to those of the adjacent main land, the highest hill rising one hundred and ninety feet above the sea. It is not permanently inhabited, being reserved by the colonial government, but is much frequented by the fishermen in the summer season. Near the centre of its Northern shore is the N. W. Cove, affording a smooth-water anchorage in Southerly winds; but the holding ground is not good, and vessels should be prepared to weigh promptly with the change of wind. The S. W. and S. E. sides of the island are broken with the heavy and almost incessant Atlantic swell, into rocky points and coves, which afford excellent fishing stations, but no shelter to shipping.

N. W. Cove.

Eastern Harbor.

EASTERN HARBOR, formed by Hay Island on the S. side of the E. point, does not deserve the name, being merely a very insecure anchorage within the reefs; but it is used occasionally in fine summer weather by small vessels employed in the fisheries, and in saving things from wrecks.

Scatari Light.

The Light-house on the E. point of Scatari, is octagonal in shape, painted white and seventy feet high. It stands on Trap Rock, ninety feet above the sea, and shows a revolving light, visible a minute and eclipsed for half a minute. It is furnished with a gun for signals, and a boat to assist vessels in distress.

The reefs off the S. W. side of the Island have been already mentioned, as extending only two cables' length off shore; those off the N. side are still shorter. The principal dangers are on the S. E. side, where a reef runs out half a mile from Hay Island. Outside of this, and bearing S. a mile and one eighth from the light-house, lies Wattie Rock, with twenty-four feet at low water; and still farther out, and bearing S. ½ E., a mile and a half from the light, there are two rocky patches, with five fathoms, on which the sea occasionally breaks.

Hay Island Reef.

Wattie Rock.

Cormandiere Rocks.

THE CORMANDIERE ROCKS lie nearly three fourths of a mile off the light to the Eastward. They are small black trap rocks, from six to sixteen feet high, and can, therefore, always be seen. They are bold to seaward, and there is no passage between them and the light for ships.

Scatari, like St. Paul Island, has become celebrated for many fatal shipwrecks; but

these casualties, which have been mainly occasioned by the neglect of the lead, in vessels bound for the Gulf of St. Lawrence, and meeting the prevailing current on the starboard bow, have been gradually diminished since the establishment of the light, in 1839.

BRETON ISLAND, SOUTH COAST.

LOUISBOURG HARBOR is situated on the S. E. side of Cape Breton, to the Westward of Scatari Island, and is very easy of access; you may be soon in, and you may likewise be soon out, if you please. In doing so, be careful to avoid the Nag's Head, a sunken rock, on the starboard hand going in. The E. part of the harbor is the safest. On the East Head, and on the side of the old French light-house, a light-house, fifteen feet high, showing a fixed light, has been erected; it is painted white, with a perpendicular black stripe on each side. The inhabitants consist of a few fishermen only. Water is plenty here, but the wood is scarce. The Nag's Head Rock lies nearly one third of a mile from the light-house point, and has no more than three feet on it at low water. The port side, going in, is the boldest. *Louisbourg Harbor.* *Light-House.*

GABARUS BAY.—From the entrance of Louisbourg to Guion Island, called also Portland Isle, the course is S.W. by W., and the distance more than three leagues. Between lies the bay called Gabarus Bay, which is spacious and has a depth of from twenty to seven fathoms. Off the S. point of this bay, called Cape Portland, lie the Cormorants, a number of islets and rocks, which are dangerous. About four leagues to the Westward of Gabarus Bay, is the Forked Harbor, a narrow winding inlet, where small vessels may run into, and lie landlocked. About five miles Southwestward of this is the remarkable white cliff already noticed, and called Cape Blancherotte. The shore now winds to the Westward, to Cape Hinchinbroke and the Isle of Madame. *Gabarus Bay.*

BLANCHEROTTE, OR WHITE CLIFF.—On the S. coast of Breton is a remarkable cliff of whitish earth. Four miles to the Westward of it is a small woody island, lying at the distance of two miles from shore, and off the little harbor called St. Esprit. Without this island, at the distance of a mile and a half on the S. E., is a breaker. *Blancherotte, or White Cliff.*

The land hence to the Isle of Madame, or Richmond, is generally low. It presents several banks of bright red earth, with beaches between them. Albion Cliff, on the S. side of Madame, is rocky, remarkably high, and precipitous. On the S. W. side of this island is the settlement called Arichat.

In the description of the Gut of Canso already given, we have noticed the general appearance of its coasts. On proceeding toward this strait, it should be remarked that the Isles of Canso, on the Nova Scotia side, are surrounded by many low white rocks and breakers. The S. shore of Chedabucto Bay is iron-bound and steep to. Its N. shore consists of red cliffs and beaches.

Off the Gut of Canso, from the Southern entrance Northward, the Western shore, throughout, is high, rocky, and steep; the Eastern shore low, with beaches. From the N. end of the Gut, the Eastern shore to Jestico, or Port Hood, is distinguished by high, rocky red cliffs. The opposite shore has several remarkable cliffs of gypsum, or plaster, which appear extremely white. Cape St. George is iron-bound, and very high, its summit being four hundred and twenty feet above the level of the sea.

THE SOUTHEASTERN COAST OF NOVA SCOTIA.

MARS HEAD TO SHUT-IN ISLAND, INCLUDING HALIFAX HARBOR.

Variation 19½° *W. in* 1860.

MARS HEAD, lat. 44° 26′ 16″ N., long. 63° 43′ 24″ W., is a rocky peninsular cape, seventy feet high, forming the W. limit of Pennant Bay, the entrance to which is three miles wide in an E. S. E. and W. N. W. direction, and about two miles deep. This bay is encumbered with rocky shoals and islands, but it affords shelter to those acquainted with the passages between them. The land at the head of the bay is of moderate height, Hospital Hill, the highest part, rising two hundred and fifty feet above the sea. *Mars Head.*

TURNER BAY, about two miles within Mars Head, and at the Northwestern angle of Pennant Bay, is open to the S. S. E., but the anchorage is good in eight or nine fathoms, mud, off the fishing coves, within Church Point, on the Southern shore. *Turner Bay*

To enter Turner Bay by the Western passage, bring Turner Bay Rock (formerly White Rock) to bear N. E. ½ E., and steer for it, passing midway between the Broad Rock which covers at high water, and the Puffer Shoal, on which the sea is said always to break. Pass Westward to Turner Bay Rock, between it and the Black Shoal, keeping nearer to the former, which is quite bold on that side, taking care not to haul to the Westward into the bay until past the thirteen-foot shoal, which lies N. N. E. ½ E., one fourth of a mile from the Black Shoal, and two cables distant from Tenant Point, formerly called Macivoith Point. *Directions*

If the Eastern passage, which is preferable in some winds, be taken, stand in for the Western end of Mackerel Island on any bearing not to the Eastward of N. E. by N., until Church Point is in line with the Northeast side of Turner Bay Rock, bearing N. N. W. ¾ W., then alter course, and steer with those marks in one, until the rock is approached; when sheer gradually to the Northward, so as to pass at a cable's length to the N. E. of it, and then to the N. W., to the anchorage of the fishing coves as before.

Pennant Harbor. PENNANT HARBOR, at the Northeastern angle of Pennant Bay, has secure anchorage above the islands, as stated on former charts, in which the dangerous Middle Ground, with thirteen feet least water, is omitted, being directly in the way of vessels taking what is called the good channel between Pennant Point and Pennant Island. Two other shoals at the head of the harbor are also omitted.

Directions. To enter Pennant Harbor, after passing at a cable's length to the Eastward of Bald Rock, steer N. E. for the Thrumcap until the Seven Islands open out to the Northward of Pennant Island, when the Middle Ground will be passed; then haul round to the Eastward and Northward of the Thrumcap, at the distance of one cable, so as to pass between it and the rocky eighteen-foot shoal lying one fourth of a mile N. E. by E. from it. Having passed to the Westward of this shoal, anchor within Martin and Saddle islands, as convenient, from one to two and a half cables from them, in six or seven fathoms, mud bottom. In rounding Pennant Point, be careful to avoid the reefs which extend two cables off it to the Southward and Eastward.

Sambro Harbor. SAMBRO HARBOR, lying at the head of the bay formed between Pennant Point on the W., and Cape Sambro, on the E., has anchorage within the Isle of Man.* The heavy sea in S. W. winds is in great measure broken by the ledges outside, but the shelter is imperfect, and the dangers off and in this harbor are so numerous, that it should never be attempted by a large ship, except in a case of extreme necessity.

Directions from the Westward. To enter Sambro Harbor from the Westward, pass between the Bull Rock and Pennant Point, steering N. E. by E. for the Isle of Man; and, having passed Bull Rock, at the distance of one and a half or two cables, to avoid the shoal water off it to the Northward, keep the E. side of the Isle of Man and Round Island in line, if the latter can be made out; if not, pass one or two cables to the Eastward of Island Rock, still steering N. E. by E. for the Isle of Man, until beyond Torpey Ledge; then, to avoid the Middle Ground, steer more Easterly, so as to pass not more than a cable to the Northward of the W. end of Inner Sambro Island, which is quite bold. As soon as Fairweather Rock and the Western edge of Inner Sambro Island are nearly in line, S. W. by S., alter course to N. E. by N., and they will lead clear to the Eastward of Cowley Rock, which has ten feet water on it and seldom breaks; having passed this, haul to the Northward and Westward round the Isle of Man, and anchor within it and Black Reef, from a half to two cables from them, in six or seven fathoms, over mud bottom. Farther in, there are several secure anchoring places for small vessels, as the Mud Hole, the Basin, &c.; but the rocks are too numerous for a large vessel to venture among them with safety.

From the Southward. Having Chebucto Head open to the Eastward of Sambro Island, to insure being outside of the S. W. Breaker, which, however, can generally be seen, bring Cook Point (on the W. side of Sambro Harbor) in line with the Western Point of Inner Sambro Island, bearing N. ¼ W., and steering for them, they will lead clear to the Eastward of the S. W. Breaker. Having passed this danger, continue the N. ¼ W. course, keeping the marks touching until nearly abreast Fairweather Rock; then steer so as to pass midway between that rock and the Western end of Inner Sambro Island, and round the latter to the N. E., until the marks come on for clearing Cowley Rock, namely, Fairweather Rock and Inner Sambro Island touching, and bearing S.W. by S., when steer N.E. by N., as before.

From the Eastward. In passing either between or within the Sambro Ledges, and within or without Inner Sambro Island, the aid of the chart, or a native fisherman acquainted with all the dangers, would be indispensable.

Sambro Island Light. SAMBRO ISLAND LIGHT.—The light-house on Sambro Island is a white octagonal tower sixty feet high. It stands near the middle of Sambro Island, at one and a half miles from the shore at Cape Sambro, and S. W. four and one third miles from Chebucto Head, the Western point of entrance to Halifax Harbor, and exhibits, at an elevation of one hundred and fifteen feet above high water, a fixed white light, visible in clear weather from a distance of twenty-one miles. Vessels approaching the light in a fog, and firing a gun, will be answered from the island, where a heavy gun and a party of artillery are stationed for the purpose. It is the resort of pilots.

Fog Trumpet. On Sambro Island, there is a fog trumpet; each blast of the trumpet will be of five seconds' duration, with intervals of twenty seconds, and in calm weather may be heard at a distance varying from six to ten miles.

Sambro Ledges. SAMBRO LEDGES.—These ledges being now correctly laid down on the recent charts, it will only be necessary here to state that from the outermost of the Western ledges, the

* This Isle is the Thrumcap of the fishermen; the name Isle of Man, however, is preferable, although not used by the natives, to avoid the confusion of so many Thrumcaps.

Smithson Rock, with two fathoms water on it, Sambro light bears N. E. by E. ¾ E. two and a half miles; and Pennant Point, N. W. by N., two and one third miles. Fairweather Rock in one with the Isle of Man, N. N. E. ¼ E., and Gull Rock little more than its own breadth open of White Head (Catch Harbor Head of the fishermen), bearing N. E. ¾ E. lead right over this dangerous rock, and also over the Mare, which, with six feet least water, lies nearly three fourths of a mile farther in.

The S. W. Breaker which almost always shows, lies one and one fourth miles to the Eastward of Smithson Rock, with Chebucto Head seen over the Eastern extremity of Sambro Island, which bears from it N. E. ¼ N., one and a half miles. *The S. W. Breaker.*

THE SISTERS are the outermost of the Eastern of the Sambro Ledges, and are distant one mile and two thirds from the light-house on Sambro Island, between the bearings from it of E. by N. and E. by S. Their position is pointed out by Black Rock, which is fifteen feet high, and from which they are distant one third of a mile to the S. E. by E. Several of them uncover at low water, and can always be seen, but the Blind Sister is more dangerous, having nine feet over it at low water; the Black Rock bears from it N. ¾ W. half a mile, and Broad Breaker, which almost always shows W. ½ N. four cables. *The Sisters.*

Nick Shoal and Ede or Owen Rock, the latter with nine feet water on it, lie nearly midway between the Sisters and Morris Point, on the Western side of the entrance to Catch Harbor.

The Hennesy and Lockwood rocks, of the old charts and directions, could not be found by our parties, nor by Captain Shortland, who has also examined the alleged positions in H. M. S. Columbia. They doubtless do not exist, for rocks covered by only eight or twelve feet water would cause breakers almost constantly, and thereby become conspicuous; but neither the native fishermen nor the light-house keepers have ever seen them.

THE HENNESY BANK, SHOAL GROUND, BARSE GROUND, AND OUTER BANK.—These are rocky fishing grounds, which are no farther dangerous to vessels than that they cause a heavy half-breaking sea in bad weather. The Hennesy Bank of the fishermen is a small rock with eight fathoms over it, lying three fourths of a mile to the Southward of the Blind Sister; Sambro light-house bears from it N. W. by W., one and three fourths miles. The Shoal Ground with eight fathoms water on it, lies a mile farther out, with the light-house bearing N. N. W. ¾ W., two miles. The Barse Ground is a rock with nine fathoms least water; the light-house bears from it N. by E. two and one fourth miles, and the Outer Bank in fourteen fathoms S. by E. four and one fourth miles. The Sambro Bank continues out two and a half miles beyond the Outer Bank to the depth of thirty fathoms, terminating in a point from which the light-house bears N. six and three fourths miles. *Hennesy Bank, &c.*

The fixed white light exhibited from Sherbrook Tower on Maugher Beach (see below) kept just open E. of Chebucto Head, bearing N. by E., will clear all the Sambro Ledges, and also the Bell Rock and Duncan Reef; and Sandwich Point in line with Chebucto Head, bearing N. ½ E., will lead one mile to the Eastward of them. *Clearing Marks.*

The lead will give little or no warning when approaching these ledges from the Eastward, on which side the bank is very steep, the depth being forty-five fathoms within less than half a mile from the Sisters.

CATCH HARBOR, the entrance to which bears N. from the Easternmost of the Sambro Ledges, and is two miles to the S. W. of Chebucto Head, has nine feet water on its bar, and sixteen feet, mud, within, where its shores are occupied by the houses and stages of fishermen. At its head there is a chapel, and a fine stream, the outlet of the waters of several small lakes which lie about a mile to the Northward. *Catch Harbor.*

THE BELL ROCK, with seven feet least water on it, lies E. half a mile from White Head, and four cables off shore, with Chebucto Head bearing N. N. E., distant one mile. Another rock, with twenty-seven feet water on it, was discovered lying one cable N. by W. from the Bell Rock; and as Duck Reef extends one cable and a half from the shore toward them, the channel between them and the land is reduced to this breadth, and is moreover nearly overlapped by Duncan Reef, and it therefore cannot be recommended. Duncan Cove, on the S. W. side of Chebucto Head, affords shelter to boats. *Bell Rock.*

HALIFAX HARBOR, one of the finest in the world, affords space and depth of water sufficient for any number of the largest ships with safety; and although the dangers off its entrance are such as to render great caution necessary, especially in the fogs which usually accompany all winds from the sea, it is yet easier of access and egress than any other large harbor on the coast. It is five and a half miles wide at its entrance from Chebucto Head on the S. W. to Devil Island on the N. E., and it continues inland fifteen miles in a Northerly direction, to the head of Bedford Basin. *Halifax Harbor.*

The town of Dartmouth stands on the Eastern side of the harbor, immediately opposite the Navy-yard; steamers ply between it and the city continually. Eastern Fort, with its tower, will be seen two miles farther to the Southward, on the same side of the harbor.

Two light-houses stand on the Eastern side of the entrance of Halifax Harbor, one on the S. W. point of Devil Island, at the Eastern point of the entrance, and the other, named Seabrook Tower, on the W. extremity of Maugher Beach, at four miles and a half within the entrance. *Lights.*

Lights. The light-house on Devil Island is octagonal, built of wood, and painted brown with a white belt. It exhibits at forty-five feet above high water, a fixed red light, visible in clear weather from a distance of about eight miles.

Sherbrook Tower, on the W. end Maugher Beach, is forty-eight feet high, circular, and painted white with red roof. It exhibits at an elevation of fifty-eight feet above high water, a fixed white light, visible in clear weather, at twelve miles. It bears from the Thrumcap buoy N. by W. two and a half miles.

Pilots. Pilots are stationed on Devil's Island, and several families reside there.

Chebucto Head. CHEBUCTO HEAD, the Southern extremity of the Western shore at the entrance of Halifax Harbor, bears N. E. four and one fourth miles from Sambro Island light-house. It is one hundred and six feet high, and consists of a whitish granite, which, together with clay slate, forms the steep and barren Western shore of the harbor. Proceeding Northward, Portuguese Cove, with its village of fishermen, and Camperdown flagstaff, on a hill, in rear of it, one hundred and sixty-eight feet above the sea, will be seen one mile and one fourth within Chebucto Head.

Herring Cove. HERRING COVE, distinguished by the steeple of a chapel, and the houses of the fishermen on its rocky shores, is three miles to the Northward of Portuguese, and distant one mile and one fourth S. W. from Sandwich Point. It is a secure harbor for small craft and boats, having six feet at low water in its narrow entrance, and eight feet, over soft mud, within. At its head a brook discharges the waters of a chain of small lakes.

York Redoubt, one hundred and seventy-seven feet above the sea, will be known by its flagstaff, and by its position, three fourths of a mile within Sandwich Point, and nearly abreast of the light-house tower on Maugher Beach. Pleasant Point, at the entrance of the N. W. Arm, is one mile and one third farther in, and will be recognized by its batteries, and by the tower on its summit, one hundred and fourteen feet above the sea; so also will George Island, by its redoubt and tower, which is at the same distance farther in, and off the outer part of the city.

Eastern Shore. The Eastern shore of the harbor is less rocky, and barren than the Western, being formed of ridges of drift sand, clay, and boulders, resting on clay slate; it is inhabited all the way to Dartmouth.

Devil Island. DEVIL ISLAND, composed of clay slate, is fifteen feet high, one third of a mile in length, and lies the same distance from Hartland Point, the Eastern point of entrance to the harbor. A reef connects with the shore, and shallow water extends from it one third of a mile to seaward.

At three fourths of a mile Northward from Devil Island is Barrie Beach (of shingle) enclosing a shallow pond, which affords shelter to boats.

Eastern Passage. EASTERN PASSAGE.—The entrances to the Eastern Passage lie on either side of Lawlor Island; that to the Eastward, between that island and the main, being the deepest, and having ten feet over its bar at low water. Only five feet at that time of tide can be carried through between Lawlor and Macnab islands; and there are rocks in the entrance, and off the S. end of Lawlor Island, as will be seen in the chart.

This passage being very narrow, and fit only for small vessels, it will merely be necessary to direct attention to the six-foot shoal, lying one cable and a half distant from a brook on the Eastern shore of the main land, and half a mile within Lawlor Island, as well as to the rock lying sixty fathoms off the Northern point of Macnab Island; these being the only detached dangers in the passage after passing the bar.

Macnab Island. MACNAB ISLAND, which forms the Eastern side of the ship channel into the harbor, is three miles long, including its shingle beaches. It is well cultivated, and its hills of sand, clay, and boulders, rise to the height of one hundred and fifty-two feet above the sea.

Thrumcap Islet. THRUMCAP ISLET is connected to the S. W. extremity of Macnab Island by long shingle beaches, enclosing a shallow pond. It is an outlet at high water, at present thirty-three feet high, and a cable and a half in length, but its cliff of red sand and clay is fast wasting by the action of the waves.

Thrumcap Shoal. THE THRUMCAP SHOAL extends one mile to the Southwest from the islet, and forms one of the principal dangers in the entrance of the harbor. At its S. W. extremity is a red buoy, with a small staff and vane, lying in eight fathoms water, with George Island just open to the Westward of Ives Point; Graham Head (ten miles to the Eastward) well open to the Southward of Devil Island; and the light-house on the latter island bearing E. ½ N. two miles.

Light-house Bank. LIGHT-HOUSE BANK extends three fourths of a mile to the Southward from Maugher Beach. Devil Island light-house open South of Macnab Island, seen over the shingle beaches, and bearing S. E. by E ¼ E., clears its S. point in five fathoms. From the least water (eighteen feet), the light-house on Maugher Beach is in one with Ives Point, and is distant half a mile.

Shallow water extends also Westward and Northward from Maugher Beach to the distance of two cables. In the latter direction it dries at low water and is called the Horseshoe, which vessels should beware of in entering or leaving Macnab Cove, where

the anchorage is good in seven or eight fathoms, mud; the best berth being with Sandwich Point seen over the Horseshoe, and the Western sides of George Island and Ives Point in one.

IVES POINT, the N. W. extremity of Macnab Island, is a steep clay bank with a shingle beach curving out from it to the N. E. *Ives Point.*

IVES KNOLL, awash at low spring tide, rises from the rocky bank which runs out four cables from the beach to the Northward of Ives Point, or toward George Island. A red buoy, without staff or vane, is moored in eight fathoms, near the Western side of this bank, and distant one cable W. from the knoll. *Ives Knoll.*

DANGERS AT ENTRANCE AND ON WESTERN SHORE.—Having pointed out the dangers on the Eastern side of the ship channel into Halifax Harbor, we will now describe the dangers in the entrance, and afterward those off the Western shore. *Dangers at Entrance.*

ROCK HEAD SHOAL, the outermost and most dangerous shoal at the entrance, with twenty feet least water on it, lies with the tower of George Island in line with Ives Point, bearing N. by W.; Sambro Light-house Island touching White Head, bearing S. W. ¼ W., the light-house on the island being open; and Devil Island light-house N. E. two and one fourth miles. *Rock Head Shoal.*

A black and white beacon buoy, carrying a bell, is moored near the S. W. end of this shoal in six and three fourths fathoms water, rocky bottom, with the Eastern end of George Island in line with Ives Point, and Sambro Light-house Island open to White Head. *Beacon Buoy.*

PORTUGUESE SHOAL lies W. S. W. half a mile from the Rock Head. From the least water on it, five fathoms, George Island is just touching the W. side of the light-house tower on Maugher Beach; Sambro Light-house Island is concealed behind Chebucto Head: and Camperdown flagstaff bears W. by S. A black buoy, without staff or vane, on its Western side, marks the Eastern side of the preferable channel for large ships; it is moored in six fathoms, with George Island just open to the Westward of the Light-house tower on Maugher Beach, bearing N. ½ W.; Camperdown flagstaff W. by S.; and Devil Island light-house N. E. ⅔ E. *Portuguese Shoal.*

Sambro Light-house Island will open S. E. of White Head bearing S. W. ½ W. leads clear to the Southward of the Rock Head and Portuguese shoals. The tower on George Island touching the E. side of the light-house tower on Maugher Beach, N. ¾ W., will lead through between them; and George Island well open to the W. of the light-house tower on Maugher Beach, bearing N. ⅓ W. will lead clear to the Westward of them, and also nearly midway between the Neverfail and Thrumcap shoals. *Leading Marks.*

NEVERFAIL SHOAL.—From the twenty-seven feet least water on this shoal, the Eastern side of George Island appears in line with the steeple of a chapel at Dartmouth; the tower on Pleasant Point over the point at York Redoubt; the Southeast end of Lawler Island over the Southeast extremity of the shingle beach: Southward of the Thrumcap; and Hartland Point over the Northern point of Devil Island, and in line with the Thrumcap buoy, which bears E. by N., distant about one mile. *Neverfail Shoal.*

LITCHFIELD ROCK, with fifteen feet water on it, lies W. by N. ½ N. two thirds of a mile from the Neverfail. A white buoy, with staff and vane, lies on its Eastern side, with the tower on George Island in line with Sandwich Point; Devil Island and Hartland Point touching and bearing E. by N.; and the steeple of the chapel at Herring Cove, N. W. by N. George Island open East of Sandwich Point bearing N. ½ E. leads clear to the Eastward of it, and the citadel flagstaff in line with Sandwich Point bearing N. 40 W., will lead through between it and the Neverfail; which is the most direct and therefore preferable channel, although the deepest water is between the Litchfield and the land, from which it is distant three fourths of a mile. *Litchfield Rock.*

MARS ROCK, with twenty feet water on it, is on a rocky bank separated from the shore by a very narrow channel. A white buoy with staff and vane is moored in six fathoms on its Eastern side, with the citadel flagstaff, and also the town-clock, just open E. of Sandwich Point, which is distant three fourths of a mile; Hartland Point open S. of the Thrumcap beaches; and the N. side of Herring Cove W. by S. *Mars Rock.*

Middle Ground carrying twenty-eight feet water, bears W. ½ N. half a mile from the Northern Point of Macnab Cove, and E. N. E. from the steeple of a chapel at Falkland Village. The steeple of a chapel at Dartmouth in line with the Eastern side of George Island, leads to the Eastward of it; and Chebucto Head only just open E. of Sandwich Point, to the Westward of it. *Middle Ground.*

PLEASANT SHOAL, which extends nearly half a mile S. E. from Pleasant Point, dries in some parts, and is covered by only a few feet of water nearly to its edge. It is much in the way of vessels, as it diminishes the breadth of the channel between it and Ives Point to half a mile. A white buoy, without staff and vane, is moored close to its Eastern extremity in seven and one half fathoms, with Sandwich Point open E. of Chebucto Head, and with the N. point of Macnab Island only just open N. of the bank of Ives Point, and seen over its beach bearing E. by N. *Pleasant Shoal.*

The entrance of the Northwest Arm is between the Western side of Pleasant Shoal and the shoals in Purcell Cove. It carries a depth of eight fathoms; and the largest *Northwest Arm.*

ships may ascend it through a narrow channel to within half a mile of its head, or nearly to Melville Island, a distance of two and one fourth miles.

Red Rock. REED ROCK lies six cables to the Northward of the buoy on Pleasant Shoal, on the same side of the channel, and two cables off shore. It is small, with five feet least water and its position is pointed out by a white buoy, with staff and vane, moored in eight fathoms, and bearing from Ives Knoll buoy W. by N. half a mile. Chebucto Head open of Sandwich Point, leads two cables to the Eastward of the rock.

Belleisle Spit. BELLEISLE SPIT lies two thirds of a mile farther in, and extends out a quarter of a mile from the shore to a white buoy, with staff and vane, in five fathoms, from which the Southeast point of George Island bears E. N. E. one third of a mile.

About a quarter of a mile farther in, on the edge of the bank in five fathoms, and distant three fourths of a cable from the Engineer wharf, is the Leopard white buoy, with staff and vane, which, together with the Belleisle buoy, marks the Western side of the channel, between them and George Island, which is clear and deep, and one and one fourth cables wide from the depth of five fathoms to five fathoms.

To the Eastward of George Island the channel is half a mile wide, and equally free from obstructions; the shallow water does not extend beyond three fourths of a cable from either end of George Island and not above half a cable from either side.

A rock with fourteen feet least water lies fifty fathoms from the end of Lyle's wharf, and bears from Government House, E. ½ S., one hundred and eighty fathoms. It lies within the five-fathom line of the chart, but in passing up the harbor no vessel of size should approach the wharves until well past this bearing from Government House. If York Redoubt be kept open of the wharves, this will be cleared.

Dockyard Shoal. After passing the Leopard buoy, the deep water approaches very near the wharves of the city, until arriving at the shoal which extends one and one half cables out to the Southeast from the dockyard wall. The Commissioner's buoy, white, without staff and vane, is moored on the Eastern edge of this shoal in five fathoms, and just within it the depth is only nine feet at low water.

Dartmouth. DARTMOUTH.—It only remains to notice the shallow water off Dartmouth, which extends a long cable out from the wharves to the depth of five fathoms, and one and one half cables S. from the point of Clay Cliff in Dartmouth Cove. There is also a detached rock carrying twenty-three feet, lying outside the fathom-line, and bearing S. W. ½ S., one and one half cables from the Ferry Wharf. The points on the Eastern side of the Narrows in one, and bearing N. W. ½ N., lead half a cable to the Westward of this rock.

Bedford Basin. BEDFORD BASIN.—There is a clear passage for the largest ship through the Narrows into Bedford Basin, which has a depth of thirty-six fathoms, and is navigable quite to its head. The principal danger in the basin is the Wellesley Rock which has thirteen feet on it at low water, and lies about one third over from the Eastern toward the Western shore, with the outermost bare rock off the Eastern shore in one with house at the head of the basin, and bearing N. W. N. distant three cables. Immediately after passing the Wellesley, the channel is contracted by islets and rocks on either side to the breadth of one and one half cables; but it has nine fathoms in it, and leads to a secure anchorage off the entrance of Sackville River, in seven fathoms mud.

Navy Island Anchorage. NAVY ISLAND ANCHORAGE.—On the Eastern side of Bedford Basin, one and one half miles from the Narrows, there is a small but secure anchorage within Navy Island. The entrance is to the Northward off the island, and the only thing in the way is an old wreck, over which there is a depth of eighteen feet at low water.

Tides. It is high water, full and change (the true Establishment) at 7h. 39m.; ordinary springs rise six feet; equinoctial springs, 7 feet; neap tides range three feet, and rise to four feet above the level of low-water springs.

The rise also is greatly influenced by the winds, Southerly winds causing high and Northerly winds low tides; and if the winds chance to act in accordance with the diurnal inequality, the rise of the morning and evening tides of the same day may differ to the amount of a foot, or even more in extreme cases. From the above-named causes, the rise of spring tides varies from five to seven feet, and of neap tides from four to five feet above the ordinary low water in spring tides. Extraordinary spring tides, aided by strong Southerly winds, have risen eight feet, and extraordinary neap tides only three feet above the average low water in spring tides.

The ordinary rate of the tide stream nowhere exceeds half a knot.

Directions. The coast in the vicinity of Halifax is of moderate height, the hills near the shore being seldom two hundred feet above the sea. To the Eastward of the harbor, as far as Jedore, nearly all the headlands present cliffs of reddish sand, clay and boulders, to the wasting action of the waves; while to the Westward, as far as Mars Head, granite rocks, nearly white, predominate. Hence the remark, that, "in standing in for the land you may know on which side of Halifax harbor you are, by a remarkable difference that exists in the color of the shores, which, if red, denotes that you are to the Eastward, and if white, to the Westward of the entrance."

The bank off Sambro Island, terminating in a point, and at the depth of thirty fathoms, five miles south of Sambro Ledges, offers considerable assistance to vessels approaching Halifax from the Westward in the thick fogs which so frequently prevail. From the Eastward the approach is rendered comparatively easy, by the absence of outlying dangers after passing Shut-in Island, and by the soundings deepening out with tolerable regularity to thirty fathoms, at distances varying from four to six miles from the shore, until within two miles of Chebucto and White heads, where the depth exceeds thirty fathoms, until within one third of a mile from the shore. Attention to these soundings, combined with the guns fired from Sambro Light-house Island, may enable steamers at times to enter the harbor, notwithstanding the fog, but it is seldom prudent for a large sailing vessel to attempt it under such circumstances.

From the Westward at Night. In approaching Halifax harbor from the Westward at night, shape a course to pass not less than three miles to the Southward of the Sambro Island light, steering E. N. E. and in not less than thirty fathoms water, until the light bears N.; when, if not more than six miles from it, the vessel will have arrived at the Southern prolongation of the Sambro bank. Having crossed the bank into deep water, haul up N. N. E., until the light on Maugher Beach opens out E. of Chebucto Head, bearing N. by E., when steer for it, or so as to pass within a mile or less from Chebucto Head, which is quite bold. Having done so, keep the light bearing between N. and N. by E. as the vessel runs toward it, and all the dangers will be avoided, excepting the Neverfail Shoal, on which there is not less than four and a half fathoms.

Having arrived abreast the Thrumcap, or brought Devil Island light in line with its Southern extremity bearing E. S. E., alter course to N. by W., or as may be necessary, to avoid the Light-house Bank; and as soon as the light on Maugher Beach bears East, steer N. by E. for Ives Point (or N. N. E., if necessary, to avoid the Middle Ground, on which, however, there are not less than four and a half fathoms), until the light bears S. by E.; then a N. by W. course, keeping the light astern, will lead between the Pleasant Shoal and Reed Rock white buoys on the one side, and Ives Knoll red buoy on the other, into the harbor. Having passed Ives Knoll, the vessel may proceed in on either side of George Island, or may anchor in the stream of Macnab Island until daylight, according to circumstances. The light on Maugher Beach disappearing behind Ives Point, will show the vessel's distance from George Island, as she runs in to the Eastward of that island, which is the wider and preferable channel in a dark night.

Within George Island there is nothing in the way, excepting the Dockyard Shoal, and the shallow water off Dartmouth.

By Day. Approaching from the Westward in the daytime, pass Sambro Light-house Island at the distance of three or four miles, and when Sandwich Point opens out E. of Chebucto Head, stand in N. by E. or N. N. E., according to the wind, until the citadel flagstaff opens E. of Sandwich Point, bearing N. ½ W. Keep the citadel flagstaff only just open, running toward it, and it will lead between the Lichfield and Neverfail shoals, and up to Mars Rock white buoy, which leave to the Westward. Having passed Sandwich Point, from which the shallow water does not extend beyond a cable's length, steer toward George Island, keeping Chebucto Head only just in sight E. of Sandwich Point until the vessel has passed close to the Westward of the Middle Ground; then open out the head more, so as to leave the Pleasant Shoal and Reed Rock white buoys to the Westward, in running toward George Island; or, if it be preferred, the steeple at Dartmouth in one with the Eastern side of George Island, bearing N., will lead to the Eastward of the Middle Ground. Either of the marks just given will lead clear up to George Island, on either side of which the vessel may pass into the harbor, leaving the Belleisle and Leopard buoys to the Westward, if she passes between them and the island, and choosing her anchorage off the wharves of the city, or off the dockyard, where the Commissioner's buoy will point out the Dockyard Shoal.

From the Eastward by Night. Approaching from the Eastward by night, and being to the Westward of the Jedore Ledges, run along the land in a depth not less than thirty fathoms, until the fixed white light on Sambro Island is seen; then, if it be intended to pass to the Southward of the Rock Head and Portuguese Shoal, steer for Chebucto Head (remembering that, to clear the Rock Head, the light on Sambro Island must be kept wide open to the S. E. of White Head, bearing nothing to the Southward of S. W. by W.; and the fixed red light on Devil Island nothing to the Eastward of N. E. by N.), until the light on Maugher Beach bears N.; when steer for it, keeping it bearing between N. and N. by E., and proceeding as already directed.

By Day. By day steer for Chebucto Head until the citadel flagstaff is only just open E. of Sandwich Point, bearing N. ½ W.; then steer for it, and proceed as before.

Between Rock Head and Thrumcap. Between the Rock Head and Thrumcap.—If a N. E. wind, or other circumstances, should render the passage preferable between the Rock Head and Thrumcap Shoals, proceed as follows:—

By Night. By Night.—Having made Sambro Island light as before, and passed Shut-in Island, steer so as to pass not less than half a mile, or more than one mile, to the Southward of

the red light on Devil Island, steering W. ½ S. (made good), until the light on Maugher Beach bears N., when steer for it until abreast of Thrumcap, or until Devil Island light bears E. S. E.; then alter course to N. by W., or as may be necessary, to avoid the Light-house Bank, and proceed as before directed.

By Day. By Day, pass the light-house on Devil Island, steering W. ½ S. as before directed, or so as to keep Graham Head open S. of Devil Island the whole breadth of the island, which mark will lead to the Southward of the Thrumcap Shoal and red buoy; and when George Island opens out W. of the light-house tower on Maugher Beach, bearing N. ½ W., steer for it until abreast the Thrumcap; then edge away to the Westward, keeping the light-house on Devil Island in sight S. of Macnab Island, and over the beaches between it and the Thrumcap (so as to clear the light-house Bank) until the steeple of the chapel at Dartmouth comes in one with the side of George Island, bearing N. These last-named marks kept in one, will lead clear of all dangers into the harbor.

In adverse winds, the chart and the leading marks already given for clearing the dangers, will enable vessels to beat in or out of Halifax Harbor without difficulty in clear weather.

Cole Harbor. COLE HARBOR is situated at the bottom of the first bay Eastward of Halifax Harbor, formed between Devil and Shut-in Islands which bear E. ½ S. and W. ½ N. from each other, distant eight miles. The harbor has a dangerous bar of sand, over which only three feet can usually be carried at low water, and which is covered with breakers whenever there is any sea running. It is only with fine weather and a smooth sea that boats can safely cross it to the entrance, which is barely forty fathoms wide between points of shingle and sand. In this narrow entrance the depth is five fathoms, and the rate of the tide-stream from one to two knots; but immediately within it the depth diminishes to four or five feet, and narrow channels between mud flats extend two miles inland.

At two miles to the Eastward of this harbor is the low Egg Islet, joined to the shore by a reef and shingle beach, and having shoal water off it three cables to the Southward, where it terminates in five fathoms, nearly one mile out from the shore.

Lawrenceton Lake. LAWRENCETON LAKE.—The entrance of this lake, admitting boats only in fine weather, is half a mile to the Eastward of Egg Islet, and on the W. side of Lawrenceton Head. This latter is one of those peninsulas, composed of drift sand, clay, and boulders, resting on clay slate, and united to the shore by long beaches of stones or shingle, the red cliffs of which form the distinguishing feature of this part of the coast. The peninsula is ninety-two feet high, and the kirk, which stands on its inner slope, is therefore not very conspicuous from the sea.

Porter Lake. PORTER LAKE is three miles farther to the Eastward, its entrance being on the Western side of Graham Head, which is another and similar peninsula, with red cliffs sixty feet high. The lake extends seven miles to the Northward, and receives the waters of other lakes still farther inland. It has in some parts a depth of four or five fathoms, but only one foot at low water in its narrow entrance.

Shut-in Island. SHUT-IN ISLAND, three cables long, and of low clay slate rock, is distant half a mile from Graham Head, but united to it by a reef and a beach of shingle. It forms the Western side of the entrance to Three-Fathom Harbor.

Shut-in Shoals. SHUT-IN SHOALS extend one mile and an eighth to the Westward, and three fourths of a mile to the Southward of Shut-in Island. They are of rock, with sixteen feet least water, and are extremely dangerous. The red cliffs of Seller Head open E. of the Eastern point of entrance of Three-Fathom Harbor, bearing N. E. by N. will clear their S. E. point; and the red light on Devil Island, when in sight, should not be brought farther to the Westward than W. by N. ½ N. There are soundings of twenty fathoms within a mile of them, and vessels should not approach nearer than that depth at night, or in foggy weather.

Three-Fathom Harbor. THREE-FATHOM HARBOR, the entrance to which is close to the Eastward of Shut-in Island, is quite open to the Southward, and affords shelter only to small vessels, which can run into the narrow channel to the Eastward of Ball Islet, one mile within the entrance. The depth is there three fathoms, over muddy bottom; but to reach it, the low-water depth of eight feet (with a four and a half feet rise) must be passed over.

The entrance to this harbor, between reefs that partly dry at low water, is half a cable wide, from three fathoms to three fathoms on either side, and the depth is twenty-two feet, but it decreases to eight feet a short distance within, as already noticed. It is an excellent fishing station, but is of no use to shipping, excepting as a harbor of refuge in case of distress, when a vessel might run in until she grounded on the mud within the reefs. The leading mark for running in is, the W. side of Ball Islet and a white house on a hill at the head of the harbor in one, bearing N. ¼ W.

SHUT-IN ISLAND TO POPE HARBOR.

Variation 20½° *W. in* 1860.

From Shut-in Island to Jedore Head bears about E., nearly ten and one fourth miles, a distance in which the features of the coast are exceedingly remarkable; every head-land being a peninsula, presenting a cliff of red clay to the wasting action of the waves. These peninsulas are joined to the main land by beaches of rolled stones and shingle; they are more or less wooded, and nowhere exceed the height of one hundred and forty feet above the sea. *S. E. Coast.*

Before noticing the inlets we will first describe the dangers off this part of the coast, which were not to be found in the charts in general use previous to the admiralty survey in 1854.

PAT SHOAL is a small rocky patch, with only four and a half fathoms water on it, bearing E. ¾ N. nearly three miles from Shut-in Island, and S. by W. one mile and a half from Story Head. The depth is twelve fathoms at a fourth of a mile to the Southward of it. *Pat Shoal.*

PERPISAWICK SHOAL is a similar patch of rock with four and three fourth fathoms water on it, bearing E. ¾ S. five and a half miles from Shut-in Island, and S. ¾ W. two and a half miles from Perpisawick Head. There are irregular soundings of six and a half and seven fathoms for a short distance around it, and sixteen fathoms outside, or to the Southward of it, within the distance of half a mile. *Perpisawick Shoal.*

MUSQUIDOBOIT SHOAL is of rock and six cables long from N. E. to S. W. The least water on it, three fathoms, is nearly in its centre, and bears from Jedore Head W. by S., distant two miles. *Musquidoboit Shoal.*

These shoals, which all lie outside of a line drawn from Shut-in Island to Jedore Head, are exceedingly dangerous to large ships. The Musquidoboit is frequently shown by breakers; the Pat and Perpisawick only occasionally, after heavy gales, when they break at irregular intervals, and become dangerous to small craft and boats.

CODRAY and ROUND SHOALS lie nearer in-shore, and are, therefore, less in the way of vessels; the least water on them is four and one fourth fathoms. The former bears from Perpisawick Head, the reefs of which extend nearly out to it, S. W. by S. nearly a mile; and the latter from Flying Point, on the Western side of the entrance of Musquidoboit Inlet, S. W. ½ W., about the same distance. *Codray and Round Shoals.*

CHISSETCOOK INLET is half a mile wide at its entrance between Cape Entry and Story Head, the latter bearing from Shut-in Island N. E. by E. three and three fourths miles. *Chissetcook Inlet.*

This inlet extends five miles inland, and receives at its head the waters of Chissetcook and other lakes. Its shores are well settled, and there are several islands in it forming beautiful scenery; but it is no use to shipping, having only three feet at low water on the bar of the Western and principal channel, which commences half a mile within Cape Entry, and continues to the head of the inlet. Both channels are very narrow, and wind through flats of sand, mud, and weeds, which dry at low water.

PERPISAWICK INLET, the next to the Eastward, is also half a mile wide at the entrance, which is on the W. side of the Perpisawick Head. After crossing the bar of sand about a mile within the entrance, and on which there are only six feet at low water, a narrow channel, between mud flats uncovered at low water, commences, and is navigable for any vessel that can cross the bar, to the head of the inlet, a direct distance of five miles. Within a mile from the head of the inlet, the mud-flats retire on either side, leaving an open space, in which there are nine fathoms water. There are reefs off the entrance points of these inlets, and a small rock, with only six feet water on it, lying one fourth of a mile off the Western side of Perpisawick Head. On these the sea breaks heavily, as it does also on the bars, which are very dangerous to boats. *Perpisawick Inlet.*

MUSQUIDOBOIT INLET is much larger than that of Perpisawick, contains many islands, and is navigable for small craft and boats seven miles inland, to where it receives the waters of the Musquidoboit River. Over the bar at the entrance of the principal channel, which is on the Eastern side of the inlet, and one mile and three fourths N. N. W. from Jedore Head, a depth of ten feet can be carried at low water; but the Dunbrock Rock, with only three feet water on it, lies directly in the way, and renders the entrance both difficult and dangerous. Within the bar there is a depth of four fathoms in a channel one cable and a fourth wide, and between flats of sand, mud, and weeds, which uncover at low water. At about four miles within the bar the channel becomes very narrow, and only seven or eight feet deep, but small craft and boats can ascend with the tide to the head of the inlet. *Musquidoboit Inlet.*

HARBOR ISLET lies three fourths of a mile off the entrance of Musquidoboit inlet, and bears from Jedore Head N. W. ¾ W. about one mile and a half. It is small and stony, and from it a rocky shoal, on which are the Musquidoboit ledges, extends upward *Harbor Islet.*

of a mile to the Southward, and to within half a mile of the Musquidoboit Shoal. A depth of two and a half fathoms may be carried past Harbor Islet on either side, but it is all covered with breakers during a strong Southerly wind, and is altogether an exceedingly dangerous place. At low water, when the Duke Rocks and the Bull Reef on either side of the entrance, and the mud flats on either side of the channel, become visible, is the most favorable time for a stranger to attempt to enter this, and also the other inlets.

Tides. At the entrance of Chissetcook, Perpisawick, and Musquidoboit inlets it is high water, full and change, at seven and a half hours after the moon's transit. The rise in ordinary spring tides is four and a half feet, and in neaps three feet. The ordinary rate of the tidal streams in the entrances is from two to three knots; but heavy rains, or the melting of the winter's snow, have been known to increase the rate of the ebb-stream in the entrance of the Musquidoboit Inlet to fully four knots.

Jedore Head. JEDORE HEAD is a remarkable headland, two hundred feet high, having at its Southwest extremity a small peninsula united to the main land by shingle beaches enclosing a small pond, and from which a reef runs out half a mile to the Southwest. On its Western side, the cliffs of red clay are seventy feet high, while on its Southeastern side Jedore cliff may be seen, also of red clay, and one hundred and thirty-five feet in height.

Jedore Harbor. JEDORE HABBOR is the first harbor for ships to the Eastward of Halifax. Its entrance, which is distant two and a fourth miles to the E. N. E. from Jedore Head, is four and one fourth cables wide from West Head to the opposite shore; but Thorn Shoal, with only nine feet water on it, stretches out from the Western shore, just outside and across the entrance, so as to be greatly in the way of vessels entering. The channel between the shoal and East Head is three and one fourth cables wide from the three-fathom line, and carries a depth of twenty-six feet at low water over what is, properly speaking, the bar.

On the Eastern side of the harbor and immediately within the entrance is Bar Point, composed of shingle, and enclosing a pond; and from it Bar Shoal, a continuation of the shingle of Bar Islet, extends more than halfway across to the Western shore, diminishing the breadth of the channel to a cable's length, but forming no bar, the depth there being six and a half fathoms. The sandy beach of Marsh Point will be seen running out from the Western shore at one mile and a half within the entrance. The anchorage is secure within this beach in seven fathoms over mud, and in a channel one cable and a half wide; but outside of it the bottom is of sand, and a considerable swell rolls in with strong winds from the Southward; nevertheless the coasting schooners anchor there in fine summer weather.

The channel, between flats of mud, weeds, and mussel beds, which dry at low water, continues clear and deep, enough for the largest ships up to the Bown Islands, off English Point, which separates the Eastern and Western arms of the harbor at the distance of four miles from the entrance. Vessels may pass close round to the Eastward and Northward of these small islands, to the secure anchorage within or to the N. W. of them; but the entrances to the arms are nearly closed by shoals, which leave only very narrow, and intricate channels, through which but fourteen or fifteen feet can be carried at low water. But for all within these arms we must refer the seaman to the recent charts since no written description would avail; only remarking, that they are navigable for any vessel that can enter them, nearly to their heads, including Salmon Inlet to the rapids at the entrance of Salmon River, which is two miles above the long wooden bridge which crosses the entrance of the inlet one mile and a half up the Eastern arm.

Water may be obtained from a small stream near Blakely Cove, on the Western shore three and a half miles within the entrance.

Danger of Entrance. To render Jedore Harbor, with its narrow and crooked channel, easy of access, buoys would be required on Thorn and Bar shoals; meanwhile, the following remarks and description of the dangers, together with the directions that follow, will enable the intelligent seaman to use it as a harbor of refuge in case of necessity.

Jedore and Arnold Rocks. JEDORE AND ARNOLD ROCKS.—Nearing the harbor refer to the chart, and observe that Jedore Rock, of clay-slate, and fifty feet in height, is the Westernmost of the islands off its mouth. It bears from Jedore Head S. E. ½ E., one mile and a half, and the passage is clear between them, excepting some patches of five and six fathoms on which the sea very rarely breaks. Arnold Rock is the only danger to the Westward of Jedore Rock, from which it bears S. S. W. half a mile distant, and dries at low water and can almost always be seen; but to insure passing to the Westward of it, and also of Arnold Shoal, which lies three fourths of a mile farther to the Southward, and has six fathoms on it, the harbor's mouth must be kept open to the Westward of Jedore Rock, from the W. end of which a reef runs out one and a half cables' length. To pass to the Southward of Arnold Rock, Long Island must be kept open to the Southward of the Old Man, bearing E. by N.

OLD MAN, MEHANNY, AND GULL ROCKS.—The Old Man is a small rock twelve feet high, and bears from Jedore Rock, in line with Jedore Head, S. E. ½ E., two thirds of a mile. It is bold on the Eastern side, but a small sunken rock, with only four feet water on it, lies a cable's length from it to the S. W. by S. Jedore Head open to the Westward of Jedore Rock, leads to the Westward of it, and the passage is clear between it and Arnold and Jedore rocks. There is also a clear passage between the Old Man and the Mehanny rocks, some of which are dry at low water, and can almost always be seen. They bear from the Old Man N. E., three fourths of a mile; and beyond them in the same direction Gull Rock, together with Barren and Roger islands, will be seen; the latter lying half a mile off shore, and three fourths of a mile to the Eastward of the harbor's mouth. *Old Man, Mehanny, and Gull Rocks.*

It is high water, full and change, at Arnold Cove, two and a half miles within the entrance of Jedore harbor, at 7h. 45m.; ordinary springs rise six and a half feet, and neaps four and three fourths feet. The streams change almost immediately after high and low water, and do not exceed the rate of two knots. In the entrance of the harbor the times will be a few minutes earlier, the rise two feet less, and the ordinary rate of the streams one knot. The indraught of the flood-tide is felt several miles off this harbor and off the inlets to the Westward of it. *Tides.*

To run for the anchorage in Jedore Harbor from the Westward, pass midway, or nearly so, between Jedore Head and Jedore Rock, steering E. N. E., so as to keep outside the Thorn Shoal, until the steep bank (not the sand beach) of Marsh Point touches the shingle beach of Bar Point, bearing N. by E. ½ E. Run in with these marks touching, until Roger Island touches East Head, bearing S. E. by E.; then steer N. by W. (to clear the Bar Shoal), and when between one and one and a half cables' length from the shingle beach on the Western shore of the harbor, keep away to the Northward and Eastward, so as to run along that shore, at any distance between a cable and a half-cable's length, until up to the sand beach of Marsh Point, which must be rounded to the Northward at the same distance, and anchor between it and Pea Point on the opposite shore, in about seven fathoms, over muddy bottom. At or near low water, when a part of the bar shoal is shown by breakers, and the steep mud flats are visible on either side of the channel, is the most favorable time for entering this harbor. *Directions.*

In approaching the harbor from the Southward, the harbor's mouth should be seen between the Old Man and the Jedore Rock, or the whole of Jedore Cliff should be open to the Westward of Jedore Rock, to pass to the Westward of the Pollocks, on which, however, no less than five and a half fathoms could be found. Leaving Arnold and Jedore rocks to the Westward, pass midway between them and the Old Man, avoiding the sunken rock off the latter; or, if it be preferred, pass to the Eastward of the Old Man, which is quite bold on that side, and when approaching the harbor's mouth bring the marks on for running in, namely, the steep bank (not the sand beach) of Marsh Point, and the shingle beach of Bar Point touching, and proceed as before directed.

In approaching from the Eastward the coasting vessels pass within Egg Island, and between the S. W. ledges and Long Island, steering for the Jedore Rock, and leaving outside of them the outermost of the ledges; but this should never be attempted by any who are not well acquainted with the place, for Macdonald and Hopkin rocks lie nearly in the way, and are the more dangerous because they are seldom shown by breakers. Besides, with a wind from the Southward or Eastward a thick fog often comes in very suddenly, and it would be perilous in the extreme for a stranger to be surprised by it among the ledges.

CLAMB BAY.—Immediately to the Eastward of Jedore Harbor are the Roger and Barren islands, already noticed, which vessels may pass within or between in case of necessity, and which may afford shelter to fishing vessels in fine summer weather, but no safe anchorage for ships. Outside of these islands are the Gull and Mehanny rocks, and to the Eastward of them Middle or Sunk Rock, Spritsail, Sister, North Sister, and Siteman rocks; Duck Island, with its ledges, rocks, and shoals: and the Sugarloaf and Goose Island, with its ledges. These all lie across Clamb Bay, which affords no safe anchorage; and as they are out of the way of shipping, we shall merely refer the seaman to the chart for them, naming only Long Island, which, being three fourths of a mile in length, and bearing from the E. head of Jedore Harbor, S. E. by E. four miles, may be easily distinguished. *Clamb Bay.*

EGG ISLAND, bearing S. E. by E., one mile and two thirds from the S. point of Long Island, is the outermost of the islands off this part of the coast. It is a rock one and a half cables in length. There is a revolving light on this island, showing a white and red light alternately. Time of revolution one minute. It is eighty-five feet above high water; the tower is fifty-three feet high. *Egg Island.* *Light.*

PYCHE AND GRIZZLE ROCKS.—Outside Egg Island, at the distance of one fourth of a mile to the Southward, are the Transport Ledges, always above water; and the far more dangerous Pyche Rock, with only eighteen feet of water on it, and which bears from Egg Island, in line with Jedore Rock, E. by S. ¾ S. three fourths of a mile. *Pyche and Grizzle Rocks.*

Also the Grizzle Rock, with four fathoms on it, and which bears from Egg Island, in line with the N. E. point of Long Island, N. W. ¾ N., a little more then half a mile. The passage is clear between Egg Island and Flint Ledge, with the exception of Passage Rock, which has nearly five fathoms on it.

Between Flint Ledge (which is ten feet above water) and Long Island, are the Tomfool Shoals, with three fathoms of water on them; and within them Stoddart and Goose ledges, lying off the entrances of Clamb and Little harbors, which admit only small craft and boats; and for which, together with all in Clamb Bay, we again refer the seaman to the chart, in order to avoid extending these remarks to an inconvenient length, and as the safest guide.

The Jedore Ledges. THE JEDORE LEDGES lie farther off shore, and will require a more particular notice, including Macdonald and Hopkin rocks. The Macdonald, which has fourteen feet of water on it, bears E. one mile and an eighth from the S. point of Long Island; and from it the East Head of Jedore is seen over Spritsail Rock and the W. point of Barren Island, bearing N. W. ½ N. Hopkin Rock has eleven feet on it, and from it the Old Man, with the breakers on Arnold Rock just open to the Southward of it, bears W., one mile and two thirds; Mehanny Rocks, W. N. W. one mile; the E. end of Spritsail Rock, one mile; and the South Sister Rocks, N. N. E. a long half mile. Both these rocks are very small, with deep water all round them, and break only in heavy weather.

Southwest Ledges. SOUTHWEST LEDGES, so named in reference to Long Island, are three rocky patches which dry at low water, and cover a space three cables long in a S. W. ½ W. direction. From the Northeasternmost ledge, the S. point of Long Island bears N. N. E. ½ E., one mile and one third, and the passage is clear between them. The Southwesternmost ledge is covered only during spring tides, and can therefore almost always be seen.

Bull Rock. BULL ROCK, bearing S. E. ¼ S., six and one fourth cables' length from the last-named ledge, is one of the most dangerous of the ledges, having only a depth of five feet over it at low water, and at high tide it is only shown by a breaker when there is a considerable sea running. From it the S. end of Long Island bears N. by E. ¼ E., one mile and three fourths, and Egg Island E. N. E. two miles.

Bull Shoal. BULL SHOAL, with three fathoms water on it, bears W. by S. ½ S., distant four and a half cables from the Bull Rock, and S. five and three fourths cables from the Southwesternmost of the S. W. ledges. From it the Old Man, Jedore Rock, and Jedore Head, are nearly in one, and bear N. W. ½ W. It is rarely shown by a breaker, and therefore is extremely dangerous.

Brig Rock. BRIG ROCK has only three feet on it at low water, when it is usually shown by a breaker, and in low spring tides accompanied by a heavy sea, its top becomes visible between the waves. Egg Island bears from it E. by N. ⅓ N. three and three fourths miles; Jedore Rock N. W. ¾ N. three and three fourths miles; the Old Man (on with the centre of Jedore Cliff) N. W. by N., northerly about three miles; and the Westernmost of the Southwest ledges, which always shows, N. E. by E. ⅜ E. one and a half miles.

Brig Shoal. BRIG SHOAL, with five fathoms on it, bears S. E. by S. four cables from the Brig Rock, and from it the Bull Shoal and Rock are in line with the S. side of Egg Island, bearing E. by N. ¾ N. This shoal is dangerous after very heavy gales, when it is said to break at irregular intervals. The Brig Rock is most dangerous in fine weather, and at high water, when it is not shown by a breaker. The Eastern extremity of Jedore Cliff in one with the Old Man, bearing about N. N. W. ¼ W., leads four cables to the Westward of these dangers, and between them and the East Pollock.

The Pollocks. THE POLLOCKS are rocky fishing grounds, on which the sea breaks after heavy gales, but on which no less than five and a half fathoms could be found; neither do the fishermen know of any less. The least water, thirty-three feet, is on the Inner Pollock, from which Jedore Rock, in one with the Eastern extremity of Jedore Cliff, bears N. by W. three miles; the Old Man, in one with the W. head of Jedore N., two and a half miles; and Egg Island, E. by N. five and one third miles.

The outer Pollock has six fathoms on it, and lies nearly a mile farther off on the same line of bearing from Jedore Rock, and with Egg Island bearing E. by N. ¼ N., five and a half miles.

The Middle Pollock, in seven fathoms, lies nearly midway between the Inner and Outer Pollocks; and the Eastern Pollock, a very small patch of seven fathoms, with deep water all round it, bears from the Inner Pollock E. ¼ N. half a mile. Jedore Cliff open to the Westward of Jedore Rock, leads to the Westward of them all.

Directions. Vessels when running along this part of the coast should pass outside of all the Jedore ledges, and in not a less depth than forty fathoms at night or in foggy weather: for the soundings are deep and very irregular near them all. There are thirty fathoms at less than half a mile to the Southward of the Brig Shoal and Outer Pollock.

FISHING GROUNDS.—Of the dangers just described, the Hopkin and Macdonald

rocks, Tom-fool Shoal, Pyche and Grizzle rocks, and the Bull and Brig shoals near the rocks of the same name, are discoveries resulting from this survey. So also are the following rocky fishing grounds, on which the sudden shoaling of the water causes at times a very heavy sea, but which are not otherwise dangerous. Of these the Yankee Bank bears from Shut-in Island S. S. E. ¾ E., six and three fourths miles; and the Darby Bank, S. E. ¼ S., six and three fourths miles, the least water on them being fourteen fathoms. The other two lie off Egg Island, from which the Duck Bank, in seven fathoms, bears S. by W. ½ W. one and a half miles; and the John Bank, in twelve fathoms, S. ½ E. two and a half miles.* *Fishing Grounds.*

BALD ROCK is small, and only eight feet high, and bears from Egg Island W. ½ N., two and a half miles. It is bold on the N. and S. sides, but reefs extend from either end of it to the distance of one and a half cables' length; and there is a sunken rock, with only six feet water on it, bearing from it W. by S. a fourth of a mile. The passage is clear, and a third of a mile wide, between Bald Rock and the shoal water off Bald Island, within which, and the other islands next Eastward, there is a passage for small craft rendered dangerous by sunken rocks. *Bald Rock.*

BARSE ROCK and HURLEY SHOAL are small rocky patches with four fathoms on them, and deep water all around. They bear from Bald Rock nearly S. by W., two and a half miles, and S. by E. two and one fourth miles respectively, and lie directly in the way of vessels running along the coast, and are dangerous to large ships. The sea breaks over them in heavy gales. *Barse Rock and Hurley Shoal.*

OWL'S HEAD BAY.—Owl's Head, which gives its name to the bay, has a remarkable round mound and cliff at its extremity, and is the most prominent point on the Western shore, one and a fourth miles within the entrance. The bay lies one and a half miles to the Eastward of Bald Island, and is much frequented by coasting vessels, as an occasional stopping place, on account of the facility with which they can beat in or out, the channel being nowhere less than half a mile wide. They anchor near the head of the bay, on either side, according to the wind; but, to be well sheltered, they must lie in less than three fathoms at low water, the statement in former directions, that "shipping lies landlocked in six or seven fathoms," or in five fathoms, according to the old charts, being entirely erroneous. *Owl's Head Bay.*

The greatest danger to be avoided in entering this bay is Owl Rock, which lies over toward the Eastern side, with only nine feet water on it, and bears from the S. point of Friar Island N. W. ½ W. three fourths of a mile. The peninsula of Wisdom Point (at the head of the bay) and Cable Point touching and bearing N. N. W., lead clear to the Westward of it, and also of the reef which runs out three and a half cables to the S. W. from Friar Island, and which can almost always be seen. On the Western side the only dangers in the way are a rock, with only ten feet water on it, lying N. one and a half cables from Black Ledge; and the reef running out one and three fourths cables from Cuckhold Head. Farther in, the points are comparatively bold, and the bay free from hidden dangers. There are a few settlers at the head of the bay.

THE FALSE PASSAGE, between Nichol and Cable islands, on the Eastern side of this bay, is only fit for boats or small craft, four feet being all that can be carried through at low water. *The False Passage.*

SHIP HARBOR is absurdly called Charles River in the old charts and directions, while the channel that leads to it between the islands is termed the harbor, although it is completely open to a Southerly wind and swell, and affords no secure anchorage for ships, excepting in Day Cove, which is within Passage Island, and in the mouth of the shallow passage leading Westward into Owl's Head Bay; and even there a vessel must lie in less than four fathoms, to be entirely out of the swell that rolls in after heavy Southerly gales. On the Eastern side, Deep Cove in Charles Island, and the narrow passages leading to Shoal Bay, are full of rocks, and therefore too dangerous for general use. Nichol and Charles islands are among the largest on this coast; they are barren of gneiss, and in no part more than one hundred feet above the sea. *Ship Harbor.*

The Northeastern shore within Newcombe Brook is barren, the hills (of gneiss) being bare, and the extreme height two hundred and forty feet. Little River flows into the head of the harbor at five miles from the entrance; and near it, on the Western side, a larger and rapid stream, on which there are mills, discharges the waters of Ship Harbor Lake. A chapel stands on the Western shore at one mile and one fourth within the entrance, and an English Episcopal church a mile farther in on the same side.

The best watering place is a rapid brook on the Eastern shore, about half a mile within Salmon Point. Supplies of fresh provisions may be obtained.

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* The "Pollock Rip" of the old charts, and also the "Foul Ground," said to be doubtful, off Shut-in Island, were searched for in vain, and doubtless do not exist, since they are unknown to the native fishermen. The rock grazed by H. M. S. "Resistance" was doubtless the Brig Rock; and the eight fathoms, according to H. M. S. "Carnation," one of the Pollocks.

Dangers. DANGERS ON WESTERN SIDE OF ENTRANCE.—The Entrance of Ship Harbor, although very narrow, is not difficult with a fair wind, and within it any number of the largest ships may be moored in security. The interior of the harbor, however, is far from being free from shoals.

In approaching the harbor, the principal dangers lie outside the islands off its entrance. Friar Island and Friar Ledges lie on the Western side, and off them Flat Ledge, always above water, and from which the West Bull Rock, with only a fathom water on it, bears W. by S. ½ S., one fourth of a mile, and the East Bull Rock, with four fathoms on it, E. one and three fourths cables' length. Bald Rock and Egg Island in one, bearing W. ½ S., lead a third of a mile to the Southward of these dangers. There is also the Middle Ground, with twenty-four feet on it, bearing from Flat Ledge E. N. E. six cables, and the more dangerous N. E. shoal, with only fifteen feet water on it, bearing from the Eastern end of Friar Ledge N. E. by E., distant four and a half cables' length, and from Bear Rock, W. by S., three fourths of a mile. These dangers lie to the Southward of Nichol Island, and vessels approaching the harbor should pass to the Southward and Eastward of them all. Farther in, the rocks and shallow water off the Eastern side of Nichol Island, including Pot Rock, with four fathoms on it, will be avoided, if Wolf Point (the high Northwestern extremity of Nichol Island) be not brought to bear to the Northward of N. N. W.

DANGERS ON EASTERN SIDE.—The principal dangers on the Eastern side of the entrance of Ship Harbor, are the ledges off Charles Island, the outermost being the Bull Rock, with only four feet on it at low water, and which is often shown by a breaker. It bears from Charles Point (the Southern extremity of Charles Island), S. E. ½ S., six cables, and, together with the numerous other rocks above and under water, will be cleared to the Southward, if Long Point (the Southern extremity of Nichol Island) be kept open to the Southward of the Bear Rock, bearing not less than half a point to the Northward of W. The mark that leads clear to the Westward of these dangers, including the ledges farther in off the Western islands, is Passage Island, just hidden behind Wolf Point, N. W. ½ W., the Ship Rock seen over Bald Island and in one with Tucker Point, bearing N. by W. ¾ W.

Bear Rock. BEAR ROCK, which is small, and rises four feet above high water, is quite bold on the Eastern side, but a reef, in great part dry at low water, extends from it one and a half cables to the Westward. It lies nearly in the middle of the entrance between the islands, with a clear channel on either side, about four and a half cables broad.

There are also several outlying dangers, which are equally in the way of vessels running along the coast, or approaching this harbor. These are, Little Rock, bearing from Flat Ledge S. S. E., about two miles; Broad Shoal, from Charles Point S. by E. Easterly one and a half miles; Silver Shoal, from Charles Point, S. E. ⅜ S. three and three fourths miles, and from the S. E. point of Outer Island nearly S. two and three fourths miles. The least water on the first two is four fathoms, and on the last five fathoms. The sea breaks occasionally over them after heavy gales.

Tides. It is high water, full and change, in Ship Harbor, at 7h. 54m. ordinary springs rise six and one fourth feet, and neaps four and three fourths feet; but winds cause great irregularities both in the times and rise; extraordinary springs rising seven feet, and neaps only four feet.

The ordinary rate of the tidal streams does not exceed half a knot; but, after heavy rains, the melting of the winter's snow, or strong Southeasterly gales that have driven the water into the harbor, the ebbing stream is said to be much stronger.

Directions. In approaching Ship Harbor, Ship Rock (which gives its name to the harbor) may be recognized, being a remarkable cliff of clay slate, seventy feet high, on one of the islands on the Eastern side of the passage, and a mile within Charles Island. It appears, when seen from a distance out at sea, like a vessel under sail; and, together with the Western extremities of Bald Island and Tucker Point, forms the leading mark for running in on either side of the Bear Rock.

When running in with the wind from the Westward, proceed as follows: To clear the E. and W. Bulls, steer to the Eastward with Bald Rock and Egg Island in one; or pass outside the Flat Ledge, which can always be seen, at the distance of a third of a mile or more; and when Ship Rock comes in one with the Western point of Bald Island, bearing N. ¼ W., steer in with this mark on, and it will lead in between the N. E. shoal and the reef off Bear Rock. Having passed the latter, steer so as to pass midway between Wolf Point and Bald Island (from either of which the shallow water does not extend beyond sixty fathoms), and thence for the harbor's mouth.

Having arrived abreast Passage Island, haul to the Westward toward Day Cove, until the house on Eisan Point, is in one with the N. E. point of Caroline Island, and seen over the small shingle islet off Salmon Point, and nearly touching the clay cliff of the latter, bearing N. N. W. ½ W. Keep these marks exactly on, and they will lead in past Black Rock (which lies outside Black Point on the Eastern side of the entrance)

and O'Brien Reef, which lies half a mile farther in, and also on the Eastern side of the narrow channel. Having passed between O'Brien Reef and Beach Point, of shingle (where the channel is only seventy fathoms wide, between the three-fathom line, and with eleven fathoms water in it), haul in more to the Westward, and anchor midway between Salmon Point and the Western shore, where the depth is seven fathoms, or anywhere between Salmon Point and Whale Island, in four, five, or six fathoms; the bottom being of mud and the shelter complete. Caroline Island lies over on the Western side of the harbor, a mile within Beach Point, and will be easily recognized by a round wooded hill, one hundred and ninety feet high, near its N. E. point.

Approaching Ship Harbor from the Eastward with a fair wind, Bull Rock, and the other ledges off Charles Island, will be avoided by keeping Long Point open to the Southward of Bear Rock, and bearing to the Northward of W. ½ N., until Passage Island disappears behind Wolf Point, bearing N. W. ½ W., then steer for Wolf Point, keeping Passage Island shut in until past the Western Islands; then midway between Wolf Point and Bald Island, and thence for the harbor's mouth, as already directed.

If the wind should be unfavorable for running in, anchor outside in Day Cove, either midway between Passage Island and Day Point, in four and a half fathoms, over mud; or farther in to the Westward, in any depth from four to two and a half fathoms, according to the size of the vessel. In the first-named berth, the Western Islands are just shut in behind the Eastern point of Passage Island, bearing S. E. by E., and the vessel will only be exposed to the swell rolling round the latter after a Southeasterly gale; farther in there is little or no swell.

With a beating wind the passage to the Eastward of Bear Rock is preferable for a stranger, for the rock is bold close to on that side, and the leading marks will enable her to stand with confidence over toward the ledges off Charles Island, including the Western Islands.

An inspection of the chart will show that shoals commence immediately within Salmon Point on the one side, and Whale Island on the other; and that the channel becomes exceedingly intricate after passing Caroline Island and the opposite Mussel Island, two miles within the entrance. If the very narrow channel between Garret Ledge and the White Rocks were buoyed, twenty-one feet at low water could be carried through into the clear part of the harbor within Eisan Point, where the depth is nine fathoms with space sufficient for a large fleet to lie in safety.

Shoal Bay.

SHOAL BAY, the next inlet Eastward of Ship Harbor, is sufficiently wide for large ships to beat in and out with ease. The coasting schooners anchor off Shellnut Cove in three to three and a half fathoms, mud, with the small Mary Island in one with Borgle Bluff (the N. E. extremity of Charles Island), bearing S. by E.; but the only secure anchorage for large ships is on the opposite or Southwestern side, near the head of the bay, where the Middle Ground, with only twelve feet of water on it, and which bears N. W. by N., five and a half cables from the N. point of Charles Island, and N. E. by E. ¾ E., three cables from Moose Island, is the only danger much in the bay.

Anchorages.

Vessels should anchor in Shoal Bay with Borgle Bluff and Outer Island touching, and bearing S. E. ½ E.; either midway between the Middle Ground and the N. point of Charles Island in five and a half fathoms, over sand, when Round Islet should be in one with Tucker Point, bearing S. S. W. ¼ W. distant two cables' length; or else to the N. W. of the Middle Ground, in four and a half fathoms, over mud, with Hardwood Island seen through the Tickle, and bearing W. S. W.; the latter being much the preferable berth.

Directions.

In running for this anchorage, the dangers on the Western side of the bay, namely, the ledges off Charles Point and also Borgle Shoal, which has sixteen feet water on it, may be avoided by keeping the remarkable and highest red clay cliff, at the head of the bay open of Borgle Bluff, bearing nothing to the Northward of N. N. W. On the Eastern side, round Outer Island, at the distance of half a mile or more, to avoid the reefs off it, and pass to the Westward of Baltee Shoal (on which, however, there are not less than four fathoms), by bringing Borgle Bluff to bear to the Northward of N. W. ½ N. as the vessel runs up the bay.

Leave Net Shoal, which has eighteen feet water on it, to the Eastward, by keeping the Western extremity of the remarkable and highest red clay cliff, already mentioned, open to the Westward of Mary Island, bearing nothing to the Westward of N. W. by N. The same marks lead close to the S. W. of Eve Ledge, the only other danger in the way, which is awash at high water, and therefore always visible. This ledge is bold on the S. W. side, and having passed between it and the N. point of Charles Island (where the channel is clear, and nearly half a mile wide), the Middle Ground will be avoided, in passing between it and Mary Island, by not bringing Borgle Bluff to bear to the Eastward of S. E. by S. until the S. side of Mary Island and Tuff Islands come in one bearing E. ¼ N., or until Hardwood Island appears through the Tickle; then keep away to the Westward, and anchor on the line of Borgle Bluff and Outer Island touching

and bearing S. E. ½ E., with the whole of Hardwood Island seen through the Tickle, bearing W. S. W., and in four and a half fathoms, over mud, as already pointed out. This anchorage is quite safe, although some swell may roll in during or after heavy S. E. gales.

Tangier Harbor. TANGIER HARBOR communicates with Shoal Bay by a narrow and intricate channel, between the Inner Baltee Island and the main land; and there is also a wider passage between Baltee and Tangier islands, but it is full of rocks.

This harbor is too shallow and too full of rocks for large ships, but it affords a secure anchorage for small vessels near its head, especially in Mason Cove, which is on the Eastern side, and two and a half miles from the entrance.

Directions. In approaching Tangier Harbor, Porcupine Hill should be kept well open to the Westward of Ironbound Island, to clear the Pope Shoals; and, on the other hand, Porcupine Point should be hidden behind Sandy Cove Point, to clear the shallow water off Tangier Island. These marks, however, might not be easily recognized by a stranger, who might safely do without them by proceeding as follows:

In running for the anchorage, avoid the ledges off Ironbound Island, by bringing Sandy Cove Point to bear N. N. W., or pass the Eastern point of Tangier Island, at a distance of between one and a half and three and a half cables' length; or midway between it and Drunken Dick, which is almost always shown by a breaker. Having passed Sandy Cove and Porcupine points at a distance of between one and a half and two and a half cables, and midway between the Whaleback and Shag Ledges (which are dry at low water) and the Eastern shore, haul round the Western point of Hog Island, and anchor within it in Mason Cove, where the vessel will lie landlocked in fifteen or sixteen feet at low water, and over a bottom of stiff mud. There are rocks, with only sixteen or seventeen feet over them at low water, so scattered about this harbor, that no written directions would enable a stranger to avoid them; therefore, vessels of too great draught to pass over them with safety should not attempt to run in.

Pope Harbor. POPE HARBOR has a depth of water sufficient for large ships, but it is only secure within Harbor Island, where, the deep water being little more than a cable's length wide, it would be necessary to moor. In the bay outside, a heavy swell rolls in during Southerly gales.

Supplies. The shores of Pope Harbor and also of the adjoining Spry Harbor and Taylor Bay, are more thickly peopled than usual on this coast; the hills of drift clay and boulders on the main land, and also on the N. side of Gerard Island, being cultivated to a considerable extent. There are extensive tracts of hardwood land in the vicinity, furnishing timber for ship-building; and supplies of fresh provisions and water may be readily obtained.

Dangers on Western side of Entrance. Of the formidable dangers off Pope Harbor, the Horse Rock, with only four feet water on it, lies the farthest out, bearing from Pope Rock, in line with the E. end of Ironbound Island, S. S. E. ¾ E., one mile and a half. The Pope Shoals, which are exceedingly dangerous, extend more than halfway out from Pope Rock toward the Horse Rock, and the soundings are rocky and irregular in the remaining distance. Pope Rock is above water, and distant three fourths of a mile from Ironbound Island, but the passage between them is rendered impassable to strangers by sunken rocks, including Drunken Dick, Soup Rock, &c.; and so also is the passage between the island and the main.

All these dangers must be left to the Westward in running in, and so also must Schooner Rock, which has only a fathom water on it, and which lies one fourth of a mile out from the islets at the entrance of Shelter Cove, in which the fishing schooners lie landlocked in two and three fathoms at low water. From Black Rock, which lies one third of a mile farther in on the same or Western side, and is always above water, the shallow water does not extend beyond a cable's length to the Eastward; leaving a clear channel between it and the Barrier Reef one fourth of a mile wide.

Dangers on Eastern Side. A reference to the chart will show that the dangers on the Eastern side of the harbor are few, and easily avoided; that the Western side of Phœnix Island is quite bold, and the channel between it and the Pope Shoals is one third of a mile wide, and has a depth of twelve fathoms in it. Also that some part of the reef off Gerard Head, and of the Barrier Reef can always be seen, and that the shallow water does not extend from the dry parts more than a cable's length. Lastly, observe that the steeple of a church, which stands more than one hundred feet up on the grassy hill in the rear of Belleng Point, can be seen from distances of many miles out at sea; and that a chapel stands low down near the water on the Western side of the point, with a cross upon it, but it had no steeple at the time of the survey in 1855.

Tides. It is high water in Pope Harbor, full and change, at 7h. 40m.; springs rise six and a half feet; neaps four and a half feet; but strong winds cause great irregularities. The tidal streams are weak and irregular.

Directions. When bound to Pope Harbor with a fair wind, refer to the chart and proceed as follows: When not less than two and a half miles from the outer islands, bring the

church-steeple in line with Gerard Head, bearing N. by W. ¾ W., and it will lead in between Phœnix Island and the Pope Shoals. As soon as Pope Head and Taylor Head come in one, bearing E. ½ S., alter course to N. W. by N., and it will lead midway between the reef off Gerard Head and Schooner Rock; and when the two Western points of Harbor Islaad come in one, bearing N. by W. ½ W. (when they should also be in line with the chapel, which is not easily distinguished), alter course to N. N. W. ½ W. (for the head of the harbor, so as to pass midway between Harbor Island and Grum Point), until the channel through the harbor and to the Northward of Gerald Island begins to open; then keep away to the N. E. by N., or for the church-steeple, until the points of Long Island on the Northern side of the harbor come in one, bearing E. ¾ N., when run in with those marks on, and anchor midway between Bellong Point and the N. E. point of Harbor Island, in four and a half fathoms, over mud. Should the wind be from the Eastward, the vessel may anchor outside on the last-named leading marks, and in six and three fourths fathoms, muddy bottom, and may either wait for a fair wind, or warp into the harbor.

Small craft can pass from this harbor Eastward, through the narrow channel between Long and Gerard islands, into a far more capacious and landlocked anchorage, but which is accessible to large vessels only from Spry Bay, through very narrow and intricate channels on either side of a shoal, between Dutchtown Point and Gerard Island.

POPE HARBOR TO INDIAN BAY.

Variation 21½° *W. in* 1860.

The character of the coast remains unchanged as we proceed Eastward from Pope Harbor. Hills of the drift boulder clay resting on granite and clay-slate, and occasionally presenting red cliffs to the action of the sea, still form the predominating feature.

Spry Bay

SPRY BAY.—Spry Harbor, in the N. W. corner of Spry Bay, would afford shelter to a large fleet; the anchorage in seven or eight fathoms, mud, being quite secure in all winds.

Tomlees Bay.

TOMLEES BAY, in the Northern part of Spry Bay, is open to the Southward, and is almost full of rocks, which, together with the islets off its mouth, afford shelter to fishing schooners near its head, where there is a wharf and store, and several respectable families residing.

Taylor Bay.

TAYLOR BAY, on the Western side of Tomlees Head, is also too shallow and full of rocks for large ships; but it affords secure anchorage for the coasting and fishing vessels, and its shores are thickly inhabited by industrious and respectable families.

Redman Shoal.

REDMAN SHOAL.—The principal dangers to be avoided in approaching Spry Harbor, are in and off the mouth of Spry Bay; the outermost being Redman Shoal, from which Taylor Head, the Eastern point of the bay, bears N. E. ¼ E., one mile and four tenths; the Eastern sides of Leslie Island and Tomlees Head in one, N.; and Lawler Point (which is an islet at high water on the Eastern side of Gerard Island) is just open to the Eastward of Maloney Rock, N. by W. ½ W. The fishermen report no less than five fathoms on this rock, nor could any less be found after repeated trials.

Herring and Maloney Shoals.

HERRING AND MALONEY SHOALS.—The dangers on the Western side of Spry Bay are the Herring and Maloney shoals. The latter, which has twelve feet water on it, and is of considerable extent, is by far the most in the way. Its bearing from Maloney Rock, which is always above water, is S. by W. ½ W., and distance from a half to two thirds of a mile. The S. extremity of the dry shingle on Mad Moll Reef in one with Taylor Head, bearing E. ¾ N., leads one fourth of a mile to the Southward of these shoals; and Bald Rock just open to the Eastward of Maloney Rock, N. ⅗ E., leads to the Eastward.

Neverfail Shoal.

NEVERFAIL SHOAL, with seventeen feet water on it, lies E. ½ S. one fourth of a mile from Maloney Rock; and from it Tomlees Head and Leslie Island appear touching and bearing N. ½ E.

Rocky Patches

ROCKY PATCHES.—There is a rocky patch with twenty-eight feet on it, lying N. one third of a mile from the Neverfail; and another, with thirty feet, one fourth of a mile further to the E. N. E.; but there is seldom sufficient swell so far in the bay as to render these dangerous.

Ram Rock.

RAM ROCK is the only other danger in the way on the Western side of Spry Bay. It dries at low water, and lies E. by S. ¼ S., about one and a half cables' length from Lawler Point: with the Southern sides of Leslie and Green islands in one, bearing E.; and with Bald Rock appearing just open to the Southward of them, and distant nearly half a mile from the Ram Rock, with a clear passage between.

Mad Moll Reef.

MAD MOLL REEF, the principal danger on the Eastern side of Spry Bay, runs out W. by S nearly a mile from Taylor Head. On it there are two patches of shingle, which are always above water; and to the Northward of it two rocky patches nearly dry at low water, the reef extending two thirds of a mile in that direction, and reducing the breadth of the passage between it and the Neverfail to one third of a mile.

Directions for Eastern Channel. To run into Spry Bay by the Eastern and preferable channel, proceed as follows: Pass to the Westward of Redman Shoal and Mad Moll Reef, and between the latter and the Neverfail Shoal, by keeping the Eastern side of Tomlees Head only just shut in behind the high bank on the Eastern side of Leslie Island, bearing N. a little Easterly. Run in upon these marks, until Maloney Rock and Pope Head come in one, bearing W. by S., then alter course to N. by W. ½ W., for the Western side of Tomlees Head; and having passed between Bald and Ram rocks, haul to the Westward round the Northern end of Gerard Island, from which the shallow water does not extend beyond one and a half cables' length, and anchor in seven or eight fathoms, mud, with Taylor Head shut in behind the N. E. point of Gerard Island, bearing S. E., and Dutchtown point S. W., and not nearer than three cables; in order to be sufficiently far from a rocky shoal with eighteen feet water on it, and which bears from the S. extremity of that point N. N. E. one fourth of a mile, and one cable and a half off shore.

This is the best berth, but there is plenty of room to the Northward and Westward of it; the anchorage being quite secure as long as Mad Moll Reef is not opened out to the Eastward of Gerard Island.

Western Channel. The Western channel into Spry Bay, lies to the Westward of Maloney Shoal and Maloney Rock, and between them and Stony Island, and is only one and a half cables wide. The marks that lead through it are, Bold Rock and the Eastern side of Tomlees Head touching, and bearing N. by E. ½ E.

Mushaboon Harbor. MUSHABOON HARBOR scarcely deserves the name, being open to S. S. E. winds. It affords indifferent shelter to vessels only on the Eastern side near its head, where the Gull Rock and the shoal, which nearly unite it to Malagash Island, break off the sea.

The Gates. The dangers off Mushaboon Harbor are common to it and to Sheet Harbor, with which it communicates by a narrow and intricate passage, called the Gates, between Malagash and Gibbs islands. In the entrance of this passage there is a small island, and the channel, which is to the Northward of this island, is not more than forty fathoms wide, and twelve feet, or at the utmost fourteen feet, is all that can be carried through at low water, and that with difficulty, instead of the "clear, deep, and bold passage" described in the directions heretofore in use.

Directions. The harbors next E. and W. of Mushaboon Harbor are so superior to it, that vessels can seldom require to enter it; but should any wish to do so, the safest course for a stranger to pursue, will be to run in upon either of the Eastern leading marks for Sheet Harbor, until the points on the N. E. side of Pyche Island open out and bear N. W.; the vessel will then be well to the Eastward of the Pyche Shoals, and may run up the middle of the bay, steering N. N. W. ½ W., for Yellow Rock, the channel, between the dangers on either side being half a mile wide. On nearing Gull and Yellow rocks she may either pass between them, disregarding the rock between them in four fathoms at low water, or passing to the Westward of Yellow Rock, between it and the main land, may then haul over to the Eastward toward Botelier Island and anchor off it, and to the Northward of Gull Rock, in six fathoms, over mud.

Sheet Harbor. SHEET HARBOR, which is one of the finest on the coast, derives its name from the Sheet Rock, a small islet outside the entrance, which presents to seaward a remarkable cliff of clay-slate, resembling a suspended sheet. The entrance between Western Island and Danberry Island is a third of a mile wide, and the anchorage is quite safe immediately within it on the Western side, with space sufficient for a large fleet.

Dangers. DANGERS OF THE ENTRANCE.—The numerous and formidable dangers off Sheet Harbor render the approach to it perilous in the extreme in dark nights or in the prevalent foggy weather, especially for large vessels; but by day, and with clear weather, little difficulty will be experienced in a vessel furnished with proper charts and directions, the leading marks being distinct and good.

Pyche Shoals. PYCHE SHOALS.—The dangers on the Western side of the entrance to Sheet Harbor are rocky patches of three and a half and four fathoms off Taylor Head, and also the more dangerous Pyche Shoals, which are separated from Pyche Island by a narrow channel leading to the entrance of Mushaboon Harbor. The least water on these shoals is seventeen feet, and their S. E. point, distant about a mile from the island, is cleared by the E. point of Guilford and Western islands in one, and bearing N. N. E. ½ E. The Western passage toward Sheet Harbor, between these and the two following dangers, is full three fourths of a mile wide from five fathoms to five fathoms on either side.

Mushaboon Shoal. MUSHABOON SHOAL, is a small rocky patch with eighteen feet water on it, bearing from Taylor Head S. E. ½ E. one mile and a half. Seldom shown by a breaker, it is exceedingly dangerous, and would be more so, were not its position pointed out by the Taylor Goose, which can always be seen, and from which it bears N. E. ¾ N. about three fourths of a mile.

Taylor Goose. TAYLOR GOOSE.—This dangerous rock awash at high water, bears from Taylor Head S. S. E. ¼ E. one mile and three fourths. Vessels may pass to the S. E. of it at the distance of a cable, but in the opposite direction the shoal extends one fourth of a mile, and is just cleared to the Westward by the E. points of Guilford and Western islands in one, and bearing N. E. by N. Northerly.

YANKEE JACK is a small rocky shoal with only three feet water on it, bearing from Taylor Head S. E. by S. Southerly two and a half miles. W. by N. ¾ N. from it, and distant one fourth of a mile, there is another rock with twelve feet water on it. These are both exceedingly dangerous at high water, and in a smooth sea, when they are not shown by breakers; but the Taylor Goose, which can always be seen, and from which the twelve-foot rock bears S. E. ¼ S. a third of a mile, serves as a beacon to avoid them. Nothing could be found to the Southward of these shoals excepting several patches of eight fathoms, the outermost of which is on the Pollock Ground of the fishermen. *Yankee Jack.*

LOGAN ROCK, with twenty feet water on it, bears S. W. ¼ S. about one mile and a half from the Western Shagroost. This dangerous rock, which is seldom shown by a breaker, bears from Yankee Jack E. by S. ¼ S., and the passage between them is nearly one mile and a half wide. *Logan Rock.*

GEDDES SHOAL, with five fathoms on it, lies about three fourths of a mile farther out in a S. by E. ½ E. direction from the Logan. From it the Eastern extremity of the Western Shagroost is in line with Fishery Point, and bears N. N. E. ⅛ E., distance about two and a fourth miles; and the Sheet Rock appears in the entrance of the harbor, between Western and Danberry islands, bearing N., and distant about four and three fourths miles. The sea breaks over this rocky shoal only after heavy gales. *Geddes Shoal.*

MONRO ROCK has twelve feet water on it, and lies with the Western points of the Western Shagroost and of Sheet Rock in one, bearing N. by W. ½ W.; the former being distant nearly a mile. Pumpkin and Horse islands touching, and bearing N. E. by E. ¼ E., lead one fourth of a mile to the Southward of this rock, and close to the Southward of Geddes Shoal. *Monro Rock.*

THE WESTERN SHAGROOST being six feet above high water, can always be seen. A reef extends S. W. ¼ W. two thirds of a mile from it, dry in part, and with only four feet at low water near its S. W. extremity. To the Northward of it lies, besides several rocky four-fathom patches, the dangerous Babin Shoal, the least water on which, sixteen feet, bears from the Western Shagroost N. N. W. ¼ W. one mile and one fourth; and from Fishery Point, nearly in line with the Southern extremities of Hardwood and Mink islands, S. W. by W. ¾ W. one mile and a half. *Western Shagroost.*

MACDONALD ROCK AND SHOALS.—Macdonald Rock, dry at low water, bears from Macdonald Point S. W. ½ W. half a mile, and lies on the extensive Macdonald Shoals, the outermost patch of which, with twelve feet water on it, bears from the point S. W. by W. ¾ W. three quarters of a mile. The mark, which just clears the Western extremities of Macdonald and Babin shoals, and also the reef on the Western Shagroost, is Sheet Rock, touching the E. point of Western Island, and bearing N. ½ W. This mark leads between the Macdonald Shoals and a shoal with twenty-eight feet on it at low water, from which Sheet Rock, bearing N. by E. ½ E., appears touching the Western point of Danberry Island, and is distant nearly a mile. There is also another rocky shoal, with thirty feet on it at low water, three fourths of a mile W. by N. from the Babin Shoal, and which bears from Guilford Island S. S. E. ⅛ E. nearly a mile. Both these shoals, which would be dangerous to large vessels in a heavy sea, will be cleared by attention to the directions which follow. *Macdonald Rock and Shoals.*

It is high water, full and change, in Watering Cove, Sheet Harbor, at 8h. 6m.; ordinary springs rise six and three fourths feet, and neaps four and a half feet: but strong winds cause great irregularities, in the rise especially. *Tides.*

DIRECTIONS FOR WESTERN PASSAGE.—There are four passages for ships between the outer dangers off Sheet Harbor, either of which may be taken, as the wind or other circumstances may render expedient. *Directions.*

To run for Sheet Harbor by the Westernmost passage, to the Westward of Taylor Goose and Mushaboon Shoal, and between them and the Pyche Shoals, proceed as follows:—

Being outside of and to the Westward of the Taylor Goose, bring Sheet Rock to touch the E. point of Danberry Island, bearing N. E. ⅛ N., and run in with these marks on until the points on the Northern side of Pyche Island come in one, bearing N. W. when the Pyche Shoals will have been passed, and the vessel may be kept away a little to the Eastward, so as to give a wider berth to the reefs off Guilford Island, which the marks only just clear.

Having passed the Guilford Island and its reefs, the passage is clear to the entrance of the harbor; it being only necessary to keep to the Eastward of a line joining the Eastern points of Guilford and Western islands; and to avoid a rock, which can always be seen, half a cable's length off the W. point of Sheet Rock.

In entering between Western and Danberry islands, give the former a berth of not less than a cable's length, to avoid a sunken rock in four feet water, half a cable off its E. point, which, having passed, haul in to the Northward and Westward until Macdonald Point is shut in behind it, and anchor anywhere within it, not less than one and a half cables off shore, and six and a half or seven fathoms, over mud.

Directions. PASSAGE EASTWARD OF TAYLOR GOOSE.—If it be desired to pass to the Eastward of the Taylor Goose and Mushaboon shoals, and between them and the Yankee Jack, run in with the Eastern points of the Sheet Rock and Danberry Island exactly in one, bearing N. N. E. ⅞ E., and those marks will lead in clear of all danger to Sheet Rock, which pass to the Westward of, and proceed as before directed.

MIDDLE PASSAGE.—To pass between Yankee Jack and the Logan Rock, which is the widest passage, run in with Sheet Rock, touching the Western point of Danberry Island, and bearing N. by E. ½ E., until the Southwest Point of Guilford Island bears N. W. ½ N., when the Southern point of Salisbury Island will have disappeared behind it; then steer to the Northward and Westward sufficiently to clear the twenty-eight feet shoal, which those marks lead over, and passing to the Westward of the Sheet Rock to the anchorage as before directed.

EASTERN PASSAGE.—To pass to the Eastward of the Geddes Shoal and the Logan Rock, and between them and the reef off the Western Shagroost, run in with Western Island only just open to the Westward of the Sheet Rock, bearing N. ½ W., and those marks will lead close to the Babin and Macdonald shoals, and up to the Sheet Rock; but, as the soundings are more than usually irregular by this route, it will be preferable, after having passed the Western Shagroost, and approached Babin Shoal, to haul over toward Guilford Island on a N. W. line of bearing, and, passing to the Westward of the Sheet Rock, proceed as before.

If the vessel be bound up Sheet Harbor, the first danger to be avoided is the White Rock, which dries at low water, and is distant four and a half cables from Danberry Island, the W. point of which touching Sheet Rock, and bearing S. by W. ½ W., leads just clear of the Westward of it. Therefore keep Sheet Rock open to the Westward of Danberry Island, until past the rock; then sheer over to the Eastward, so as to bring the Western point of Danberry Island and of the Sheet Rock in one, bearing S. S. W. ¼ W., and steer N. N. E. ¼ E., or so as to keep those marks on astern, until nearly abreast Slab Point, on the Western shore, two miles within the entrance. Then as those marks barely clear Slab Shoal, sheer a little to the Eastward until it is passed, observing that the passage between it and the reef, which extends one cable and a half from Salmon Island, is only two cables wide.

Anchorage. Having passed Slab Shoal, keep over toward the Western shore, rounding Olding Point at a distance not exceeding one cable and a half to avoid the shoal off the shingle Watt Point, and anchor off Watering Cove on the Western shore in seven fathoms, over a mud bottom, and with the chapel at the head of the Northwest arm appearing nearly midway between Mitchell and Church points. The vessel will here be landlocked, and secure in all winds.

For the navigation of the arms, a pilot would be indispensable.

Hurd Cove. HURD COVE.—On the Eastern side of Sheet Harbor, at one mile and a fourth within the entrance, is the shingle Gull Ledge, off Hurd Cove, which last is the entrance of a narrow and intricate passage between Sober Island and the main land, through which a depth of six or seven feet only can be carried at low water.*

Eastern Shagroost. EASTERN SHAGROOST lies one mile and a half to the Eastward of the Western Shagroost, and like it is also a low rocky ledge barely four feet above high water, with breaking rocky shoals on its N. and W. sides, but bold to on its Southwest side, and with deep water between it and Pumpkin Island.

Pumpkin Island. PUMPKIN ISLAND is a steep rounded islet, ninety feet high, bare of trees, lying W. N. W. one mile and three fourths from the light-house on Beaver Island: rocky ledges extend S. S. W. nearly half a mile from its South Point.

Beaver Island. BEAVER ISLAND, forty feet high, and bearing E. ¼ N. about four and a half miles from the Western Shagroost, is partially covered with scrubby trees, and its slate cliffs show white to seaward. On its N. side, in moderate weather, landing can be safely effected at a small cove near the E. end; and in bad weather boats may be saved at high water, by entering the gully which separates the two parts of the island.

Beaver Island Light. BEAVER ISLAND LIGHT.—A house, thirty-five feet high, stands on the E. end of Beaver Island, and exhibits, at seventy feet above the level of the sea at high water, a white light, which revolves every two minutes, and is visible in clear weather from a distance of twelve miles. The house, on the roof of which the lantern is placed, is painted white, with two black balls to the S. S. W.

Beaver Harbor. BEAVER HARBOR is formed at the head of a straight deep channel, half a mile wide, passing two cables to the Eastward of Beaver Island. From the position of this harbor, although open to the S. S. E., it affords an excellent refuge.

The Beaver Harbor of the fishermen is a small cove situated N. N. W. one mile from Beaver Point. It affords excellent shelter to small craft, being protected by a reef of

* The directions from Sheet Harbor to Indian Bay are by Commander J. Olebar, R. N., 1857.

stones, partly dry at low-water springs, and by a spit of sand or shingle extending half-way across its entrance, within which vessels may lie secure from all winds.

This little harbor may be entered by rounding the reef on the line of Quoddy Hill (one hundred and eighty-four feet high), and the S. point of Hardwood Island in one, until the hill of Beaver Point comes in line with the stores at the end of the spit, when steer in upon this latter mark bearing S. ¾ E., and rounding the spit which is bold to, anchor in eighteen feet, over muddy bottom.

MACLEOD COVE also affords excellent anchorage in twenty-one feet, over a muddy bottom, and is entered by a channel half a cable wide at the W. end of Macleod Island. The anchorage is on the N. side of the island, after rounding a spit of sand and mud extending N. N. W. a cables' length from the island. *Macleod Cove.*

SALMON RIVER falls into the E. division of Beaver Harbor, and at the bridge affords good fresh water. *Salmon River.*

ROCKY AND HARDWOOD ISLANDS lie on each side of the entrance to the Salmon River anchorage. The former has a rock with only five feet water on it, lying one and one fourth cables' length from its Eastern end; the latter is bold to, and has red clay banks. *Rocky and Hardwood Islands.*

BALCOM SHOAL, with only ten feet of water on it, lies in the middle of the passage between Rocky and Hardwood islands, and narrows the available channel into Salmon River anchorage to less than one cable. Harbor Rock touching the W. end of Sandy Islet, leads through the Western channel; and touching the Eastern end of the islet, leads through the Eastern channel. *Balcom Shoal.*

SANDY ISLET has a red clay bank, twelve feet high, at its S. end; between it and Harbor Rock, the ground is broken and rocky. *Sandy Islet.*

HARBOR ROCK, of bare slate, twelve feet high, lies on the Eastern side of the channel into Beaver Harbor, and has shoal water extending a cable's length to the W. N. W. *Harbor Rock.*

SUTHERLAND ISLAND, on the W. side of the channel into Beaver Harbor, is wooded with cliffs of slate, and has on it a conical shaped hill one hundred and seven feet high, sufficiently remarkable to make a good mark for William Shoal. *Sutherland Island.*

MIDDLE SHOAL, on the Eastern side of the channel into Beaver Harbor, has fifteen feet water on it, and with the two neighboring patches of twenty-four feet, lying to the Southward and Westward, may be avoided by not opening Harbor Rock to the Westward of Rocky Island. *Middle Shoal.*

MARMOT ROCK, the outermost danger on the E. side of the channel leading to Beaver Harbor, is only awash at low-water springs, and lies so much within the line of the Beaver Islands, that with the prevalent S. W. winds it seldom breaks; it will, however, be avoided by not opening Pumpkin Island much to the N. of the Brother Islands, until the Harbor Rock comes in line with the W. end of Rocky Island, bearing N. N. W. *Marmot Rock.*

WILLIAM SHOAL, with eighteen feet water on it, and only breaking occasionally, is the principal danger to be avoided in approaching Beaver Island light, which bears from it N. N. W. distant two miles. It will be cleared when nearing it from the Southward, by keeping the conical hill on Sutherland Island open E. of Beaver Island; the light-house situated on Beaver Island in one with the hill would lead directly over the shoalest part. *William Shoal.*

It is high water, full and change, in Beaver Harbor, at 7h. 40m.; springs rise six and a half feet, and neaps four and a half feet; neaps range two feet. *Tides.*

In approaching Beaver Harbor from the Southward by day, when about five or six miles from Beaver Island, bring the light-house on it to bear N. N. W. ½ W., and steer in N. N. W., observing that in passing to the E. end of Beaver and Horse islands, the dark wooded Beaver Point is open to the Eastward of Sutherland Island. After passing a cable's length to the Eastward of Sutherland Island and Beaver Point, keep the light-house in sight astern, open to the Eastward of Sutherland Island; on this line with the cross mark of Quoddy Hill in line with the S. end of Hardwood Island, fair anchorage can be obtained in seven fathoms, muddy bottom. *Directions.*

If, however, better shelter be desired, a pilot should be procured, and the vessel run into Salmon River anchorage or Macleod Cove. Into the latter a depth of twenty-one feet may be carried, and a landlock berth obtained in the same depth, over muddy bottom. Into the former there are two passages, one N. of Rocky Island, narrow but clear of rocks; the other more commonly used, between Rocky and Hardwood islands, for which the following brief directions may suffice:

In nearing Beaver Point, when the church steeple on the E. side Salmon River appears open W. of Hardwood Island, steer for it until Harbor Rock comes in one with the W. side of Sandy Island, when alter course with this latter mark on astern, steering in N. ¼ W. till Quoddy Hill appears well open N. of Hardwood Island; then having passed the shoals, steer for the steeple again, and anchor in four and half fathoms mud, when Sandy Island is shut in behind Hardwood Island.

With an offshore wind a vessel must tack upon the two leading marks binding the E. and W. sides of the channel; namely, the Harbor Rock and the W. end of Rocky Island, and Beaver Point open of the E. end of Sutherland Island.

The intelligent seaman, with the assistance of the chart, will find no difficulty in working into a safe berth in Beaver Harbor, remembering always that the anchorage is not good until the vessel is N. of Beaver Point.

At Night. The entrance to Beaver Harbor may be safely attempted, even at night, in clear moonlight weather, with a fair wind, and careful attention to the bearing of Beaver Island light. Having passed not nearer than half a mile to the Eastward of the light, steer in N. N. W., and approaching Sutherland Island, which will be recognized by its wooded hill, pass about a cable's length to the Eastward of it. After passing this island, keep the light just open of the point astern, and steering with that mark on, pass Beaver Point and anchor when abreast the cove, in seven or eight fathoms mud.

Bay of Islands. BAY OF ISLANDS is the name commonly given to the coast between Beaver and Mary-Joseph harbors. The islands off this part of the coast are very numerous, and the channels between them are so narrow, intricate, and beset with rocks, that, although there is sufficient depth in them to admit schooners drawing twelve feet water, they are not easily described, and their safe navigation requires a more intimate local knowledge than can be acquired from the best chart. Coasters, however, use them occasionally to avoid the heavy swell in the offing; and while a few know the channels sufficiently well to run the whole distance from Sheet Harbor to Liscomb Harbor inside the islands, others, again, are content, here and there, to venture within some few of the numerous islands overlying this part of the coast. The recent charts, on which it is believed every rock and shoal is now correctly placed, will be useful to the coasters, and enable them, with their local knowledge, to find their way in much greater security than heretofore.

There is a channel passing close on the N. side of Beaver, Brother, and Pumpkin islands, which is often used; but to navigate it safely, care must be taken, when to the Westward of Pumpkin Island, to keep Beaver Island light-house in the hollow between the wooded Brother Islands, bearing E. by S. ¾ S., so as to clear the Black Peg shoals.

Newtonquoddy. NEWTONQUODDY, the next inlet to the Eastward of Beaver Harbor, will admit schooners of small tonnage, but it is not much frequented on account of the numerous rocky shoals and islands overlying its entrance.

Bird Islands. BIRD ISLANDS, low and naked of trees, lie E. N. E., three and one fourth miles from Beaver Island light-house; and S. E. by S. two miles from them lie the Bassoon reefs; while other rocky shoals extend W. toward the Marmot Rock, noticed on page 171, overleaf.

Bassoon Reefs. BASSOON REEFS, bearing E., distant four miles from Beaver Island light-house, are composed of large rounded stones, and uncover partly at low water. They generally break heavily, but as at high-water springs, with the wind off shore, their position is not easily recognized, it will be well to take care that Pumpkin Island does not show open to Northward of the Brother Islands; this mark will lead half a mile to the Southward.

Halibut Islands. HALIBUT ISLANDS, lying E. three miles from the Bird Islands, are situated on the Eastern side of a channel of deep water, leading N. N. W. ½ W. into an indifferent anchorage under the shelter of Brokenback Island. They also mark the entrance into Nicomtau Bay.

Nicomtau Bay. NICOMTAU BAY, the outlet of Moses River, a small stream admitting schooners of light draught, is in common with Newtonquoddy, the abode of a few industrious families who cultivate small farms; and during the summer frequent the Halibut and White islands for the purpose of fishing.

Directions. The anchorages under Brokenback Island and in Nicomtau Bay are not recommended, but they may prove useful in a case of emergency. To enter the anchorage under Brokenback Island from the Eastward or Westward, do not approach to the Northward the line of the Bassoon Reefs and White Islands in one, until Baptiste Island (of red clay banks, seventy feet high, and partly wooded) is seen E. of Brokenback. When the highest part of Baptiste is in line with the E. end of Brokenback bearing N. W. by N. (which mark leads to the Eastward of the Snapper Shoal), steer in N. N. W., and giving Brokenback a berth of less than a cable's length, anchor when the Bird Islands are seen open W. of Brokenback in ten fathoms, sand.

To enter Nicomtau Bay, steer in with Harbor Rock (of slate, thirty feet high, and nearly bare of trees), in line with the high land on the Eastern side of Moses River, bearing N. ¾ E. In passing to the Westward of the Halibut Islands, be careful that the W. end of Hartlin Island is well open of Goose Island, so as to clear the Salamander Rock with only a foot on it at low water. After clearing the Salamander, steer so as to pass

a cable's length to the Eastward of Harbor Rock, and to the Westward of the Bull Rock, which uncovers at low water; then steer in N. E., and choose a berth in seven or eight fathoms, mud, under Hartlin Island.

White Islands. WHITE ISLANDS, which derive their name from cliffs of slate of highly-inclined strata, showing white to seaward, are eighty feet high at their Eastern extreme, and are wooded. They lie nine miles to the Eastward of Beaver Island light-house, and are the outermost of a group of islands and rocks lying off the point separating Nicomtau Bay from Nicumcigum Inlet.

Between these islands are some channels and some snug anchorage; they are, however, far too intricate to be serviceable to any but the small schooners trading or fishing along these shores.

Variation. The variation of the compass at the White Islands, July, 1857, was 21° 50′ W. It is increasing at the rate 7′ a year.

Bowen Ledge. BOWEN LEDGE is a bare flat slaty rock only eight feet high, lying S. S. W., half a mile from the low W. point of Camp Island; there is a navigable channel three and one third cables wide on its Northern side.

Horseshoe Shoal. HORSESHOE SHOAL, with three fathoms water on it, lies S. S. W., nearly one mile and a half from the centre of the larger White Island. The W. end of the Halibut Islands kept open of the W. end of Bowen Ledge leads to the S. W.

David Shoal. DAVID SHOAL, with four fathoms on it, lies N. half a mile from the Horseshoe Shoal.

Lockwood Rock. LOCKWOOD ROCK, with three fathoms on it, lies nearly on the line of the highest part of Tuffin Island seen over the E. point of White Island, bearing N. W. by N., and is distant rather more than two miles from that point. By keeping the whole of Tuffin Island open East of White Island, it will lead to the Eastward; and to the Westward when it is all shut in behind White Island.

Directions. In clear weather Pumpkin Island may be seen distinctly from the deck of a vessel when off the White Islands, and by keeping it just open N. of Beaver Island light-house, bearing W. by N., it will lead to the Southward of all these shoals. If not made out, the White Islands should not be approached nearer than two miles, a distance that can be easily maintained by cross-bearings or a couple of sextant angles between three known objects, laid off from time to time upon the chart.

Gull Ledge. GULL LEDGE, lying S. S. W., one mile and a half from the S. part of Barren Island, is composed of two bare ridges of slate, thirty feet high, and separated only by a narrow gully just wide enough to afford shelter to a boat; close to the ledge the water is deep, but West Rock, with only two feet on it, makes the passage N. of the ledge dangerous.

Smith Rock. SMITH ROCK, with twelve feet water on it, lies S. W. six cables' length from the Gull Ledge.

Seal Ledges. SEAL LEDGES lie N. E. by E., two miles from the Gull Ledge and extend one mile and a third from S. E. point of Barren Island. Between these ledges and the Black Prince Shoal is the channel, nearly a mile wide, leading into Mary-Joseph Harbor, but which, on account of the dangerous shoals on its Eastern side, should not be attempted without a pilot, unless the wind be fair and the weather clear.

The mark for leading to the Eastward of the Seal Ledges, is Gravel Point, the N. extreme of Liscomb Island, open of Liscomb Point, bearing N. N. E. ½ E.

Thrumcap Islet. THRUMCAP ISLET, not more than fifteen feet high, and distinguished by a small clump of trees, lies at the Eastern entrance of Mary-Joseph Harbor. E. of it are some patches of shoal water, while on its W. side is a dry rocky ledge, between which and Smith Point is a channel one cable wide, but not much used or generally known.

The more direct channel is S. of the Thrumcap, and this is narrowed to one cable, at half a mile to the Eastward of the islet, by a rock with only ten feet water on it, lying in the N. border of the Pan Shoal; and to clear which, Turner Point on Hawbolt Island should be kept touching Smith Point, and bearing W. N. W.

Nicumcigum Inlet. NICUMCIGUM INLET, the next opening to the Eastward of Nicumtau Bay, is the abode of a few small families who earn a precarious livelihood by net and line fishing off the White Islands, and the cultivation of small farms. A few small schooners frequent this inlet, and find within it snug anchorage, but the vicinity of the excellent harbor of Mary-Joseph makes it unnecessary to attempt a description of the crooked channel leading thereto.

Mary-Joseph Harbor. MARY-JOSEPH HARBOR is secure and well sheltered, and has the advantage of entrances E. and W. The inhabitants find the drift hills susceptible of cultivation, and generally keep cattle and follow fishing. A church stands on high ground in Smith Cove, and may be seen from the sea. The entrances to Mary-Joseph Harbor are narrow, and should not be attempted without a pilot by any vessel drawing more than nine feet.

Directions for Western Entrance. Several dry ledges will be seen to the Eastward of the White Islands, between which and Goose and Barren islands there is a channel sometimes frequented by coasters, and

with sufficient water in it for vessels of the largest draught, but it is difficult to navigate without local knowledge. There is another channel entering from sea, between Halibut and White islands, and as it leads into the harbor of Mary-Joseph, directions will be given for its navigation.

In approaching from sea, with the usual Southwesterly wind, be careful that the highest part of Tuffin Island bearing N. E. by E., shows midway between Halibut Island and the low Camp Island, W. of the White Islands, when steer in on that mark, until the Southern Halibut Island bears W., then bear up E. N. E.; and when, as Tuffin Island is approached, Brokenback Island opens N. of the middle Halibut Island, W. by N. ½ N., alter course and steer E. by S. ½ S., with that mark on astern.

Running three miles on this course will bring the Hubbub Rock (dry at half tide, and always showing) in line with E. end of the bushes on Little White Island; then steer N. with this mark astern, until the S. W. point of Goose Island shuts in Salmoneaux Point, when alter course to N. by W. ½ W., so as to pass one cable and a half to the Westward of the Frenchman Rock (dry at low water) and to clear which see that Harbor Rock is just open E. of the high grass field on Nicum Point N. ¾ W.

Continue on this course until Round Island, in Mary-Joseph harbor, is nearly shut in behind Epe Point, then steer E. upon this mark until Blackbill Point shuts in the White Islands, when keep in mid-channel steering about E. by S. to leave Round Island a cable's length to the Westward. Having cleared this island, haul in N. by E., and rounding Turner Point, secure anchorage may be had halfway between Turner and Lobster points, in seven fathoms.

There are also other passages leading into this channel, but directions for them would be useless without local knowledge; and therefore only the more direct and those clearest of dangers will be described.

To pass between the E. and W. Black ledges, observe that these ledges are bold to and separated by a channel half a mile wide. With a leading wind bring the low and wooded end of Goose Island, midway between the two ledges bearing N. by W. ½ W., and upon that course steer in; when within the ledges steer N. N. W. ½ W. and passing to the Eastward of the Hubbub Rock, enter the channel before described.

If wishing to run between the White Islands and Little White Island, bring the W. end of Little White Island in line with W. end of Goose Island to clear the shoal off the E. end of the White Islands, and steer in N. by E. ½ E., until the E. end of the White Islands bears W.; when alter course to N. N. W., and having passed Little White Island, steer N. N. E., which will lead to the Westward of the Hubbub Rocks, and into the channel before described.

Another channel between Little White Island and the W. Black Ledge, is too narrow and intricate to be described.

Directions for Eastern Entrance.

Being off the Gull Ledge with a leading wind, bring the Gravel point of Liscomb Island open of Liscomb Point, bearing N. N. E. ½ E., the mark for leading to the Eastward of the Seal Ledges; run in upon this course until the high barn on Hawbolt Island shows open N. of Barren Island, when steer with the church-steeple bearing N. W., and immediately Turner Point on Hawbolt Island, touches Smith Point (see page 173), alter course to W. N. W., and with a careful attention to that mark ahead, proceed until the False Passage opens to the S. W.; then keep nearly a W. by N. course so as to pass a cable's length from the Thrumcap and from Smith Point; and then W. N. W. along the N. side of the channel, so as to avoid Turner Shoal, nine feet rock on the left and the Middle Ground on the right, a muddy flat with eel-grass, and which is cleared by keeping the Thrumcap just in sight over Smith Point. Good and convenient anchorage can be had in seven fathoms, mud, as before mentioned, about halfway between Lobster and Turner points.

Liscomb Harbor.

LISCOMB HARBOR.—The entrance to this excellent harbor, which is capacious and landlocked, and tolerably smooth at all times, is five miles to the Eastward of Mary-Joseph, and is formed between Liscomb Island and Liscomb Point. At one mile and one fourth within the entrance it trends in a W. N. W. direction for four miles; but at the distance of two miles, the N. side of the channel is much narrowed by rocky shoals, to clear which, Slate Cliff on the S. shore should be opened out clear of the point farther E., bearing S. E. by E. ½ E., after which it maintains a breadth of one cable up to its head, where it receives the waters of Liscomb River, a rapid shallow stream abounding in trout and salmon. There is a large cove on the N. side of the harbor, named Spanish-ship Bay, but it is too much encumbered by rocks to be described.

Supplies.

Good water can be obtained at a little brook in Liscomb Harbor; and small supplies of fresh provisions and firewood may be purchased at moderate prices.

About thirty-five families reside along the shores of the harbors of Liscomb, Little Liscomb, and Jegogan; they are not numerous, but the establishment of a day and Sunday school has been productive of great good among them, and the people generally are intelligent and religious. The church with a steeple, lately erected in Liscomb Harbor, forms a prominent object from the sea and a useful landmark.

The approach to Liscomb Harbor lying E. of the Black Prince and other shoals, it is necessary that they should now be described. *Dangers off the Entrance.*

HAWBOLT ROCK, the most outlying danger, has twenty-seven feet water on it, and lies nearly S., four miles from Liscomb Point, and one mile and three fourths from the Black Prince. It seldom breaks, but a vessel will pass to the Southward of it by keeping Gull Ledge only touching the S. W. side of Tuffin Island. *Hawbolt Rock.*

SAND SHOAL, composed of rock and sand, with nine feet of water on it, lies S. three miles from Liscomb Point. Gull Ledge touching the N. side of the Little White Island (the wooded hummock of which, fifty feet high, should bear W. ½ N.) leads to the Southward. *Sand Shoal.*

BLACK PRINCE SHOAL, which uncovers at half tide, and generally breaks heavily, lies also S. from Liscomb Point, distant two miles. *Black Prince Shoal.*

NORTHEAST BREAKER and LUMP ROCK lie respectively N. N. E. six and a half cables, and N. nine cables from the Black Prince; the former has four feet, and the latter eleven feet water on it. *N. E. Breaker and Lump Rock.*

The church-steeple in Liscomb Harbor, in line with Smoky Point, bearing nearly N., leads to the Eastward of all these shoals excepting the N. E. Breaker, which may be cleared by opening the steeple about midway between the points of entrance; also a high barn on Hawbolt Island, touching the Thrumcap and bearing W. by N. ½ N., will clear all these shoals on the N., and is a useful mark for vessels bound to Mary-Joseph Harbor. *Leading Marks.*

The following are the dangers on the East side of the channel leading to Liscomb Harbor.

SADDLE ROCK, with five fathoms water on it, bearing S. ½ E. from Creek Point, distant two and three fourths miles. Gull Ledge, touching the N. side of Little White Island, leads to the Southward: and by sighting the church-steeple in Liscomb Harbor, W. of the Cranberry Head, will lead to the Westward. *Saddle Rock.*

THE CHANNEL ROCK, lying S. E. two and one fourth miles from Creek Point, has three fathoms water on it, and breaks when there is much swell. Smoke Point, well open of Cranberry Head, leads to the Westward; and the Black Prince in line with S. point of Barren Island, leads to the Southward. *Channel Rock.*

LISCOMB ISLAND, one hundred and twenty feet high, and wooded, lies on the E. side of the entrance to Liscomb Harbor. The Crook Shoals extend S. E. nearly one mile from Crook Point, the E. extreme of the island: Wedge Islet bearing N. E. ¾ E. and touching Wine Head (a high clay bank E. of St. Mary River), leads about half a mile to the S. E. of the shoals. *Liscomb Island.*

MACKEREL SHOAL, with only two feet water on it, extends W. nearly two cables from Cranberry Head, the W. extreme of Liscomb Island; it will be avoided by keeping the church-steeple just open of the trees on Hemloe Island, bearing N. by W. *Mackerel Shoal.*

LISCOMB SHOAL, extends S. E. by E. half a mile from Liscomb Point, the W. point of the entrance to Liscomb Harbor, and the least water on it is sixteen feet. The church-steeple N. by W. will also clear this shoal. *Liscomb Shoal.*

It is high water, full and change, in Liscomb Harbor at 8h. 0m.; ordinary springs rise six and a half feet, and neaps four and a half feet. The streams are weak and irregular, being much affected by the winds. *Tides.*

Approaching Liscomb Harbor from the Eastward, with a fair wind, bring Smoke Point in line touching Pye Point N. W. by N.; run in upon this mark till abreast the Mackerel Shoal, then steer N. by W. for the steeple, and after passing Smoke Point, which is bold to, alter course to N. W. by W. ½ W., and anchor in four and three fourths fathoms, mud, where the entrance to Spanish-ship Bay bears N. N. E. *Directions.*

Approaching the harbor from the Westward, bring the church-steeple well open of Liscomb Point and stand in, so as to bring it in line with the low trees of Hemloe Island, bearing N. by W.; then steer upon this mark, and it will lead in clear of all danger, until having passed Smoke Point, when the course must be altered and an anchorage obtained as before.

With an off-shore wind, in standing to the Westward, take care to tack immediately the steeple appears open of Hemloe Island, until within the Liscomb Shoal; and in standing to the Eastward tack when Cranberry and Pye points are in line, until abreast Cranberry Point, when the steeple must be kept in line with the trees on Hemloe Island to clear the Mackerel Shoal. Within this, both shores may be approached safely to a cable's length, and anchorage obtained as before.

LITTLE LISCOMB HARBOR, the entrance to which lies on the N. E. of Liscomb Island, has fair anchorage, but is only adapted for small craft. It may be entered safely by bringing Redman Head (a steep wooded bluff, one hundred feet high) touching the S. E. side of Hemloe Island N. W. ¾ N.; this mark will lead clear in from sea, passing three fourths of a mile to the Eastward of the Channel Rock, up to Redman Head, which being bold to, can be passed at the distance of a cable's length, and anchorage obtained to the N. W. of the head, in three fathoms, mud. *Little Liscomb Harbor.*

If a vessel has to work into this harbor, the following marks must be attended to: Gravel Point, the N. extreme of Liscomb Island, touching the S. W. extreme of Hemloe Island, clears all shoal water off the N. E. side of Liscomb Island; and the S. side of Hog and Hemloe islands in one, lead to the Southward of the shoal S. of Shag Rock. Farther in it will require great caution to avoid the dangerous reef off Hog Island, and for which there is no better mark than the E. end of a slate cliff up the harbor in line with the N. E. point of Hemloe Island, bearing N. by W. ½ W.

Jegogan Harbor. JEGOGAN HARBOR.—This deep inlet, lying immediately to the Eastward of Little Liscomb, is not much frequented, and has but few settlers. Vessels drawing eighteen feet water may anchor near its head, secure from all winds; but the narrow channel leading to it, on the N. E. side of Rae Island, is only half a cable wide, and should not be attempted without a pilot. Below this the anchorage is exposed to the ocean's swell, and the approaches to it are much impeded by the Shag and Tobacco ledges.

Tobacco Island. TOBACCO ISLAND, low and wooded, lies at the entrance to Jegogan Harbor. A vessel will pass to the Southward of the Tobacco Ledges, extending S. by E. one mile from the S. Point of this island, by not opening Pye Point N. of Liscomb Island bank, bearing N. W. by W. ½ W.

Shag Ledge. SHAG LEDGE, a low, dark rock, only five feet above high water, lies E. S. E. distant six cables from Redman Head. There are several dangers off its W. side, leaving a channel only two cables wide near Redman Head.

Wedge Islet. WEDGE ISLET has a beacon erected on it, one hundred feet above high water, which can be seen at the distance of ten miles, and forms a good mark for the neighboring harbors, as the coast is so monotonous in character and so uniformly low, that its features at a short distance are not easily made out; the islet is of clay and toward the main land rises abruptly to the height of fifty feet.

This islet is surrounded with rocky ledges, and those on its N. and S. sides extend out to the distance of nearly half a mile. Between it and the main land the passage is obstructed by rocky ledges, but a depth of twenty feet may be carried through by keeping to the N. W. extreme of Walter Island touching Cape St. Mary, bearing N. E. by E. ½ E.

Sand Shoal. SAND SHOAL, with five fathoms water on it, lies S. by E. one mile and two thirds from Wedge Islet and only breaks after heavy gales.

Directions. A vessel intending to enter Jegogan Harbor by the middle passage, between Tobacco Island and the Shag Ledge, should bring the N. E. side of Hemloe Island to touch Redman Head (the mark for entering Little Liscomb Harbor), bearing N. W. ¾ N., and steer in upon the mark until Shag Ledge is in line with Brig Point (low and wooded on the W. side of Jegogan Harbor) bearing N. by W.; then steer N. so as to pass a cable's length to the Eastward of the Shag Ledge, and continuing the same course fair anchorage and good holding ground will be found abreast the houses on the W. side of the harbor, between Brig Point and Coote Head. It should, however, be borne in mind that a thirteen-foot rock lies N. N. E. four cables from Brig Point; but it will be cleared by keeping the little bare gravel islet, united at low water to Tobacco Island, just touching the wooded part of that island.

St. Mary River. ST. MARY RIVER, one of the largest rivers in Nova Scotia, falls into the bay between Barachois Point and Cape St. Mary, about one mile and a half N. of Wedge Islet. Its entrance is obstructed by two bars of sand, over which a depth of about ten feet may be carried at ordinary low water springs. The outer bar extends from Wharf Point to Black Head; the inner bar a little below Shag Reef.

For the first half mile above the bars the channel of the river is crooked and dangerous, running close to Shag Reef and the E. bank of the river. Nearly in the centre of the channel, a little below the small low Horton Islet, there is a rock with only six feet water on it, and at a short distance above it another with eight feet; above these rocks the channel about fifty yards wide and carrying a depth of fifteen feet, winds its way between mud flats, and gradually decreases in depth and width, until at the distance of six and a half miles from the bar it divides into two branches, one of which ends in a swamp, but the other, the main river, makes an abrupt turn round a steep slate rock at right angles to its course, and is navigable nearly half a mile farther to the Northward.

At this point, the head of the navigation, and on the E. bank of the river, is situated the village of Sherbrooke, with a population of three hundred persons. It has two churches, a school, a court-house, and jail; its principal trade is in firewood, deals, and ship-building, and it employs a few schooners in the Labrador fisheries. Below Sherbrooke, on the E. bank of the river, there are two other churches, one of which, seventy-five feet high, forms a prominent object and can be seen on approaching from the sea.

After a continuance of Southerly winds there is much swell in the bay and the bar of this river is one mass of breakers, making the entrance to the river, at any time of tide, dangerous, if not impracticable; but in the summer months, during the prevalence

of S. W. winds, the water is smooth, the bay being much sheltered by the Wedge Islet shoals. The shores of the bay are rocky and should not be approached nearer than two cables' length. Blaek Head and Birch Point in line, bearing N. by W. ½ W., will lead clear of the shoal off Barachois Point.

Pilot. An excellent branch pilot lives in McDiarmid Cove, on the Eastern side of the entrance to St. Mary River, and he is always ready to board any vessel carrying the usual pilot signal.

Tides. It is high water, full and change, within the bar of St. Mary River at 8h. 0m.; ordinary springs rise six feet, and neaps four and a half feet.

Directions. In approaching St. Mary River from the Eastward, the first object that is generally recognized, is the beacon on Wedge Islet. With the wind and weather favorable, steer for this beacon on a W. N. W. or N. W., bearing so as to open out the entrance of the river; and so soon as the wharf and red store, a mile above the bar, are in one, bearing N. N. W., steer in on that course.

As the river is approached, a remarkable tree on a distant hill will be seen over the end of the wharf; this mark would, at the time of the survey of this river, in 1856, lead over the bars in the deepest water. Nevertheless, to enter the river safely, a pilot is necessary, as the bars shift, and the channel is not only crooked, but the cross set of the tides upon Shag Reef and Bridget Shoal, makes local knowledge of the first importance.

Vessels frequenting this river, moor head and stern, or are secured to the wharves, as there is not sufficient width in the channel, with any scope of cable, to swing clear of the mud flats.

During the summer months vessels occasionally anchor in five fathoms, sand, in the middle of the bay, between Barachois Point and Cape St. Mary, but later in the season such anchorage is not to be recommended.

Cape St. Mary. CAPE ST. MARY, one hundred and thirty-seven feet high, is the headland immediately to the Eastward of St. Mary River, and on its Eastern side is Wine Cove, affording neither shelter nor anchorage.

Walter Island. WALTER ISLAND, lying one mile to the Eastward of Cape St. Mary, is low and wooded, and a beach of sand and stones nearly unites it to the mainland at low water; a reef of rocks extends to the distance of two cables from its Eastern side, affording some shelter to an insecure anchorage in the cove N. of the island, sometimes used by coasters.

Walter Shoal. WALTER SHOAL lies S. three fourths of a mile from Walter Island, and the least water on it is twenty feet. A vessel will pass to the S. E. of it by not opening Wedge Islet S. of Liscomb Island.

Rude Shoal. RUDE SHOAL is a rocky reef extending E. half a mile from Wine Head on the Western side of the entrance to Indian Bay. A vessel will pass close to the Eastward of it by keeping Rude Point in line with Fleming Cliff, bearing N. by W. ½ W.

Indian Bay. INDIAN BAY is bounded on the East by Hollins Head and on the West by Walter Island, but it is entirely open to the S S. E., and only affords unsafe anchorage and some shelter from S. W. winds to fishing craft and small coasters. The head of the bay receives the waters of a large fresh-water pond, from which it is only separated by a narrow beach of sand.

There are several shoals extending from the headlands forming the E. side of this bay, but the most dangerous and extensive is the Nixonmate Shoal, described on next page.

INDIAN BAY TO CAPE CANSO.

Variation 20½° *to* 22½° *W. in* 1860.

Coast. THE COAST, from Indian Bay to Torbay, a distance of about twenty miles, is formed of metamorphic rocks, principally clay and micaceous slates in nearly vertical strata. On these rest the unstratified drift clay and boulders, of which the reddish cliffs are formed, that appear occasionally, but not extensively, on this part of the coast. The country near the sea has in general a desolate appearance, in some parts thinly wooded with dwarf spruce-trees, in others, which are called the barrens, it is quite bare, or only covered with peat and bushes.

A few miles inland, as may be seen in most of the harbors, the drift-hills become covered occasionally with hard wood, birch, beech, and maple, and are more or less susceptible of cultivation. The hills seldom exceed the height of two hundred feet above the sea, and near the coast are in general much lower.

From Torbay to Cape Canso, a distance of eighteen miles, metamorphic gneiss is the prevailing rock. It forms barren hills along the Northern shore of Torbay; and White Haven, White Head, and White Point, derive their names from its more or less white appearance.

Soundings. The soundings are deep and irregular everywhere along this part of the coast and vessels running along it, or approaching it in dark nights, or in the prevailing fogs, should not go into a less depth than forty fathoms water.

Tidal Streams. THE TIDAL STREAMS are weak and irregular, but there is generally, although not constantly, a current setting along the coast to the Westward, and sometimes exceeding the rate of one knot per hour; hence vessels seldom experience any difficulty in beating to the Westward.

Hollins Bay. HOLLINS BAY, the next inlet to the Eastward of Indian Bay, is open to the S.E., and affords shelter at its head to boats and small craft. At its entrance, two thirds across toward Bickerton Island, lies Hollins Shoal, with only six feet water on it.

Hollins Head. HOLLINS HEAD, the S. W. point of Hollins Bay, bearing from the beacon on Wedge Island, E. by N. six and two thirds miles, is a small and remarkable peninsula, united to the main land by a long beach of stones and shingle, and having on its Eastern side a cliff of reddish clay and boulders fifty feet high. It is fast wasting by the action of the sea.

Nixonmate Shoal. NIXONMATE SHOAL.—A reef runs out S. S. W. ½ W., one mile and a half from Hollins Head, on which the shoalest patches are the Nixonmate Shoal and the Webb Rock, distant one mile and one fourth and four cables respectively from the head, and carrying ten and six feet at low water. There are patches of fifteen and twenty feet water between them. The Castor Rock and Cape Mocodome in one, bearing E. by N. ½ N., lead half a mile to the Southward of these dangers; and there is a clear passage, half a mile wide, between them and the Castor Shoals.

Castor Rock. CASTOR ROCK, of dark slate and four feet in height above the ordinary tides, bears from the Eastern point of Bickerton Island S. S. W. one mile and a half; and the Castor Shoals, rocky patches with three, four, and four and a half fathoms water on them, lie off it to the Eastward, the Westward, and the Southward. The outermost of these shoals, with three and a half fathoms, bears from the Castor, S. S. W. ½ W. one mile and two thirds; and Green Island open to the Southward of the Pollux, bearing E. by N., leads clear to the Southward of it.

Pollux Rock. POLLUX ROCK, lying S. S. W. two and one fourth miles from Cape Mocodome, is a similar rock to the Castor, from which it bears S. E. by E. rather more than two miles. A reef extends from it four cables to the N. N. W. The Eastern extremities of Cape Mocodome and Country Harbor Head in one, lead over the end of this reef; therefore to pass clear to the Westward of it, Country Harbor Head must not be opened out farther than to be only just seen in one with the bank or cliff off Cape Mocodome, and over the shingle beaches, enclosing a pond which forms its S. E. extremity.

The passage between this reef and the nearest of the Castor Shoals is more than a mile wide, and Harbor Island, touching Cape Mocodome, bearing N. E. ½ E., leads through it; but the N. W. extremity of the island cannot always be distinguished from the land behind it.

Bingly and Taylor Shoals. BINGLY AND TAYLOR SHOALS.—The Bingly Shoal, with fifteen feet water on it, lies E. half a mile from the Pollux. The Taylor Shoal has eighteen feet on it, and lies two thirds of a mile farther to the Southward, bearing S. E. ¼ S. nearly one mile from the Pollux; the two points on the Eastern side of Goose Island in one, bearing N. E. ¾ E., lead to the Eastward of this shoal, but those points are low, and can seldom be distinguished. These two last-named dangers, and also the Castor Shoals, being shown by breakers only when there is a heavy sea running, are among the most formidable dangers off this part of the coast.

Port Bickerton. PORT BICKERTON is a safe and convenient little harbor for small vessels. It has a clear entrance, carrying six fathoms water, between Bickerton Island and Barachois Head, but it is less than two cables wide. Barachois Head, on the Eastern side of the entrance, may be known by its white cliff, from which as also from the island, a reef extends two cables to the S. E.

Directions. To enter Port Bickerton with a leading wind, being half a mile or more from the entrance, open Round Island (small, with red clay banks, and one mile up the harbor) only so far as to touch the N. E. side of Bickerton Island, bearing N. W. by N. Run in with these marks on until abreast the S. E. point of the island; then, having passed in mid-channel through the entrance, avoid the shoal in the middle of the harbor by keeping close along the Eastern shore, until abreast Round Island, where anchor, within the shoal, in thirteen or fourteen feet water over a bottom of mud. Or, if it be preferred, on entering, haul to the Westward round Bickerton Island, at a distance of between one and two cables, so as to pass between it and the shoal into the Western part of the harbor, where the anchorage, in twelve feet over mud bottom, is sheltered by the reefs, which leave only a shallow boat channel between the island and the main land to the Westward.

Fisherman Harbor. FISHERMAN HARBOR, two and one fourth miles to the Eastward of Port Bickerton, is a bay nearly two miles wide at the entrance, between Cape Mocodome and Country Harbor Head. It is quite open to the S. E., so that the only part that can properly

be called a harbor is a cove on its Southern shore, formed by a long beach of shingle, and in which vessels may lie securely in from ten to fifteen feet at low water, over a bottom of mud. Outside the cove the holding ground is good in from four to seven fathoms, and, as the sea is in some degree broken by the dangers off the mouth of the bay, large vessels with good ground tackling might safely anchor there during the summer months.

ROSE SHOAL, the most formidable of the dangers off Fisherman Harbor, is a rocky ledge two thirds of a mile long, and on which the least water is six feet; its outer or Southern extremity bears from Cape Mocodome, S. S. E. ½ E., distant one mile and a half, and from the Pollux N. E. by E. ¾ E., nearly two miles. The marks for clearing its S. extremity are Fleck Point, on the Northern side of Hollins Bay, just open of Bickerton Island, bearing N. W. by W.; and for clearing its Northern extremity, Barachois Head and the Cape Rock in one, W. N. W. *Rose Shoal.*

THE BULL is a small rock, which dries at low water, and bears S. E. distant three and a half cables from Cape Mocodome; off which there are other rocks in six feet water, the outermost bearing E. ½ N., distant half a mile from the cape. These all lie on the rocky shoal, which extends two thirds of a mile out from the cape, and are exceedingly dangerous at high water, and with a smooth sea, when they are not shown by breakers. The Cape Rock, four feet high, lies S. W. by S. distant one cable from the cape. *The Bull.*

BLACK LEDGE, more than a mile in length, in a N. and S. direction, lies directly off the mouth of Fisherman Harbor. The central part of it is two feet high above ordinary spring tides, and in several other parts it dries, or nearly so at low water; from its Southern extremity, which is steep to, and has only two feet on it at low water, Cape Mocodome, in line with Hollins Head, bears W. ½ N., and is distant rather more than one mile. The head kept open will lead clear to the Southward of it; and the summit of Mount Misery (in Country Harbor) open of Country Harbor Head, bearing N. by W. ½ W. clears its Eastern side. *Black Ledge.*

To enter Fisherman Harbor from the Southward with a fair wind, and being within the Pollux, observe that the marks that just clear the rocks off Cape Mocodome are, Holly Point (on the Western side the entrance of Isaac Harbor) in one with Country Harbor Head, bearing N. by E. ½ E., therefore, to pass between the Bull Rock and Rose Shoal, run in upon those marks, keeping Holly Point only a degree or two open, until past Rose Shoal, when the point may be opened more, in order to give the rocks off the cape a wider berth. As soon as the small Dorkin Island at the head of the harbor opens out to the Northeastward of the shingle beach at the cove on the Southern shore, bearing N. W. ½ N., the vessel may haul to the Westward into the bay, where the only danger is a rocky shoal extending a fourth of a mile out from the high clay cliff next eastward of the cove just mentioned. *Directions.*

To run for the harbor from the Eastward between Rose Shoal and Black Ledge, the marks are, Dorkin Island and the shingle beach of the cove (already mentioned) bearing N. W. ½ N. The channel between the shoal and the ledge is two thirds of a mile wide, so that there would be no difficulty in beating in, with the assistance of the chart, and attending to the leading marks for clearing the opposite points of Black Ledge, and Rose Shoal; but there would be less sea with a Westerly wind between the Ledge and Country Harbor Head, where there is also a clear channel half a mile wide,

COUNTRY HARBOR is the finest of any on this coast E. of Halifax. It may be easily recognized by the three islands on the Eastern side of the channel leading to it and Isaac Harbor, and by Country Harbor Head, a bold and precipitous headland of clay-slate in nearly vertical strata, one hundred and sixty feet high, and which may be considered as the termination of its Western shore. Properly speaking, however, the harbor does not commence until we arrive at Harbor Point, three miles farther to the N. N. W., where its entrance is three cables wide, and carries a depth of eleven fathoms. Thence the harbor continues from a third to half a mile in with a depth of from ten to five and half fathoms, and of easy navigation to Stewart Cove on the Eastern shore, off which the anchorage is landlocked and excellent, in from four and a half to seven fathoms, and, and four miles in from the entrance. In this distance, the only danger to be avoided is a rock, with three feet on it at low water, lying about half a cable off shore near the Southern point of Mount Misery peninsula. *Country Harbor.*

From Stewart Cove the channel becomes narrow, but continues navigable for large vessels two and a half miles above it, and for small vessels to the entrance of the river at the head of the harbor, which is distant seven and one fourth miles from its entrance Harbor Point. Boats can ascend the river two miles or to half a mile above the bridge, where the tide ends.

The shores of this harbor are steep on either side, the summits of the ridges being generally only a short distance back from the water, and increasing in elevation above the water as we proceed inland, from two hundred feet near the entrance to four hundred and twenty feet near its head.

On the Western shore, at two thirds of a mile within the entrance, is Green Point, of shingle, enclosing a large pond; and three fourths of a mile farther in, on the same side, is Mount Misery, a remarkable round peninsulated hill, one hundred and forty feet in height, and which form the principal leading mark for clearing the dangers lying off the harbor.

Country Harbor Ledges

COUNTRY HARBOR LEDGES.—The Westernmost of these dangers, commonly called the Country Harbor Ledges, off Fisherman Harbor, and also those to the S. E. of the Pollux, have been already described in pages 178, 179.

The Middle Ledge, or Southeaster of the fisherman (so named in reference to Cape Mocodome, from which its bears S. S. E. ½ E. three and two thirds miles), is a rock which covers at half tide, and lies on a rocky shoal about four cables long from N. W. to S. E., and around which the soundings are too deep and irregular to afford much warning by the lead. When it is shown by breakers, as it always is, excepting when a high tide accompanies an unusually smooth sea, there is no difficulty in passing on either side of it; the nearest danger to the Westward being Taylor Shoal, which bears from it W. by N. ¼ N. one and a half miles, it is only necessary when passing on that side to give the rock or breakers a berth of half a mile.

To the Eastward the passage between the Middle Ledge and the Tomcod Shoals is two miles wide, and the marks that clear it on that side, at the distance of four cables, are the Western points of Goose Island, in one bearing N. by E. ¾ E.; and these marks lead also over Jarvis Bank, a fishing ground lying a mile farther out to the S. S. E., and on which the least water found was fourteen fathoms. The marks for passing to the Southward or outside of the Middle Ledge are, the Castor and Pollux in one, bearing N. W. by W., or the Pollux and Hollins head, N. W. ¾ W.; and these marks, be it observed, lead also close inside or Northward of the Taylor Shoal. The name "S. W. Breaker," applied to the Middle Ledge in the old charts, is unknown to the native fisherman.

The shoal places of the Fisherman is the farthest out of the Easternmost Country Harbor ledges, and bears from Green Island S. ¼ E. two and one fourth miles. It is small and rocky, with five fathoms least water, and is shown by breakers only when there is a heavy sea running.

Tomcod Rock covers at high water, and lies a mile and one fourth to the N. W. by N. of the Shoal Place. When shown by breakers as it usually is, it serves to warn vessels of their approach to the Tomcod Shoals, which are small rocky patches lying off it in various directions, as will be seen in the chart.

The Northernmost of these patches, the Gull Nest of the Fisherman, carrying eighteen feet water, bears from the rock N. by E. ¼ E. distant four cables, and from Green Island S. S. W. ½ W. three fourths of a mile with a clear passage between. But the Westernmost of these patches, with fourteen, twenty, and twenty-four feet water on them, are most in the way of vessels bound to or from Country Harbor. The marks that lead close to the Westward of them are, Harbor Island open to the Westward of the low dry reef off Flying Point, the S. extremity of Goose Island, bearing nothing to Westward of N. ½ W.; or the summit of Mount Misery in one with Harbor Point, bearing N. N. W. ¼ W.

Tides.

It is high water, full and change, at one mile from the head of Country Harbor, at 8h 45m.; springs rise six and a half feet, and neaps four and a half feet; extraordinary tides rise seven feet. The streams are weak, seldom exceeding half a knot.

Directions.

With a fair wind for Country Harbor, having passed the Middle Ledge, either by giving its breakers a sufficient berth, or by the aid of the given leading marks, open the summit of Mount Misery only just to the Eastward of Country Harbor Head, bearing N. by W. ¾ W. and run in with these marks on, until about midway between Rose Shoal and the S. point of Goose Island, or until the latter is abeam; then alter course to N. and when the summit of Mount Misery comes in one with Harbor Point, steer N. N. W. ¼ W., or so as to keep the last-named marks on, until near the mouth of the harbor, which enter in mid-channel, and anchor anywhere within it, there being no detached dangers in the way, excepting the rock already mentioned as lying half a cable off the Southeastern point of Mount Misery peninsula. If intending to proceed to Stewart Cove keep well over toward the Western shore, to avoid the mussel beds that lie off the isle and the points of small coves on the Eastern shore.

With a beating wind, the leading marks which have been given for clearing the dangers on either side of the channel will show when to tack. In the board toward Harbor Island stand no nearer than half a mile, to avoid the shoal water off its Southwestern shore; and in standing in to the N. W. of the island, tack while Flying Point is well open to the S. W. of it, to avoid the shoals between it and Isaac Harbor.

Isaac Harbor.

ISAAC HARBOR, is separated from Country Harbor by Ragged Point, opposite to which on the Eastern side of the entrance, and at the distance of three fourths of a mile is Red Head, a small peninsula, with red clay cliffs, united to the main land by shingle beaches enclosing a shallow pond.

Off the next little peninsula to the Northward, Webb Reef runs out Westward across the entrance to the distance of two and one fourth cables, leaving a passage with seven fathoms water in it, but only two cables wide, between it and the Ragged Rocks, which cover at high water, and which lie a fourth of a mile within Ragged Point, and one cable off shore.

These dangers, and some shallow water within the harbor off its Western shore, render a pilot necessary to a stranger entering this beautiful little harbor, in which vessels of the size of a frigate may anchor securely in from three and a half to four fathoms, mud.

Webb Cove, in which the fishing and coasting vessels usually anchor, in two fathoms, mud, is on the Eastern side, and just within the entrance. The harbor runs in from it three miles farther N., with a breadth nowhere exceeding four cables, and there is a rapid stream and saw-mill at its head. The shores, on either side, rise gradually to the summits of the hills of drift clay and boulders, from two to three hundred feet high, and are cultivated to some extent by a highly respectable, industrious, and religious community, whose principal occupations appeared to be the coasting and the fisheries.

Tides. It is high water, full and change, in Isaac Harbor, at 7h. 40m.; springs rise six and three fourths feet, and neaps four and three fourths feet, but they are subject to great irregularities from the effects of the winds, as was also observed at Country Harbor.

Directions. Entering Isaac Harbor with fair wind, refer to the chart, and pass the Ragged Rocks, supposed to be uncovered, at the distance of one cable, steering N. E. until within Webb Reef; then steer so as to keep at the same distance from the Western shore until near Holly Point, from which haul over to the Eastward, to avoid the shallow water which commences immediately within the point, and extends nearly halfway over from the Western toward the Eastern shore. Having passed a dry and small stony islet or reef, which will be observed on the Western side of the harbor, anchor in the middle, not more than half a mile within Holly Point, and in from three and a half to four and a half fathoms, mud; the smaller depth being all that can be assured, as the vessel swings to her anchor. Farther in there is a shoal with nine feet least water on it.

Harbor, Goose, and Green Islands. HARBOR, GOOSE, and GREEN ISLANDS, which lie on the Eastern side of the channel leading to the two last-described harbors, are formed of the drift boulder clay, resting on highly inclined clay-slate rock, and are wooded with small spruce-trees. They are low, the highest hill on Goose Island, the middle and largest of the three, not exceeding the height of eighty feet above the sea.

Island Harbor ISLAND HARBOR is a bay between the two long shingle points on the N. side of Harbor Island. Directly abreast it and distant a third of a mile, is Drum Head, a small island, close to and joined to the main land at low water; and next Eastward from it is Darby Point, both of which are used as leading marks. In the bay, within the line uniting the shingle points of the island, there is only depth of water sufficient for small vessels but the anchorage farther out, although open to the E. S. E., is considered safe during the summer months, in seven fathoms, mud bottom. It is, however, only fit for vessels not larger than a sloop-of-war, the deep water being confined to a narrow and crooked channel.

Pilots. Several families reside on Harbor Island during the fishing season, as also on the opposite main land, from which pilots may be obtained; but they are not much in the habit of conducting vessels drawing more than ten or twelve feet water.

Tides. It is high water, full and change, in Island Harbor at 7h. 40m.; springs rise six and a half feet, and neaps four and a half feet. The flood stream comes from the Eastward, and its rate is usually less than one knot, but it is much influenced by the winds.

Directions. In approaching Island Harbor from the Westward refer to the chart, and observe that a ridge of rocky ground, with irregular soundings, extends from Red Head, on the Eastern side of the entrance to Isaac Harbor, to Harbor Island, a distance of one mile and a half. To avoid the shallow patches, in twelve, sixteen, and eighteen feet water upon this ridge, pass the N. W. point of Harbor Island at a distance of between two or three cables, steering N. E. by E. until Drum Head and Darby Point come in one bearing E. S. E.; then keep away to the Eastward, and bring Burke Point (the shingle N. E. point of Harbor Island) in one with the remarkable hill on Goose Island, bearing S. E. by S.; then run in upon these last-named marks, and anchor just outside of the line joining the two shingle points of the harbor, in seven fathoms, muddy bottom. It is best to moor in so narrow a channel, laying one anchor to the Southward in the shallow water within the bay.

From the N. W., being off Red Head, bring Drum Head and Beach Point, the N. extremity of Goose Island, in one, and steer toward them S. E. ¾ E., or as may be necessary to keep them in one, until Burke Point comes in line with the remarkable hill on Goose Island bearing S. E. by S., which steer toward, and anchor as before directed.

From the Southward, having a Southerly or Easterly wind, enter the channel between Harbor and Goose islands, steering N. N. E., and keeping two thirds over from the former toward the latter, to avoid the reef off Saladin Point and the Middle Ground;

and having passed between the latter and the reef always visible off Goose Island alter course to N. until Red Head and Drum Head come in one; then to N. W. ½ N. keeping them in one to clear Burke Shoal; and when Burke Point, which is bold to the Northward, bears W. by N., haul to the Westward, and, having passed the point, anchor as before directed

From the Eastward, the coasting vessels usually take the inner route, especially late in the autumn, when Northerly and N. W. winds prevail, passing between the Brandy Ledge and New Harbor Head, and through the Sound, as the passage between Goose Island and the main land is called. Having passed New Harbor Head at the distance of half a mile, steering W. N. W., observe that the marks for clearing the shoals of Coddle Harbor, Coddle Island, and Seal Cove, are, Darby Point and Drum Head in one, bearing W. N. W.; therefore keep Drum Head only just open, in running toward it, until abreast Beach Point (Goose Island); then bring Burke Point to bear W. by N., and remembering the mark for clearing Burke Shoal, steer so as to pass the point to the anchorage as before.

The dangers in the offing, or to the Southward of this route, will be cleared to the Northward, by keeping *both* the shingle points of Harbor Island open to the Northward of Beach Point, bearing W. N. W., until the vessel is as far West as Coddle Island; then the course must be more to the Northward to clear the shoal off Goose Island, which contracts the channel between it and Graham Shoal, off Seal Cove, to the breadth of two cables. The leading marks already given, namely, Drum Head, just open to the Southward of Darby Point, until Burke Point bears W. by N., will be found the best guide for this narrow part of the channel.

Seal Cove. SEAL COVE, opposite Goose Island, is dry at low water, excepting narrow channels for boats.

Coddle Harbor. CODDLE HARBOR has secure anchorage for small vessels, in from twelve to fourteen feet at low water, and within Coddle Island. The principal entrance is to the Eastward of the Island, but the dangers are too numerous there, and all the way to New Harbor Head, as well as within the harbor, for any written directions to avail.

Dangers East of Goose Island. DANGERS EAST OF GOOSE ISLAND.—The dangers in the first four miles Eastward of Goose and Green Islands forbid any approach to that part of the coast in dark nights, or in the prevailing fogs, nearer than the depth of thirty fathoms.

Dutch Shoal, carrying eight feet water, bears from Sheep-pen Point, the East extremity of Goose Island, E. N. E., nearly one mile. It is separated from the shallow water, that extends to the shore of that island, by a very narrow channel; and its Northern edge is just cleared by the line of Burke and Beach points in one, bearing W. N. W., keeping in mind that the point of the Western beach of Island Harbor must at the same time be well in sight to the Northward of them both.

Ragged Ledge extends nearly one mile and a half to the E. S. E. from Sheep-pen Point, and from its outer extremity, which is seldom entirely covered, all the way in to the island, it dries partly at low tides. There is no passage for ships between this ledge and Green Island, or between Goose and Green islands; the whole space being strewed with rocky patches with ten, twelve, and eighteen feet water on them, and which break heavily in bad weather.

Fryingpan, a shingle reef four feet above high water, lies two cables from the N. side of Green Island.

Pan Rock, with three feet on it at low water, lies a third of a mile to the Westward of the Fryingpan.

White Rock, with ten feet water, lies E. one mile from Green Island; and there is a rock, with twenty-eight feet water on it, one fourth of a mile farther off on the same bearing. There are other patches nearer the island, the Southernmost of which, with fourteen feet water, bears from its S. extremity E. ½ S. two thirds of a mile.

Split Rock, small and awash at low-water springs, lies near the Southern end of a long rocky shoal, which, together with two detached patches in four and five fathoms water, extends a full mile to the N. N. W. of the rock. The marks for clearing Dutch Shoal, namely, Burke and Beach points in one, bearing W. N. W., lead also to the Northward of those patches; but these points are often not easily distinguished.

From Split Rock, which is dangerous at high water and with a smooth sea, Darby Point appears just open to the Northward of Beach Point, bearing N. W. ¼ W.; the South extremity of Green Island bears W. ¾ S. two and one third miles; the part that dries of the Brandy ledge E. by S. ½ S. one and one third miles; and the Eastern side of New Harbor Head bears N. E. by E. two miles.

Brandy Ledge is a rocky shoal nearly a mile long, parallel to the coast, and nearly half a mile wide. From the part near the middle of it, and which covers only at high water, New Harbor Head bears N. by E. one and two thirds miles.

New Harbor Cove. NEW HARBOR COVE is not a harbor, but merely a shallow bay open to the S. S. E. and affording no safe anchorage to shipping. From Shoal Point, on its Western shore, a rocky shoal runs out three fourths of a mile to the S. S. E. At the head of the cove

in the entrance of St. Catharine River, only one foot deep at low water, and dangerous to boats when there is any sea running. For the first five miles in the river flows through a shallow and narrow inlet, which boats can ascend to its head; the stream then becomes rapid and unnavigable for four miles farther, to the large lakes from which it flows.

LITTLE HARBOR lies three miles to the Eastward of New Harbor Cove, and only admits boats at high water. *Little Harbor.*

TUFFIN BANK AND NET ROCK.—The Tuffin Bank, with six fathoms water, and on which the sea is said to break occasionally after very heavy gales, and the Net Rock, with twenty feet water, lie respectively S. S. W., two and one fourth miles, and S. S. E. half a mile from the entrance of Little Harbor. *Tuffin Bank and Net Rock.*

SHAG ROCK rises two feet high above the ordinary high water, and lies S. E. by E. distant one mile from Little Harbor. Between it and the shore, from which it is distant half a mile, there are rocks dry at half tide, and the shallow water extends from it four cables to the S. E. *Shag Rock.*

TORBAY is of great extent, nearly nine miles long and four miles deep. At its Eastern end a very narrow isthmus, or "haulover" for boats, separates it from White Haven. On its Northern shore, Molasses Harbor, Cole Harbor, and Charlo Harbor, afford secure anchorage for small vessels in from two to three fathoms water: but the approach to them all is more or less difficult, and would require the aid of a native pilot. *Torbay.*

There is a settlement of Acadians at Molasses Harbor, and a chapel, a large wooden building without a steeple and one hundred and ten feet above the sea, will be seen on the Western side of the entrance. There are settlements also at Cole and Charlo harbors, and at Larry River at the W. end of the bay; and there are chapels on the Eastern side of the two last-named places, but they are small wooden buildings, undistinguishable from others in the vicinity. At these settlements the drift boulder clay is cultivated sufficiently to afford pasture to cattle; in rear of them the barren granite hills rise to the height of three hundred and sixty feet above the sea.

The principal entrance into Torbay is between Berry Head and the small low Sugar Islands of clay slate not exceeding thirty feet in height, which stretches across the Eastern half of the bay; there is here a clear channel three fourths of a mile wide, and in some parts carrying twelve fathoms water. The anchorage within this entrance, off Webber Cove near the Western end of the bay, is easy of access and secure, in six fathoms, sand and mud, the only danger much in the way being Webber Shoal, which, with twelve feet water on it, lies off to the N. side of the peninsula, from three to six cables' length from the shore, and its Northern end is cleared by the Southern extremities of Topstone Ledge (off the Westernmost of the Sugar islands) and Green Ledge in one, bearing E. S. E.; small vessels only should attempt to pass to the Southward of it. To the Northward of Webber Shoal the passage is not less than half a mile wide between it and either Charlo Shoal or Larry Reef, which lie to the N. E. and N. W. of it respectively.

DANGERS OFF TORBAY.—Before describing the dangers off the entrance of Torbay, observe that Berry Head is not a bold headland, as erroneously stated in the old directions, but the low rocky Eastern extremity of a peninsula, nowhere exceeding eighty feet in height, and which is united to the main land by a beach and range of sand hills. The shallow water extends off this peninsula a third of a mile to the Southward, but the greatest danger on the Western side of the entrance is the Gull Rock, with fifteen feet water on it, from which Berry Head bears N. E. ¾ E. nearly one mile, and the Shag Rock West one mile and a fourth; the Shag in one with New Harbor Head, bearing W. ¾ N., leads two cables to the Southward of the Gull Rock. There is a reef, and also detached rocks, with fourteen, eighteen and twenty feet water on them, off Berry Head, the outermost lying four cables to the Eastward of it; these must all be left to the Westward in running into the bay. *Dangers off Torbay.*

Torbay Ledges, lying on the Eastern side of the entrance, are still more dangerous. French Rock, the farthest out, and with only ten feet water on it, lies with Topstone Ledge, off the Western extremity of the Sugar Islands, bearing N. by E. one and a half miles; Berry Head N. W. by W. ½ W. one mile and one third; and the Bull Rock, with four feet on it, and which usually breaks E. two thirds of a mile. The other ledges lie between these and the islands, with deep water between them, but so scattered as to leave no safe passage for ships.

Shag Rock and New Harbor Head in one, bearing W. ¾ N., leads three cables' length to the Southward of all these ledges.

Hog Island, touching Leblanc Point, bearing N. E. by E., leads to the Eastward of the Bull Rock; and Cole Harbor Head, open to the Westward of Topstone Ledge, N. N. E. ½ E., leads to the Westward of French Rock, and the ledges next to the Northward of it, but does not clear the Brig Rock, the Westernmost of the ledges, in nine feet water, and from which Topstone ledge bears N. E. by N. three cables' length. The soundings

are so irregular around these ledges, and the depth so great (fifteen fathoms close to them), that the lead affords scarcely any assistance.

Directions. With a fair wind into Torbay, run in with the Western extremity of the Sugar Island touching Mars Head, and bearing N. E. ½ E., or with Cole Harbor Head open to the Westward of Topstone Ledge, N. N. E. ½ E., whichever course the wind may render preferable; and when Berry Head and the points to the Westward of it come in line, bearing W. ½ S., alter course immediately to N. N. W., which continue till the Southern extremities of Topstone and Green ledges come in one, bearing E. S. E.; then steer W. N. W., keeping those marks on astern, until Flat Point and Berry Head are in one, bearing S.; and then W. or W. ½ S. to the anchorage, in six fathoms, mud, off Webber Cove, which should bear between S. W. and S. W. by W., and be distant from half to three fourths of a mile.

Whitehaven. WHITEHAVEN is a secure harbor, with depth of water and space sufficient for a fleet of the largest ships, but the entrances are so narrow and indirect, and the sunken rocks so numerous, that no large vessel could safely attempt them at night, or in the dense fogs that so frequently prevail.

The shores of the harbor have a barren and desolate appearance, the woods having been extensively burnt off the granite hills, especially on the Eastern side, where there were only two families residing in Yankee Cove at the time of our survey. On the Western shore there are hills of the drift boulder clay, affording pasture for the cattle of the fishermen, who reside principally in Doliver and Marshall coves, but whose houses will also be seen at intervals all the way to the head of the Northwest Arm, distant seven miles from the entrance of the haven.

White-Head Island Light. WHITE-HEAD ISLAND LIGHT.—White-Head Island, six cables long and one hundred and twenty feet high, is so named from the whitish granite rock of which it is formed. The interior of the island is wooded with dwarf spruce-trees, but the light-house on its S. W. point stands on the bare rock, and is a square wooden white building, thirty-five feet high, showing a *flashing* light, alternately flashing and eclipsing every *ten seconds*. The light is elevated fifty-five feet above the level of the sea at high water, and should be seen in clear weather from a distance of eleven miles.

Dangers. The East Bull, one of the outer dangers of the Eastern entrance to Whitehaven, lies in six feet water, with the light-house bearing N. W. distant six cables. Halfway between it and White Head is the Sculpin Rock, dry at low water; and midway between it and Millstone Island there is a rocky shoal carrying twenty feet water. The entrance to the Eastern passage into Whitehaven Harbor is between this shoal and Millstone Island.

Southwest Bull, with five feet water on it, lies with the light-house bearing N. E. distant six and one fourth cables. Rocky ground, with four fathoms water on it, extends from it four cables to the N. W. by W.; and there are rocky patches with five fathoms between it and White Head Island.

Dover Head, open to the Southward of Millstone Island, bearing E. by N., leads to the Southward of both the E. and S. W. Bulls.

Black Ledge dries at low water. Its Western extremity, from which the light-house bears E. ¾ S. rather more than one mile, is cleared by keeping Doliver Island and Fisherman Island touching and bearing N. by E. ¼ E., while Bald Rock and Flying Point in one, bearing N. N. W. ¼ W., will lead to the Southwest of it, and the S. W. Bull.

Shag Ledge and Rocky Ledge are nearer the light-house, and never cover; and the Gammon Islets, small, and of bare granite, will be seen to the Northward of them. The Southern passage into Whitehaven Harbor is to the Eastward of all these, including the S. W. Bull, and between them and Whitehead Island.

Inner and Outer Gull ledges and Bald Rock extend nearly a mile to the Southward from Deming Island, which being united to the main land at low water, forms the Western point of entrance to Whitehaven. These ledges and rocks are above water, but there are reefs between and around them: that most in the way being a rock with six feet water on it, lying S. S. E. ½ E. one and a half cables from the Outer Gull Ledge; Net Rock (joined by a reef to the S. E. extremity of Treetop Island) and Spry Point in one, bearing N. E. by E. ¾ E., leads clear to the Southeast of it. The Western passage into Whitehaven Harbor between this rock and Black Ledge is half a mile wide. There is little or no warning by the lead in approaching any of these dangers from seaward, the depth exceeding twenty fathoms, a little more than one fourth of a mile from them.

Threetop Island. THREETOP ISLAND may be easily recognized by the three remarkable hills, fifty or sixty feet high, from which its name is derived. The channels to the N. W. of it, on either side of Doliver Island, are so narrow and full of rocks, as to be only fit for small craft and boats. The ship-channel is to the Eastward of it, and is two cables wide at the entrance between Net Rock and Turtle Reef, which runs out from Spry Point. A short distance within the entrance, and nearly abreast the middle of Threetop Island, there is a rock with three and a half fathoms water on it, which reduces the breadth of the channel

between it and the island to one and a half cables. The marks that lead to the S. W. of this rock are the opposite extremities of the Gammon Islets and White Head Island very slightly overlapping, and bearing S. by E. ¾ E, and these marks also clear the shoals farther in off Doliver Island and Deming Point on the Western side of the harbor.

Tides. It is high water, full and change, in Marshall Cove, Whitehaven Harbor, at 8h. 0m.; springs rise six feet, and neaps four feet. The rate of the tidal streams in the entrance seldom exceeds half a knot, unless it be the ebb-stream when accelerated by heavy rains, or the melting of the snow in spring.

Directions. To run into Whitehaven Harbor in a steamer, or with a fair wind through the Western passage and ship-channel, attention must be paid to the marks already given for clearing the rock of the Outer Gull Ledge on the one side, and the Bulls and Black Ledge on the other. It is seldom that the Black Ledge or the breakers on it cannot be seen, and it may then be passed at any distance between one and four cables. But to run in nearly midway between it and the rock off the Outer Gull Ledge, bring Net Rock to bear N. E., and steer so as to pass round to the Eastward, and Northward of it at the distance of one cable. Open the light-house only very little to the Eastward of the Gammon Islets, bearing S. S. E. ½ E., and steer in N. N. W. ½ W., or so as to keep those marks on astern, until the N. W. end of Threetop Island is nearly abeam. Then alter course to N., taking care to keep White-Head Island open to the Eastward of the Gammon Islets, to clear the shoal off Doliver Island and Deming Point on the Western shore, and the light-house open to the Westward of Spry Point, to clear the reef off the islet at Yankee Cove on the Eastern shore. Having passed this reef, the anchorage becomes good, in from seven to ten fathoms, mud, immediately within it, and also off the fish stages and houses on the Western shore, although some swell comes in with the strong Southerly winds. Small vessels anchor in Yankee Cove, into which three and a half fathoms can be carried through a very narrow channel. The best passage for a large vessel, desirous of proceeding farther in, to the more completely sheltered parts of the harbor, is the Eastward of Fisherman Island, where there is a clear channel, one cable wide, and carrying a depth of eight fathoms.

Kelp Shoal. The Kelp Shoal, with only three feet water on it, lies directly in the way of vessels passing to the Westward of Fisherman Island. The marks for running through the channel (only half a cable wide) between it and the island, are the Western extremities of Pilot Point and of Yankee Islet in line bearing S. ½ E. There is also a passage to the Westward of the Kelp Shoal, between it and the shoal, which extends one and a half cables off shore, to the Southward of Marshall Cove; but the marks for running through it, namely the Western sides of Monroe Rock, Threetop Island, and Shag Ledge, in one, and bearing S., might not easily be distinguished by a stranger.

Anchorage. Having passed through either of these channels, anchorage may be chosen either in Marshall Cove, or farther up the harbor, where the only detached danger in the way, until the vessel arrives at the entrance of the arms, is a shoal, with twenty feet water on it, lying one fourth of a mile N. W. by W. from the White Islands, and which is cleared to the Westward by the line of Fisherman Island and Pilot Point touching, and bearing S. by W. ¼ W.

Southern Passage. The Southern Passage into Whitehaven is only one cable wide. To run in to the Eastward of the S. W. Bull, steer between N. by E., and N. N. E. for the Western side of White-Head Island, which pass at a distance not exceeding one cable; open out Millstone Island until it is touching Dogfish Point, the Northern extremity of White-Head Island, bearing S. E. ¾ E., then alter course to N. W. ¾ W., or so as to keep those marks touching, and they will lead to the Southward of Turtle Rock and reef off Spry Point. When the light-house becomes only a very little open to the Eastward of the Gammon Islets, bearing S. S. E. ½ E., steer in N. N. W. ½ W., and proceed as before directed.

Light-house.

Eastern Passage. The Eastern Passage into Whitehaven is rendered so intricate and dangerous by the Middle Ground, with only six feet water on it, and other shoals, that it should never be attempted in a large ship, unless in a case of necessity. Between the Middle Ground and Paddy Ledge, the passage is only half a cable wide. To run in, bring the summit of the Northernmost hill on Threetop Island in line with Dogfish Point, bearing N. W. ¼ W., and run toward them, passing a cable's length to the Southward of Millstone Island. To pass between the Middle Ground and Paddy Ledge, open out the hill a little to the Northward of the point, and when abreast the reef off the Mink Island, steer sufficiently to the Northward to clear the sunken rock, which lies N. by E. sixty fathoms from the small islet on the opposite side of the channel; then round Dogfish Point to the Westward, at the distance of one cable, until it and Millstone Island are touching, and bear S. E. ¾ E.; when alter course to N. W. ¾ W., or so as to keep those marks touching, and they will lead to the Southward of Turtle Rock and Reef; then run in N. N. W. ½ W., with the light-house only a very little open to the Eastward of the Gammon Islets, as before directed.

Raspberry, Crane, and Wine Coves. Raspberry, Crane, and Wine Coves, are small and intricate places, abounding in sunken rocks, fit only for small craft and boats, and dangerous to all but the native fishermen.

Port Howe. PORT HOWE (erroneously named Raspberry Harbor in the old charts), is also an exceedingly dangerous place. It has depth of water sufficient for the largest ships, but scarcely room for them to swing to an anchor in the parts that are not exposed to the swell from the Southward. The best anchorage is in the mouth of the Western arm, care being taken to avoid a sunken rock with only eight feet on it, lying rather more than a cable S. by E. ½ E. from the point which separates the Western and Northern arms. There is also secure anchorage within Port Island and in the mouth of Dover passage, but it would be necessary to moor there. As a harbor of refuge, this place might on some occasions prove useful; observe, therefore, that the dangers to be avoided in approaching from the Westward, are as follows:

Avery Shoal. AVERY SHOAL, with twenty feet water on it, lies nearly a mile to the Southward of Whale Island, and three fourths of a mile from the S. E. extremity of Millstone Island, in one with the light-house on White Head Island, and bearing W. by N. ½ N. Dover Head, open to the Southward of the Snorting Rocks, bearing E. N. E., leads clear to the Southward of this shoal, which is in the way of vessels running along the coast; and the same marks lead also to the Southward of the Vache and Whale Shoals, carrying ten and twenty feet water, and lying four cables and one mile and a fourth respectively farther to the E. N. E. The Whale Shoals and the Whale Rocks, which latter dry at low water and are farther in shore, lie on the Western side of the channel leading to Port Howe.

Dover Shoals and Snorting Rocks. DOVER SHOALS AND SNORTING ROCKS.—The Dover Shoals, with four fathoms on them, lie on the Eastern side of the channel, S. ¾ E., distant five and a half cables from the Snorting Rocks, which never cover, and are nearly joined at low water to the S. W. extremity of Dover Island. Sunken rocks, with various depths on them, extend W. by S. one fourth of a mile from the Snorting Rocks; and together with similar rocks lying two cables off Howe Point, must be left to the Eastward in running in. The entrance between these last-named rocks and Black Rock and Reef off Fluid Point is only one and a half cables wide.

Directions. The marks for running into Port Howe are the Black Rock just mentioned, and which is four feet high, in one with the remarkable Sugarloaf Hill, one hundred and eighty feet high, and about a mile inland from the entrance of Kyak Brook at the head of the harbor. Being outside the shoals, bring these marks in one, bearing N. ¾ W., and run toward them until the S. extremities of Whale and Millstone islands are nearly in one, bearing W. S. W.; then alter course sufficiently to pass round to the Eastward of the Black Rock at a distance of a cable; then steer to the Westward of N., as far as may be necessary to pass midway between Port Island and the Western shore If the anchorage within Port Island be preferred, pass round the N. W. end of the island at the distance of a cable, to avoid the reef off it, and anchor within it, in four and a half fathoms, mud. In anchoring in the mouth of the Western arm, in eight fathoms, mud, it is only necessary to avoid the sunken rock off the point which divides the arms.

Dover Passage. DOVER PASSAGE, between Dover Island and the main land, is frequented by the fishermen and small coasting vessels, but it has only fourteen feet water in the narrowest part, which is only about thirty fathoms wide.

Dover Bay. DOVER BAY is two and a half miles wide at the entrance, from Dover Head Eastward to White Point, and is four miles deep to the N. N. W., but although so extensive, it affords no shelter for ships, being filled toward its head with islets and rocks above and under water, which only small craft and boats could find their way among. Louse Harbor, on its Western shore, one mile within Dover Head, has depth and space sufficient for large vessels; its entrance, to the N. of Louse Island, has three and a half fathoms water in it, but it is only about thirty fathoms wide. Little Dover Run, on the opposite or Eastern side, is a very narrow channel between White Island and the main land. In the narrowest part it is about thirty yards wide, and has twenty feet water in it. It leads in among the islets in the head of the bay, and is frequented in the season by fishing vessels.

Dangers. The dangers at the mouth of Dover Bay are, a rock with three feet water on it, from which Dover Head bears N. N. E. ½ E. a third of a mile; Blackman Shoal, with twenty-five feet water, from which Dover Head bears N. W. by W. three fourths of a mile; Bay Shoal, with thirty feet water, lying nearly halfway across from Dover to White Point, and breaking only after heavy gales; Horne Shoal, with eighteen feet water, lying nearly in the middle between Louse Head and White Island; and Lumsden Shoal, with fourteen feet water, from which White Point bears S. E. by E. distant six and a half cables. The White Point Ledges extend five and a half cables to the Southward of White Point; and the White Rock, with five fathoms water on it, and which breaks after heavy gales, lies nearly half a mile farther off, with the point bearing N. by W. one mile.

The Gannet Shoal, with nine feet water on it, lies East one mile from White Point;

and there are other rocks to the Northward of it off Madelaine Point and at the entrance of Little Dover Run for which the chart is indispensable for the safe guidance of a vessel in such intricate places. The soundings are so deep and irregular near these dangers that the lead will afford little or no warning at night or in thick weather; but in the daytime Cranberry Island light-house (the light-house, octagonal in shape, and painted red and white horizontally, stands on the Northern end of the island, and exhibits two fixed white lights, one seventy-five feet, the other forty feet above high water), kept open to the Eastward of the trees on Cape Canso, bearing N. E. ½ N., will lead to the Eastward of the Gannet Shoal, the White Point Ledges, and the White Rock. *Light-house.*

ANDREW PASSAGE, between Andrew Island and the main land, and leading to Glasgow and Canso harbors, is too intricate for a written description to avail. It is frequented occasionally by fishing vessels and small coasters, but the aid of the chart or a native fisherman would be indispensable for the safe guidance of even a small vessel. *Andrew Passage.*

GANNET LEDGES.—The outermost of these ledges, with only three and four feet water on them, extend S. E. by E. nearly a mile from Gannet Point, the S. extremity of Andrew Island; and there is foul ground, with six and nine fathoms over it, fully a mile farther out to the S. E. The S. W. extremity of Dover Island kept open to the Southward of White Point, bearing W. ½ S., leads half a mile to the Southward of these ledges, and also the dangerous Boon Rock with twelve feet water on it, and from which Gannet Point bears W. N. W. one mile and a half. *Gannet Ledges.*

The remaining dangers off Cape Canso, namely, the Boon Rock, just mentioned, and the Patch Rock with five fathoms water on it, from which Cape Canso bears N. N. W. ½ W., one mile and three fourths, together with the Cape Breaker, &c., will be found described in pages 126–137. The depth of thirty fathoms is near enough for a vessel to approach to them when the lights on Cranberry Island are hidden by the dense fogs which so frequently prevail on this coast.

OFF-LYING BANKS ON SABLE ISLAND.

Variation 21° 35′ *W. in* 1860.

GENERAL OBSERVATIONS.—Full and complete directions for approaching the S. E. coast of Nova Scotia, including Breton Island, cannot well be given until the extensive banks which lie off it shall have been surveyed. *General Observations.*

The aspect and nature of the different parts of the coast Eastward of Halifax have been stated in the preceding pages; but the distinctive features are often not easily perceived in the usual weather, and at the distance which the outlying dangers render it prudent for a vessel, uncertain of her position, to be kept from the shore. The light-houses, however, on Cranberry and White Head islands, the beacon on Wedge Island, and the light-house on Beaver Island, afford great additional assistance to a stranger in ascertaining his position, when first making the land; as would also a light-house if placed on Egg Island. Vessels approaching Sambro Island light-house in a fog, and firing a gun, will be answered from the island, where a heavy gun, and a party of artillery are stationed for the purpose.

In the present imperfect state of our knowledge of the banks which lie off this coast, of the depth and nature of the soundings on them, and between them and the shore, no further directions can be safely given to vessels approaching the land during a dark night, or in a thick fog, than not to go into a less depth than forty fathoms, at the same time bearing in mind that there is that depth at a less distance than three miles from some of the most formidable of the dangers between Cape Canso and Halifax, as for instance the Jedore Ledges; while fifty fathoms is near enough to the Sambro Ledges, which have more than forty fathoms water at distances of half a mile and one mile to the E. and S. of them respectively.

BANKS.—The principal banks lying off the S. E. coast of Nova Scotia are, the Banquereau and Sable Island banks, which are each about one hundred and fifty miles in length, and extend to an equal distance from the coast; but it has not yet been ascertained whether these may not be united, and form a single bank of double that extent, in a direction nearly parallel to the coast. Our knowledge of the extent, shape, and position of the smaller banks nearer the coast, including the Canso Bank, and of the nature of the soundings on and between them, is equally uncertain and incomplete; the survey of them having been necessarily deferred until the completion of the survey of the coast.* The few lines of accurate soundings which have been obtained by passing *Banks.*

*Le Have and Roseway banks were surveyed by Captain Shortland, R. N., in H. M. S. Devastation, Commander Baird, in September, 1859.

surveying vessels, have shown the inaccuracy of the charts at present in use, and the consequent necessity for a correct and complete survey of these banks, and of the whole five hundred miles of sea in which they are included, from the French survey of the bank of St. Pierre to George Bank of the United States coast survey. Such a survey, requiring the work of several years in an efficient steamer, would be invaluable to the numerous vessels approaching this dangerous coast in the dense fogs that so frequently prevail:—meanwhile, a brief description of Sable Island and its bars, the greatest danger in the way, will be useful.

Sable Island. SABLE ISLAND, seen from the N., at the distance of nine or ten miles, presents the appearance of a long range of sand-hills, some of which are very white. From the S. the range of white sand appears more continuous, and very low toward the W. end. On a nearer approach, many of the sand-hills are seen to have been partly removed by the waves, so as to have formed steep cliffs next the sea. In other parts they are covered by grass and defended by a broad beach, which, however, cannot be reached without passing over ridges of sand covered with only a few feet of water. These ridges, which are parallel to the shore at distances not exceeding one third of a mile, form heavy breakers, and are dangerous to pass in boats, when there is any sea running.

The island is formed of two nearly parallel ridges of sand, shaped like a bow, concave to the Northward, and meeting in a point at either end. Its whole length, following the curve, and including the dry parts of the bars, is twenty-two miles; or E. ¾ S., twenty and a half miles, in a direct line across the curve; its greatest breadth is exactly one mile. In some parts it is wholly or partially covered with grass, in others scooped out by the winds into crater-shaped hollows, or thrown up into sand-hills, not exceeding the height of seventy-five feet above high water. Between these ridges a long pond, named Salt-water Lake, said to be gradually filling with blown sand, but still in some parts twelve feet deep, extends from the W. end to the distance of eleven miles; and a low valley continues from it six and a half miles more to the N. E. end of the island. The entrances to this pond have been for some time closed, the sea flowing in over the low sandy beach on the S. side and at the W. end only in high tides and heavy gales.

Productions. The amount and variety of the vegetation on this gigantic sand-bar are extraordinary. Besides two kinds of grass, there are wild peas and other plants affording subsistence to more than four hundred wild horses, and innumerable rabbits, as well as to the domestic cattle at the Establishment. There are no other animals on the island, excepting rats which have come on shore from wrecks. There are also four or five kinds of edible berries in great abundance, and many flowers and shrubs, but no trees.

Fresh water is to be had almost everywhere, by digging down a few feet into the sand.

The fisheries around the island are exceedingly valuable, but the danger of remaining near its formidable bars has hitherto restricted the number of vessels engaged in them to a few schooners.

Seals, and also abundance of wild fowl, frequent the island in their seasons.

The Establishment on Sable Island, for the relief of shipwrecked persons, is supported by an annual grant from the legislature of Nova Scotia, to which the imperial government adds an equal sum: also by a salvage upon the sale of wrecked vessels and their cargoes, the occasional sale of wild horses, &c. It is situated on the N. side of the island, between the pond and the sand-hills, and consists of a comfortable house for the superintendent and his family, buildings for the men, and the occasional accommodation of shipwrecked persons, for storing provisions and property saved from wrecks, workshops, stabling, &c.

The superintendent has under him a foreman and nine men, two of whom with their families occupy outposts at the Middle and East flagstaffs. No wrecks can take place on the island at a greater distance than six miles from some one of these posts; and in the event of one occurring, the outposts report by signal to the superintendent at the principal establishment.

West Flagstaff. The West flagstaff, which points out the position of the principal Establishment, stands on a sand-hill forty feet high; and with its Crow's Nest, or lookout, one hundred feet above the sea, is a conspicuous object on the N. side of the island, and was distant (in 1852) four thousand two hundred and fifteen fathoms from the W. end of the grassy sand-hills.

East Flagstaff. The East flagstaff, forty feet high, is also a conspicuous object, standing on a sand-hill on the N. side of the island, and distant at the same date, two thousand two hundred and eighty fathoms from the N. E. end of the grassy sand-hills.

Middle Flagstaff. The middle flagstaff was farther inland, and was about to be removed to a more advantageous position on the S. side of the island. Besides the buildings at these flagstaffs, there was an unoccupied house on the N. side, distant three and one fourth cables from the W. end of the grassy sand-hills.

The West Bar. THE WEST BAR is dry only three fourths of a mile out from the end of the grassy sand-hills. There are several patches nearly dry about a mile farther out, and then

nine miles of heavy breakers in bad weather, succeeded by seven miles more, in which the depth increases from five to ten fathoms, and where there is usually a great ripple and a heavy cross sea. The direction of this bar is N. W. ½ N. for the first twelve miles, and then W. by N. for the remaining distance; the whole extent of the bar from the end of the grassy sand-hills, to the depth of ten fathoms, being seventeen miles, beyond which the water deepens gradually to the Westward for many miles.

The East Bar.

THE EAST BAR is dry in fine weather four miles out from the end of the grassy sand-hills. At the distance of one mile and three fourths out a small sand-hill, about ten feet high, and with some grass on it, has accumulated around a wreck since 1820. The four miles of dry sand are succeeded by eight or nine miles of heavy breakers; the whole length of this bar, from the grassy sand-hills to the depth of ten fathoms, being fourteen miles. Its direction is N. E. by E. ½ E. for the first seven miles, beyond which it curves gradually, till it terminates to E. S. E. The ridge of sand, with a depth of from ten to thirteen fathoms on it, and with often a heavy cross sea, continues for ten miles farther to the E. S. E., and then ends abruptly; the depth increasing, in a distance of three miles farther in the same direction, to one hundred and seventy fathoms, in what is supposed to be a narrow channel between the Sable Island Bank and the Banquereau, but which has not yet been surveyed.

Sable Island and its submerged bars form a crescent concave toward the N., and extend over more than fifty miles of sea. Vessels should be careful not to be caught within this crescent in a strong gale from the Northward, when the accelerated ebb-tide, setting directly toward and over the bars, would render her situation extremely dangerous. Both the bars are extremely steep on the N. side, the E. bar especially so, having thirty fathoms water close to it. To the Southward, on the contrary, the water deepens gradually out for so many miles as to render it difficult to account for the greater number of shipwrecks having occurred on that side of the island and its bars, excepting by a neglect of the lead.

The average number of known wrecks on the island for some years past has been about two annually, but there is not unfrequently evidence of additional losses on the bars; pieces of recently-wrecked vessels and their cargoes, together with the drowned bodies of their crews, being found drifted on shore by the people of the island, usually after a long continuance of foggy weather. Wrecks on the bars are of course far more dangerous to life than those that take place on the island, and it is important in such cases to know on which bar the vessel is, and the consequent direction in which to seek for safety on the island. This information, when the island is hidden by fog or the darkness of night, must be sought by observing the direction of the line of breakers, which on the E. bar is between N. E. by E. and E. until near its outer extremity, while on the W. bar it is N. W. ½ N.

Anchorage.

Off the N. side of Sable Island, excepting near the E. end, where the deep water approaches too near the shore, there is good anchorage in from five to ten fathoms, and from one to two miles off shore. The bottom is fine sand, that holds well, but the sea is so heavy, excepting with off-shore winds, that a vessel should weigh immediately on the first indications of a wind from the sea.

Directions.

In approaching the anchorage off Sable Island from the Northward at night, or in thick weather, the lead should be kept constantly going, and after passing the Middle Ground, distant about twenty-five miles to the Northward of the island, great caution should be used, and the vessel should be certain of her position; for the E. end of the island and the E. bar are very steep on that side.

The Middle Ground, and the ridge of sand reported to continue from it to the W. and S. till it joins the W. bar, require to be surveyed before more precise directions can be safely given.

Vessels seldom anchor off the S. side of the island, because of the prevailing heavy swell from the Southward; but they may safely approach by the lead on that side, taking care not to become becalmed in the heavy swell, and in the strong and uncertain tides and currents near the bars.

The landing is in general impracticable on the S. side, excepting after a long continuance of Northerly winds; and on the N. side boats can land only in Southerly winds and fine weather; but there are surf-boats at the establishment, which can land when ordinary boats would swamp instantly.

A life-boat that could sail as well as row, was very much wanting to complete the efficiency of the establishment.*

The utility of a light-house on Sable Island has been much discussed. It has been said that almost all the vessels wrecked upon the island have come on shore in fogs, when a light could not have been seen; but to this it may be replied, that some of those

* This want has since been in some degree supplied; but there is no doubt but that additional life-boats of the most approved construction are still wanting.

vessels ran on shore in clear nights, when a light would almost certainly have saved them. Moreover, there are occasionally brief intervals in the fogs, during which a light might be seen by vessels in the vicinity of the island and warn them of their danger. Besides, in the autumnal and winter months, when Northerly winds prevail, fogs are less frequent, and a light would then be consequently of great service.

It has also been objected, that a light would induce seamen to be less careful in avoiding the island, but this does not necessarily follow; and therefore, upon the whole, there seems no reason to doubt that a light on the hill at the E. end of the island named, in anticipation, by the people of the island, Lighthouse Hill, would be very useful. This hill is seventy-three feet high, and a light on it would readily be seen in clear weather from the end of the E. bar, the distance being fourteen miles. The W. end of the island, wasting continually by the action of the sea, furnishes only an insecure site for a light-house, which, moreover, is less requisite there, since the W. end of the island and the W. bar may be safely approached by the lead, if a common degree of precaution be used.

Currents. The irregular currents are said to be one of the principal causes of the frequent wrecks on Sable Island. Our acquaintance with the strength and direction of those currents is as yet very imperfect. It has, however, been ascertained that a branch of the Labrador currents, after passing along the Eastern coast of Newfoundland, is frequently deflected to the Westward, probably by the Great Bank, and that it is often joined by another branch of the same current, which, having entered the Gulf of St. Lawrence through the Strait of Belleisle, is frequently found running out to the Southward between Newfoundland and Breton Island. These currents are rendered inconstant and irregular in both strength and direction by winds present and at a distance; but the general tendency is well known to be to the Westward, for vessels find no difficulty in beating to windward in that direction anywhere to the Northward of the Florida Gulf-stream; and hence it is, that many of the vessels that have been wrecked on Sable Island were considered to be well to the Eastward of it when they ran on shore.

Tides. It is high water, full and change, on the N. side of Sable Island at 7h. 30m. nearly, and on the S. side about an hour earlier, and the rise at springs does not exceed four feet. The tidal streams are much influenced by the winds. The ebb sets to the Southward on and over the bars, often at the rate of one and a half or two knots; the flood at a much less rate in the contrary direction.

Fogs, Winds, and Barometer. In the spring and summer months dense fogs or rain almost always accompany all winds from the sea, from E. N. E., round S., to W. S. W. In winter, the rain is frequently replaced by snow. During the autumnal and winter months, winds from between N. and W. become more frequent, and, being off the land, are always accompanied with clear weather.

Strong gales of wind do not often occur in May, June, or July; but, after the middle of August, they are often of great strength, and it becomes the more necessary to attend carefully to the indications of the barometer. Strong winds from E., round S., to W. S. W., are always accompanied by a falling barometer. When, therefore, these winds begin to abate, and the barometer at the same time ceases to fall, a change of wind, more or less sudden, to the opposite direction may be expected, with a rising barometer and fine weather; and if it be winter, with intense frost, coating the vessel, her sails and rigging, with ice.

Again, a high barometer, stationary or beginning to fall, indicates that a S. E. or S. W. wind, with accompanying rain and fog, is not far distant; and, if, at the same time, there be a bank of clouds rising above the Northwestern horizon, the indication is certain.

Caution. CAUTION.—It is essential to the safety of vessels to attend to these indications, for to neglect of them, and more especially of the deep-sea lead, no less than to the fogs and irregular currents, the frequent shipwrecks on Sable Island and the S. E. coast of Nova Scotia are attributable.

Ice. H. M. packet brig Express fell in with two islands of ice on Sable Island Bank the 7th July, 1836, in forty-five fathoms water: estimated heights one hundred and eighty and one hundred and fifty feet. Lat. 43° 3′ N., long. 25° 17′ W. Air 46°, water 42°.

Positions. All this portion of the sea, from the Eastern limit of the Bank of Newfoundland past Cape Race to Halifax, and to Portland, Boston, or other harbors of the coast of the United States, is within soundings, and in foggy weather, or in any case of doubt as to his position, nothing could excuse the master of a ship, whether steamer or sailing vessel, from carrying a continuous line of soundings across this track. Another point to which attention should be paid is, that in coming from the Eastward the variation of the compass rapidly decreases; thus at the Eastern edge of the Newfoundland banks the variation at present (1860) is 29° W., while in a day's run to the Westward of two hundred miles the variation would have become 24½° W., or nearly half a point, which, if not allowed for, might easily run a vessel into danger.

POSITIONS.—The West flagstaff on Sable Island is in lat. 43° 56′ 24″ N., long. 60° 2′ 47″ W.; the W. extremity of the grassy sand-hills in lat. 43° 56′ 44″ N., long. 60° 8′ 28″ W.; and the E. extremity of the grassy sand-hills in lat. 43° 58′ 57″ N. and long. 59° 45′ 30″ W. Such was its position in 1852, but the island has been wasting away at the W. end for many years past, sometimes almost imperceptibly, at other times several miles have been swept away by the winds and waves during a single heavy gale. The E. end has changed very little, if at all, during the last thirty or forty years. The distance of the E. and W. flagstaffs from the end of the grassy sand-hills have been stated, so that any future change may be readily ascertained. The distance of the island from the light-house on White Head Island, the nearest part of Nova Scotia, is eighty-five miles. *Positions.*

HALIFAX, WESTWARD.

Leaving Halifax and sailing Westward, you will find the shores to be steep, and appear from seaward broken and rocky, with whitish cliffs; the high lands of Aspotogon and Le Have, are conspicuous and remarkable; to the Westward the rocks about the land appear black, with reddish banks of earth. Le Have appears bald or barren at the top, with red earthy hillocks under it, and between Cape Le Have and Port Medway, or Jackson, are some hummocks inland, the coast to seaward being level and low, and the shores marked with white rocks, with low barren points; thence to Shelburne and Roseway it is woody. Near Port Latour are several barren places, and thence to Cape Sable the land is low, with white sandy cliffs, particularly visible at sea. *Remarks.*

PROSPECT HARBOR lies about three miles to the N. W. of Cape Prospect, or Mars Head, which forms the W. side of Bristol Bay; and its entrance is encumbered with a cluster of islands which form the Western side of Bristol Bay. At the back of these islands is a considerable inlet, called by Des Barres, Parker's River, but little frequented. Prospect Harbor wears, at its entrance, a rugged broken appearance, but is safe, commodious, and extensive, and in rough weather the dangers mostly show themselves. Vessels coming from the Eastward, and rounding Cape Prospect, must beware of a rock with seventeen feet over it; it lies S. about one third of a mile from the cape; go not between it and the cape, but proceed on its Southern side in twenty and twenty-one fathoms water; by keeping more than half a mile from the land, you will steer quite clear of danger; and may sail boldly up its Eastern channel, between Prospect and Betsey's islands; having passed these, the channel narrows; the Western passage is between Hobson's Nose and Dorman's Rock; there is good anchorage for large ships above Pyramid Island, and also for small vessels within Betsey's Island, in four and a half fathoms, blue stiff clay. At the entrance to this harbor, depths are very irregular, and there is a rock over which the sea breaks, having three fathoms water over it, and lying two cables' length to the Eastward of Dorman's Rock. There are some residents on the Western side of the bay. *Prospect Harbor.*

LEITH HARBOR.—This lies about two and a half miles to the Northwestward of Prospect Harbor, and here are situated the inlets called Shag and Blind Bays both possessing excellent anchorages. At its entrance lies the Hog, a sunken rock, having six feet water over it, and bearing E. S. E. about one mile and a half from Taylor's Island. In fair weather the Hog Rock may readily be perceived by a constant ripple over it, and in bad weather, with an on-shore wind, it will be distinguished by the breakers. There are good channels on both its sides, but the Eastern one is always to be preferred on account of the ledge which extends E. S. E. about half a mile toward it from Taylor's Island. *Leith Harbor.*

DOVER PORT lies at the Western side of the entrance to Blind Bay, and is chiefly formed by Taylor's and the adjacent islands; this is the Port Durham of former charts, and affords safe and good anchorage; the Eastern passage is the best, and sailing in, you must give the reef that stretches off the E. end of Taylor's Island a sufficient berth, anchoring within the body of the largest island, in seven, eight, nine, or ten fathoms, muddy bottom. The Western entrance has some sunken rocks in it, and the water is in some places but shallow. *Dover Port.*

Between the harbors of Halifax and Dover the shores are craggy, broken, and barren, steep to, iron-bound, and destitute of trees; but the creeks and inlets abound with fish, and great quantities of cod, herrings, and mackerel, are caught and cured here for the markets.

MARGARET'S BAY.—The entrance to this bay is to the Westward of Taylor's Island about one league. The bay itself is full twenty-five miles in circumference, in length nine miles, and in breadth, from Peggy's Point to Owl's Head, about two miles. There are harbors capable of receiving ships-of-war, even against the sides of the shore, and sufficiently wide to turn in. In choosing a berth, it is usual to be guided by the direction of the wind, taking the Western anchorage in S. W. gales, and the Eastern one in S. E., where you lie landlocked, the bottom mud. *Margaret's Bay.*

Owl's Head. OWL'S HEAD is very remarkable, being round and abrupt. The land and island in the neighborhood are rugged and barren. The body of flood-tide sets in from S. W. at the rate of one mile per hour.

Following the coast, which runs nearly two miles W. N. W. from Taylor's Island to East Point, there is a rock uncovered at low water, which lies near the land, having a passage between, with four and five fathoms water. The shore all the way is rugged and steep, against which the sea beats violently. N. N. W. from East Point, one mile, is Contact Point; and in the same direction, a mile and one fourth farther, is Peggy's Point; beyond which, a short mile, is Shut-in Island, two hundred feet high, and covered with trees. Off the Southern point of this island there is a shoal of nine feet, with six and seven fathoms between it and the island; and near to Peggy's Point there is another of fifteen feet, with six fathoms to the Northward of it. During Southerly gales the water on the lee side of the islands becomes smooth, and the bottom holds well. Indian Harbor runs in here, and forms a place fit for small vessels, but affords no shelter being entirely open to the sea. To the E. Northeastward of the Indian Harbor is Haggett's Cove, distant one mile, a cove or harbor of similar description. Luke's Island, Thrumcap, Joliman, and Wedge Island, all lie off the Eastern side of Margaret's Bay, and contribute to break off the force of the sea, so that under the lee of Luke's and Joliman's islands there is good anchorage at all times for ships of every description.

French Cove. FRENCH COVE is easy of access, and may be considered as a natural dock, extensive, with plenty of water, and well sheltered. There is a shoal of ten feet water opposite to the entrance of this cove, at the distance of two miles; but as the islands of the Eastern shore are bold to, no vessel need go so far out into the bay as to approach too near this danger.

Head Harbor, or Delaware River. HEAD HARBOR, or DELAWARE RIVER, lies at the farther end, on the Northeastern extremity of the bay, and is an anchorage of most excellent description, forming so complete a place of safety, that a fleet of ships might be securely moored, side by side, and remain undisturbed by the most violent hurricane. The surrounding lands are high and broken. Mason's Point is, in itself, a good farm, well stocked with cattle, and excellently cultivated; and Moser's Islands, at its entrance, are used as sheepfolds. The land on the port side of the entrance to the Head Harbor is four hundred and forty-six feet high.

Ingram River. INGRAM RIVER.—To the Westward of Head Harbor is Ingram River, running in to the Northward of Moser's Islands. At its entrance it is one third of a mile wide, with seven, six, and five fathoms water; it then gradually decreases to its head, which is shallow and sandy. To the Westward is Gasper's Indent, open, shallow, and seldom frequented. These indents or coves have rugged points projecting Southward, and it is from these places small craft are employed to take limestone, building sand, &c., the former of these being of a very superior quality. Cooper and Indian rivers are both shallow rocky nooks, but are the resort of salmon, and in the lakes above, trout abound in great quantities, of delicate flavor, and commonly of a deeper red than the salmon.

Hubert's Cove HUBERT'S COVE is situated at the N. W. corner of Margaret's Bay. Here at the entrance is a ridge of rocks about one hundred fathoms long, and covered at high water, so that when the sea is smooth it becomes invisible. In order to avoid this danger, you have only to keep toward the Western or Eastern side of the harbor, for both sides are bold to. The Western channel is much the wider and better of the two, and by keeping the port shore on board, a stranger, or a ship dismasted or in distress or without anchors, may turn in and find shelter, running aground with perfect safety.

Long Cove is two and a half miles to the S. of Hubert's Cove, and affords good anchorage with a Westerly wind. To the Southward of Long Cove the coast is bold and rugged, without any danger, except a small rock of six feet water, which lies close in to the land.

Northwest Harbor. NORTHWEST HARBOR is about one league to the Southward of Long Cove: at its entrance is Horse Island, which divides it into two channels. There is a good passage with ten fathoms water on each side of the island, and small vessels may find anchorage behind it, in from six to nine fathoms, or farther up, in five, four, or three fathoms. Owl's Head is an abrupt precipice, and forms the S. point of entrance to Northwest Bay.

Southwest, or Holderness Island. SOUTHWEST, or HOLDERNESS ISLAND, is a remarkably rocky island, full fifty feet high, and steep on all sides; directly to the Northward of the Northern part of the Southwest Isle is a small spot of three fathoms water, and to the Northwestward of the island is what is commonly called the Southwest Harbor, formed between Owl's Head, which literally is a rocky island, separated from the main land by a very narrow passage, not even navigable for boats; here are five, six, and seven fathoms water, but the place is seldom frequented. To the E. N. E. of Southwest Island, distant nearly half a mile, is a rocky shoal of four fathoms; this the sea frequently breaks over, in bad weather, but it cannot be considered dangerous, unless to vessels that draw very deep water.

THE HORSESHOE, or DOG ROCK, lies about S. distant one mile and a half from the Southwest Island; directly W. from East Point, distant two and three fourths miles, and from Taylor's Island W. by N. four and one third miles; there are several small sunken rocks about it; part of it is consequently above the surface of the water, shelving on all sides, and the sea in stormy weather breaks violently over it; at a little distance from it on the Western side, are six fathoms, and on its Eastern side, at a similar distance, are eight fathoms; it then sinks into deep water; between the Horseshoe and the Southwest Island there are twelve, fourteen, twenty-six, thirty-four, and thirty fathoms water. Vessels from the Eastward, bound for Margaret's Bay, commonly go in between the Horseshoe and East Point; a Northerly course will carry you midway between them right up to the head of the bay, without encountering any danger, except those already described. *Horseshoe, or Dog Rock.*

To the Westward of Southwest Island, is Aspotogon Harbor, too shallow for shipping; at its entrance are Black Saddle and Gravelly islands and shoals: to the Southward of these is Seal Ledge, shallow and dangerous; it lies W. ½ N., distant two and three fourths miles from the Horseshoe, and W. S. W., nearly three miles from the Southern part of Southwest Island.

IRON-BOUND ISLAND.—W. S. W. ½ S. from the S. point of Southwest Island, distant five miles, is Iron-bound Island, about one mile long, narrow and steep to; it lies S. S. E. ½ S. one mile and a half from the extremity of the peninsula which divides Margaret's and Mahone bays, and is called New Harbor Point; between which is a good channel with from six to seventeen fathoms water, the ground being chiefly a black sand. *Iron-bound Island.*

GREEN ISLAND.—S. ½ E., distant one league from Iron-bound Island, S. W. by S. seven miles from Southwest Island, W. S. W. three leagues from Taylor's Island, and W. N. W. ¾ W. from abreast of Sambro light-house, lies Green Island; it is small. Midway between Iron-bound and Green islands there is said to be a shoal of only two fathoms, but its exact position is not accurately known, and therefore it is omitted in the charts; the mariner, in passing through the channel between these islands, will do well to look out for and guard against the probable existence of such a danger; there is otherwise water sufficiently deep for any vessel. *Green Island.*

MAHONE BAY is separated from Margaret's Bay by the peninsula upon which the high and conspicuous mountain of Aspotogon is situated, whose appearance, in three regular risings, is a very remarkable object to seaward, being visible more than twenty miles off; its entrance is encumbered with several islands, between all which are good passages, with plenty of water, and few dangers; these lead to most excellent harbors, and places convenient and well adapted for the fisheries. We have already noticed Green and Iron-bound islands; these lie on the Eastern side of the entrance to the Bay of Mahone; adjacent to these, and on the same side, are the Tancook Islands, Flat Island, and the Knohme Rock; there are also the Bull Rock and the Outer Ledge. On the Western side are the Duck and other islands. *Mahone Bay.*

Great Duck Island lies W. by S. from Green Island, distant four and a half miles. Little Duck Island lies N. W. ½ N., about one mile and two thirds from Great Duck Island, and W. ½ N. five miles and one third from Green Island; nearly midway between Green Island and Little Duck Island lies the Outer Ledge, over which the sea always breaks; this danger bears from the E. end of the Great Duck Island N. E. ¾ N., distant one mile and two thirds; and from Green Island W. ½ N. one league; over it are four feet water, and round it are four and a half, five, and seven fathoms.

Flat Island lies due W. from Iron-bound Island, distant one mile and a quarter; and in a similar direction from Flat Island, somewhere about one mile off, lies the Bull Rock, but the exact situation of this danger is not correctly ascertained, for Mr. Des Barres places it more to the Southward, and Mr. Lockwood to the Northward of this position; it is a blind rock, uncovered at one third ebb, with deep water all round it. The Southern part of Flat Island, in a line with the Southern points of Iron-bound Island, will lead on the rock, as Mr. Des Barres has placed it, while the Northern part of Flat Island in a line with the Northern shore of Iron-bound Island, will lead to the Northward of it; and Chester Church open of Great Tancook Island, will carry you to the Westward of it in seven and ten fathoms water.

Great Tancook is one mile and three fourths long, and about a mile broad; to the Eastward, between it and the main land, is the Little Tancook Island, separated by a channel a fourth of a mile broad, in which are seven, eight, and nine fathoms; a similar passage is between Little Tancook and Indian Point, on the main, but there is a middle-ground in it of four fathoms. Knohme Rock is above water, and shoals all round; it lies to the Eastward of the S. E. part of Great Tancook, and at this part of the island is anchorage in eight or ten fathoms water.

Westward of Great Tancook, one third of a mile, is a rocky shoal of six feet, while between them the channel has ten fathoms water; to the W. by N. of this shoal, one mile, is another, with from six to twelve feet over it. Between these shoals the passage

is good, and has from twelve to twenty-five fathoms over it. Off the N. W. part a Great Tancook is Star Island, and a little to the Eastward of it is a rocky patch shallow ground, so that vessels should never attempt the passage between Star a Tancook islands. There is yet another danger, called the Coachman's Ledge; it li two miles to the Northward of Great Tancook, and is only visible at low water. lead clear to the Eastward of this ledge, you should bring the Eastern point of Gre Tancook and the E. side of Flat Island in one; to clear it to the Southward, bring th W. end of Iron-bound Island open of the W. part of Little Tancook, and Frederick Island N. point, bearing W. S. W. ½ S. will carry you safe to the Northward of it.

Having passed the Coachman, the head of the bay lies open; on your starboard sid is the high land and small river of Aspotogon, where small vessels occasionally run i and anchor; there is a rocky shoal at its entrance, which must be avoided. To th Northward is Cumberland Arm, easy of access, and affording good anchorage, wit seven and eight fathoms, observing to give a berth to the starboard shore, which shal lows some distance out. There is also good riding on the port shore, behind an islan which lies on the Eastern side of the Chester Peninsula; here vessels can ride, well shel tered, in eight fathoms water.

Chester Town is situated at the Northern part of Mahone Bay, and is surrounded b a fine and fertile country; its inhabitants are industrious people, and the adjacen islands are well clothed, with sheep; wood and water are in abundance, and sever vessels are built here; the anchorages between the various islands and before the tow are good, well sheltered, and secure, and the depth of water moderate; the only dang is a shoal, which partly dries at low water: this lies W. ½ S. from the town of Chest from which it is distant one mile and three fourths.

On the port side of Mahone Bay, and directly W. of Tancook Islands, is a large inl or branch of a river, named by Des Barres, Prince's Sound. The passages into it a very safe, only giving a wide berth to the Southern end of Edward's Island; steer mi channel, and when well in, anchor in nine fathoms, or within the innermost islands i five or six fathoms; farther in it becomes flat and shallow.

To sail into Mahone Bay from the Eastward, the first land visible will commonly b Green Island, which is round, bold, and moderately high; thence to Iron-bound an Flat islands both steep to, is two and three fourths miles; you may proceed and pa between them toward the Tancook Islands; these are inhabited; the channels b tween them are bold, and the anchorages under their lee good, in from seven to twel fathoms water; but if you are proceeding for Chester between Green and Duck island you must beware of the Outer Ledge, which always shows itself by breakers; th mark to lead clear through this passage, is Chester church well open of Great Tanco Island; this mark will also carry you safe to the Westward of the Bull Rock, alread described; and when you get near, or within half a mile of Tancook Island, steer o Westward, and bring the same church to bear about N., and this will lead you up the town.

Light. LUNENBURG HARBOR.—There is a fixed white light on Battery Point, entran of the harbor.

Lunenburg Bay. LUNENBURG BAY, called also Malaguash, is now a place of great populati and considerable trade; vessels carrying wood, cattle, vegetables, &c., are constant employed from here to Halifax; the harbor is very easy of access, and there is go anchorage to the very town. At its entrance lies Cross Island, about thirty feet hig and containing two hundred and fifty-three acres of land, on which a light-house, pain ed red, is erected, containing two lights, one thirty feet above the other; the low one is fixed, the upper one is flashing or darkened at intervals of one minute; the buil ing is red. Crop Island is low and thickly covered with trees. On the N. E. side this island is a nook, where coasters ride in safety; off this part lie the Hounds Rock which, in passing, must have a berth; the W. and S. sides of the island are bold; an two miles from its Southern end is an excellent fishing-bank, with from fourteen t seventeen fathoms of water. There are good channels on either side of Cross Island.

Light-house.

Vessels sailing in or out through the Northern passage, should endeavor to keep abou the middle of the channel, in order to avoid the shoals and rocks above-mentioned, an also those adjacent to the opposite, or Colesworth Point; having passed these, you shoul keep the Northern shore on board, bringing Battery Point to bear nearly N. W., b which you will also go clear of the Sculpin or Cat Rock.

The Sculpin or Cat Rock lies nearly in the middle of the bay, bearing N. E., distan three fourths of a mile from Ovens Point; according to Des Barres, there are but thre feet over this danger, but it will easily be discovered by the breakers over it at lo water. Sailing through the Western channel, which is to be preferred, you should e deavor to steer N. N. W., between Cross Island and Ross Point, where you will hav ten and twelve fathoms water; keep the town of Lunenburg in sight, over the low lan to the Eastward of Battery Point, and this will lead you clear of the rocky reefs abo the Ovens Point; but beware lest you lessen your water below seven fathoms, for th

oundings about the point are very irregular; bring the wagon-road at Lunenberg open o the Westward of the Battery Point; and this will run you to the Westward of the culpin, and between it and a rocky knoll of four fathoms water; having passed the culpin, haul up toward the Northern shore, until you bring Moreau and Battery oints in one; this being the direct mark for the Sculpin Rock, steer on in the direction f the Battery Point, approaching it no nearer than a cable's length; then round Battery Point, and bring the road well open of the Moreau Point; this will run you clear nto the harbor, and between the Long Rock and the shoals off Battery Point, when you may direct your course for the town, where you will find twelve and thirteen feet water alongside the wharves, and near to them twenty and twenty-four feet, soft muddy ground, and perfectly secure.

Vessels having occasion to go to the Southward of the Long Rock, which is the wider and safer passage, will observe there is a reef runs out from Woody Point called the Shingles, which must be carefully avoided; to do this, when you have so far entered the bay as to be equidistant between the Ovens, which are hollow cliffs, Battery and Woody oints, then edge off a little to the Westward, until you bring a farm-house that stands ver the middle of Sandy Bay, on with the end of a wood close to an opening like an venue, bearing N. W. ½ N.; steer with this mark on, until the W. end of Lunenburg own comes over Moreau Point; then steer Northeastward a little, approach Battery Point, and proceed as before directed.

The best anchorage in the Bay of Malaguash, or Lunenburg, is on its Western side bout half a mile from the shore, and nearly midway between Ovens and Woody points; here, with good ground-tackling, you may safely ride out a Southeasterly gale; but he bottom is generally rocky and uneven. It is high water, full and change, at nine *High Water.* 'clock.

DARTMOUTH BAY.—This is situated between Ovens and Rose points; there are *Dartmouth* ome settlements about the shores, and on an island at the bottom of the bay. It is easy *Bay.* f entrance, and you may anchor abreast of this island in three, four, six, or seven fathms. In sailing into this bay, it will be always advisable to borrow somewhat toward he Rose Point shore, because of the shoals which lie to the Southward of the Ovens Point; there is otherwise no danger whatever.

From Lunenburg to the Iron-bound Island, at the entrance to Le Have River, the hores are bold, and much indented with irregular inlets or bays. Iron-bound Island ies about W. S. W. ½ S., distant nearly two leagues from Cross Island. It is inhabited, nd some small rocky islets surround its Northern shore; S. E. ½ E., one mile and a half rom this island, is a bank of twenty and twenty-five fathoms; and W. S. W., three ourths of a mile from that, is a small spot of fifteen fathoms. These have from thirty o forty fathoms about them.

LE HAVE RIVER.—Vessels coming from the Southeastward for Le Have River, *Le Have* ill not fail to discover Cape Le Have, a steep abrupt cliff, one hundred and seven feet *River* igh, bearing W. ¾ S., and about twelve leagues distant from Sambro light-house. S. E. y S., one mile from the cape, is the Black Rock, ten feet high, and one hundred feet ong with deep water all round it, and nine to eleven fathoms between it and the shore, xcept on a small knoll, lying off, and opposite to the cape, over which there are only our fathoms. W. by S., distant three and a half miles, is Indian Island; and to the orthward of the cape lie several islands, with passages between them; but the best ntrance to the River Le Have is to the Northward of them all. There is also a channel to the Northward of Iron-bound Island, but it is narrow, and to navigate this, you ust give the Iron-bound Island a good berth. You will then have from twelve to four thoms water all through it; but the best passage is to the Westward of the island, hich is above one mile and a half broad and has from ten to fourteen fathoms water ithin it. Above three miles to the Northwestward of Iron-bound Island, is a bar which uns across from shore to shore. Over this are twelve and fifteen feet, the deepest water eing one third across from the Eastern shore. The soundings from Iron-bound Island ward the bar are eleven, fourteen, twelve, nine, seven, six, five, four, and three fathms, the latter depth being close to the edge of the bar; but when you are well over at, you drop into four, five, and six fathoms, the river continuing navigable twelve iles up, or so far as the falls. The general width of the river is half a mile, and when u are eight miles up it, you will meet with the road from Lunenburg to Liverpool, here a ferry is established.

On the Southern side of Iron-bound Island there is a light-house; it is a square white *Light.* wer, the lantern is seventy feet above high-water mark; the light flashes once in thirty conds.

Within and to the Westward of Cape Le Have, is Palmerston Bay, at the head of this Petit Riviere. Off the Eastern entrance of this bay lies Indian Island, bearing W. by distant three and a half miles from Cape Le Have.

PORT METWAY lies between Cape Le Have and Liverpool Bay; and is a place now *Port Metway.* ising into considerable consequence on account of its navigable capacity and its con-

venience to the fisheries. The entrance to this port bears from Indian Island W. S. distant seven miles, the land to the Eastward of it being remarkably broken and hi On the starboard point of the entrance lies Fryingpan Island, which is connected b sandy reef to numerous islets which stretch along in a N. N. E. ½ Northerly directi until they join the main land. That which is next to Fryingpan Island is commo called Glover's Island, and lies half a mile to the Northward, and bears S. E. ½ S. a go mile and a half from Metway Head. The entrance to this port may be known by t high land at Cape Metway, and the low ragged islands before mentioned. The wid of the channel is about seven eighths of a mile, and the depth of water from five to fou teen fathoms. Directly in the way of your making for the entrance of the channel, li the Southwest Ledge and the Stone Horse Rock. The former bears from the Fryingpa Island S. ½ E., distant three fourths of a mile; there are nineteen feet water upon it, an the sea in rough weather breaks over it. The latter, or Stone Horse Rock, lies E. by S distant one third of a mile from the S. W. Breaker, and dries at low water. There ar six, seven, and eight fathoms between it and the Fryingpan Ledge, and should you pas this way you must give the island a good berth, on account of a spit which runs o from it, in the direction of the Stone Horse Rock, a full fourth of a mile; but the be course will be half a mile outside of both these dangers, you will then pass in twel and fourteen fathoms water, and running on W. a little Southerly, toward Kempenf Head, you will open the channel, and may steer in directly N. Or you will avoid t Southwest Ledge and Stone Horse Rock, in coming from the Eastward, by bringing t

Light-house. Liverpool light-house, which stands on Coffin's Island, open of the land to the Eastward it; and when Fryingpan Island comes N. N. E., distant one mile and three fourth steer in N. ½ E.; this will carry you past Metway Point, and when opposite to Nei Point you may anchor in four or four and a half fathoms water. Hence mud ban considerably narrow the passage, and a pilot will be found necessary; but should y proceed farther without one, you will continue mid-channel from abreast of Neil's Poi N. N. W. ½ N., until Collins Island bears W., and until Alicia River is just opening Point Lucy, then steer N. W. by N. and W. N. W. ½ W., and anchor in three or fo fathoms, muddy ground.

To run up Alicia River, you must sail between Grass Island and Point Lucy, keepi close to the Southern and Western shores, in order to avoid the flat which extends fr the Northward, leaving a deep but narrow channel. Barry Bay, or Branch, whi runs up to Westward, is shallow and full of rocky shoals; and so is Brier Bay, whi

Tide. is situated on the N. E. side of the port. The tide runs commonly with great streng and it is high water at forty-five minutes after seven.

Tides.

At Cape Le Have it is high water, full and change, at 8 o'clock, tide rises from 5 to 7
At Malaguash Bay.....6 to 8
At Green Island.....6 to 8
At Mahone Bay.....7

Liverpool Bay. LIVERPOOL BAY.—The entrance to this bay bears about W. by S. distant seve teen or eighteen leagues from Sambro Light-house, Halifax; and W. S. W. ¼ W., fift miles from Cape Le Have. Before it lies Coffin's Island, which is now distinguished

Light-house. a light-house, painted red and white horizontally, eighty feet above the level of the s The light is on the revolving principle, and appears full, at intervals of two minu Between this island and the Western land is the bay, affording good anchorage for la ships, especially with the wind off shore. In the bay there is sufficient room for turni to windward, and the deepest water will be found near the Western coasts. The la in the vicinity of the harbor is broken, rocky, and of a barren appearance, yet the co merce of the town is very considerable. The channel to the Northward of Coffin's Isla is shallow, having a sandy spit, running from it and joining the main land; therefo none but small vessels ever attempt it; but the passage to the Southward is full o mile and a half wide, and has fifteen, sixteen, seventeen, and eighteen fathoms wat Give the light-house point of the island a small berth, as a flat of three or four fathom encompass it, and there is no other danger. Bald Point, or Western Head, is bold and rendered remarkable by its having no trees upon it. Having entered this bay, a passed between Coffin's Island and Moose Head, bringing the light-house to bear E. N., distant one mile and one fourth, steer N. W. This will bring you abreast of Herri or Schooner's Cove, situated on the N. E. side of the bay, and affording good shelt from sea-winds in three fathoms water, on a bottom of mud; or, proceeding farther, v sels of two or three hundred tons, with high water, may pass over the bar, which stretc from Fort Point to the opposite shore; but at low water this cannot be done, for then has not more than nine or ten feet over it. When within the bar, you will perceive t channel winds Southwesterly, and you can anchor, in not less than two fathoms, oppos the town of Liverpool. Herring Bay is much exposed to the heavy Southeasterly swe of the sea, and has not room for more than two sloops-of-war.

On Fort Point there is a fixed light in a square white tower, thirty feet high. *Light.*

It is high water in Liverpool Bay, full and change, at fifty minutes after seven, and *Tides.* tides rise from five to eight feet.

PORT MATOON, or MOUTON, called by Des Barres, Gambier Harbor. This *Port Matoon, or Mouton.* rt is formed by the Island Matoon, which lies across its entrances, dividing it into o channels. In the Eastern passage lies the rocky ledge called the Portsmouth, or ack Rocks, partly dry. This is about one mile to the Eastward of the island, and lies W. by W. distant five miles from Bald Point. The passage on either side of the dge has deep water, with sufficient room to turn into the harbor. From the N. W. rt of Mouton a shoal runs off a full mile, having two and one fourth fathoms near its ter extremity. Over some parts of this shoal you will have three, three and a half, d four fathoms. Here also is a small spot of foul ground with twenty feet over it; is lies N. N. W. ¼ W. from the N. W. end of Mouton Island, and N. E. ½ E. from the orthern Spectacle Island, distant half a mile. The Spectacles lie to the W. Northestward of Mouton Island, and are visible as you enter the port. To the Northward d Westward of them, are ten, eleven, and twelve fathoms water, muddy and sandy ound, with good anchorage, secure from all winds. To sail into Port Mouton by e Eastern channel, and with a leading wind, to the Northward of the Black Rocks, you ay steer in W. by N., passing at the distance of three fourths of a mile from White oint, until you bring the Spectacle Islands to bear S. S. W. ½ W.; this will carry you ear to the Northward and Westward of Mouton Island N. W. Shoal, then haul up S. . by W. for the anchorage before mentioned. To sail in to the Westward of the Black ocks, you should steer in N. W., mid-channel, or nearly half a mile from Mouton land. In this passage you will find from eight to fifteen fathoms water; always giv- g the Southern part of the island a berth, on account of a sandy flat which runs off it. adopting this channel, mariners must look out for a small knoll of six feet, said to lie N. E. ¾ E., distant one mile and a half from the Southern extremity of Mouton Island. his appears to be a modern discovery. The Western passage to Port Mouton is between e island and the main, and only frequented by coasters and vessels of a small draught of ater. It is encumbered with shoals, and too intricate for strangers. The channel is rrow, and close to the main land, passing between it and the Bull Rock; having pass- which, you can proceed to the anchorages, either off the N. W. shore, or Mouton land, or round the Spectacles.

The land now turns S. W. ¾ W. from Port Mouton toward Port Jolie; midway is a ack craggy point, with several rocks about it. S. ½ E., distant two and a half miles om Black Point, and S. W. fourteen miles from Liverpool light-house, lies Little Hope, an and twenty-one feet high, and two hundred fathoms long. This is a very great danger, d should have a beacon to distinguish it; round the island is a shoal ground, partly ying, and with three and four fathoms upon some parts; it lies direct E. S. E. from the stern point of the entrance to Port Jolie, from which it is distant two good miles. Be- een the island and point, somewhat near to the latter, there is said to lie a dangerous oal, not hitherto noticed in the charts.

Port Jolie is an inlet more than five miles deep, but very shallow, and having scarce ater enough for large boats; the lands adjacent appear barren and stony, yet have me families of fishermen settled there. Nearly S. from the Eastern point of Port Jolie, stant one mile, is a spot of three fathoms, over which the sea commonly breaks; and the Western entrance of the port are some rocky ledges, which show themselves by e breaking of the water over them. There is also a small island, lying to the Southestward, called the Little or Lesser Hope, on which is a beacon forty feet high.

LITTLE HOPE ISLET.—There is a red revolving light on this islet. Time of revo- *Light.* tion, one minute, forty feet above high water. It is on the keeper's house; the tower is irty-one feet high.

PORT L'EBERT.—This is the third inlet W. of Liverpool, and may readily be known *Port L'Ebert.* the steep and abrupt appearance of its Western head; and also by Green Island, hich lies to the Southwestward of its entrance. This island is somewhat remarkable, be- g destitute of trees. Port L'Ebert is divided from Port Jolie by a peninsula, which, at the ad of the respective ports, is scarcely half a mile across. The channel in runs nearly six or seven miles; small vessels may run some way up, but larger ships can only find chorage at its entrance. The depth, half a mile from the head, is from nine to twelve et; but at the mouth of the port are six, four and three fathoms.

SABLE RIVER lies to the Southwestward of Port L'Ebert, distant five miles. At its *Sable River.* trance, nearly midway of the channel, is a rocky islet. This lies S. W. by W. of Green land, distant three and a half miles; there is a passage on either side of the rock; that to e Eastward has twelve, thirteen, and fifteen fathoms water, but that to the Westward is mewhat shallower. The two points of the entrance of this river are distant from each her one mile and a fourth, with from six to eleven fathoms; but there is a bar which ren- rs this place totally unfit for affording shelter to any but the smallest vessels It is, how- er, not destitute of inhabitants, some of whom are settled in a small nook close to the estward of the river, which is called the Little Harbor.

Rugged Island Harbor.

RUGGED ISLAND HARBOR lies W. by S., distant fifteen miles from the Ho Island, and E. N. E., nine miles from Shelburne light. It seems to have been so nam from its craggy and rugged appearance, and the numerous dangerous ledges and sunk rocks at its entrance. This harbor is difficult of access, and seldom resorted to unle by the fishermen, who are familiar with its navigation, yet the anchorages are goo with four and a half and four fathoms. During gales of wind, the unevenness of th ground frequently causes the sea to put on a most formidable appearance, breakin violently from side to side. Off the Western head, distant about a mile, is the Gull, bed of rocks, over which the water always breaks: but between the land and th Gull are from six to eight fathoms. Vessels coming from the Eastward will perceiv St. Thomas' or Rugged Island, lying S. W. by W. from Green Island, distant six and three fourths miles. This island, having high rocky cliffs on its Eastern side, affords a good mark for the harbor. To the S. W. of Rugged Island are some rocky ledges. The outermost of these is called the Bear Rocks, being distant from the island three fourths of a mile. Between Rugged Island and the Bear Rocks are other dangers; and a little Westward of the Bears is a sunken rock; these three latter lying in a sort of triangular form. W. by N. from the Bear Rock, distant one mile, is the Blow Breaker, a rock with only four feet over it. This appears to be the Tiger of Des Barres, by whose de scription it should bear S. from Rugged Point, which is the Eastern boundary of the harbor. To sail from the Eastward for Rugged Harbor, you will see the Eastern cliff of Rugged Island bearing N., distant one mile and a half. Keep a good lookout for th Blow, or Tiger Rock, and pass well to the outside of the foregoing dangers; and having cleared these, haul up N. N. W. for the islands on the left or port side of the harbor. In so doing, you must be careful to avoid a shoal which stretches halfway over from the starboard shore, narrowing the channel very considerably, so that between the shoal and Muffatt Island the passage is not above a fourth of a mile wide. Pursuing this direction, you will readily reach the anchorage in the Northern Arm. In the best of the channel, Centre Island will be just open of Muffatt Island. Small vessels may be well sheltered within Chubb Basin, which is to the Northward of Muffatt Island; and vessels coming from the Southward or Westward will have deep water on either side of the Gull Rocks, or between the Bear and Blow rocks. On the Gull Rock there is a fixed light, fifty-one feet high. At Cape Negro and Rugged Island Harbor, it is high water, full and change, at eight o'clock; and the rise of the tide is about seven feet.

Light.
High Water.

Green Harbor.

GREEN HARBOR.—This port is to the Westward of Rugged Island Harbor, having an island on its Western side of entrance, and running in full three miles. This and the River Jordan, situated still farther to the Westward, appear to be places where good anchorage may be obtained, but they are at present little frequented by shipping, although they have many inhabitants. They are open to Southerly winds, which cause a heavy rolling sea.

Shelburne Harbor.

SHELBURNE HARBOR, or PORT ROSEWAY, is, according to Mr. Lockwood, justly esteemed the best in all Nova Scotia, from the ease of its access, and perfect se curity of its anchorage. At the entrance of the harbor is the Island of Roseneath, or M'Nutt's, which is nearly three miles in length, and one mile and a half in its broadest part. On the S. E. point of this island stands an excellent light-house. This point is high cliff of white rocks, the summit of which is without trees; the W. side of the island is low. The light-house is painted black and white, vertically, and has a remark able appearance in the daytime, on account of a dark wood that is behind it; while at night two lights are exhibited from it. The upper light is one hundred feet above the level of the sea, and the lower about one third from the top of the building. This light house bears from the light-house of Sambro W. S. W., distant thirty leagues; from Cape Negro N. E. ½ N., seven miles; from Point Benny S. W. ½ S., two and three fourths miles; from the breakers S. W. of Rugged Island W. N. W. ¼ W., eight miles; and from the Jigg Rock which has only six feet over it, N. N. E. ½ E., one mile and three fourths. When coming in from sea, make for the light-house, bringing it to bear N. W. or N. W. by N.; then steer directly toward it. The dangers to be left to the Eastward of you, are those adjacent to the Rugged Rocks already mentioned, the Bell Rock which is always visible, appearing black and bold to, lying E. N. E. ½ E., distant two miles and a half from the light-house. In coming from the Westward, you may steer for the entrance on either side of the Jigg Rock; and if for the Eastward, on either side of the Bell Rock. When you get abreast of the light-house, you may sail in to the Northward of M'Nutt's Island, about N. W. by N., keeping nearly in mid-channel: the island's side is bold to, and the anchorage is good, in seven, eight, or ten fathoms, the bottom mud; keep the Western shore on board, for there is a shallow spot somewhere about the Eastern side, between George's and Sandy points. Sandy Point is about two miles beyond the N. W. part of M'Nutt's Island; give it a berth, for a sandy spit extends from it three hundred yards. With M'Nutt's Island locked to this point, the anchorage is exceedingly good, and shipping may, with good ground tackling, ride in safety durin

Light-house.

most violent storm. In the channel about S. by E., distant nearly one mile from arlton Point, lies the Adamant Rock, abreast of Durfey's House. This will easily be oided by going into less water than four and a half or five fathoms, or by keeping Petit's land open of Surf Point. The inlet which runs up to the N. W. has several shoals in , but the Eastern shore has regular soundings, from Sandy Point upward, and is free om danger; while in the upper part of the harbor, above Carlton Point, vessels may ide in five, six, or seven fathoms, the ground holding well. We have already stated, hat your course from the entrance toward Sandy Point, will be about N. W. by N., and aving rounded Sandy Point, you can proceed N. by W. and N. according to your wind.

In coming from the Eastward of this harbor, be careful to avoid, and give a good berth to, the shoals off Rugged Island; and do not haul up for the harbor until you get the light-house to bear W. by N. ½ N., by which precaution you will go clear of every danger; or you may stop a tide at the entrance, in from sixteen to ten fathoms, sand and clay.

Shelburne affords excellent shelter for ships in distress, and is secure against any wind, except a violent storm at S. S. W. abreast of the town. The wind from S. to E. does no harm, although from S. by W. to S. W. by S., if blowing hard for some considerable time, it will set the smaller vessels adrift at the wharves; but in the stream, as has been observed before, with good cables and anchors, no winds can injure you. Here you may be supplied with cordage, duck, spars, provisions, and water. Carpenters, pump, block, and sail makers can be obtained, if required; and the port charges for vessels which put in for supplies only, is no more than four pence per ton, light money, on foreign bottoms; but should you enter the custom-house, the duties become much higher. It is high water, full and change, at eight o'clock; spring tides rise eight feet, neaps six, but a fresh breeze from the S. E. commonly brings on high water sooner, and causes an additional rise of two or three feet. *High Water.*

CAPE NEGRO HARBOR is named from Cape Negro, the Eastern limit of an island which lies before its entrance; this cape is remarkably high, rocky, and barren, bearing S. W. ½ S., distant seven miles from Shelburne light-house; this island is very low midway, and has the appearance of being two islands. There are two passages into the harbor, one to the Eastward of the island, and the other to the Westward of it; the former is much the better of the two, but this is rendered dangerous, on account of two sunken rocks which lie off its entrance; these are called the Gray Rock and the Budget; the Gray Rock lies N. N. E. from the cape, distant a full mile, and is situated nearly on the starboard side of the channel; some parts of these rocks are always visible, and serve as a mark for the harbor. The Budget is a blind rock of six feet, lying nearly mid-channel, and only one fourth of a mile from the island, having deep water round it. In the channel to the Eastward of the Budget you will have ten, twelve, and fourteen fathoms, and the best direction to enter the harbor will be to steer one third from the rocks off the Eastern point, until Shelburne light-house is shut in, then you will be within the danger. There is excellent anchorage off the N. E. part of Negro Island, in from six to four fathoms, on a bottom of stiff mud. The Northern part of the island presents a low, shingly beach, from which a bar extends quite across to the Eastern shore, over which are fifteen feet at low water; above this bar it is navigable full six miles, having a smooth clayey bottom, with three, four, and five fathoms water. *Cape Negro Harbor.*

The passage to the Westward of Negro Island, is intricate, encumbered with rocks and dangers, and should not be attempted except in cases of extreme emergency. Mr. Des Barres says: "If coming from the Westward, in hauling round Point Jeffrey, to avoid the ledges, blind rocks and shoals, extending Easterly from the Western shore, you should shape your course N. N. E. ½ N. toward the cape, giving the Savage Rocks a berth of three cables' length, until you open David's Island a sail's breadth off Point William; David's Island is the largest and Westernmost at the head of the harbor; run up in that direction, observing to keep clear of a sunken rock which lies E. S. E. from Point William, about three hundred fathoms from the above. Fishery Beach is bold to."

To sail through the N. E. passage, which is not so difficult, keep Gray's Rock on board, and steer N. W. for Point John, until you see across the isthmus in the middle of Cape Negro Island, or until Shelburne light-house is shut in, and having passed the Budget; thence haul over to the Westward, keeping along the shore about two cables' length from the island, to avoid the shoal, which extends half the distance over from Point John toward the island; and when you have opened the small islands at the head of the bay, shape your course N. N. W. to the anchoring ground, the bottom is mud and clay; along the N. E. side of Cape Negro Island, the anchorage is good stiff clay.

The River Clyde, which descends from a chain of lakes that extends E. N. E. and W. S. W. a considerable distance in the interior, falls into the head of Negro Harbor, after a run of twenty-eight miles.

Port Latour, or Haldimand.

PORT LATOUR, or HALDIMAND, is situated a little Westward of Negro Harbor being separated from it by a narrow peninsula; the extreme points which bound the entrance to the Southward, are Point Jeffrey, or Blanche Point, to the Eastward, and Point Baccarro to the West; between and within there are several clusters of rocks, rendering the harbor unfit for any but small craft; and the tide leaves the head of the inlet dry in many places. To sail into this port from the Westward, continue Easterly until you have Brehem Isle a ship's length open to the Eastward of North Rocks; thence steer Northerly for Isle George, and when you come up within two cables' length from its S. end, incline to the Westward in a direction with the Western extremity of Pond Beach, until you open Prospect House on the N. side of the Northernmost Mohawk Ledges, and then haul into anchorage, in three fathoms, muddy bottom.

Nearly midway between Baccarro Point and the South Ledge lies the Folly, a sunken rock, within which and the Western shore is a channel of six fathoms. The Vulture, a dangerous breaker, lies W. S. W. ½ S., one mile and three fourths from Baccarro Point.

Barrington Bay.

BARRINGTON BAY.—This is a spacious inlet, situated to the Westward of Port Latour, and formed by Cape Sable Island, which lies in front of its entrance; there are two passages into it, that to the Eastward is between Baccarro Point and Sable Island, being at its entrance three miles wide; that to the Westward is not more than a mile broad; both are encumbered with numerous and extensive flats, narrowing the passages, and rendering the navigation dangerous; for although the channels may generally be discovered, by the water appearing dark, yet it will require a leading wind to wind through to the anchorage, which is toward the head of the bay, and about one mile and a half below the town; here there are from eighteen to twenty-six feet water. The passage to the Northward and Westward is used by small vessels only, and is not safe without a commanding breeze, as the ebb-tide is forced unnaturally through to the Eastward, by the Bay of Fundy tide, at the rapidity of three, four, and sometimes five knots an hour, setting immediately upon the rocks which lie within it.

Light.

On Baccarro Point, the Eastern side of the entrance, there is a flash-light of fifteen seconds' duration, with eclipses of twenty-five seconds from it. Cape Sable bears S. 77° W., distant seven and one fourth miles; Brazil Bock S. 4° 10′ W., distant five and a half miles; Bantan Rock S. 45° W., distant a mile and one fourth.

The town of Barrington is situated at the Northeastern extremity of the bay. Vessels venturing into this bay by the Eastern passage, must be very careful to avoid Baccarro Point, giving it a wide berth of full two miles on account of the Bantan, Shot Pouch, the Vulture, and other rocks which lie off it; the Vulture Rock is very dangerous, and lies W. S. W. ½ S. from Baccarro Point, distant one mile and three fourths; the Bantan bears S. W. from the point, a mile and one fourth, and from the Vulture S. E. almost one mile; they are both exceedingly dangerous.

Cape Sable.

CAPE SABLE is the Southeastern extremity of a small narrow island which is separated and distinct from Cape Sable Island; it is low and woody, but the cape itself is a broken white cliff, apparently in a state of decomposition, and visible four or five leagues off; from this island spits of sand extend outward, both to the Southeast and Southwestward; the Eastern ledge is called the Horseshoe, and runs out two and a half miles S. E. by S.; the Western or Cape Ledge stretches to the S. W. about three miles. The tides, both flood and ebb, set directly across these ledges at the rate of three and sometimes four knots an hour, causing a strong break to a considerable distance, particularly when the wind is fresh; it will then often extend full three leagues out, shifting its direction with the tide, the flood carrying it to the Westward and the ebb to Eastward, the former running a considerable time longer than the latter. The rippling or breaking of the water may be considered hazardous to pass through in a gale of wind, but there is not less than eight, ten, thirteen, and twenty fathoms, rocky ground.

Light.

CAPE SABLE LIGHT is a fixed red light placed at an elevation of fifty-three feet above high water, and in clear weather should be visible from a distance of twelve miles.

The light-house is painted white, is slightly conical, and fifty feet high from base to top of lantern. From it the Brazil Rock, with two fathoms on it, bears S. E. by E. ¼ E. nearly eight miles, the Seven-foot Rock, in Horse Race, S. by E. ¾ E. one mile and three tenths, and the One-foot Rock, on outer S. W. Breaker, W. by S. ¼ S. one mile and eight tenths. The position of the light-house is lat. 43° 23′ 19″ N., long. 65° 37′ 11″ W. of Greenwich. High water 8h. 30m.; spring tides rise nine feet, neaps six.

Bonnetta Cove.

BONNETTA COVE.—To the Northwestward of Cape Sable is a small island, called Green Island, to the N. E. of which an inlet runs in to Cape Sable Island, forming Bonnetta Cove, where good anchorage may be found in three fathoms water; the entrance to it is narrow, and runs in between a spit and the island; this will be too difficult for a stranger to discover, but is frequented by the coasters and fishermen.

Favorite Cove.

FAVORITE COVE is situated in the Western Channel, and about the middle of Cape Sable Island; here also small vessels may run in and anchor in two fathoms, behind a small islet which lies mid-channel, at its entrance, affording a passage on either side, but that to the Eastward is the best and has the deeper water. With S. W. gales there is

lways good anchorage off the N. E. side of Cape Sable Island; but the Shag Harbor, n the opposite side of the Western Channel, and bearing N. N. W. from Bonnetta Cove, s full of shoals, and must not be attempted unless you are well acquainted with it.

THE BRAZIL ROCK.—This is a flat rock covering a space of ten yards, over which are only eight and nine feet at low water; a tail extends ninety to one hundred yards from its base, having six to eight fathoms water; the tide running strong over this causes a ripple and makes the rock appear larger than it really is. Southward of the rock, at the distance of about a mile, you will have thirty-five and thirty-four fathoms, then thirty and twenty-two as you approach nearer to it; but toward the Cape Sable shore the soundings are regular, from nineteen to fifteen fathoms; you will then lessen your water to ten and seven fathoms, when you will be at the edge of the Racehorse Shoal; to the Northward of the Brazil Rock, in the direction of the Bantan Rock, you will have sixteen, nineteen, fifteen, seventeen, sixteen, fifteen, and ten fathoms: with this latter depth you will be near the Bantan, and must tack to the Westward. Brazil Rock bears from Baccarro Point light S. 4° 10′ W., distant five and a half miles; its latitude is 43° 24 15″ N., longitude 65° 22′ W. *Brazil Rock.*

Magnetic Bearings and Distances between Halifax and Cape Sable.

From Sambro light-house to Cross Island, Lunenberg, nearly W		8½	leagues.
..... Cape Le Have	W. ¾ S	12	do.
..... Liverpool light-house	W. by S	17½	do.
..... Hope Island, near Port Jolie	W. S. W. ¼ W	21	do.
..... entrance of Port Shelburne	W. S. W	29	do.
..... Cape Negro	W. S. W. a little Westerly	31½	do.
..... Cape Sable	W. S. W. ½ W.*	36	do.
..... Brazil Rock	Nearly W. S. W	34½	do.
Shelburne light-house to Cape Negro	S. W. ½ S	7	miles.
Cape Negro to the Brazil Rock	S. W. ¾ S	10	do.
Cape Sable to the Brazil Rock	S. E. by E. ½ E	8½	do.

BETWEEN CAPE SABLE AND SEAL ISLAND.

SEAL ISLAND is low and thickly wooded, with a light-house on its South end, exhibiting a fixed light, ninety-eight feet above high water. The dangers of it are— *Seal Island Light.*

PURDY ROCK bears from the light-house S. E. by E. ½ E., rather more than two miles distant; it is of very small extent, and has only fourteen feet on its shoalest part, and deep water all round, but it shows a tide-rip during the strength of the tide, and breaks in heavy weather. *Purdy Rock.*

THE BLONDE ROCK, which bears from the light-house S. ½ E., distant three miles and a half, uncovers about two feet above low-water springs; it generally breaks, and can be passed to the Southward at a quarter of a mile distant. There is also a rock, with only fourteen feet on it, the eighth of a mile to the Southward. About a mile to the Westward of the Blonde, there is a heavy breaking tide-rip during the strength of the tide, but the Columbia carried good water through it. *Blonde Rock.*

THE ELBOW SHOAL lies between the Blonde and Seal Island; it is of some extent, and has a rock on it called the Elbow, with only five feet on its shoalest part at low water, which bears from the light-house about S. by W., distant one mile and a third: the Eastern tangent of Seal Island on with the rock off its South point, leads to the rock. There is a heavy tide-rip over the shoal during the strength of the tide. *Elbow Shoal.*

THE ZETLAND SHOAL, so called from a vessel of that name striking on it, and reported one small rock with only seventeen feet water over it; not less than twenty-one feet at low water was found on it, which bears from the light-house S. W. ¼ S. nearly two miles. The shoal breaks in heavy weather, and shows a tide-rip during the tide. *Zetland Shoal.*

THE DEVIL'S LIMB is a small rock, about ten feet above high-water springs, bearing from the light-house N. W. ½ W., distant one mile and a fourth. At about a fourth of a mile to the Southward of the rock is a small detached shoal, which just uncovers at low springs, called the Loch Foyne, from a ship of that name which was wrecked on it; the passage between the Devil's Limb and Seal Island should only be used by those well acquainted with it. *Devil's Limb.*

THE LIMB'S LIMB, which lies upward of half a mile to the Northward of the Devil's Limb, is small, with deep water close outside of it, and shows itself one hour after high water; the Columbia mail steamer was wrecked on it. *Limb's Limb.*

Between the Limb's Limb and Crowell Beach on Seal Island there is anchorage in five fathoms, over sandy bottom, and safe from all winds, except those between N. and W.

THE MUD ISLANDS lie to the Northward of Seal Island, and consist of four *Mud Islands.*

* This course cannot be sailed on account of the intervention of the land.

small islands, namely, Noddy, Mud, Round, and Flat; they may all be approached on their Eastern side, except the former, to which a berth should be given of half a mile, as many rocks lie off it within that distance. A shoal runs off about a third of a mile from the Northern end of Flat Island, and shows a heavy tide-rip during the strength of the tide. There is a good channel between Noddy, the Southernmost of these islands, and Seal Island; mid-channel is to be recommended to vessels passing through it, but in foggy or thick weather Seal Island's side is the best to make. About a third of the way across the channel from Noddy Island is a shoal on which Lockwood states are only eighteen feet water; the least water that could be found on it was five and one fourth fathoms, and it shows a tide-rip during the strength of the tide. The tide-stream sets strong through this channel, at a rate of about four knots per hour during its strength, in about a N. W. and S. E. direction. In fogs, however, it is better to go to the Southward of Seal Island and the Blonde Rock.

Black Ledge. BLACK LEDGE lies to the Westward of Mud Island, and to the Southward of Flat Island, and bears from the centre of Noddy Island N. W. ¾ N., distant one mile and one third; it is always visible, except at high-water springs, when it generally breaks.

Soldier's Ledge. THE SOLDIER'S LEDGE uncovers about two hours after high water, and is very dangerous, but it generally breaks when covered. It bears from the N. end of Flat Island about N. W ¾ N., distant two and one fourth miles. There is a passage between this ledge and Flat Island, but it had better not be used. This shoal is improperly laid down by Lockwood, and agrees nearly in position with the Acteon of Des Barres.

Mud Island, West Shoal. MUD ISLAND, WEST SHOAL.—To the Westward of Mud Island lies a shoal, with only twenty-four feet on it at low-water springs, but it shows a tide-rip during the strength of the tide, and is said by people on Seal Island to break in very heavy weather. It should, however, be avoided by vessels of large draught, because, the bottom being very irregular, it is highly probable that the least water has not been obtained. The twenty-four feet bears from the light-house on Seal Island nearly N. five miles, the light-house showing just open to the Westward of Division Point, and from the centre of Noddy Island N. W. by W. ½ W. two and one half miles. In running between Noddy and Seal islands, the S. side of this shoal should be passed.

The soundings between the Seal and Mud islands and the main are irregular, varying from twenty-two to six fathoms water; the shoal patches show a tide-rip during the strength of the tide.

Stoddart Cove. STODDART COVE.—From Bear Point to Stoddart Island is a bay full of rocks and ledges. This bay and the S. point of Stoddart Island require a good berth. To the Northward of Stoddart Island is Stoddart Cove, which affords good anchorage in all weather for vessels of not more than nine feet draught. The best entrance is the Western, keeping the island on board to avoid a rock off the Northern point of the entrance, which just uncovers at low-water springs, and has good water around it. It lies about a sixth of a mile from the point, and about halfway between it and the shore is another rock, which shows at half tide.

Shag Harbor. SHAG HARBOR lies between Bon Portage or Shag Harbor Island and the main, and affords anchorage for vessels of good draught with all but strong Southerly winds.

Cockerwit Passage. COCKERWIT PASSAGE.—At the entrance of Cockerwit or Wood's Harbor, and between it and the Mutton Islands, there is a good anchorage in from five to five and one half fathoms at low water, over a muddy bottom. In the passage to this anchorage there is a rock to be avoided, which just uncovers at very low springs, and has deep water close to it. Robinson's Ball Station (built of stone) on with the centre of Little Stony Island, leads right on it; and in running up, a house standing on the Northern end of Stoddart Island, just open to the Eastward of a detached rock off Prospect Point, clears it to the Eastward. Cockerwit passage can only be used by vessels of small draught, from eight to nine feet water, and steered by experienced persons.

The passage to the Northward of Bon Portage Island, between it and Robinson's Bull, can only be used by small vessels.

St. John Ledge. ST. JOHN LEDGE is a dangerous shoal, which generally shows itself except at very high springs. It bears from the S. W. point of St. John Island, S. by W. ½ W., one mile and a half. Pubnico light-house, open to the Westward of the island, bearing N. E. by N., leads to the Westward of the ledge.

Pubnico Harbor Light-House. PUBNICO HARBOR.—A light-house has been erected on Beach Point, the Eastern side of the entrance to Pubnico Harbor, in the shape of the frustrum of a pyramid on a square base, and exhibits a fixed white light, at about twenty-eight feet above high water. On entering this harbor, care must be taken not to pass St. Ann Point, on the Western side of the entrance, nearer than a quarter of a mile. Beach Point, a low shingle point on the Eastern side, has good water, and may be passed pretty close. A long ledge, which uncovers at low water, runs off the Western side of the harbor, nearly abreast of Beach Point; a buoy is placed at its Eastern extremity, and should be passed at about half a cables' length to the Westward. After passing the buoy, haul a little more to the Westward, steering toward the church, which is a conspicuous object on the West-

ern shore of the harbor, to clear a shoal which lies off the Eastern shore, and on which were found only eleven feet at low water; the bottom is, however, so peaked and uneven, that it is possible there may be less than that given by the lead. A good mark for clearing the ledge off the Western shore, after rounding Beach Point, in case the buoy should not be seen, is the Point to Southward of Beach Point, seen over the high-water line of Beach Point; this will also clear the ledge on the Eastern side before mentioned, but will lead rather close to it.

Vessels had better not proceed farther that the two Southernmost wharves, unless under charge of a good pilot; off these there is good anchorage in nine or ten fathoms, over muddy bottom, a little nearer the Western than the Eastern side of the harbor. The lead will give the best information at high water when everything is covered, and which is the most difficult time to enter: but at low water, when everything shows itself, the banks of the channel point out the anchorage.

A spring of fresh water close to the Southernmost wharf affords about four tons of very good water daily.

Directions. Cape Sable, bearing N. two miles, a W. by N. course, sixteen miles, will lead a mile to the Southward of the Blonde Rock.

To pass between Seal and Mud islands, keep the extremity of Cape Sable to the Northward of E. by N. ¼ N. until Green Island bears N. by E. ½ E., this will clear the S. W. ledges; then haul up N. W. by W. sixteen miles, which will lead through the channel about midway.

To pass to the Northward of the Mud Islands and to the Southward of the Bald Tusket, when clear of the S. W. ledges, haul up N. W. ¾ N. seventeen miles, and when Round Island bears S. by W. ½ W., the vessel will be in the fairway.

If bound for Pubnico Harbor, haul up N. N. W. ¼ W. ten and a half miles, when St. John Ledge will be on the starboard beam, distant one mile and a half, and the harbor will open out to the Westward of St. John Island, and may be run for, that island being bold to; Beach Point (the Eastern point of the entrance) must be passed close to.

At Night. At night, Pubnico light, open to the Westward of St. John Island, bearing N. E. by N., leads to the Westward of St. John Ledge, and the light may be steered for on that bearing by vessels running for the harbor, giving the island a berth of a cable's length, and rounding the light-house at the same distance; when the light bears S. S. W., steer N. N. E. In running for the harbor from any other direction, the light must be brought to bear to the Northward of E. N. E., before it can be steered for, to avoid the shoal off St. Ann Point.

When the Blonde Rock is in sight, and the vessel bound to the Northward, Flat Island just open to the Eastward of Seal Island will lead between the Blonde Rock and the Elbow.

Tides. The tide stream between Cape Sable and Seal Island sets about N. W. by N. at flood and S. E. by S. at ebb, from two to three knots per hour; a due allowance on the above courses must therefore be applied to determine that which ought to be steered. The direction and rate of the stream become much modified when near the land. Through the channel between the Seal and Mud islands it sets N. W. and S. E., nearly four knots per hour.

The tide-stream sets very strong round Seal Island, and except at slack water, there are heavy tide-rips over the shoal ground to the Eastward of the island, which may, however, be approached. The tide commences running along shore to the Northward at half-ebb, and continues so to run until high water.

BETWEEN PUBNICO AND TUSKET ISLANDS.

St. Ann Shoal. ST. ANN SHOAL.—A shoal, with sixteen feet at low springs, rocky bottom, called St. Ann Shoal, bears from St. Ann Point N. W. ¼ W. one mile and three fourths, and from the South Twin S. W. ½ S. one mile and a half, and shows a tide-rip during the strength of the tide.

The Twins. THE TWINS are two small islands lying about half a mile from the shore, from which they are separated by a channel with more than five fathoms in it at low water, and between them is a channel of similar depth; they can be approached pretty close. There are two dangers off the Northern Twin, bearing N. W. by W. three tenths of a mile, with sixteen feet on it at low-water springs, and the other bearing N. ½ W. a third of a mile, with eight feet; they are both of small extent, and carry good water close to.

Argyle. ARGYLE lies to the Northward, and has several good anchorages, but the channels to them are too intricate to be entered without a good pilot.

White-Head Island. WHITE-HEAD ISLAND is rendered conspicuous by earthy cliffs of a reddish gray color, nearly seventy feet in height, which forms its boundary to the S. W. It can be safely approached on all sides except the Northern to one fourth of a mile.

White-Head Ledge. WHITE-HEAD LEDGE bears from the S. end of White-Head Island E. ¼ S., distant

three fourths of a mile. It uncovers at low water, round which part it is shoal for about a cable's length. After half ebb, the kelp marks the position of this ledge.

White-Head West Shoal. WHITE HEAD WEST SHOAL bears from the S. end of White Head Island N. W. half a mile. It has only thirteen feet on it over a rocky bottom, at low springs.

Jones Ledge. JONES LEDGE dries about one hour before low water in one spot, but the kelp shows a half-tide; it bears from the S. extreme of Jones Island S. by W. ½ W. three eighths of a mile.

Jones Anchorage. JONES ANCHORAGE.—In case of distress, Jones anchorage may be entered as follows: steer for White Head Island and run along its Eastern side, steering about N. by E. ½ E., at a distance of not less than a fourth of a mile, and not greater than half a mile from it; this will avoid White Head Ledge, leaving it to the Eastward. Immediately to the Northward of White Head Island lies Pumpkin Island, which is bold to on the Eastern side, and must be left to the Westward at not more than a third nor less than a fourth of a mile; this will avoid Pumpkin Ledge, which has only two feet water on it at low springs, and which bears from the S. end of Pumpkin Island E. ¾ S., half a mile; at half-ebb the kelp marks its position.

When abreast of the Northern end of Pumpkin Island, alter course to N. by W. ¾ W., and run for mid-channel between Jones Island and the Thrum; and when abreast of the latter, run along Jones Island from about one or two cables' length distant: good anchorage in six fathoms, mud, will be found, at one cable and a half from the shore.

To run in on the Western side of White Head Island, proceed as follows: steer for the S. end of White Head Island, and pass it at not more than three cables' nor less than one cable's length distant; this will avoid White Head West Shoal passing between it and the island. Then run along Pumpkin Island, but not nearer than a fourth of a mile; and when it bears E. by S. ½ S., take care to open the Western side of Hog Island with the Eastern side of Jones Island; this will clear Jones Ledge. Then run along the Eastern side of Jones Island and anchor as above.

Gull Island. GULL ISLAND.—To the Westward of White Head Island lies a small low green island called Gull Island, which may be approached on the Southern side to about half a mile; the bay between it and White Head Island should not be entered without a good pilot especially at high water, when the dangers are covered.

Gull Ledge. GULL LEDGE.—To the Southward of Gull Island lies the Gull Ledge which has only five feet on its shoalest part at low water springs. The large barn on Sheep or Wilson Island with the Western high-water mark of the Gull, leads right on the shoalest part, distant two miles.

S. W. Shoal. S. W. SHOAL.—To the S. W. of Gull Island is a small shoal with only fifteen feet on it at low springs. It is distant from Gull Island about a mile in the direction of Pumpkin Island on with Gull Island.

There is good anchorage all the way in mid-channel between Hog and Jones islands, but vessels should not pass beyond Hog Island without a pilot. There are no regular pilots, and the fishermen are not used to carry vessels of any size through those passages, and cannot be trusted with a vessel of more than six or eight feet draught.

Lights. TUSKET RIVER.—There are two fixed lights horizontal, at Fish Island, entrance to Tusket River.

Tusket River Entrance. Eastern Passage. TUSKET RIVER ENTRANCE—EASTERN PASSAGE.—Between Gull and Sheep islands there is a rock which uncovers at half tide, and between the former and Eastern Bar Island there is a rocky patch with only four feet on it at low-water springs; hence the Eastern passage into Tusket River should not be attempted, except by persons well acquainted with it. The passage between Eastern Bar Island and the Fish Islands is obstructed by Fish Ledge, which uncovers at half tide, and which bears from the Southern point of Eastern Bar Island N. ¼ W., half a mile, and from Little Fish Island, S. by E. ½ E., half a mile. The E. tangent of Tucker Island on with the inner Fish Island, leads over the ledge, and when open to the Westward clears it.

Western Passage. WESTERN PASSAGE.—To enter Tusket River by the Western passage (which is to be recommended when coming from the Southward, and clear of Gull Ledge), steer N. by W. ¾ W. for Western Bar Island, until Tucker Island opens to the Westward of Inner Fish Island (which clears Fish Ledge to the Westward); then steer N. ¼ E. for Big Fish Island, passing Little Fish Island, which is bold to at about a fourth of a mile to the Westward. The course should then be altered a little to pass Big Fish Island to the Westward, at from a cable to a cable and a half distant, taking care not to exceed the latter distance, in order to avoid Big Fish Rocks, which lie N. W. by W. ½ W., two cables' length from the N. end of Big Fish Island, and just uncover at low springs; the large barn on Sheep Island a little open of the N. tangent of Big Fish Island, and the high water tangents of the S. points of Eastern Bar and Big Fish Islands in line, lead over these rocks.

Thence steer N. by E. ½ E., and give Tucker Island a berth of from one to two cables' length, passing to the Westward of it; take care not to exceed the latter distance to avoid Tucker Island Ledge, which has only five feet on it at low-water springs, and bears from the N. end of Tucker Island N. W. by W. ½ W., two and a half cables' length. After passing Tucker Island, steer about N. by E. ¾ E., for Pinch Gut Island, which may

be passed to the Westward at a cable's length; care must, however, be taken not to incline too suddenly to the Eastward, as a shoal bank of mud runs off the N. end of Tucker Island, having only twelve feet on it at low-water springs, and at three cables' distance from that end of the island there will be equal danger by inclining to the Westward, from a mud-flat which runs off a considerable distance along the Western shore, commencing just above Tucker Island. To the Southward of this the Western shore is very ragged and shoal, which is the reason for keeping the islands (whose Western shores are bold) aboard. There is sufficient room for a good pilot to turn a vessel of twelve feet draught in or out of the river with the tide. Big Fish Rocks having deep water all round them, a buoy would greatly facilitate the navigation, when they might be passed on either side.

One mile above Pinch Gut Island is Half-tide Rock, which lies a third of the way across from the high line of the Eastern shore toward that of the Western. The deep-water channel is to the E. of this rock.

Anchorage. Good anchorage over mud bottom can be obtained anywhere between Tucker Island and Half-tide Rock, beyond which it is strongly recommended for no vessel of any draught to attempt going without a very experienced pilot and a leading wind, because the channel is very intricate, and the tide rapid. In the narrows, by Plymouth, the stream at half-tide springs runs about five knots per hour, and abreast of Pinch Gut Island about two knots.

When bound out of Tusket River, and proceeding to the Westward, being abreast Little Fish Island, steer S. S. W. ½ W., taking care not to bring Western Bar Island to bear to the Eastward of N. by E. ½ E. until the S. point of Spectacle Island opens to the Southward of Pease's Island, when the course may be altered to the Westward. This will clear the Old Woman, a rock which uncovers at about two hours' ebb, and bears from the S. end of Western Bar Island, about S. S. W., distant two and one fourth miles, and from the S. point of Bald Tusket Island N. E. by E., three miles. A long piece of shoal broken ground runs from the Old Woman toward Western Bar Island.

Before carrying a vessel through the passages between Round Island, the Tuskets, and the main, we will describe the principal dangers in the neighborhood.

The Old Man. THE OLD MAN uncovers about one hour before low-water springs, at which time it is about two or three feet above water, with some straggling rocks just uncovered extending to the Northward of it about the eighth of a mile. The large rock bears from the Bald Tusket about N. E. by E. ¾ E., a little better than a mile. Owl's Head opens to the Eastward of Allen Island, clears the Old Man to the Eastward; and the N. end of Half-Bald Tusket Island open to the Northward of Little Bald Tusket Island, clears it to the Northward.

Little Bald Tusket Ledge. LITTLE BALD TUSKET LEDGE lies between the Old Man and Little Bald Tusket Island, from which it bears about E. S. E., distant half a mile, and has nine feet on its shoalest part at low water. The N. end of Half-Bald Tusket on with the N. end of Little Bald Tusket, leads right on the nine feet; and Owl's Head open to Eastward of Allen Island, clears it well to the Eastward.

Harriet Ledge. HARRIET LEDGE covers at a third flood, and bears from Bald Tusket Island N. N. W. ¾ W., nearly a mile, and from the Southern point of Half-Bald Tusket Island S. W. by S. distant half a mile. Holmes Island, just open to the Eastward of Spectacle Island, and the S. point of Pease's Island, just touching the N. point of Little Half-Bald Tusket Island, lead right over this ledge, which shows a considerable tide-rip when covered during the run of the tide.

Cleopatra Shoal. CLEOPATRA SHOAL bears from the S. point of Bald Tusket Island S. by E., distant one mile and three fourths, and is rocky and uneven, having only twelve feet on its shoalest part, where a few long pieces of kelp show at low springs. It has deep water all around it and shows a considerable tide-rip during the run of the tide. Half-Bald Tusket Island open to the Eastward of the Bald Tusket, clears it to the Eastward; and open to the Westward, clears it to the Westward.

Between the Cleopatra Shoal and the Bald Tusket are two small shoals, one with fourteen feet and the other with nineteen at low-water springs, which show a tide-rip during the run of the tide. There is a good passage between them and the Bald Tusket.

Pease's Island Ledge. PEASE'S ISLAND LEDGE covers at a third flood, and lies nearly mid-channel between Pease's Island and the main, at one fourth of a mile distant from the former. McKinnon's barn on Ellenwood Island, just touching the N. E. point of Pease's Island, clears it to the Westward, and leads between it and Pease's Island; and the S. point of Spectacle Island just open to the Southward of the S. point of Pease's Island, clears it to the Southward.

Mark Island Ledge. MARK ISLAND LEDGE just uncovers at low-water springs, and lies one and a half cables' length off the Western side of Mark Island. It shows a considerable tide-rip during the tide, which runs over it with great rapidity.

Allen Rock. ALLEN ROCK lies off the S. end of Allen Island, one and a half cables' length

distant, in the direction of Pease's Island; it has good water all round it and shows a whirl in the strength of the tide. The barn on Ellenwood Island, open of the S. W. end of Allen Island, clears it to the Southwestward.

Schooner Passage Rock. SCHOONER PASSAGE ROCK lies nearly mid-channel between Owl's Head and Turpentine Island, and has ten feet on it at low water springs, and deep water all round. Bird Rock, just open to the Southward of Owl's Head Island, leads over it.

Bird Rock. BIRD ROCK lies in Ellenwood Passage, nearly mid-channel between Ellenwood Island and Owl's Head Island. It always shows, being about two feet above water at high springs.

Spectacle Ledge. SPECTACLE LEDGE has eleven feet on it at low-water springs, and shows a large tide-rip during the strength of the tide. It bears from the S. end of Spectacle Island S. S. W. three fourths of a mile, and from the N. end of Half-Bald Tusket about W. by S. ½ S., a good mile. The Southern point of Pease's Island just overlapping the Northern point of Half-Bald Tusket Island, clears the ledge to the Southward; and the cliff on the S. W. end of Ellenwood Island open of the Eastern tangent of Spectacle Island, leads clear to the Eastward. It runs in this direction, being very narrow.

Schooner Passage. SCHOONER PASSAGE.—To run through Schooner Passage, keep Owl's Head open to the Eastward of Allen Island until Half-Bald Tusket Island opens to the Northward of Little Bald Tusket Island, taking care to keep the S. point of Spectacle Island open to the Southward of the S. point of Pease's Island until McKinnon's barn, on the N. end of Ellenwood Island, touches the N. E. tangent of Pease's Island; this leads clear to the Westward of Pease's Island Ledge, which must be rounded to close on the flood tide, which acts strong on the S. point of Pease's Island. Keep about mid-channel, taking care not to approach the Eastern side, to avoid Haymaker Ledge, which lies off the S. end of Haymaker Island, with only two feet on it at low water, and which will be cleared by keeping Candlebox Island open to the Westward of Haymaker Island. After passing Allen Island, take care not to open the S. E. tangent of Murder Island to the Eastward of Candlebox Island, in order to pass to the Westward of Schooner Passage Rock. Keep midway between Owl's Head and Candlebox Island, and run along the Western side of Murder Island, which may be approached to about two cables' length on its S. W. side.

Anchorage. ANCHORAGE.—Good anchorage will be found off the Northern end of Allen Island. In this passage the tide runs with great rapidity, about three knots an hour in its strength.

Ellenwood Passage. ELLENWOOD PASSAGE.—After passing Pease's Island Ledge, keep McKinnon's barn open to the Southward of Allen Island; this clears Allen Rock, passing to the Southward of it. Run in mid-channel between Mark and Allen islands, and mid-channel between the Bird Rock and Ellenwood Island, and after passing the rock a cable's length, get it on the Eastern tangent of Mark Island, which will clear the shoal ground which lies on either side of the passage. Murder Island can be passed on its S. W. side at two cables' distance.

Tides. Anchorage. Through the Northern entrance to this passage, off the Northeastern point of Ellenwood Island, the tide runs four knots an hour. There is good anchorage off McKinnon's house, about one cable and a half to the Northward of the Bird Rock.

To approach Ellenwood anchorage from the S. W., keep the cliff on the Southwestern point of Ellenwood Island open to the Eastward of Spectacle Island, taking care not to open Holmes Island until the Harriet Ledge is passed; this will clear Spectacle Ledge, passing to the Eastward of it. Keep Bald Tusket Island entirely open of the W. end of Half-Bald Tusket Island until the S. point of Allen Island opens to the Northward of the N. point of Mark Island; this clears Mark Island Ledge, passing to the Westward of it. Then keep in mid-channel between Mark and Ellenwood islands, giving the Southern point of the latter (which runs off shoal) a good berth; thence proceed to the anchorage as before.

Tides. The tide runs very rapidly through the Tusket Island passages, and the tide-rips thrown up by it are numerous and heavy. Its general set is to the N. W. and S. E., but this is modified by the position and shape of the islands, which form considerable eddies, and by the main land in the vicinity, of which the tide follows its direction. The average rate is from two to four knots per hour, and round some points its rate probably exceeds the latter. The tide turns a little after high and low water respectively. The establishment, or the times of high water, at full and change, at the port at Ellenwood Island, is 9h. 47m.

Directions. To pass between Round Island and the Bald Tusket, having cleared Cape Ledge, steer N. W. ¾ N., which will lead clear to the Eastward and Northward of Round Island, and midway between the Cleopatra Shoal and the Soldier's Ledge, which must be carefully avoided. When the Southeastern extreme of Frenchman's Point opens to the Northward of Bald Tusket Island, a vessel will be clear to the Westward of the Soldier's Ledge, and the course must be altered to W. N. W. to pass to the Southward of

Gannet Dry Ledge, and to the Northward of the South Ledge and Southwest Shoal, which lie much in the way, and must be carefully avoided by vessels of large draught. When the Gannet bears N. E. by E., the Dry Ledge is passed, and the course may be altered to the Northward. When the Dry Ledge is seen, it may be safely approached to within half a mile, as it has good water all round it.

GANNET ROCK.—The Gannet is a remarkable rock, the sugarloaf peak of which is fifty feet above high water, and the lump to the Northward of it has only three feet less elevation. Yarmouth or Cape Fourchu light-house bears from the peak N. by E. ¼ E., and Seal Island light-house S. ½ E.; they are both in sight in clear weather. The rock is three eighths of a mile long in a Northerly direction, and narrow, having deep water all around, except on its Southern side. The variation of the compass is 2° less Westerly on Gannet Peak than in the neighborhood, being there only 14° W. *Gannet Rock.*

NORTH ROCK bears from Gannet Peak about N. ½ E., three cables distant. It uncovers at a third ebb, and generally breaks when covered. *North Rock.*

SOUTHEAST ROCK bears from Gannet Peak S. by E. ¼ E., distant nearly one mile and a half, and shows two breaks in heavy weather, and a good tide-rip during the tide. It has good water to a cable's length on its E. and W. sides. Yarmouth light-house, touching the Eastern tangent of Green Island, leads over it. *Southeast Rock.*

SOUTH LEDGE bears from the Gannet Peak nearly S., distant four and a half miles; the least water found on it was twenty-four feet at low springs; it shows a tide-rip, and breaks in very heavy weather, The outer high lump of Cape Fourchu, just open of the E. tanget of Green Island, leads over this ledge. *South Ledge.*

SOUTH ROCK bears from the Gannet Peak S. ½ W., distant three fourths of a mile; it shows at a third flood, and generally breaks. *South Rock.*

JACCO'S RIDGE.—The shoalest water found on this ridge was twenty-seven feet at low water springs on its N. end, which bears from the Gannet Peak S. by W. ⅛ W., distant six miles; thence it extends one mile and a third in a Southerly direction, and is narrow, with deep water on its E. and W. sides, and shows a tide-rip during the tide. Green Island, on the Eastern edge of the Gannet, leads over it. *Jacco's Ridge.*

SOUTHWEST SHOAL bears from the Gannet Peak S. S. W. ¼ W., three and a fourth miles, and extends one fourth of a mile in a Southerly direction; it has only nineteen feet on it, and shows a tide-rip, and breaks in heavy weather. Green Island, just open to the W. of the Gannet, leads over this shoal. *Southwest Shoal.*

SOUTHWEST DRY LEDGE bears from the Gannet Peak S. W. ⅜ W., one mile and three fourths; it uncovers at two hours' ebb, and generally breaks at high water; there is plenty of water between it and the Gannet, but it is prudent to go outside. *Southwest Dry Ledge.*

The bottom at the above shoals and ledges being very uneven, it is highly probable that there may be less water on them than that given by the lead, and therefore vessels are recommended to avoid them.

BETWEEN ELLINGWOOD PASSAGE AND BRYERS ISLAND.

MURDER ISLAND WEST SHOAL has eighteen feet on it at low water, which depth lies half a mile from the high-water line of the island, there being a good channel between it and the island. From the N. W. point of the island a shoal also extends in that direction, having twelve feet on it at low water, about one third of a mile from the shore. *Murder Island West Shoal.*

REEF LEDGE, which uncovers at a quarter-ebb, is shoal all round for a considerable extent; and there is very little water all the way between it and Reef Island, from the Southern point of which its shoalest part bears W. by N. ½ N., half a mile; and from Jebogue Point S. E. by S., about a mile distant. *Reef Ledge.*

REEF SHOAL has thirteen feet on it at low water, and shows a tide-rip during the tide. Although it can be passed on either side, it had better be kept to the Eastward. Yarmouth light-house open to the Westward of the W. tangent of Jebogue Point, clears it to the Westward. From it the S. end of Reef Island bears E. by N. ½ N., one mile and a fourth, and Jebogue Point is distant one mile and a half. *Reef Shoal.*

JEBOGUE POINT SHOAL is a large broken patch, with fourteen feet water on it, there being a passage with twenty-five feet on it between the shoal and the point, which is the channel generally used, though the deepest channel lies between it and Jebogue Shoal, or Ledge. *Jebogue Point Shoal.*

JEBOGUE LEDGE, or SHOAL, is very dangerous, having only two feet on it at low water springs; it shows a large tide-rip during the tide, and breaks, if there is any sea on at low water. It bears from Jebogue Point about S. W. ¾ W., nearly one mile from the high-water line. There is a good channel between this shoal and Green Island. *Jebogue Ledge or Shoal.*

Foul Ground. THE FOUL GROUND lies to the N. of Jebogue Ledge; it has only nine feet on i (which is two thirds of a mile from the shore), and shows a considerable tide-rip; ther is a good channel between it and Jebogue Ledge.

Roaring Bull. THE ROARING BULL lies nearly midway between Green Island and Yarmouth light-house, and very nearly in the line joining them, and a mile distant from the shore It is about two feet above water at low springs, has good water to a cable's length al round, and shows a small tide-rip, but breaks if there is any sea on.

Tides. From Yarmouth to Ellenwood Island the tide runs inside Green Island and through the above-named ledges at full three knots per hour during its strength; there is a very short interval of slack water. It sets strong round Cape Fourchu, so that, if a vessel is steering for Yarmouth Sound with the flood-tide running, she must be careful to haul up the moment she has cleared the Roaring Bull. It is necessary to impress on the mariner that he should keep clear of these shoals, from the strong probability that the shoalest water has not been obtained by the lead, and that the chances are in favor of there being in reality less water than that marked on the chart.

Anchorage. The anchorage inside Murder Island and in Little River can only be used by small vessels.

Jebogue is a safe little anchorage, and may be used in cases of necessity by vessels drawing from twelve to fourteen feet. The following are the directions for entering it:

A vessel being to the S. W. of the entrance between Gannet Rock and Green Island, should bring the Gannet to bear about S. W. by S., and steer N. E. by N., so as to pass midway between Garden Head and the small earthy cliff opposite (on the N. W. side), from which it runs off shoal full a third of the way across, and a bar extends right across, over which there are only twelve feet at low-water springs. Keep mid-channel in the entrance, and anchor one and a fourth cables' length inside the point, on the Eastern side of the entrance, round which the channel makes a sudden turn to the Eastward, taking care to keep the Gannet in sight in the middle of the entrance, in order to keep clear of the mud-bank that runs along the Western side, and also of two small mud-banks in the middle of the channel at its head. The depth of water will be about sixteen feet at low springs, over muddy bottom, excellent holding-ground, and the water always smooth. Good fresh water can be obtained, the supply being about three tons per tide.

If the vessel be to the N. W. of Jebogue Point, bring the S. end of the earthy cliff to the Northward of Garden Head just open to the Southward of Jebogue Point, and run for it in that direction, which will carry her clear in good water between the Foul Ground and Jebogue Ledge; when about three fourths of a mile from Jebogue Point she will have passed the Ledge, and may haul more to the Southward, so as to pass round Jebogue Point at a distance of from one fourth to half a mile, when she should steer so as to run along the Northern shore at half a mile distant, until the opening of the harbor bears N. E. by N., and the Gannet Rock S. W. by S., when the course should be altered to the former bearing, to pass halfway between Garden Head and the earthy cliff opposite; when proceed as before.

Yarmouth Sound. YARMOUTH SOUND can be used with all winds, except those between S. and W., when it is dangerous if the wind is strong. The best anchorage is in about twenty feet, over sandy bottom, the light-house bearing W. by N. ½ N., about one fourth of a mile. The shore inside the light-house should not be approached within a cable's length, as there are several detached patches of rocks lying off it. At about two cables' length from the opposite shore to the light-house, from which they bear about E. by S. ½ S., lie the Hen and Chickens, which begin to uncover at two thirds ebb. The Independent church at Yarmouth on with the middle of a low beach at the head of the sound, clears them to the Westward. The inner anchorage should not be attempted without a good pilot; but in case of a vessel being caught in the sound in a S. W. gale, the following directions will be of use:

The principal dangers are, a rock outside the beacon, lying one and three fourths cables' length from the extremity of the ship's stern, with only a foot on it at low-water springs; and a rock in the middle of the harbor, inside the beacon, from which it is distant about three cables' length, which uncovers three feet at low-water springs. Run for the ship's stern so as to pass it at a cable's length, leaving it on the port hand, and pass the beacon at the same distance, leaving it on the starboard hand, taking care not to let the light-house, the top of which may be seen over the land, pass beyond the first little islet inside the entrance; then steer for the Independent church, keeping about two cables from the land, and give Battery Point a berth of half a cable's length, and when about one cable and a fourth distant from it, you will find safe anchorage. Fresh water can be obtained from wells; that from the lake is not good, and is difficult to get.

Tides. In Yarmouth Harbor the establishment or times of high water, at full and change, is 10h. 0m., and the rise varies from sixteen feet nine inches to twelve feet five inches. The tide-stream changes its direction a little after high and low water respectively.

Lurcher. THE LURCHER consists of two shoal patches, bearing from each other N. E. ¼ E. and

S. W. ¼ W., with sixteen or seventeen fathoms water between them. That to the Southwestward is the larger and shoaler having only nine feet on it at low springs, and shows a considerable tide-rip during the run of the tide, near the S. W. end of which the shoalest water is, and breaks in heavy weather. The other, bearing from the nine feet N. E. ¼ E., distant two and a half miles, has five fathoms on it, and is very small, but shows a good tide-rip. The Southwest Shoal bears from Yarmouth light-house N. W. by W. ⅔ W. fourteen and three fourths miles.

Tides. At the Northeast Shoal the ebb commences running 1h. 30m. after high water at Yarmouth; at neap tides it attains a velocity of two and a half knots, the average set being nine and one fourth miles in a Southerly direction. The flood sets in the opposite direction, its greatest velocity at neaps being two and one fourth miles, its average set eight miles. The slack water is full one hour in duration.

Trinity Ledge. THE TRINITY LEDGE consists of three small rocks which uncover at low springs, the highest being between two and three feet above water, and the others just seen. They bear from Cape St. Mary S. W. ¾ W. six and three fourths miles; and from Black Point W. ¼ S. six miles, and from Fourchu light-house N. by W., thirteen and three fourths miles. The highest rock should not be approached nearer than one fourth of a mile. They cause a considerable tide-rip during the tide, at the S. W. extremity of which the rocks lie, and in heavy weather they break. There is broken ground all the way from the Trinity Ledge to Black Point, but nothing that will bring a vessel up. The tide-current runs with great strength at the ledge, attaining in the middle of the tide two knots per hour: the ebb setting S. ½ W., and the flood N. ½ E.

Bryers Island S. W. Shoal. BRYERS ISLAND S. W. SHOAL, bears from Bryers Island light-house S. W. by S. nearly four miles, and from the Gull Rock S. W. by W. ¾ W., distant two miles. It has only thirteen feet water on a small patch where Dartmouth Point is just open to the Westward of the Gull. A long tide-rip extends from the Gull to a mile beyond the S. W. Shoal. Between this shoal and the Gull Rock there is a channel one mile and a half broad, and the rock can be approached to a fourth of a mile on its sea-side.

Directions. In running into the Bay of Fundy, and intending to pass to the N. W. of Grand Manan Island, a vessel being four miles to the S. W. of the Blonde Rock, should steer N. by W. ¾ W. thirty-seven miles, which will carry her four miles to the S. W. of the shoalest part of the Lurcher; thence a N. by W. course for forty-eight miles will bring Machias Seal Islands to bear N. N. E. ¾ E., distant four miles; or a vessel having passed Mud Island W. Shoal on its Southern side, the light-house being well open to the Westward of Division Point, a N. W. ¾ N. course seven miles will clear Jacco's Ridge. Passing to the Southward of the ridge, steer N. N. W. ½ W. twenty four miles, when the shoalest part of the Lurcher will bear N. E. by E. ¾ E. one mile and a half; thence a N. by W. ½ W. course for forty-eight miles will bring Machias Seal Islands to bear N. E. by ¾ E. one mile and a half.

Tides. The average set of a tide on the above courses is from eight to ten miles per tide, its direction constantly altering as follows: At the Blonde Rock the ebb sets about S. E. by E. ½ E.; to the Northward of Seal Island, S. S. E. ½ E.; at the Lurcher S.; and at Machias Islands, about S. W. ½ S., beyond which it takes the direction of the shore.

Machias Seal Islands should be passed to the Southward, at a distance of four miles; and when they bear N. E. by E. ½ E. four miles, the course should be altered to N. by E. ½ E. for eight miles, when the light will bear S. by E. ½ E. six miles, and a N. E. ¾ E. course sixteen miles will bring the vessel due E. of Quoddy light-house, one mile and a half distant. This light should not be approached nearer than half a mile, to avoid the Sail Rocks, which lie about that distance from it.

In the above directions the weather has been supposed clear; should it, however, be foggy, the lead must be frequently used, and the vessel kept on nearly the above courses, according to the following considerations: when nearing the land abreast the Salvages, keep in thirty fathoms, and pass to the Southward of the Brazil Rock, by not going under twenty fathoms water over a sandy bottom; after which keep in twenty fathoms, which will carry her outside all dangers from the Brazil to the Blonde Rock. When near the latter rock, and the vessel making a W. by N. course, the depths will suddenly increase to thirty and forty fathoms; she will then be past Seal Island, and can haul in N. by W. ¾ W. for the Bay of Fundy. After altering the course, if the depths shoal under thirty fathoms, haul more to the Westward, as the deep water runs close up to the Gannet Rock. A good lookout must be kept for the Lurcher (which shows a tide-rip), and the lead kept going when in its neighborhood. The vessel, by continuing the above course, with the lead going and a good lookout, will approach the American shore near Libby Island, when the soundings will shoal, and when in twenty fathoms, the course should be altered to N. E. by E. ½ E.; she will then be running parallel to the coast until she reaches Quoddy light, when the coast tends more to the Northward.

In running for Yarmouth, or intending to pass to the S. E. of the Grand Manan inside

the Lurcher, after passing Jacco's Ridge, a N. ¼ E. course for seven miles will clear th Gannet Dry Ledge, and lead to the Northward of the Gannet; then N. by E. ½ E. te miles, will lead outside Green Island, which is bold on its W. side, to within three mile to the Westward of Yarmouth light-house. If the vessel has passed between Roun Island and Bald Tusket, there is a good passage between the Gannet and the Tuske Island. Keep the light-house well open to the Eastward of Green Island, which will clear all the dangers off the Gannet, passing inside of them; pass Green Island, which is bold on the E. side, from half to a fourth of a mile, then steer N. ½ E. until the light-house bears to the Eastward of N. by E. ½ E., in order to pass outside the Roaring Bull.

After running through either Schooner or Ellenwood Passage, and being abreast of the low part which connects the two high portions of Murder Island, and from two to four cables' length from the shore inside Murder Island W. shoal, alter course to N. W. to pass between it and the shoal that extends off the N. W. point of Murder Island. When Yarmouth light-house opens of the W. tangent of Jebogue Point, a vessel will be clear of and outside Reef Shoal, and wishing to run along the coast inside the dangers the course should be altered to N. ½ W., running for the light-house, keeping it a little open to the Westward of the W. tangent of Jebogue Point, so that when the point bears E. by S. ½ S. its high-water line will be from a fourth to half a mile distant. Run along shore, preserving this distance to keep inside the foul ground; and when Pinkney Point shuts in of Jebogue Point, the distance may be gradually increased to two thirds of a mile until the Roaring Bull is passed, which is about a mile from the land. Cape Fourchu is bold, and may be safely approached to two cables' length. If wishing to run outside the dangers, preserve the former (N. W.) course until the line joining Green Island and the light-house is passed, when the course may be altered to N. ½ E. until the light-house bears to the Eastward of N. by E. ½ E.

From Cape Fourchu, to run inside the Lurcher and Trinity Ledge for Grand or Petit passages: With Yarmouth light-house bearing E. by S. ½ S. three miles, a N. ½ E. course for twenty-eight and a half miles will carry a vessel to Peter Island, leaving the Trinity about a mile to the Westward, and Cape St. Mary about three and a half miles to the Eastward. If bound to Petit Passage, a N. by E. ½ E. course will carry her well inside the Trinity, and about three fourths of a mile to the Westward of Cape St. Mary. In foggy weather it will be better to make the land in the vicinity of Cape Fourchu, when a N. ¼ E. course for sixteen miles will bring her near Cape St. Mary. When passing Chegoggin Point, care must be taken not to approach the land to the Northward of it nearer than half a mile until abreast of Cranberry Head, after which the projecting points to Cape St. Mary are pretty bold and may be approached, bearing in mind that the lead should be kept constantly going, and the depth not decreased under eight or ten fathoms; if any doubt arises, anchor. When near Cape St. Mary, great care must be taken to avoid a shoal which dries at low water, and which runs off one fourth of a mile in a S. W. by S. direction; the flood tide round this shoal shows a considerable tide-rip to the extent of full half a mile. From Cape St. Mary to Montegan, the coast is bold, and the cliffs in some places rise one hundred feet above high water. From Cape St. Mary to Grand Passage, steer N. by W. ¼ W., in order to make the S. E. part of Bryers Island at from one to two miles to the Southward of the passage, a small allowance being made for tides. Across the entrance of St. Mary Bay the flood tide has a greater general effect than the ebb, which is chiefly confined to two strips of current from Petit and Grand passages respectively in the direction of Cape St. Mary. At Montegan, the current sets along the coast, the flood at its greatest velocity attaining one knot, and the ebb about two thirds of a knot per hour.

GRAND PASSAGE AND WESTPORT.

The principal dangers in Grand Passage are:

Passage Shoal. PASSAGE SHOAL, which has five feet on it at low-water springs, lies in the middle of the passage bearing from Peter Island light-house N. ½ E., four cables' length distant and shows a tide-rip during the tide.

Cow Ledge. COW LEDGE.—The highest part shows soon after high water, and is distant one and a half cables' length from Long Island, to which it is joined at low water. Peter Island light-house bearing S. by W. ½ W., with the island its own breadth open to the Westward of Sand Point, clears the ledge to the Westward.

Cow Ledge Shoal. COW LEDGE SHOAL has fourteen feet on it at low water, and lies a fourth of a mile to the Northward of the highest part of Cow Ledge, and S. E. ¼ E. three cables' length from the N. point of Bryers Island. Peter Island bearing S. by W. ½ W., with the island open its own breadth to the Westward of Sand Point, clears it to the Westward.

Directions. Grand Passage has two entrances to the Southward, one on each side of Peter Island; that on the W. is the shorter and narrower, and has twenty-four feet in it, and no dan

gers. In entering the latter passage keep in mid-channel, and if the flood is running great care must be taken, as the tide sets directly on the S. point of Peter Island with great strength. When through the channel, and wishing to anchor at Westport, haul to the Westward, giving the point on Bryers Island a berth of nearly a cable's length. Anchor with the Episcopal church bearing S. W. ¾ W., and the Baptist chapel W. ½ N., in from five to seven fathoms at low water, over a hard bottom, but the water will be smooth. A small supply of fresh water may be obtained from wells.

The establishment at Westport is 10h. 39m.; the greatest rise observed at high water was twenty-one feet six inches, and the least sixteen feet three inches; the highest low water seven feet, and the lowest eleven inches. The tide commences running to the Southward full half an hour before high water. The tide-stream runs with great velocity through Grand Passage, especially through the two channels at the Southern entrance, where it attains the rate of from five to six knots per hour. *Tides.*

If wishing to run through the Western entrance without anchoring at Westport, instead of hauling to the Westward preserve a Northerly course, taking care not to approach Bryers Island nearer than one cable and a half, to avoid a rocky shoal which runs off that island a little beyond the N. end of Westport, about that distance off; and on the other hand, keep Peter Island light-house to the Southward of S. ½ W., until half a mile to the Northward of the island, to clear Passage Shoal, when the light must be kept to the Southward of S. by W. ½ W. until the N. end of Bryers Island bears N. W. ¾ W., when a vessel will be clear of Cow Ledge and Shoal, and by keeping the light-house in sight, will pass a long way to the Northeastward of the N. W. Ledge, and may approach Long Island, which is bold, to a cable's length. Care must, however, be taken not to run very close to the Northern point of Bryers Island, for it is shoal for a cable's length in a Northeasterly direction, and also one cable and a half in a Northerly direction from the high-water line of the point.

To run through the Eastern entrance, keep the S. point of Peter Island a little on the port bow to avoid Dartmouth Point, which should be given a wide berth; on the flood, pass along the Eastern side of Peter Island, which may be safely approached to half a cable's length. Preserve a Northerly course, taking care not to bring the light-house to bear to the Southward of S. by W. ½ W., until half a mile beyond it; nor to approach the Long Island shore, until arriving at Sand Point, nearer than two cables' length; after passing Sand Point take care not to bring the light-house on Peter Island to the Westward of S. by W. ½ W., and then steer as before recommended.

When Peter Island is passed, and wishing to anchor at Westport on the flood, haul sharp round the N. end of the island, taking care to keep a full cable's length off the high-water line, or two cables' length from the light-house, in order to avoid the shoal point off the Northern end of the island, and pass between it and Passage Shoal, on which the flood sets directly and with great strength.

A buoy on Passage Shoal would greatly facilitate the navigation of this passage and the entrance to Westport, which affords a very safe anchorage with all winds, except from N. ½ E. to N. N. E. ½ E., to which it is exposed; but the water is always smooth in the position recommended for anchorage.

FROM CAPE SAINT MARY TO RUN THROUGH PETIT PASSAGE.

PETIT PASSAGE.—There is a flashing light, exhibiting a red and white flash alternately, at intervals of one minute, on Boar's Head, S. side of the entrance to Petit Passage. *Light.*

Cape St. Mary bearing E. one mile, a N. by E. ½ E. course, distance sixteen and one fourth miles, will carry a vessel to the S. entrance of Petit Passage, the S. point of Digby Neck bearing E. N. E., half a mile; this point must not be approached close to, for some rocks run off it nearly a cable's length in a Southerly direction. *Directions.*

In running through the passage, keep about mid-channel. The Western shore is bold, and may be approached, especially at Eddy Point, which projects into the passage; the Eastern shore to the Northward of Sand Point has a ragged rocky bottom to about one cable and a half from the high-water line. Care must be taken in approaching the Boar's Head (the point at the N. W. entrance of the passage) off which lies a rock with only eight feet on it at low springs; it bears from the point about N. by E. ½ E., one and three fourths cables' length distant, and shows a tide-rip during the strength of the tide-stream and breaks in heavy weather. There is a passage with twenty-five feet at low water between this rock and the shore. When running for Petit Passage on the ebb, and off Cape St. Mary, steer for the middle of Long Island about N. ½ E., until the strip of tide is passed which runs from the passage to the cape, beyond which, on the Long Island shore, a feeble eddy is formed, running toward Petit Passage, which increases in strength and diminishes in breadth on approaching that passage, where it reaches up to Eddy Point, which can be rounded close to.

When through the passage, or the Bay of Fundy side, Boar's Head bearing S. W.

eight tenths of a mile, Partridge Island light (St. John, New Brunswick) will bear N. N. E. ½ E., forty-nine and a half miles distant.

When in the Bay of Fundy, and wishing to enter Petit Passage on the ebb, make the Digby Neck shore to the Eastward of the passage, and skirt it along until in the passage, in order to prevent the tide sweeping the vessel by the entrance. The above shore can be approached with safety to about one cable and a half, where there is a depth of about five fathoms at low water.

Petit Passage is the shortest route between St. John and Cape Fourchu, and is to be preferred by steamers and smart sailing vessels with a leading wind through the passage, not only on account of the lesser distance, but because it is entirely free from dangers. A small light on Eddy Point would be of great advantage.

Tides. The tide runs through Petit Passage at a rate of from six to seven knots an hour. High water happens about two minutes before, and the range exceeds that in Grand Passage by one twentieth. An eddy is formed on the Western shore of the passage to the Northward of Eddy Point, where small vessels can anchor close to the shore, but require to be moored head and stern on the ebb-tide

St. Mary Bay. ST. MARY BAY.—When off Cape St. Mary and bound up St. Mary Bay, the coast is bold, and may be approached until you arrive at Montegan, where it becomes low, and beyond which rocky ridges run off the shore in a direction at right angles to its trend as far as Groscocq; the shore should be given a berth of a mile. Beyond Groscocq the coast becomes bolder, until within a short distance of the entrance of the Sisibou River, where a shoal runs off; by keeping rather more than half a mile from the shore, a vessel will pass outside in about five fathoms at low-water springs, after which, when the remarkable notch in Sandy Cove shows open, she can haul in toward the entrance of the river, and find good anchorage in about five and a half fathoms at low water, over mud bottom, at rather less than half a mile from the shore.

Long Island. LONG ISLAND.—The St. Mary shore of Long Island is very bold, and a vessel can run close along it except in rounding Dartmouth Point, off which some ragged rocks lie nearly cable and a half distant.

The Bay of Fundy shore of Long Island is bold, and after passing Cow-ledge. Shoal can be approached to one cable's length, until you reach Boar's Head, where only small vessels or steamers should attempt to pass inside the rock before described.

Bryers Island N. W. Ledge. BRYERS ISLAND NORTHWEST LEDGE.—This ledge, which is of large extent, and lies to the N. W. of Bryers Island, has very deep water to the N. W. close to it, and a good passage between it and the island; the Northwestern shore of the island may be safely approached to two cables' length.

On this ledge there are several shoal spots, the principal of which are the N. W. Rock, Batson's Rocks, and the Frenchman's Elbow.

Northwest Rock. NORTHWEST ROCK has only six feet on it at low springs, and is of small extent. The six-foot bears from Bryers Island light-house N. by E., four and a half miles, and from station on Bryers Island, N. by W. ½ W., three and three fourths miles; a large granite boulder on a hill on Long Island, on with the N. point of Bryers Island (over which it is seen), leads clear of this rock and of the whole ledge, passing in good water to the Northward of it.

The Batson. THE BATSON consists of two rocks, or small shoals, the least water on which is respectively twelve and thirteen feet at low springs; they lie S. W. ½ W. and N. E. ½ E. from each other and nearly a cable's length apart, with five and a half fathoms between them. The twelve-foot spot bears from the N. W. rock W. S. W. ½ W., distant one mile; from Bryers Island light-house nearly N., three and eight tenths miles; and from Bryers Island station, N. N. W. ¾ W., three and nine tenths miles.

The Frenchman's Elbow. THE FRENCHMAN'S ELBOW is a long shoal strip, with five and a half fathoms water on it, and lies between the N. W. Rock and Bryers Island, in the direction of the N. point of the latter, and distant about one mile from the former.

To the S. W. of the Batson, the ridge extends to a considerable distance in that direction, gradually increasing in depth, with deep water on both sides of it.

The N. W. Ledge shows a large heavy tide-rip during the strength of the tide, and breaks heavy on its shoal parts when there is much sea.

The Gull Rock, well open of the point of Bryers Island to the S. E. of the light-house, clears the Batson Rocks, passing to the Southward of them; and the Gull on with the point will lead over the N. W. Ledge, between the Batson and N. W. Rock.

Tides. The tide stream runs very strong over the N. W. Ledge, the ebb taking a Southerly and the flood a Northerly direction, at the rate of about four miles an hour at half-tide, when it attains its greatest velocity. The stream changes its direction here about three fourths of an hour after that in Grand Passage, or nearly about the time of high and low water there.

Directions. In sailing from Cape Fourchu to St. John, and intending to run between the Grand

Manan and Bryers Island, with Cape Fourchu light-house bearing E. by S. ½ S., three miles, a N. by W. ¼ W. course, twenty-seven miles, will lead three miles to the Westward of Trinity Ledge, and about the same distance to the Westward of Bryers Island S. W. Ledge; thence steer N. ¼ W. eight miles, when the Batson Rocks on the N. W. Ledge will bear about E. by S. ½ S., rather more than five miles; the course to St. John is then clear of all danger, and Partridge Island will bear N. E. ½ N. sixty miles.

Caution. In foggy weather it requires a very careful lookout, and the lead frequently hove, to make this passage; in which case, when abreast of the Trinity Ledge at the distance above mentioned, if a depth of less than thirty fathoms is obtained, haul more to the Westward. When approaching the S. W. Ledge, you should be in about forty fathoms. The tail of this ledge runs out a considerable distance to the S. W., and shows a ripple during the tide; if, therefore, you go from deep to shoal and then deepen again, and see the ripple, you will know you have crossed the tail of the shoal, and by referring to the chart and depth of water, will pick up your place pretty exactly. In approaching the N. W. Ledge, keep beyond forty fathoms; and in a similar manner to the above, you may pick up your position, when crossing the tail that runs out a considerable distance in a S. W. direction from the Batson.

Tides. The tide-stream from Cape Fourchu to Bryers Island will set a little across the above courses from five to ten degrees, and run about two knots an hour during four hours on each tide, the ebb setting the vessel to the Westward, and the flood to the Eastward of her apparent course. After passing Bryers Island, the direction of the stream suffers a considerable alteration, setting N. E. and S. W.

Annapolis Gut. ANNAPOLIS GUT.—Pursuing the coast along shore from Bryers Island to Annapolis Gut, it has very few curvatures; the shore is bound with high rocky cliffs, above which a range of hills rise gradually to a considerable height; their summits appear unbroken except at the Grand and Petit passages at Sandy Cove, and Gulliver's Hole, where they sink down in valleys, and near the gut where they terminate by an abrupt and steep declivity. The mariner, in navigating this coast, will, by keeping about a mile or a mile and a half from the land, have fifty, forty, and not less than thirty fathoms water all the way; and when at the entrance of the gut, one mile and a half distant from the light-house on Point Prim, he will find the latter depth. The shore on both sides of the gut is iron bound for several leagues; the stream of ebb and flood sets through the gut with the velocity of five knots an hour, causing various eddies and whirlpools, but the truest tide will be found off the Eastern side, which is so bold to approach that a ship may rub her bowsprit against the cliffs, and yet be in ten fathoms water. *Light-house.* There is a light-house upon Point Prim, the light from which is exhibited from a window one hundred and twenty feet above the sea, and is an object of pitiful and useless economy; but it may perhaps serve to prevent the fatal error of mistaking the real entrance of the gut from Gulliver's Hole, which the land much resembles, but which latter has no such distinguishing building upon. Point Prim runs off shoal about thirty fathoms, and off the Eastern entrance is the Man-of-war Rock; it lies about a cable's length from the land, and has no channel within it. The entrance to the gut is very narrow, but keep mid-channel, and after you get within it the harbor widens, and ships can anchor on the E. or W. side of the basin, or run up to Goat's Island; if the latter, they should observe that when they get within half a mile of the island, they must stretch two thirds of the way toward the port shore, until they are past the island, which is shoal all round, and thence they can steer up mid-channel toward the town.

In addition to the above, Mr. Lockwood observes, that "the abrupt precipices of the highlands which form the gut, cause those gusts of wind which rush down so suddenly and so violently from the mountains. The tide also hurries your vessel through with great force. At the entrance there is no anchorage except close inshore, near the outer Western point; in some places the depth is from forty to eighty fathoms."

Black Rock Point Light-house. BLACK ROCK POINT.—On this point there is a light-house, forty-five feet above sea level at high water (rise and fall about fifty feet), three fourths of a mile E. of it, and at Givan's Breakwater, two and a half miles Westerly. It will be a guide light for vessels in clear weather, making Spencer's Island anchorage and the channel leading into the Basin of Mines. The following are bearings of the prominent headlands within view from the light:

Bearings.

Long Point, South shore	S. 86½	degrees	W.
To Givan's Breakwater	S. 81	"	"
Isle of Haute	N. 49	"	"
Cape Chignecto	N. 21	"	"
Cape D'Or	N. 13½	"	E.
Spencer's Island	N. 35	"	"
Cape Split	N. 66½	"	"
Range of shore toward Hall's Harbor	N. 89	"	"

Annapolis to the Basin of Mines.

ANNAPOLIS TO THE BASIN OF MINES.—From the Gut of Annapolis up the bay to Cape Split, the coast continues straight, and nearly in the same direction, with a few rocky cliffs near the gut or narrows, and many banks of red earth under highlands, which appear very even. In the channel or narrows leading into the Basin of Mines, from Cape Split to Cape Blow-me-down, and from Cape D'Or on the N. side, to Partridge Island, the land rises almost perpendicularly from the shore to a very great height. Between Cape Blow-me-down and Partridge Island, there is a great depth of water, and the stream of the current, even at the time of neap tides, does not run less than five or six knots. Having passed Cape Blow-me-down, a wide space opens to the Southward, leading to the settlements of Cornwallis, Horton, Falmouth, and Windsor, &c.; these are now rising into great mercantile consequence, and abound in mines of coal, plaster, limestone, and other valuable minerals; while to the Eastward the river extends to Cobequid Bay, having on its banks the towns of Londonderry, Truro, and Onslow, this latter place forming a direct communication with the Bay of Tatmagouche, in the Gulf of St. Lawrence. Off Cape Split there are considerable whirlpools, which, with spring tides, are very dangerous, and frequently run nine knots an hour. Should a vessel be at anchor between Cape Sharpe and Partridge Island, and you should be desirous of proceeding to Windsor River, it will be necessary to get under way two hours before low water, in order to get into the stream of the Windsor tide on the Southern shore; otherwise, without a commanding breeze, a vessel would run the hazard of being carried up with the Cobequid tide, which is the main stream, and runs very strong, both with flood and ebb; while the Windsor tide turns off round Cape Blow-me-down to the Southward, and is then divided again, one part continuing its course up to Windsor, and the other forming the Cornwallis tide, running up the river of that name.

In sailing up Windsor River, the house on Horton Bluff should be kept in a S. bearing, and the gap in the Parsborough River, N.; this will carry you through the channel between the flats, which cannot be passed at low water by a vessel drawing fifteen feet much before half-tide. Off Horton Bluff the ground is loose and slaty, and a ship will be likely to drag her anchors, with a strong breeze, particularly at full and change; therefore it might, perhaps, be better for men-of-war to moor across the stream, and full one third from the bluff.

Horton Bluff Light.

HORTON BLUFF LIGHT.—A beacon light on Horton Bluff, in the Basin of Mines, ninety-five feet above sea level, high water—rise and fall forty to forty-five feet.

The building is square, painted white; stands sixty feet from the bluff, and shows a white light, which may be seen in clear weather over the greater part of the Basin of Mines (after passing Cape Blow-me-down), and above the Five Islands and up Windsor River, until intercepted by the continuation of the bluff to the Southward of it.

Course to Boot Island, entrance of Cornwallis River	N. 14°	W.
" Cape Blow-me-down	N. 2	W.
" Partridge Island (Parsborough)	N. 2	E.
" Largest group of Five Islands	N. 38	E.
" West side of river, or continuation of bluff	S. 35	E.

Haute Island.

HAUTE ISLAND.—This island is situated at the entrance of the Mines Channel, and is not a mile and a half in length, and about half a mile broad; it bears from Cape Chignecto S. W., distant four miles; the channel on either side is good; that between it and the cape has fourteen, twenty, and twenty-two fathoms water in it, and that between Haute and Jolyffe Head from twenty to forty fathoms; it forms a prominent and very remarkable object, from the height and steepness of its rocky cliffs, which in a most singular manner seem to overhang its Western side; there is, however, a fair landing at its Eastern end, an anchorage half a mile off in eighteen fathoms, with the low point bearing about N. E. by N.; here also is a stream of fresh water running into the sea. Cape D'Or and Cape Chignecto are highlands with very steep cliffs of rocks and red earth, and deep water close under them. You have nearly the same kind of shore to the head of Chignecto Bay, where very extensive flats of mud and quicksand are left dry at low water. The tides come in a bore, rushing in with a great rapidity, and are known to rise at the equinoxes, from sixty to seventy feet perpendicular.

Chignecto Bay.

CHIGNECTO BAY runs up E. N. E., and may be considered to be the Northeastern branch of the Bay of Fundy; it is divided from the Mines Channel by the peninsula, of which Cape Chignecto is the Western extremity; having advanced about twelve or thirteen miles within it, you will see a point on the port or Northern shore running out to seaward; this is called Cape Enragée, on which there is a light-house containing a fixed light; eleven miles beyond which it divides into two branches, the one leading to Cumberland Basin, and by the River Missequash to Verte Bay, in the Gulf of St. Lawrence, and now becoming a place of very considerable commerce; the other running Northerly

Light-house.

and taking the name of the Petcudiac River; these parts, like the Basin of Mines, are fast rising into consequence, and becoming the seat of numerous settlements. The Cumberland Branch is navigable to within thirteen miles of Verte Bay; and it is remarkable that when the rise of the tide in Cumberland Basin is sixty feet, that in Verte Bay will only rise eight feet. The River of Missequash, which runs across the isthmus, is the present boundary between the provinces of Nova Scotia and New Brunswick.

CAPE CAPSTAN.—On this cape there is a light-house which shows two lights horizontally, when approaching it from the Westward or seaward side. The lights are about forty feet above high water (rise and fall about fifty-five feet). The building is square and painted white, and is a conspicuous beacon in the daytime to mark the entrance of Apple River, a place of resort for vessels of one hundred tons and under. The following bearings are given from the light: *Cape Capstan Light-house.*

Bearings.

To the Sister's outermost head	S. 61	degrees	W.
Salmon River	N. 9	"	"
Cape Enragée Light	N. 41	"	E.
Grindstone Light	N. 51	"	"
Along shore, Easterly	N. 62	"	"

CHIGNECTO BAY TO THE MANAN ISLANDS AND PASSAMAQUODDY BAY.

THE NORTH COAST OF THE BAY OF FUNDY, from Cape Enragée toward Quaco, in the township of St. Martin's, is, at present, but thinly inhabited, and it continues to be so as far as St. John: the land is good, but much broken with steep valleys; the weather is generally humid, the winds boisterous and changeable, and the intervals of sunshine limited and evanescent; but from Quaco to St. John the interior hills rise in easy inequalities; the ravines of the cliffs are deep and gloomy, and the indentations frequently have beaches; at Black River, which is about twelve miles W. of Quaco, is a safe inlet for a small vessel, although it is dry from half-tide. *N. Coast of the Bay of Fundy.*

QUACO LIGHT, white and red, horizontal, seventy feet above the level of the sea, is on a small rock off Quaco Head, W. ¾ S. from St. Martin's Head; it is a revolving light; time of revolution twenty seconds. *Quaco Light.*

QUACO LEDGE.—This is a dangerous, gravelly shoal, situated about twelve miles S. E. ½ E. from Quaco, and W. by N. distant eleven miles from Haute Island; it extends N. W. by N. and S. E. by S. about three and a half miles, and is half a mile broad; vessels have frequently grounded upon this bank; there are several irregular patches of rocks lying off its N. E. side; the ledge shows itself at half-tide, and dries for about one hundred yards, having but twelve feet water over it with common tide; half a mile to the N. E. the eddies with the flood-tides are strong and numerous, the ship's head going nearly round the compass in the space of half an hour; the ebb is a true tide, and sets in a W. S. W. direction toward the ledge; the soundings are from seven to fourteen fathoms, at about two cables' length all the way round, but they shoal more gradually from the N. E. *Quaco Ledge.*

At low-water spring tides, the highest rock is twelve or fourteen feet above water, and as much under at high water. In light winds and smooth water it is not visible, and therefore dangerous.

The night tides here, and generally throughout the bay, are highest; at St. John they are so during the summer, but the contrary during the winter months, or between the equinoxes. The mark to go clear to the Southward of the Quaco Ledge is Cape D'Or, on with the S. side of the Island Haute.

ST. JOHN HARBOR.—The entrance to this harbor bears from the Gut of Annapolis about N. ½ W., distant eleven leagues; it is distinguished by a light-house which stands on Partridge Island, after mentioned. Vessels coming from seaward and making for this harbor, should, so soon as ever they can well discern the light-house, make their signal for a pilot; but if unable to succeed in reaching the harbor that tide, then endeavor to run in between Meogenes Island and the main, going either on the S. or on the N. side of this island, in doing which you will have nowhere less than four, five, and six fathoms water, with a bottom of sand and mud. Here you will obtain the best anchorage, by bringing the three hills in the country to the N. E. in a line over Rocky Point Island, and the house on Meogenes Island S. E. by S. High water 11h. 44m., rise twenty-one to twenty-five feet. *St. John Harbor.* *High Water.*

THE CITY OF ST. JOHN stands on an irregular descent, having a Southern aspect and on entering the river has an imposing appearance. Partridge Island is about two miles to the Southward of the city, answering the double purpose of protecting the harbor, and by its light-house, painted white and red, vertical, guiding and directing the mariner to its entrance; the lantern is one hundred and sixty-six feet above the level of the sea, and the light is good and well attended. The ground for several miles to the *City of St. John.*

Southward of Partridge Island is muddy, the depth gradual from seven to twenty fathoms, affording excellent anchorage: the passage Westward of this island has in it ten feet, that to the Eastward has sixteen feet, and abreast of the city are from seven to twenty-two fathoms. Three-fourths of a mile to the Northward of the light-house is a beacon, black and white, vertical, fixed on the edge of a rocky ledge, forming the W. side of the channel, and having deep water close to it. A breakwater is erected farther on at the Eastern side of the channel and below the town; this greatly intercepts the violence of the waves, which Southerly gales usually occasion. Every possible assistance is here given to ships wanting repair; they lie upon blocks and undergo a thorough examination, without incurring the expense, injury, and loss of time, occasioned by heaving them down.

Beacon.

Vessels having made the harbor, and finding themselves able to enter, may, when they have passed Meogenes Island, edge inshore toward Rocky Point, until they perceive Meogenes Point is in a line with or over the N. W. corner of Meogenes Island; then, sailing in between Rocky Point and Partridge Island with these marks on, will lead them in the deepest water, over the bar, until they open Point Maspect to the Northward of the low point of Partridge Island; when putting the helm starboard, they should edge over toward Thompson's Point, until they get the red store at the S. edge of St. John in a line over the beacon; keep them in one until they have passed the beacon at the distance of a ship's breadth; then haul up N. N. W. for the harbor, keeping the blockhouse at the upper part of the harbor open to the Westward of the king's store, situated by the water-side: which mark will lead them, mid-channel, up to the wharves, where they may lie aground, dry at half-tide, and clean the ship's bottom: or ride afloat in the stream at single anchor, with a hawser fastened to the posts of the wharves on shore. The flood-tide is weak here, but the ebb runs down rapidly past Meogenes Island into the Bay of Fundy.

Tide.

Should the tide of ebb have taken place at the beacon, then it would be highly improper to attempt gaining the harbor that tide; but wait for the next half-flood to go over the bar; as both sides of the entrance to the harbor are composed of sharp rocks which dry at low water; and the tide of ebb, especially in the spring of the year, when the ice and snow are dissolving, is so exceedingly rapid and strong, that all the anchors you possess will not be sufficient to prevent the ship from driving.

From St. John out of the Bay of Fundy.

FROM ST. JOHN OUT OF THE BAY OF FUNDY.—To run mid-channel between the Gannet Rock and Batson Northwest Ledge: after leaving Partridge Island steer S. W. ¼ S., about fifty-five miles, which will lead about halfway between the rock and the ledge, when you will have soundings in about one hundred fathoms, or rather more. The deep water runs close up to the Old Proprietor off Grand Manan, on the one hand, and the Northwest Ledge on the other, so that when sailing in this direction, and in sixty or seventy fathoms, a sharp lookout is requisite.

From the above position, halfway between the Gannet and the Batson, the shoalest part of the Lurcher will bear about S. ¾ W., distant thirty-five miles; there will be plenty of room to pass either side of it.

To the W. S. Westward of Meogenes Island is Flat Bay, called also Visarinkum: it is a small harbor with five and four fathoms water, used sometimes by the coasters. Hence the land runs nearly W. S. W. passing Negro Head to Cape Musquash, off the point of which is Split Rock; it lies close to the cape, and has eight fathoms water very near it, being distant from Partridge Island eight and three fourths miles; the shore is iron-bound all the way, and has deep water close in to the land.

Musquash Harbor.

MUSQUASH HARBOR lies about a mile to the Westward of the Split Rock; its entrance is about half a mile wide, and there is good anchorage a little way in, with four fathoms water, but farther on a bar runs across the harbor, over which is only one fathom and a half; small vessels sometimes pass to the Westward of the islands, and run up the river, which, when past the bar, has two, two and a half, and three fathoms water; but this harbor is open to the Southward.

Point Lepreau. Lights.

POINT LEPREAU.—From the entrance to Musquash the coast runs W. S. W. Westerly, nearly ten miles to Point Lepreau, on which there is a tower, eighty-one feet high, red and white, horizontal, with two fixed lights, one elevated twenty-eight feet above the other. In this space are four or five inlets but only calculated for small craft; the first of these is about a mile and a half to the Westward of Musquash Western Point, and is of no note whatever; in your way to it a berth must be given to the shore, particularly about Musquash Point, on account of some rocks lying off that part; there are channels between these rocks, but few vessels will venture through them. About a mile farther is Chance Harbor, which is a mere shallow cove of two fathoms water. Little Dipper is more Westerly still, and situated three and a half miles from Musquash Point; this also has only twelve feet water in it, and scarce fit for anything but boats. Great Dipper is divided from Little Dipper by a flat point of land, round which are several scattered rocks; this harbor can accommodate small craft, which sometimes run in there for shelter; but is by no means to be recommended, unless in case of necessity; there is a

creek of fresh water runs into it, called Moose Creek. Farther Westward, and about a mile and a half from Point Lepreau, is Carriage Harbor; this is open to the Eastward, and affords anchorage at its entrance in from seven to three fathoms. The land all the way from Musquash to Point Lepreau is high, broken, and many scattered rocks lie off it; therefore vessels in passing should carefully give it a good berth.

MACE'S or MASON'S BAY is formed to the Westward of Point Lepreau, between it and Red Head; these bear from each other N. W. ¼ N., and S. E. ¼ S., distant full five miles. There are numerous rocks, shoals, and small islets within it, but its navigation seems insecure, for Mr. Lockwood emphatically observes, "This point ought to be classed as one of the dangers of the Bay of Fundy; for many serious accidents have lately happened in the neighborhood of this promontory." Mace's Bay he calls a deep and ugly indent; so much so, that ships bound to the River St. John, dreading to pass its entrance, get frequently embayed there, and some valuable vessels have thus been lost. "Yet, at the head of this bay," he observes, "is a place called Pok Logan, where there is good shelter. Several rivers appear to fall into this bay; and, perhaps, a better knowledge would tend much to strip it of its fancied dangers." *Mace's or Mason's Bay.*

W. by S. from Point Lepreau, distant three and a half and four miles, there is supposed to be a dangerous shoal, but its actual situation is not known; if such should exist, it must be surrounded with very deep water, for a small distance from this imagined situation are twenty-six, twenty-eight, and thirty-one fathoms, mud, mud and sand, and gravel.

BEAVER HARBOR lies about four miles to the Eastward of Bliss Island, and is above a mile wide at its entrance, with ten fathoms water on each side, and twenty fathoms mid-channel. In entering keep the Western shore on board, until you bring the Goal Rock to bear E., distant about half a mile, when you may anchor in four or five fathoms, good holding ground. There are no regular pilots, but the fishermen on the coast are well qualified for the task, although in clear weather they are not absolutely necessary, yet strangers to the place will most probably require their assistance. There are several rivulets running into various parts of the harbor, but there is no convenient water-place. *Beaver Harbor.*

ETANG HARBOR is situated to the Southward of the Magagadawe, and runs in to the Northeastward of Campo Bello; before it lie many islands. There are three entrances into this harbor, so that vessels may go in or out at any time. The Western entrance leads to La Tete Harbor, where anchorage may be obtained in from ten to five fathoms, but there is no passage for ships round the Northern end of Payne's Island. The channels between Payne's and Bliss islands are considered to be the best, as they will admit of vessels working through them; but the Eastern passage requires a leading wind. A pilot will be necessary on account of the intricacies of the channel, but one can easily be obtained anywhere on the coast; water can be procured in various places. The bay is extensive, secure, and well sheltered, having good anchorage throughout. High water, 11h. 10m.; rise, twenty-one to twenty-five feet. *Etang Harbor.* *High Water.*

ST. ANDREW'S HARBOR lies on the Eastern side of the entrance of the River Scoodic and has two entrances; the Eastern one is narrow and intricate, but is the deeper, having four or five feet at low water; the dangers in entering through this passage are a reef of rocks with a beacon on it, extending nearly three fourths of a mile from Navy Island, and a reef of sand and large stones with a pole on it, extending nearly two miles from the blockhouse on the main land; the narrowest part of the channel is not more than a cable's length: the mark for entering is to keep the town of St. Andrew's open, and steer directly in for the harbor. In the bay, in general, there are from seventeen to twenty-five fathoms water. *St. Andrew's Harbor.* *Dangers.*

The Western entrance is not so difficult, but has less water than the Eastern, the bar being dry at the last quarter ebb. A dangerous reef of stones, with a floating beacon on it, lies off the W. end of Navy Island. In steering you must keep close to the Northward of the two poles on the bar, where, at high water, you will have from eighteen to twenty feet water. *Reef.*

There is a harbor master and branch pilots belonging to St. Andrew's, and large vessels should never attempt to enter without having one of them on board. High water, 10h. 50m. Common tides rise twenty feet; spring tides twenty-six feet. *High Water.* *Tides.*

On the N. point of the entrance there is a light-house thirty-five feet high; it contains a fixed light. *Light.*

WOLF ISLANDS.—The Wolves may be passed on either side, having deep water close to them; but they afford no shelter anchorage, except for small fishing-vessels in summer-time; they are from sixty to one hundred feet high. With light winds, a lee tide, or thick weather, you may let go an anchor anywhere between the Wolves and Beaver Harbor, in good holding ground, with a depth of twenty or twenty-five fathoms. *Wolf Islands.*

THE MANAN ISLANDS.—Grand Manan is an island situated at the Northwestern entrance of the Bay of Fundy. The Northwestern part of this island is distant from Quoddy Head, W. seven and a half miles. Its S. W. end, or head, bears from the light- *Manan Islands.*

house on Bryers Island N. N. W. ½ W., from which it is distant thirty miles. It possesses harbors where the largest ships may ride in perfect security. Its fisheries are in great estimation.

On the Western side the cliffs are nearly perpendicular, rising six hundred feet above the level of the sea; but on this side there is only one little inlet along the whole range that can shelter even boats. It is commonly called Dark Cove, being situated about four miles from the Northern part of the island; there is, indeed, a place called Bradford's Cove, about five or six miles more to the Southward, but this is of no note whatever. There are soundings all along the shore, from Bishop's Head to the S. W. Head, three, four, five and six fathoms close to the land, deepening to thirteen, twenty, twenty-one and twenty-two, half a mile off; to thirty, forty and fifty fathoms at a mile distance, and still deeper as you increase your distance from the island.

The Northern or Bishop's Head is abrupt and bold; but on its Eastern side there is anchorage in a place called Whale Cove. This is situated between Swallow's Tail and the N. point; here vessels frequently ride during Southerly winds, to wait the turn of tide. The soundings are from fifteen to twenty-five fathoms; but it must not be resorted to in Northerly gales.

Long Island Bay. LONG ISLAND BAY.—This lies to the S. Eastward of Whale Cove, and is formed by the Swallow's Tail, which is a bold, high, ragged, and barren-looking point, and Long Island, which bears nearly S. from it, distant one mile and a half. This bay is easy of access, and possesses all the advantages of a harbor. The bottom of the bay is generally mud, excepting a ridge of rocks and gravel, which extends from the ledge that shows itself within the Swallow's Tail, and the cluster of sunken rocks that lie half a mile N. N. E. from Long Island Point, and these are five feet under water at low spring tides. In the Northern part of the bay the bottom is a stiff clay, and vessels ill provided with gear have often rode out the severest gale there; and under Long Island opposite the beach is good anchorage, even locking in the Northern end of Long Island with Swallow's Tail. The ground here is a strong mud, and you will ride safe and unaffected by sea or wind from any quarter.

Light. On Swallow's Tail there is a fixed light one hundred and thirty feet high.

Farther to the Southward, and on the Eastern coast of Grand Manan, are the Duck Islands. Here a pilot will be necessary, for, though the ground is good about Great Duck Island, yet there are dangers which, when the tide becomes high, are completely hidden. To the Southwestward of Duck Islands are the islands of Ross (the Northern point of which is scarcely separated from Manan,) Cheney's Island, and White-Head Island; these are connected together by a sandy and rocky reef of foul ground, which extends S. ½ W. to the Diamond Rocks. On White-Head Island resides an able and active pilot, and the cove opposite to his house is commonly a great resort for vessels employed in the fisheries; but with Easterly winds this is no desirable place. At the Western side of Ross Island is part of what is called Grand Harbor. It is a shallow muddy basin; but vessels may enter and lie securely in it on the mud, a convenience somewhat desirable, should you have lost your anchors and cables on any of the outer ledges. The entrance to this place has four, five, six and seven fathoms water, with a clayey bottom; the channel is narrow, but secure from the sea.

A little to the Westward of White-Head Island are the Green Islands, and to the Southward of the Green Islands, about one mile, are the three Kent's Islands; these latter are low and ledgy; the Eastern, or largest one, is bold to the rocks, which are at all times to be seen; and to the Northwestward of these rocks is a ledge called the Constable, which dries at low water. Under the lee of these and the Green Islands, occasional anchorage may be obtained in from fourteen to seven fathoms.

Wood Island. WOOD ISLAND lies off the Southern part of Grand Manan, and is one mile and three fourths long; it runs parallel to the S. W. head of Manan, and forms an excellent harbor between. The upper part of this inlet, and the head of it, afford most secure anchorage; and the inhabitants about Seal Cove and Red Head will furnish you with all necessary supplies you may stand in need of, for these places are all well settled.

Manan Ledges. THE MANAN LEDGES are those more distant islets, rocks, and dangers, which lie to the Southward of Grand Manan. The outer and most dangerous of these is the Old Proprietor, covering a space of half an acre at low water, and drying at half ebb; but when covered the tide sets directly over it, at the rate of four miles an hour. It lies S. ¾ W. eight miles from Great Duck Island; E. by N. five miles from Gannet Rock light; S. E. by E. ½ E. ten miles from the S. W. point of Grand Manan.

About two and one fourth miles N. E. ½ N. from the Old Proprietor is the Clerk's Ground, a rocky shoal of four and a half fathoms. N. W. by N. one mile and two thirds from the Old Proprietor, is Crawley's Shoal, of seven feet only; and W. of the Crawley, one mile and a half, is the Rans, of five feet. The Roaring Bull bears N. E. by E. ¾ E. from the Old Proprietor, two miles; and although it has six fathoms over it, it usually has a heavy dangerous ripple. The marks to go clear to the Eastward of all these dan-

ers is the Northeasternmost high land of Manan well open of the Long and Duck islands; the mark to lead to the Southward of them is the S. W. head of Manan open to Kent's Three Islands. In Easterly winds the tide-rips are impassable.

There are also other rocks within these, a range of which lies S. of the S. W. point of White-Head; some of these have deep water between them, and occasion a continual ripple three miles from the shore, quite home to the long point; these are called the Tinker, Three Diamonds, and many others without names; some of these show themselves, others have only three and four feet water over them.

S. S. E. ½ S., about three fourths of a mile from the Southern part of the Three Islands is a knoll called the Kent; it is dangerous, and has only seven feet water over it; it bears about W. N. W. ½ W. from the Rans, and is not included within the confines of the mark given to avoid the dangers to the Southward, viz., the S. W. head open of all the islands. There is also a danger said to lie S. E. ½ S. from the Kent Knoll, distant two miles, and W. S. W. ¾ S. one mile and a fourth from the Rans, but this is doubtful.

THE GANNET ROCK, on which there is a light-house, painted black and white, vertical, containing a flashing light, which flashes three times each minute, sixty-six feet above water, lies S. W. by S., distant three and a half miles from the Southern point of the Three Islands, and S. S. E. ½ E., seven miles from the S. W. head of the Grand Manan, it has a number of small ledges and sunken rocks about it which are always breaking; this stands conspicuous, being in the immediate vicinity of all the sunken rocks and dangers. Nearly S. W. by W. ¾ W. from the Gannet, distant three miles and a half, is St. Mary's Ledge, part of which is always above water; and to the Northward of St. Mary's Ledge, one mile, is the Long Ledge, equally visible; between and around these are numerous rocky shoals with deep water between them, rendering this part particularly dangerous. Other reefs are supposed to exist to the Westward, and between the Gannet Ledges and the Machias Seal Islands; their imaginary situations are marked on the chart, but no farther particulars of them are known. *Gannet Rock Light.*

MACHIAS ISLANDS.—S. W. by W. ¾ W. from Grand Manan, lies the Machias Islands. On the Eastern Island two light-houses are erected, showing fixed lights, distant from each other about one hundred and sixty-five feet, in the direction of E. S. E. and W. N. W., by which they are distinguished from all other lights upon the coast; they are elevated about fifty feet above high-water mark. A gun is fired every four hours during a fog. From the Westernmost of these light-houses the following bearings were taken: *Machias Islands.*

To the Southernmost of St. Mary's Ledges, E. by S. ¼ S. *Bearings.*
To Gannet Rock light-house E. ½ S. about thirteen miles.
To Little River Head N. ¾ W.
To Libby Island light-house N. W. ½ W.
To S. point of Kent Island (on the chart Three Islands) E. ¼ N.

ROCKS.—There is a rock of eleven feet at low water, which bears from the lights on Machias Island N. 15° E., distant two and a half miles; and a rock six feet above water, which bears N. E. by E. ½ E., three miles from the light. *Rocks.*

The pilots for St. John, St. Stephen's, and St. Andrew's, are to be found off Little River, or the Seal Islands. *Pilots.*

THE COAST OF THE UNITED STATES

FROM PASSAMAQUODDY TO CAPE COD.

SHIP-MASTERS will please remember that by following the directions given below, published under the authority of the Light-house Board, it will render their entering into, and departure from, a port much easier.

In conformity to the terms of the Act of Congress, approved September 28th, 1850, prescribing the manner of coloring and numbering the buoys along the coasts and in the bays, sounds, rivers, and harbors of the United States, the following order must be observed, viz.: *Directions.*

1. In approaching the channel, &c., from seaward, RED BUOYS with even numbers will be found on the STARBOARD side of the channel, and must be left on the STARBOARD hand in passing in.

2. In approaching the channel, &c., from the seaward, BLACK BUOYS with odd numbers will be found on the PORT side of the channel, and must be left on the PORT hand in passing in.

3. Buoys painted with RED and BLACK STRIPES will be found on obstructions, with channel-ways on either side of them, and may be left on either hand in passing in.

4. BUOYS painted with WHITE and BLACK PERPENDICULAR STRIPES will be found in MID-CHANNEL, and must be passed close to avoid danger.

5. All other distinguishing marks to buoys will be in addition to the foregoing, and may be employed to mark particular spots, a particular description of which will be given in the printed lists of buoys.

6. Perches, with balls, cages, &c., will, when placed, be at turning points, the color and number indicating on what side they shall be passed.

7. No deviations from the foregoing directions will be permitted.

8. The depth of water named in which the buoys and beacons are placed is low-water spring tides.

9. All LIGHT VESSELS of the United States are furnished with BELLS to be rung by hand, GONGS to be sounded, and HORNS to be blown, alternately, at intervals of not exceeding five minutes, with a duration of each signal of about three minutes, leaving a silent interval of about two minutes.

10. The principal light-houses and light-ships are furnished with the Commercial Code and Signals, and vessels having the latter can communicate with them.

Tides. TIDES ON THE UNITED STATES SEACOAST.—The article on the tides will be found in the first part of the Coast Pilot, immediately after that on the Gulf Stream.

Banks. BANKS.—There are four banks on this part of the coast: Jeffrey's Bank, Jeffrey's Ledge, Cashe's Ledge, which is dangerous, and George's Bank and Shoals, also dangerous; the only information to be relied upon of the three first named, although they have been upon the charts for nearly a century, is that of the United States Coast Survey.

Jeffrey's Bank. JEFFREY'S BANK.—*Surveyed on October 3d and 4th, by Lieut. Phelps, U. S. N.*—Shoalest Sounding found, forty-six fathoms, Matinicus light, bearing N. by W. ½ W., distant twenty-five miles. Another shoal spot, with forty-eight fathoms upon it, eleven miles S. S. W. ½ W. from the former soundings, with deeper water between them.

Jeffrey's Ledge. JEFFREY'S LEDGE.—*Lieut. A. Maury's Survey in* 1858–59.

21 fathoms	Thatcher's Island,	bearing	S. W. by W. ½ W.,	distant	3	miles.	
20	"	"	W. S. W. ¼ W.	"	6¾	"	
24	"	"	W. by S. ¼ S.	"	20	"	
25	"	"	S. W. by W. ½ W.	"	21	"	
18	"	"	S. W.	"	15¾	"	and
	White Island light	"	N. W.	"	14¼	"	

Lieut. I. Wilkinson's Survey in 1860.

30 fathoms	Thatcher's Island,	bearing	W. ¾ S.	distant	13	miles.	
30	"	"	S. W. by W.	"	34	"	and
	Boon Island light,	"	W. N. W.	"	19¼	"	

Shoalest sounding, eighteen fathoms, is near the Western edge of the ledge, and about midway between the Northern and Southern limits of it. One detached ridge is separated from the Northern end by deep water, showing soundings varying between eighty and ninety fathoms.

Cashe's Ledge. CASHE'S LEDGE.—The position of the rock on this ledge was accurately determined by Admiral Charles H. Davis, then on the U. S. Coast Survey. It is in latitude 42° 56′, longitude 68° 51′ 30″, and has on it twenty-six feet. It is on the Eastern edge of the bank, and is a flat white rock of from two to three hundred feet in extent. It is called Ammen Rock, from Capt. D. Ammen of the U. S. Navy.

S. of the flat rock there is a gully, ninety fathoms water, which runs in upon the bank in a Southwesterly direction. Upon the S. side of the gully, three miles S. of the flat rock, there is a shoal of seven fathoms, whence the soundings run suddenly to fifteen and thirty fathoms on all sides except the E., where it deepens suddenly to eighty fathoms.

N. by W., nine miles from the flat rock, there is a shoal of fourteen fathoms; between them there are from ten to thirty-five fathoms, rocky bottom; on the rocky bottom there is a kelp of forty-five feet in length; and on the flat rock there is none.

George's Shoals.

GEORGE'S SHOALS.

A Report relative to the Survey of George's Shoals, made in Sloop Orbit, by Direction and at the Expense of E. M. Blunt, assisted by the United States schooner Science, under Authority of Capt. Isaac Hull, at his Request, in 1821.

There are properly four shoals on George's Bank; the whole of them included between latitudes 41° 34′ N. and 41° 53′ 30″ N. and longitudes 67° 18′ W. and 67° 59′ W. Between them there are from fifteen to thirty-five fathoms water.

The largest, and on which is the chief danger, is the most Southerly and Westerly. It is somewhat triangular, with a long and narrow spit making out from the S. E. angle. The S. E. point is in latitude 41° 34′ N. and longitude 67° 40′ W. The W. point is

George's Shoals.

titude 41° 42′ N. and longitude 67° 59′ W. The N. E. point is in latitude 41° 48′ N., and longitude 67° 47′ W. The Eastern side of this shoal, although somewhat irregular, runs nearly S. S. E. and N. N. W., having on it from three feet to nine fathoms at common low water. It is composed of a great number of sand-spits, very narrow, so that the width of a narrow vessel will make several fathoms difference in the depth of water. The general range of the spits is from S. E. to N. W. As there are no rocks, they are consequently liable to change, in some measure, their positions and ranges. On the Eastern edge, even in calm weather, unless it be high or low water, the tides run with great rapidity, and form considerable breakers when setting to the Westward, and a large waterfall when setting to the Eastward. This is accounted for by a knowledge of the fact that, directly on the edge of this shoal, there are from twelve to sixteen fathoms of water, so that the edge forms a species of dam, stopping the force of the flood-tide, and over which the ebb falls.

When there was considerable wind, we observed that the breakers were higher within the edge, to the Westward, than on the edge; and I have no doubt that the water there was still shoaler, and that we should have seen the sand had it not been for the heavy sea. The breakers were such, unless it were entirely calm, that it was impossible to go among them in boats; nor was it considered safe to attempt it with the vessels. For, besides the danger of striking on the hard sand-spits, the vessels would have been liable to be filled by the breakers. Even on the Eastern edge, and at nearly slack water, the vessels were at times nearly covered with them. And it was not thought necessary to attempt it, as the objects of survey, to ascertain if there was danger on the shoals, and the situation and extent of them, could be accomplished without the risk.

Had not the sea been very smooth, and at high water, we should not have been able to have gotten on where we found three feet, reducing it to low water. The prevailing wind was to the Eastward; and I have no doubt but that this place would have been bare with any continuance of an off-shore wind.

I think there are no rocks about the shoals. We had one cast on the S. W. side, which indicated rocky bottom in fifteen fathoms; but I believe it to have been some sharp stone that the lead struck on, although I have marked it according to the appearance, on the chart. (This chart is published by E. & G. W. Blunt.)

The centre of the Northern shoal is in latitude 41° 53′ 30″ N., and longitude 67° 43′ W. It extends E. and W. about four miles. The shoalest part, having six fathoms, is very narrow, and composed of hard sand. But there are not more than twelve fathoms of water for three miles S. of the above latitude. On the N. side, at two cables' length from the shoal, the sloop dropped into thirty-three fathoms.

The breakers on this shoal are very heavy, and when there should be a sufficient sea to endanger a vessel, they may be seen some miles, and heard at a very considerable distance; and as the shoalest part is not more than a cable's length inside, and no danger near it, a vessel might avoid it.

To the Eastward of the last-mentioned shoal, in latitude 41° 51′ N., and longitude 67° 26′ W., is another small shoal, with eight fathoms water, having, however, considerable breakers. There are but seventeen fathoms for three miles N. of it; but very near to the E. of it are thirty-one fathoms, and from twenty to thirty fathoms to the S. and W.

The centre of the E. shoal is in latitude 41° 47′ N., and longitude 67° 19′ W. It is about two miles long from E. to W., and has several fathoms water. To the S., there are but seventeen fathoms for five miles. In other directions there are from twenty to thirty fathoms.

The above-described shoals, I am confident, are all which are on George's Bank. Their positions and size may be relied on, as well as the places of the soundings which I have laid down on the chart. They were ascertained by a vast number of celestial observations, taken with good and well-adjusted instruments on board the two vessels, and very carefully and faithfully calculated. The rates of the chronometers were found by a transit instrument previously to sailing from Boston, and after our return, and all the observations recalculated for the small variation which appeared.

At anchor, at different places, and on different days, we determined the set and strength of the tides, and as nearly as possible their rise and fall. The rise of them is from one to one and a half fathoms. They set round the compass every tide, setting S. E. nearly, at full moon, and running from one to four knots per hour, at a mile's distance from the breakers. The mean rate, however, is materially varied by the winds; they set strongest at W. S. W. and E. N. E., and which is undoubtedly the strength of the flood and ebb. From these causes and variety in the tides, arises a principal danger in approaching the shoals. When under way about the shoals, in a few hours' time we found ourselves drifted far out of our reckonings, and to ascertain our situation, when both vessels were under way, we took continued observations for the longitude by the chronometers, and at the same time double altitudes for the latitudes; which latter were calculated by Brosier's new and certain method. By allowing for the sets of tides

George's Shoals.

as ascertained at anchor, the observations and reckoning agreed very nearly, so that the latitude and longitude of every sounding-place on the chart may be considered as certain. Should any vessel fall in with the shoals, a knowledge of the course and strength of the tides would be of the greatest importance. And they can be calculated for any day and hour by the preceding facts.

In going from Cape Cod to the shoals, at five leagues from the light, there are eighty six fathoms, muddy bottom. The water gradually deepens to one hundred and thirty-three fathoms; and then gradually decreases toward the shoals. In latitude 41° 51′ N., and longitude 68° 11′ W., there are ninety fathoms. In latitude 41° 50′ N., and longitude 68° 3′ W., there are forty-nine fathoms, sand and gravel, on the Western edge of the bank. The water then shoals fast. To the Northward of the shoal, in latitude 41° 59′ N., and longitude 67° 52′ W., on the S. side of the N. channel, there are sixty fathoms, soft mud. In latitude 42° 12′ N., and longitude 67° 51′ W., there are one hundred and two fathoms. In latitude 42° 10′ N., and longitude 67° 18′ W., there is no bottom at one hundred and seventy-five fathoms. To the Eastward we did not ascertain the extent of the bank. In two miles Southward of the S. E. point of the shoals, there are from twenty to twenty-six fathoms of water, which soundings continue for at least twenty miles to the Southward and Westward.

The bottom of the bank, so far as we ascertained it, is of such a narrow character, that it is difficult for a vessel to ascertain her situation by it. We often found a great variety of soundings in a very short distance; such as sands of various colors, and differently mixed, coarse and fine, gravel, pebbles of various colors, stones, sponge, and shells. Of all these, except sand, I saved a number of specimens, with marks to note the place from which they were taken.

It may be worthy of remark, that one cast of the lead, on examining the arming, I found one third black sand, one third white, and one third green shells, in as distinct dimensions as they could have been drawn.

Notwithstanding this variety, some idea of the general character of the soundings may be useful. To the Westward of the shoals, and at some distance from them, the bottom is coarse sand and gravel of all colors; to the N. W. a mixture of white, black, and yellow sand; to the N. black and white sand; to the N. E. chiefly gravel and pebbles; to the E. fine white and yellow sand—and in latitude 41° 57′ N., and longitude 68° 40′ W., some white moss; to the S. E., fine white and yellow sand.

As the shoals are approached, in whatever direction, the soundings become coarse, and are frequently mixed with shells of different kinds. Near the shoal much of the bottom is pebbles; and to the E. of the largest and most dangerous shoal, there are stones of the size of hens' eggs, with moss and sponge on some of them. Near the S. E. point are from fifteen to twenty fathoms; a prevailing character of the soundings is green shells, and chiefly of the species usually called sea-eggs. If a vessel be far enough S. to avoid danger, she will have no shells. The quality of the soundings, as far as we were able to survey the bank, will be best understood from the chart, where they have been carefully rated.

The time and weather prevented making a complete survey of all parts of the bank; and although we ascertained the boundaries of it to the Westward and Northward, I have not delineated it on the chart, being unwilling to borrow anything from charts which disagree so essentially, and which we found very incorrect in the material points. Of the shoals themselves, I do not believe a more perfect survey can be made; unless in a calm time the main shoal could be penetrated. This, however, does not seem to be an object, as no vessel would be safe in attempting to pass over it.

The reports that rocks have been seen on the shoals are undoubtedly incorrect. Had there been any there, we could not have failed of discovering them. At the W. part of the bank, in strong tide-rips, we saw large quantities of kelp and sea-weed, which, at a distance, had the appearance of rocks. But on sounding we found good water, and regular and clear bottom.

It will be seen by the bottom that the holding ground is not good. But the vessels employed in the survey, by having a long scope of cable, rode out a considerable gale of wind for twenty-two hours, on the E. side of the main shoal, and to the windward of it. At this time the sea broke very high in ten fathoms water.

Since this survey, in 1821, the shoal has been resurveyed by Lieut. Charles Wilkes and others, in the U. S. brig Porpoise, in the year 1837, and from his report the following is taken:

"The shoalest water found on any part of the bank was two and a half fathoms, or fifteen feet, reduced to low water; and this is only to be found in two small places, viz.:

Lat. 41° 40′ 13″	Long. 67° 44′ 10″
Lat. 41 40 33	Long. 67 44 30

"The whole of the shoal is composed of hard sand-spits—fine sand on the shoalest places, and coarser as the water deepens, until it becomes large pebbles without sand.

"The rise and fall of tides is seven feet, extremely regular, the first part of the flood setting N. N. W., the latter part N. by E., and ebb S. S. E. and S. by W. The flood runs four and a half hours, ebb five and a half hours; greatest velocity two and six tenths of a mile, from half an hour to two hours in changing, going round with the sun on from N. by way of E. The wind has but little effect on the velocity. High water, at full and change, at 10h. 30m. Variation of the compass 8° 15′."

High Water.

CLARK'S AND LITTLE GEORGE'S BANKS of the charts are proved by later examinations, not to be accurately defined, and are but parts of the shoal ground of George's Bank. They are erased from E. & G. W. Blunt's charts, and the name of Stellwagen's Shoal Ground substituted, after the commander of that name on the U. S. Coast Survey.

Clark's and Little George's Banks.

STELLWAGEN'S SHOAL GROUND.—Commander H. S. Stellwagen, U. S. N., by his soundings has shown the existence of this bank of over two thousand square miles, extending from George's Shoal to the Westward twenty-five miles, to the S. W. fifty miles, to the Southward thirty miles, its Eastern limit not yet defined; having on it as little as nine fathoms water, in some cases rocky bottom.

Stellwagen's Shoal Ground.

THE FISHING GROUNDS of George's Bank are between latitude 42° 5′ and 41° 18′, longitudes 66° and 67° 45′, in depths of water varying from fifteen to eighty fathoms, generally twenty to thirty-five fathoms.

Fishing Grounds.

NOTE.—In coming from the Southward for George's Bank, you will get soundings in lat. 40° 4′ N., if on the S. S. W. part of the bank. Should you not get soundings in the lat. of 40° 30′ N., you may be certain you are to the Eastward of the shoal, when you must direct your course accordingly to clear it, when your first soundings will be in seventy-five to sixty fathoms. When steering to the Northward you will shoalen your water gradually to twenty fathoms when you will be in latitude 41° 20′ N., which depth of water you will have ten or twelve leagues distant, either E. or W.

Soundings from George's Bank continue W. by S. until you are nearly abreast of the East of Long Island, then Southward to Cape Hatteras.

THE BAY OF PASSAMAQUODDY abounds in good anchoring places, well sheltered from all winds, and divides the United States from that of the British territory.

The Bay of Passamaquoddy.

There are three passages into Passamaquoddy Bay, namely, the Western Passage, the Ship Channel or Middle Passage, and the Eastern Passage. The first is that between the Isle of Campo Bello and the main land to the W. Middle Passage lies between Campo Bello and Deer Island, and the Eastern Passage is to the Eastward and Northward of both islands, which is preferred, being of easy access, with good depth of water.

QUODDY HEAD LIGHT is on the S. E. side of Quoddy Head. It is a fixed light one hundred and thirty-three feet above the level of the sea, and may be seen in clear weather eighteen miles. It bears from the Southern point of Grand Manan N. ¼ E. thirteen miles, and from the Northern point of said island W. N. W. seven and a fourth miles.

Quoddy Head Light.

Owen's Head bears from the light E. N. E. about one and one third of a mile, being the S. E. point of Campo Bello Island.

Owen's Head.

W. from Owen's Head, about three eighths of a mile distant, lies a rock called Black Rock, which is not covered at high water, and is bold all around.

Sail Rock bears from the light S. S. E. about three eighths of a mile; it is not covered at high water, and at some distance has the appearance of a sail, from which it derives its name. There is a passage between it and the main shore, at low water, but which had better not be attempted, unless forced by the currents and light winds.

Sail Rock.

The Middle Ground is a shoal, near the middle of West Quoddy Bay, about one fourth of a mile in circumference, with a good channel on either side of it. The shoalest part is often dry.

The Middle Ground.

WESTERN PASSAGE.—Vessels bound to West Quoddy Bay, and being to the Westward of the light-house, should give the shore a berth of three fourths of a mile, and steer N. E. by E., which will carry you clear of Sail Rock; and when the light or sound of the bell bears W. N. W., you may steer N. W. one mile and a half, which course and distance will bring you up with the beacon or the Middle Ground, and if low water, here you may anchor and wait for the tide to go over the bar, which you cannot cross until two and a half hours flood.

Western Passage.

Beacon.

LUBEC NARROWS.—On the Lower Middle Ground (six feet low water) there is a white and red striped wooden beacon, ten feet at top, with cask on spindle painted white, red on bilge. West Quoddy Head bears S. W. one mile and a half; Black Rock, S. E. by E. ¾ E., one mile; and the beacon on the Western Bar, N. N. W. ¼ W. This beacon is below the Narrows; sandy bottom. Give it a berth of fifty yards.

Lubec Narrows.

On the Western Bar (two feet low water) there is a white and black striped wooden beacon, fifteen feet at top, with cask on spindle painted white, bilge black. Mid-channel, opposite Cranberry Point, bears one mile N. by E. ¾ E. This beacon is on hard gravel bottom; can be passed to the Eastward within twenty yards.

On Comstock's Ledge there is a black spar-buoy, thirty feet. Lubec meeting-hous bears N. N. W.; Shockford's Head, N. by W.; Comstock's house, Lubec Neck, W. b N.; and Rogers' Island S. E. This buoy can be passed close aboard at the N. I common tides there are eight feet of water on the ledge at low water.

The bar has on it four feet at low water and should not be attempted without a pilot. Spring tides rise twenty-four feet; neap tides, sixteen.

Pilot. The entrance of West Quoddy Bay is wide, and the shores are bold, and may be neared until up with the spar-buoy. If in want of a pilot, by displaying a signal one can be obtained at the light-house.

Middle Passage. *Light-house.* MIDDLE PASSAGE.—If bound into Passamaquoddy in a large vessel, your best way is to go to the Eastward of Campo Bello Island, on the N. E. point of which is a light-house, forty feet above high-water mark, containing a fixed light; it is placed between the main ship channel and the Northern entrance into Head Harbor, and within two hundred and fifty feet of the extreme point. Ships in entering into the main channel, or vessels bound to Head Harbor, may safely pass at a cable's length from the light-house. In sailing up the main channel, care should be taken not to keep far from the shores of Campo Bello, as the flood tide sets directly over from the point at the light house, to the islands and ledges on the N. side of the channel, which is here upward o a mile in width, and at two hours' flood the tide sets directly toward the Black Rock which is a very dangerous ledge between Spruce and Casco Bay islands, upon which several vessels have been wrecked; after passing up, and leaving the light about a mile to the Eastward, the tide becomes more regular, and sets along the direction of Campo Bello shore.

High Water. Common tides rise here twenty-five feet. At full and change it is high water at half past eleven o'clock at Moose Island and runs when strongest, between Moose and Marble islands, and between Deer Island and Campo Bello, near five miles an hour.

In the Western passage, common tides rise from twenty to twenty-five feet, and within Passamaquoddy Bay the stream of tide is scarcely perceptible.

Vessels from the Southward, when bound up for this bay, should make for the Western coast, or that of the United States, as it is the most clear, and the flood most favorable being from seven to eight miles wide; both shores bold, the depth quickly increasing, on each, from twelve to seventy and seventy-five fathoms; the greatest depths near Grand Manan, where you haul quickly from ten to seventy-five fathoms.

With the light bearing S. S. E. or S. E. there is a depth of nineteen and twenty fathoms, where ships may anchor securely from all winds.

Off the N. E. end of Campo Bello, is a remarkable large rock, called the White-Horse Rock.

Campo Bello Light-house. CAMPO BELLO LIGHT-HOUSE.—The following bearings were taken from its top:

To the E. point of Grand Manan (Fish Head), S. 18° E., or S. by E. ½ E.

To the Southernmost of the Wolves, S. 66° 30′ E., or E. S. E.

To the Northernmost do., S. 87° E., or E. ½ S.

To Point Lepreau, N. 84° E., or E. ½ N.

To entrance of Beaver Harbor, N. 70° E. or E. N. E. ½ E.

To the White Horse Island, the top of the rock, which is white, N. 45° E., or N. E This you leave on the starboard hand.

Spruce Island bearing from N. 60° E. to N. 15° W.

To Black Rock, very dangerous, N. 61° 30′ W., or N. W. by W. ½ W.

To Casco Bay Island, N. 33° W., or W. ½ N.

Head Harbor. HEAD HARBOR, at the N. E. point of Campo Bello Island, is a secure and saf place, small but of easy access, and with six, seven, and eight fathoms water, muddy bottom.

Harbor Delute. HARBOR DELUTE, lies on the Western side of Campo Bello, and at its S. W. end is Snug Cove, a good harbor. Moose Island is on the opposite side of the channel, and belongs to the United States. The entrance to Passamaquoddy comprehends a space of nearly twelve miles.

If bound for Moose Island up the river Scoodic, as you pass Todd's Head (which is half a mile N. E. from the town landing on Eastport), give it a berth of half a mile, as a ledge of rocks lies off it. Having passed this head, the course and distance to Oak Point or Devil's Head, will be N. by W. eight leagues; in going which distance (twenty four miles), you pass Fross' Ledge on your port hand six miles from Todd's Head, and three fourths of a mile from the land; when continuing your N. by W. course five leagues, you will come to Robinstown, two miles above which, off a small island, from which it bears N. E., is a shoal on your port hand, and to avoid it, you must keep your starboard hand best on board, till you come up with Neutral Island, which you leave on your port hand, one fourth of a mile distant; and your course from this to the Devil's Head (before mentioned), which you leave on your port hand, is N. N. W. three miles When you have passed the Devil's Head, your course is W. N. W. one league, when you will come to a large ledge of rocks that you must leave on your port hand, which is

pare at two hours' ebb, and extends halfway across the river. Keep your starboard hand on board, and when you pass this ledge, your course is W. S. W., distant one mile, to Turner's Point, and from said point to the harbor, your course is N. W. by N., distant three wiles, and the next reach to the falls is W. N. W., distant one mile; the tide flows here twenty-five feet, and there are only six or seven feet in the channel at low water, with long flats of mud on both sides. The Devil's Head may be seen at the distance of ten or twelve miles.

There are several good harbors on the W. side of this river, and all the difficulty is the great depth of water, which is in general from eighteen to twenty-four fathoms. There is also a good harbor on your starboard hand going into Deer Island, which lies to the Southward of St. Andrew's, two leagues distant. It may be easily known, as there is a large bay between the two islands, which lies N. E. from the River St. Croix, three leagues distant

ST. CROIX RIVER.—On Frost Ledges (thirteen feet low water) there is a black *St. Croix River Buoys.*
nun-buoy (No. 1). Kendell's Head bears S. ½ E.: Clam Cove Head, E.; and the Eastern end of St. Andrew's Island, N. N. E. This buoy is on hard bottom, and is opposite Clam Cove Head, on Deer Island, province of New Brunswick.

On the Southern end of St. Croix Island (seven feet low water) there is a red spar-buoy (No. 2), thirty-nine feet. St. Croix light-house bears N. by E. three fourths of a mile; and Wilson's Point, N. W. by W. This buoy is on the Southern end of Half-tide Ledge, and can be approached within thirty yards.

On the Northern end of St. Croix Island (twelve feet low water) there is a red buoy (No. 4), thirty-eight feet. St. Croix light-house bears S. ½ E.; and Wilson's Point, E. by N. This buoy is on a point of ledge, and can be approached within ten yards, Northerly.

On the Middle Ground (thirteen feet low water) there is a black spar-buoy (No. 3), thirty-seven feet. Devil's Head Point bears S. E. ½ E.; and Marcus Head, New Brunswick, N. N. E. This buoy is on a soft muddy bottom; can be passed on either side; is about halfway between Chicks Landing and Raven's Head, N. B.

On Elliot's Flats (six feet low water) there is a black spar-buoy (No. 5), thirty-eight feet. Whidden's wharf bears S. by E. This buoy marks the main channel E. of the ledge, which can be passed at any time of tide. (Tide at this place twenty-seven feet.)

On the ledge there is a wooden beacon. This beacon is built of hemlock timber, and *Beacon.*
stands upon three piers: space between piers, thirty feet; is one hundred and seventy-two feet long, twenty feet wide at base, fifteen feet at top, and twenty-six feet in height.

On Knight's Point (six feet low water) there is a black spar-buoy (No. 7), thirty-six feet. Knight's Point bears W. by N.; and Todd's wharf N. W. by N. This buoy is on the outer edge of the flats, and marks the main channel.

LITTLE RIVER.—This harbor bears due W. from the middle of Grand Manan *Little River.*
island, and is called Little River, but you cannot see it except you are near the N. shore. You must not run in for it before it bears N. W. or N. N. W. There is a bluff point of rocks on the starboard hand as you go in, and an island in the middle of the harbor. As you pass in, leave the island on your port hand, keeping it close on board to avoid a ledge of rocks on the starboard shore, and when you have passed it half a mile, you may anchor in four or five fathoms, muddy bottom, and remain safe from all winds. Your course from this harbor to W. Passamaquoddy light is N. E. by E. ½ E., distant four and a half leagues. On the island, at the entrance, there is a fixed light, *Light.*
varied by flashes every ninety seconds, forty feet high.

MACHIAS.—Machias light is a fixed light, which is located on Libby Island, *Machias Light.*
at the western side of the entrance, fifty-two feet above the level of the sea. After you have passed the light, and have the passage well open, steer N., until you pass Cross Island, which you leave on your starboard hand; but in passing Cross Island, you must be careful of some dangerous ledges lying off it one mile and a half, in a N. W. direction, on which course you will leave a large white rock on your port hand; keep on this N. course until you pass around high island on your port hand, when you may shape your course W. N. W. or N. W. by W. for a point that is covered with young birch-trees, and a house on it, for on the starboard hand there is nothing but flats and shoals. You may keep your port hand after you pass this house, until the river opens to the Northward, when you may run up to Cross river, where you may anchor in four fathoms; but if you are bound up to the S. W. mills, you must haul away to the Westward. When you get up with Mr. Parker's house and barn, which are on the starboard hand, you must leave the barn open to the Southwestward of the Pott Head. This Pott Head is a large hill that you leave on your starboard hand.

JONES HARBOR.—After passing the above large white rock in your N. course, *Jones Harbor.*
haul to the Westward for one half mile; bring a high round island that is covered with trees to bear N., when you may anchor in four or five fathoms, muddy bottom.

MOOSE-A-BEC HEAD LIGHT is on Mistake Island; it is sixty-five feet above the *Moose-a-Bec Head Light*
level of the sea, and contains a revolving light; time of revolution thirty seconds, showing in that time two bright faces.

Moose-a-Bec Reach.

MOOSE-A-BEC REACH.—When you come from the Westward, and pass Ladle Island on your port hand, steer N. E. by E. for Tibbet's Island, which you leave on your port hand. When you come to the E. end of this island, give it a good berth, for at low water there is a ledge of rocks that lies a cable's length to the S. E. of said island. When you pass it and bring Moose-a-Bec Reach open, you may steer E. for Mr. Beal's house; but you must keep the starboard hand best on board, for there is a rock that lies about the middle of the sound, which is four feet above water at low water. You may anchor to the Westward of Mr. Beal's house.

When bound to the Eastward over Moose-a-Bec Bar, which you must not cross before two hours' flood, you steer for Kelly's Coffeehouse, which lies on the port hand, as you go to the Eastward, on the N. E. point of Moose-a-Bec Reach. When you are entering on the bar, you will bring a bushy tree right against Kelly's house, which stands on the point. Your course over the bar is E. You leave the Virgin's Breasts, one on your starboard and one on your port hand; but if you are bound to Chandler's River, you will leave the Virgin's Breasts on your starboard hand, and Rogue's Island on the same hand. There is a muddy bar that lies between Rogue's Island and the main land, but water enough on it at two hours' flood. Rogue's Island has a good harbor at the N. W. of it, safe from all Easterly winds, and a small distance from Chandler's River.

When you go over Moose-a-Bec Bar, bound to Machias, you leave the Virgin's Breasts, as before mentioned, keeping your course E., and a bare rock, called Pulpit Rock, on your starboard hand; you must keep Libby's Island light open to the Southward of this bare rock. [N. B.—This bare rock, which you leave on your starboard, may also be left on your port, and steer E. S. E. for Libby's Island light.]

Seguin Passage.

SEGUIN PASSAGE, MOOSE-A-BEC REACH.—On Long Ledge (fourteen feet low water) there is placed a black spar buoy (No. 9). Sawyer's Cove bears N. W. by W., one mile and one fourth. The buoy is about seventy-five feet S. S. W. of the Eastern end of the ledge, which is just bare at low water. This ledge extends N. W. and S. E. about six hundred feet. The Western end is just covered at high water.

On Sawyer's Ledge (thirteen feet low water) there is a red spar-buoy (No. 8). The buoy on Long Ledge bears N. W. by W. ½ W., three fourths of a mile. This buoy is placed about fifty feet N. of the ledge, which is just awash at low water.

On Driscoe's Ledge (twelve feet low water) there is a black spar-buoy (No. 11). The E. end of Mark Island bears E. N. E., three fourths of a mile. The buoy is about fifty feet S. E. of the ledge, which is just awash at low water.

On Moose Rock (thirty feet low water) there is a red spar-buoy (No. 10). The E. end of Mark Island bears N. E. ½ E., one mile. The buoy is one hundred feet N. E. of the highest part of the ledge, which is just covered at high water.

On Seguin Ledge (thirty feet at low water) there is a red spar-buoy (No. 12). The highest part of Seguin Island bears E., one eighth of a mile; and the E. end of Mark Island, N. E. ¾ N., three fourths of a mile. The buoy is about forty feet N. of the ledge, which has one foot of tide on it at low water.

Moose-a-Bec.

MOOSE-A-BEC.—On Fessenden's Ledge (fifteen feet low water) there is a black spar-buoy (No. 5). Tibbet's Narrows bears W. S. W., three miles; and Hardwood Island, S. E. by S. ½ S., one half mile. The buoy is one hundred feet S. of the ledge, which is just bare at low water.

On Horse Ledge (eleven feet low water) there is a black and red spar-buoy. Entrance to Sawyer's Cove bears N. W., half a mile; and buoy on Nova's Rock, E. by S., about one mile and a half. The buoy is about fifty feet W. of the ledge, which is just bare at low tide.

On Moose-a-Bec Bar (six feet low water) there is a black spar-buoy (No. 7). The buoy on Nova's Rock bears E. S. E., half a mile. This buoy is fifty feet S. E. of the end of the bar, which is dry at low water.

On Nova's Rocks (six feet low water) there is a red spar-buoy (No. 6). Entrance to Sawyer's Cove bears N. W. by W., about two miles. The buoy is about fifty feet N. of the ledge, which is bare at low water.

Moose-a-Bec Head to Machias.

MOOSE-A-BEC HEAD TO MACHIAS.—Give the light a berth of one mile, leaving it on the port hand, and steer N. E. by E. two leagues and a half, when you will be up with Libby's Island light on your starboard hand; then run N. N. E. two leagues, which will bring you up with Stone's Island, on your port hand, having a rock lying E., one third of a mile from the centre of the island; from this steer N. for Round Island, from which follow the Eastern direction for Machias.

Cape Split Harbor.

CAPE SPLIT HARBOR.—When you pass Petit Manan light, bring it to bear S. W. ½ S., and steer N. E. ½ N. for Cape Split, distant five leagues, which course will carry you safe into the harbor. In steering said course you will make a black rock, which you leave on your starboard hand, distant one mile from Cape Split. This harbor is safe from all winds but S. W., which blows right in; but if you anchor in a cove on the starboard side, and moor N. W. and S. E., you will lie safe from all winds.

NASH'S ISLAND is at the entrance of Pleasant River. There is a light-house, forty-seven feet above the level of the sea, on this island, containing a fixed light of a deep red color, which you leave on your starboard hand going in. *Nash's Island Light.*

Coming from the Westward, you must leave Petit Manan light on your port hand, giving it a berth of half a mile; then steer N. E. ten miles, which will carry you up with Nash's Island light, leaving it on your starboard hand, one fourth of a mile, when you must steer N. E. by E. two and a half miles, which will take you into Tibbet's Narrows. These narrows are formed by Tibbet's Island on the N. W. side, and Ram Island on the S. E.; this passage is one fourth of a mile wide; from the middle of which you must steer N. E. ½ E. one mile, which will bring you up with Shabby Island, leaving it on your starboard hand, one eighth of a mile, and when half a mile above it you may anchor in from five to six fathoms, good holding ground, Shabby Island bearing S. W. by S.

Coming in from sea, and to the Eastward of all the shoals and ledges hereinafter mentioned, bring Nash's Island light to-bear N. by W., and run for it, taking care not to approach the Southern end of the island nearer than half a mile, as there is a sunken ledge fully one third of a mile from the shore.

Vessels may anchor on the N. W. side of Nash's Island, and find a tolerable shelter from Easterly and S. E. winds, one fourth of a mile above the light, and one eighth of a mile from the island, in ten fathoms, soft bottom, being but a little out of the regular track from the light to Tibbet's Narrows. In coming from the light to the narrows, leave on your port hand, about half a mile, a large black rock, generally known by the name of the "Pot;" the next is Ladle Island, formed very much like a ladle, and about one mile above the light; this you pass within one fourth of a mile in steering the regular course; the next land on the left is Tibbet's Island, the entrance of the narrows, as before described. It may be proper to observe that Tibbet's Island appears to be a part of the main land until you get above the narrows.

On the right hand, between the light and said narrows, are several islands and ledges, but they lie a good distance from the regular track.

Any ship, no matter how great her draught of water, may enter Moose-a-Bec Reach by following the above directions.

NARRAGUAGUS LIGHT-HOUSE is on the S. E. point of Pond Island; it is forty-five feet above the sea level, and painted red. The light is fixed. It bears from Petit Manan light-house N. E. by N., distant six miles; from Nash's Island light-house W. ¾ N., distant four miles. *Narraguagus Light-house.*

NARRAGUAGUS HARBOR.—On Simm's Rock there is a red and black spar-buoy, forty feet. Petit Manan bears N. ½ W., four miles; and Schordic Island, W. by N., eight miles. This buoy is one hundred and thirty feet N. E. of the rock, in eight fathoms of water at low tide. There is about six feet of water over the rock at low tide. *Narraguagus Harbor.*

On Southeast Rock there is a red and black nun-buoy, third class. Petit Manan light-house bears N. by W., six miles; and Moose Peak, N. E. by E ½ E., eighteen miles. There is seven feet water on this rock at low tide. The buoy is one hundred feet N. W. of the rock in eight fathoms water; hard bottom. *Buoys.*

On Jackson's Ledge there is a red and black nun-buoy, third class. Petit Manan light-house bears W., six miles; and Narraguagus, N., ten miles. This rock has twelve feet water on it at low tide. The buoy is two hundred feet N. W. of the ledge, and is moored in ten fathoms water; hard bottom.

On Moulton's Ledge (thirty feet low water) there is a red and black nun-buoy, third class. Petit Manan light-house bears E. by S., four miles. This buoy is three hundred feet S. W. of the ledge, which is bare at low water.

On Petit Manan Bar (twelve feet low water) there is a black and white spar-buoy, thirty-five feet. Petit Manan light-house bears S. ½ W. This is a channel buoy over the bar inside of Petit Manan Island. There are two fathoms on the bar at low water.

On Jordan's Delight Ledge (forty-two feet low water) there is a red spar-buoy (No. 2). The W. end of Jordan's Delight bears N. by W., one mile and one fourth; Nash's Island light-house, E. by N. ½ N., five miles; and Petit Manan light-house, S. W. ¾ S., six miles. There are very dangerous sunken ledges for one mile to the Northward of this buoy. In running from Petit Manan Island to Nash's Island, this buoy is very useful. It should be left on the port hand in that case.

On the N. point of Pond Island Ledge (twelve feet low water) there is a black spar-buoy (No. 1). Stanwood's house bears S. W. ½ S. This buoy is one hundred and fifty fathoms from shore, just outside a ledge, with three feet at low water.

On Trafton's Island Ledge (twelve feet low water) there is a red spar buoy (No. 4). The E. end of Trafton's Island bears S. by E. ½ E., three fourths of a mile distant; the W. end of Trafton's Island. S. S. W. ½ W., one mile distant; and off the middle of the bank. The buoy is thirty fathoms W. of Middle Ledge, which is dry at half tide. The ledge is twenty-five fathoms long and eight wide.

Buoys. On Lower Middle Ground (twelve feet low water) there is a black spar-buoy (No. 3). The buoy is on the W. side of the channel, one fourth of a mile from shore, and one mile above Trafton's Island.

On the lower end of Upper Middle Ground, on E. side of channel (five feet low water). there is a red-spar buoy (No. 6). This is the deepest water to Millbridge. The channel is very narrow, and close to the Western shore; three miles from Millbridge.

On Long Point Ledge (five feet low water) there is a black spar-buoy (No. 5); off the ledge and close to; extends thirty-five fathoms off Long Point. It is dry at low water, and is two miles below Millbridge.

On Half-tide Ledge (three feet low water) there is a red spar-buoy (No. 8); thirty fathoms S. of dry part of ledge, which is dry at half tide. The part that dries is forty fathoms long.

The best way for a stranger, wishing to enter Narraguagus Harbor, is to go into Cape Split Harbor and get a pilot, as there is no difficulty in going into Cape Split in the day-time, keeping the port hand best on board.

Petit Manan Light. PETIT MANAN LIGHT is a flashing light, once in two minutes, one hundred and twenty-five feet above the level of the sea, on the S. end of Petit Manan Island, and there are several dangerous ledges bearing from the light. (For bearings of the shoals from this light see page 227.) The tower is of granite, and of that color.

Pleasant River. PLEASANT RIVER.—When you come from the Westward and bound for Pleasant River, in passing Petit Manan Light, bring it to bear S. W. by S., and steer N. E. by N., three leagues distant. In steering said course, if it is clear weather, you will see Captain Wasse's house open between the island and main land; but this passage will not do at low water. You must leave this island (and a high dry ledge of rocks that lie to the Westward of it) on your starboard hand; when you pass the bare ledge, you will see a bare isle, which you leave on your starboard hand; then you may haul up for Captain Wasse's house and anchor, and take a pilot for Pleasant River, as it is not safe going without one, except you are well acquainted.

Bowbear Harbor. BOWBEAR HARBOR.—In coming from the Westward, bound to Pigeon Hill, or Bowbear Harbor, bring Petit Manan light to bear N. E., and run for it, giving it a berth of one fourth of a mile, and then steer N. ½ W. four miles; in steering this course you will leave the Egg Rock on your starboard hand, when you will make the Westerly shore, giving it a berth of half a mile; then steer N. N. E. one mile, when you will be opposite Dyer's house, where you may anchor safe from all winds, in three fathoms water.

Dyer's Bay. DYER'S BAY.—In coming from the Eastward, bound to Dyer's Bay, give Petit Manan light three fourths of a mile berth, leaving it on your starboard hand; bring the light to bear N. E. three fourths of a mile distant, then steer N. by W., which will carry you into the mouth of the bay, leaving a large dry ledge on your port hand; when abreast of this ledge, which is bold to, give it a berth of five or six rods, then steer N. ½ E. four or five miles, where you may anchor safe from all winds in four or five fathoms, muddy bottom.

Goldsborough Harbor. GOLDSBOROUGH HARBOR lies N. N. W. from Petit Manan light-house, two leagues distant, leaving one island, covered with trees, on your starboard hand, and two on your port hand; then your course is N. N. W. one mile and a half, then N. ½ E. four miles, which will bring you up with Goldsborough Point, where you may anchor safe from all winds, in three or four fathoms, muddy bottom.

West Goldsborough. Buoys. WEST GOLDSBOROUGH.—On the S. E. point of Calf Island (nine feet low water) there is a black spar-buoy (No. 1). The S. E. point of Calf Island bears N. by W., one half mile. The S. E. point of Calf Island extends a long distance into the channel; and the outer rocks, which are dry at low water, are fifty fathoms inside of the buoy.

On the N. point of Middle Ground, off Stave Island (nine feet low water), there is a red spar-buoy (No. 2). The S. E. point of Calf Island bears N. W. by W., one half mile. The N. point of the Middle Ground lies so far from Stave Island that the channel makes a sharp turn around this buoy.

On Half-tide Rock (nine feet low water) there is a black spar-buoy (No. 3). The S. E. point of Calf Island bears W. S. W., one mile. The ledge extends a long distance to the Northward; and there are ledges and shoal ground to the dry rocks to the Southward of Ash Island.

On Sunken Ledge at entrance of Flander's Bay (nine feet low water) there is a black spar-buoy (No. 5). The S. E. point of Calf Island bears S. W. by S., two and one fourth miles. The ledge is nearly dry at low water. The buoy lies Eastward of the shoalest part of the ledge. It is off the entrance to Sullivan. The Eastern shore in going up is called West Goldsborough.

Prospect Harbor Light. PROSPECT HARBOR has a revolving light on the E. point of entrance. From Petit Manan it bears N. W. ½ W., distant six miles, but is not visible from that point; from Shepdick Island it bears N. N. E., distant four miles—and in sailing along the coast is visible only between the bearing N. by E. ¼ E., and N. W. by N.

Clark's Ledge (the old point of entrance to the harbor) lies S. W. by S., distant one third of a mile from the light; Big Ledge S. by E., distant two and a half miles; Little Black Ledge S. by E. three fourths of a mile. Little Black Ledge is nearly covered at high tide, and bears S. ½ E., one mile from Crenburg Point, and E. ½ S. from Big Ledge, which is high above water. There is a good passage between the two ledges.

Bring the light to bear N. W. by N. ½ N., and steer for it, leaving Little Black Ledge on the port, and Cranberry Point on the starboard hand; when up with the light give it a berth of two hundred fathoms, leaving it on the starboard, and Clark's Ledge on the port hand, sailing W. N. W. for the middle of the harbor. Anchor with the light bearing E. ½ N.

On Harbor Ledge (eighteen feet low water) there is a black spar buoy. Prospect Harbor light-house bears N. N. E. one mile and a half. This buoy is about eighty feet E. of the shoalest part of the ledge, which is bare at low water.

On Prospect Harbor Ledge (eighteen feet low water) there is a red spar buoy (No. 2). Prospect Harbor light-house bears N. one mile. The W. point of the ledge is about eighty feet E. of the buoy.

Winter Harbor Light.

WINTER HARBOR is one of the best on the coast. There is a fixed white light on Mark Island. The tower is painted brown, and is thirty-seven feet in height.

Mount Desert to Goldsborough and Machias.

MOUNT DESERT TO GOLDSBOROUGH AND MACHIAS.—From Mount Desert to Goldsborough, when up with Bunker's Ledge, you must steer E. ½ N. eight miles for Scuttock Point, where there is an island which you may pass either side of, but it is best to leave it on your port hand, and then steer N. E. seven and a half miles, which will carry you up with Goldsborough Harbor. You will see three islands which lie in the mouth of the harbor; you must leave them on your port hand, and go in the Eastern passage. In standing in for this place, you will see Petit Manan light-house, which you leave on your starboard hand. N. from Petit Manan, one eighth of a mile distant, lies a ledge bare at half-tide, which you keep within half a cable's length of when going over the bar, which you pass on your starboard hand, when bound Eastward, at which as you pass the bar, Scuttock Island will be a handspike's length open to the Southward of Scuttock Point; but to go over this bar requires a pilot. When near the bar, and up with Petit Manan Island, keep E. S. E. one half mile distant, which will clear a ledge having nine feet water at low water, that lies E. of the channel going over the bar, one fourth of a mile distant. There is a bar that runs from the shore to this little island, which is about one league from the land. This bar has three and a half fathoms at high water, and nine feet at low water.

Light.

Mount Desert Rock.

Light-house.

MOUNT DESERT ROCK.—This rock is fifteen miles S. twelve degrees W. from Baker's Island light; on it there is a light-house seventy-five feet above the level of the sea, containing a fixed light. There is a fog-bell on the rock, near the light-house. It is about fifty feet above the level of the sea, and strikes about seven times in one minute. S. W. by S., three thousand six hundred and fourteen feet from the rock there is a ledge of three fathoms; inside there are twenty-two fathoms; outside, close to the rock, there are seventeen, eighteen, twenty, twenty-five, thirty, and thirty-five fathoms water; it has been called Columbia Ledge by Capt. Owen, R. N., who surveyed it.

Bunker's Ledge.

BUNKER'S LEDGE, on which there is a stone beacon, bears from the Eastern end of Sutton's Island E. ½ N., distant about one mile, which you leave on your starboard hand. You may near the ledge within two cables' length. When the light on Baker's Island is entirely obscured behind the Eastern point of Cranberry Island, you are then to the Westward of Bunker's Ledge; and should you have a head wind, you may stand to the Northward until the light on Bear Island bears W. by N. In running for Bear Island light, you may near Bunker's Ledge within one cable's length, leaving it on your starboard hand. After passing the light one fourth of a mile, you may anchor, with the light bearing from E. to E. N. E., in twelve fathoms, good holding ground; or you can run for N. E. Harbor, about one mile to the Northward of the light.

N. W. by W., distant half a mile from Bear Island light, lies a ledge, bare at low water, having on the Western edge a spar buoy painted black, which you leave on your starboard hand. Said ledge bears from the centre of N. E. Harbor S. ½ W.

Sutton's Island lies near the centre of the passage, but the best water is to the Northward of it. If you wish to go to the Westward of it, when between Bunker's Ledge and Cranberry Island, steer W. by S. until Sutton's Island Eastern point bears N. E. You can then anchor, or run farther in, into Hadlock's Harbor, to the S. of you; or steer W. N. W., distant about three miles, for S. W Harbor.

Cranberry Islands are three islands lying S. of N. E. Harbor, Mount Desert, making a good roadstead for all winds but Easterly.

Baker's Island and Cranberry Island form the Western side of the entrance of the passage to Bear Island, and are covered with spruce-trees. The light on Baker's island is located near the centre of the island, elevated seventy feet above the level of the sea, exhibiting a fixed light, varied by flashes, and may be seen a distance of fifteen miles in clear weather.

Light.

A bar extends from Baker's to Cranberry Island, covered at high water, which is often mistaken by strangers for the passage going into Cranberry Island Harbor.

You must always recollect that before going into Cranberry Island Harbor the light on Baker's Island will be entirely obscured behind the Eastern point of Cranberry Island.

You may go in on either side of Bunker's Ledge; but strangers should leave it on the starboard hand. Between Herring Cove and Bear Island light, near the N. shore, there are several rocks and ledges covered at high water.

Mount Desert Island. MOUNT DESERT ISLAND forms the Northern side of the passage to Bear Island, and may be known by several high hills upon it. This island is about fifteen miles long, from N. to S., and twelve broad; it is nearly divided by a stream of water, called Soames Sound, at the head of which is Eden; at the entrance of Soames Sound are two good harbors, N. E. and S. W. harbors.

Bear Island lies near the centre of the passage between Sutton's Island and Mount Desert; it is a small island covered with spruce trees. The light stands upon its Western end, elevated sixty-five feet above the level of the sea, exhibiting a fixed light, and may be seen in clear weather a distance of twelve or fifteen miles.

Mount Desert Eastern Pass. MOUNT DESERT EASTERN PASS.—In coming from the Westward, and intending going into Mount Desert, bring Baker's Island light to bear N. and run for it, leaving it on your port hand. After passing it steer N. N. W. and run direct for it. In running this course, you will leave Sutton's Island on your port hand. The shores round this island are very bold, and you may near it within one cable's length.

S. W. Harbor. S. W. HARBOR.—This is one of the best harbors on the coast. As many as four hundred vessels have been at anchor at one time here. To run in, if coming from the Westward, when up with Long Island steer N. N. E. six miles, leaving the two Duck Islands on your starboard, and the three Calf Islands on your port hand. This will bring you up midway between the Great Cranberry and Mount Desert; steer up midway until you open S. W. Harbor, when you may haul in (keeping nearest to the starboard hand, on account of a ledge on the port hand, which runs off half a mile) N. W. or W. N. W., and anchor in five or six fathoms, muddy bottom, safe from all winds.

High Water. High water at twelve o'clock; rise of tides twelve feet.

Off the S. W. point of Cranberry Island there is a rock bearing W., distant three fourths of a mile.

Light. The Eastern passage into S. W. Harbor is between Bear Island (on which there is a fixed light) and Sutton's Island; after you have passed these, run until you get the harbor open, then follow the above directions.

Buoys. To mark the approach from the Eastward into S. W. and N. E. harbors—

On Bunker's Ledge there is a gray square stone beacon. Baker's Island light-house bears S., two and a half miles; and Bear Island light-house W. N. W., two and a half miles. This beacon may be passed on either hand in running for Northeast harbor from the Eastward. It is not seen when coming from the Westward.

On Bowden's Ledge (thirty feet low water) there is a red spar buoy (No. 2). Bear Island light-house bears W., two and a half miles; and the beacon on Bunker's Ledge, S. E. ¾ E., one mile and a half. This buoy is about fifty feet S. E. of the ledge, which is just bare at low water.

On Long Pond Shoal (twenty-one feet low water) there is a red spar-booy (No. 4). Bear Island light-house bears W. by N. ½ N., one mile; and the beacon on Bunker's Ledge, E. S. E., two miles. This buoy is about fifty feet S. of the shoalest part of the ledge, which has eight feet on it at low water.

To mark the approach to S. W. and N. E. harbors—

On Bunker's Whore Ledge (twenty feet low water) there is a red spar-buoy (No. 2). Baker's Island light-house bears E., four miles. The buoy is in the curve of the ledge on the Western side.

On Long Ledge (twelve feet low water) there is a black buoy (No. 1). The buoy on Bunker's Whore Ledge bears E., three fourths of a mile; and Bass Harbor Head, W. by N. The buoy is at the S. E. point of the ledge.

On Cow Ledge (twelve feet low water) there is a red spar-buoy (No. 4). The buoy on Long Ledge bears S. W., three miles; and the W. end of Cranberry Island, N. E. ¼ E., one fourth of a mile. This buoy is about one hundred and fifty feet W. N. W. from the ledge, which is bare one hour before low water.

On Grinning's Ledge (nine feet low water) there is a red spar-buoy (No. 8), opposite the wharf in Southwest Harbor, at entrance of Soames Sound.

On Northeast Harbor Ledge (fifteen feet low water) there is a red spar-buoy (No. 6). Bear Island light bears S. E. ¼ E., half a mile. This buoy is W. N. W. of the ledge about eighty feet distant. The ledge is bare at low water.

Hull's Cove, Mt. Desert. HULL'S COVE, MOUNT DESERT.—Bring the light on Baker's Island to bear S. W. by S., and steer N. E. by N. for the Great Porcupine Island; when up with it haul

to the Westward of Hull's Cove, leaving a dry ledge on your starboard hand, where you may anchor in three fathoms, one fourth of a mile from the shore.

BASS HARBOR.—When you leave this harbor, bound to the Eastward, steer out S. W. till you bring Bass Harbor Bar to bear S. S. E., then run S. S. E., keeping the port hand best on board. This bar has not water enough for a loaded vessel before half-tide, having eight and a half feet only at low water; but a light vessel may go over at low water keeping the port hand best on board. When you get over this bar, you steer E. by S. till you bring the S. W. entrance of Mount Desert to bear N. E., then you may run N. E., leaving Cranberry Island on your starboard hand. But this passage is shoal at low water, and not fit for loaded vessels to go through; but at full tide there is water enough, keeping the middle of the passage. Continue your course to the N. E. till you pass Cranberry Island; then you may steer E. S. E., and anchor between the two Cranberry Islands, where you will be safe from Easterly or S. W. winds. You may lie in from four to seven fathoms, good holding-ground. *Bass Harbor.*

To mark the approach into Bass Harbor—

On the Western end of Weaver's Ledge (eighteen feet low water) there is a red spar-buoy (No. 2). Bass Harbor Head bears S. E. ½ E., one mile; and Rich's Point, W. by N., one half mile. The buoy is five hundred feet W. of the shoalest port of the ledge, which is dry at low water. *Buoys.*

On the Eastern end of Weaver's Ledge (twenty-four feet low water) there is a black spar-buoy (No. 3). Bass Harbor Head bears S. E. by E., seven eighths of a mile; and Rich's Point, W. by N., five eighths of a mile. The buoy is five hundred feet E. of the shoalest part of the ledge, which is dry at low water.

On Harbor Point Ledge (eighteen feet low water) there is a black spar-buoy (No. 5). Weaver's Ledge bears S. W. by S. ¼ S., one mile and a half. The buoy is about ten feet E. of the ledge, which has four feet on it at low water.

When you leave this port bound to the Eastward, you steer E. by S. till you get up with Baker's Island light, which lies to the Eastward of the Cranberry Islands, then you steer E. by N. eight and a half miles to Shuttock's Island. When you pass said island, and are bound to Goldsborough, you steer N. E. seven and a half miles, and keep that course till you bring Goldsborough Harbor to bear N. N. W., then you must leave three islands on your port and one on your starboard hand, and run into the harbor, where you may lie safe from all winds, and anchor in five or six fathoms.

To mark the approach to Blue Hill Bay—

On Rudder Rock (fifteen feet low water) there is a red and black horizontal striped spar-buoy. Lazygut Ledge buoy bears S. W. ¾ S., about two miles; and the S. E. point of Crow Island, N. N. W., about five hundred feet. This buoy is about forty feet S. W. of the ledge, which has three feet on it at low tide.

On Mahoney Island Ledge (fifteen feet low water) there is a red spar-buoy (No. 2). Devil's Head bears N. W. by W., two miles; and Edgemoggin light-house, N. E. by N., four and one half miles. This buoy is fifty feet N. W. of the ledge, which is just awash at low water.

On Fly's Point (thirty feet low water) there is a black spar-buoy (No. 1). Edgemoggin light-house bears S., three fourths of a mile; Channel Rock, W., five eighths of a mile; and Mahoney Island, N. E. by N., three miles. This buoy is in five fathoms water. The shoal extends from the buoy to the shore.

On the Cow and Calf (twenty feet low water) there is a red spar-buoy (No. 4). The S. E. point of Long Island bears N. E. by N., two and a half miles; and the N. W. end of Tinker's Island, S. E., three fourths of a mile. This buoy is about three hundred feet N. W. of the ledge, which is bare at half tide. Water grows shoal to the shore.

BLUE HILL BAY.—If you are bound to Blue Hill Bay, or Union River, as soon as you pass Long Island you will open a large sound to the N. N. W., which course you are to steer seven leagues, when you will be up with Robertson's Island, leaving the Ship and Barge on your port hand. Robertson's Island is the only island near that place, and has a house upon it. The S. part of the island is clear of trees, on which the house stands. When you come near the S. part of the island, give it a berth of three fourths of a mile, as there are several sunken rocks off said point. When you bring this island to bear from S. W. to N. W. you may anchor in six or seven fathoms water, muddy bottom, but if you are bound to the Blue Hill Bay, you may stand to the Northward direct for the Blue Hills which you may see ten or fifteen leagues off. If you are bound for Union River, you had better take a pilot at Robertson's Island, for it is not fit for a stranger to go without one. *Blue Hill Bay.*

PUMPKIN ISLAND LIGHT.—A light-house has been erected on Pumpkin Island as a guide to the Western entrance of Edgemoggin Reach, and to Buck's Harbor. The tower is of brick, and painted white. The keeper's dwelling is painted brown. The tower is seventeen feet high, and the light is twenty-seven feet above the level of the sea. It is of the fifth order, fixed. *Pumpkin Island Light.*

Edgemoggin Reach. EDGEMOGGIN REACH.—WEST TRIANGLE LEDGE bears N. E. by E. ½ E., distant one third of a mile.

Triangle Ledges. EAST TRIANGLE LEDGE bears E. N. E., distant one half of a mile.

These ledges have about four feet water on them at low water, and there is a good passage between them and the light.

The ledge making out to the Northward and Eastward from Pumpkin Island is covered at high tides, but the water is bold close to the outer point.

The water is bold close up to the N. point of Pumpkin Island, and the point can be passed safely within the distance of the length of the vessel.

At about a cable's length from the shore, on the W. and N. W. part of the island, there is shoal ground with four feet at low water.

There is a good passage of six feet at low water between Pumpkin Island and Deer Island. When bound to the Eastward, the port shore must be kept close on board.

Merriman's Ledge. MERRIMAN'S LEDGE bears W., distant five eighths of a mile; bare at extreme low tides. The leading mark for this ledge is Billing's house (on the N. side of the Reach), in range with the light-house. By keeping the house out either way of the high part of the island will lead clear of the ledge. The cross-mark is to bring the points of Deer Island and Birch Island open an oar's length. The ledge is about twenty fathoms in width, and the water bold.

Two-Bush Ledge. TWO-BUSH LEDGE bears W. by S. ¼ S., distant about a mile and three fourths. It has four feet water on it at low-tide; it is about the dimensions of the deck of a vessel of one hundred and fifty tons, and the water bold. This ledge bears N. by W. ¼ W. from Eagle Island light-house. The leading mark for Two-Bush Ledge is the barn on Beach Island, open a handspike's length from the S. point of Hog Island. The cross-mark is Two-Bush Island in the gap N. of Eagle Island light. Two-Bush Island is small, without bushes or trees, produces grass, and appears green in summer. It had formerly two bushes upon it, from which it derived its name. The water is bold close to it. It bears S. W. from the Pumpkin Island light, and N. by W. ¼ W. from Eagle Island light.

Spectacle Island Shoal SPECTACLE ISLAND SHOAL.—This shoal lies on the N. side of the channel leading to Buck's Harbor; bears from Pumpkin Island light W. by N. distant two and a half miles; from the S. point of Spectacle Island E. ½ S., distant half a mile; from Long Ledge S. W. ½ W., distant one mile, and has four feet water on it at low tide. It is about half an acre in extent, with a number of large rocks on it.

In passing Cape Rosiere, bound to the Eastward, to clear it to the Southward, keep the passage between Pumpkin Island and Deer Isles open a handspike's length, and when Two-Bush Island and the W. end of Pickering's Island are in range, you are up with the Ledge.

In running from Buck's Island, to clear the ledge, keep Walker's house (a conspicuous white house on the Eastern part of Buck's Harbor) open an oar's length from Long Ledge.

Long Ledge. Long Ledge lies on the N. side of the channel, and is nearly covered at high water, but is exposed at low water; may be known by a single rock which lies a cable's length S. E. from it, and which is visible at half tide. This ledge bears N. W. ¼ W. distant about one mile from Pumpkin Island light, and from the W. entrance to Buck's Harbor, S. W. ½ W.

Fiddle Head. Fiddle Head (N. E. point of Hog Island) bears from the light W. S. W.; S. end of Spectacle Island, W. ½ N.; E. point of Beach Island, S. W. by W. ½ W.; N. point of Buck Island, S. W. ¼ W., distant half a mile.

The middle of the Western entrance to Buck's Harbor bears from the light N. by E. ¼ E.

The Eastern entrance N. E. by N. ½ N., distant two and a half miles. From Pumpkin Island down the Reach, giving the N. point a small berth, the course is E. S. E., leaving the Triangle Ledges on the port hand and the Pulpit Ledge and Howard Ledges on the starboard hand.

Pulpit Ledge. Pulpit Ledge lies about E. S. E. ½ E. from the light, distant three eighths of a mile, N. N. E. of a detached rock off the Deer Island shore, which resembles a pulpit, and has about five feet at low water.

Howard Ledges. Howard Ledges lie about one mile and a half to the S. E. by E. from the light. There is a channel inside of these ledges which is seldom used. The mark for bringing up with them is Captain Gray's two chimneys in range.

The main ship-channel is to the Northward of the Triangles, which must be left on the starboard hand in going down the reach. Vessels coming by Hog Island must keep on a N. E. course. Vessels coming by Cape Rosiere, after getting Conder's Point on the Western entrance of Buck's Harbor, to bear N. E., must run for it until up with or have passed the middle of the head of the Reach, which will take them to the Northward of the Triangle Ledges, between which and Buck's Harbor, on N. shore of the harbor, there is good water and free from dangers.

The port hand, on the N. side of the Reach, must be kept on board. Run S. E. for a tolerably high bluff point, called Bayard's Point, which should be given a good berth in passing, then haul in to the N. E. and anchor in a good harbor called Pleasant Cove.

If bound to Sedgwick, continue the S. E. course about two and a half miles from the bluff point, or until the village of Sedgwick is open by the W. entrance to the harbor bearing to the N. E., when haul in and anchor one fourth of a mile from the entrance, with good bottom.

W. by S. from Carter's Point (the W. entrance to Sedgwick) one third of a mile, lies Stumpy Cove Ledge, with only three feet water on it at low water. With the exception of this ledge, the N. shore is pretty bold to the head of the Reach.

The Deer Island side of the Reach is not so bold until up to the Narrows or Bayard's Point, when vessels may stretch from side to side. After leaving Scott's or the steamboat landing, going E., give the starboard shore a good berth, as there is a string of ledges well out from the shore covered at high water.

If bound through the Reach, continue S. E. for a red, bare ledge, with round stones on it, called Torry's Castle. This ledge lies off the W. point of the Western Torry's Island, and the water is bold on either side. It must be left on the port hand, continuing to the S. E. for a bluff, rocky point at the Eastern extremity of the Reach.

It will be necessary to look out for a ledge which is sometimes visible at low water, called Conory's Ledge, which lies S. S. E. of Torry's Castle, and N. W. by N. of Conory's Island.

Conory's Island.

Conory's Island is large, and lies on the Eastern end of Deer Island. To go clear, keep Eaton's house in range with Torry's Castle. Eaton's house is the first one seen to the Eastward of Bayard's Point.

In running for the bluff point, before named, called "Dutch City," a large number of islands will be left on the port hand, which may be passed close to.

After passing Conory's Ledge, stand two thirds of the way to the Deer Island side, until near the lower end of the Reach or "Dutch City," when it will be necessary to keep a good lookout for ledges which lie off "Dutch City," and about midway, known as Half-tide Rocks, being visible at half-tide.

The S. E. course should be continued by "Dutch City," and until the Southern Mount Desert Hill is brought out by the S. point of Harbor Island, when haul to the Eastward for Mahoney's Island, leaving it on the starboard hand if bound to Blue Hill, Ellsworth, or Mount Desert.

Light.

There is a fixed light on Fly or Green Island, near the Eastern end of Edgemoggin Reach. It is on a tower twenty-five feet above the level of the sea, and should be seen nine miles.

The following buoys are passed by vessels entering Edgemoggin Reach from the Westward or Southward:

On Two-Bush Ledge, a red and black striped spar-buoy.
On Heron Island Ledge, a black buoy, No. 1.
On Merriman's Ledge, a red buoy, No. 2.

To mark the approach to Edgemoggin Reach, coming from the Southward—

Buoys.

On the Triangle Ledges, Western end (fourteen feet low water), there is a red spar-buoy (No. 4). Pumpkin Island light-house bears S. W. ½ W., three fourths of a mile. There are three of these ledges, forming a triangle nearly equilateral, with sides from two hundred and fifty to three hundred feet long. The buoy is sixty feet W. of the Western ledge, which has two feet of water at low water. Deep channel all around them.

On the Triangle Ledges, Northern end (eighteen feet low water), there is a spar-buoy (No. 4½). The buoy is about fifty feet from the N. end of the Triangle Ledges, in three fathoms water, and about two hundred yards distant from the buoy on the Western end of the Triangles.

On Howard Ledges (thirteen feet low water) there is a red spar-buoy (No. 6). Pumpkin Island light-house bears N. W. by W. ½ W., two miles. There are three of these ledges, lying N. and S., extending about half a mile. The buoy is twenty feet N. of the Northern ledge, which has three feet of water at low water.

On Stump Cove Ledge (eighteen feet low water) there is a black spar-buoy (No. 3). The entrance to Benjamin's River bears E. S. E., one mile. This ledge makes shoal to shore.

On Conory's Ledge (eighteen feet low water) there is a red spar-buoy (No. 8). The N. E. point of Conory's Island bears S. E. by S., one mile; and Torry's Castle, N. W. by N., two miles. This buoy is fifty feet N. E. of the ledge in three fathoms water. The ledge is bare at low water.

On the Eastern Half-tide Rock (seventeen feet low water) there is a red spar-buoy (No.

10). Hog Island Head bears N. by E. three fourths of a mile. This ledge is out at low water and about one hour, and bears from the Western Half-tide Rock S. E. by E. nearly half a mile. The buoy is placed one hundred feet N. N. E. of the ledge. In running up and down Jericho Bay, keep Sand Island light out by Naskeag Point clear of those ledges.

Isle-au-Haut. ISLE-AU-HAUT.—The Isle-au-Haut is remarkable land, composed of high steep cliffs, and makes with a large bay on each side of it; has good landing on its Eastern end, and anchorage half a mile off, in eighteen fathoms, with the low point bearing about N. E. by N., where is also a stream of water running into the sea. The highest part of the island is in the middle, and represents a saddle.

Saddleback Ledge. Light. SADDLEBACK LEDGE is a high black rock, formed somewhat like a saddle, on the S. E. end of which is erected a light-house, built of hewn granite, and of that color. It is elevated forty feet above the level of the sea, exhibiting a fixed light, and may be seen in clear weather a distance of fifteen miles. You may near it on all sides within one cable's length.

About one mile N. W. by N. from the light lies a small sunken ledge of four feet which breaks at low tide, with a little motion of the sea.

The Southern head of Isle-au-Haut bears from Saddleback light S. E. by E. ½ E., three and a half miles distant; Seal Island, S. by W. eight miles.

Isle-au-Haut and Deer Island form the Eastern side of Isle-au-Haut Bay, Brimstone and the Fox islands the Western side. The bay is five miles in width.

To mark the approach to Deer Island Thoroughfare, going Eastward from Isle-au-Haut Bay—

Buoys. On Mark Island Ledge (twenty-three feet low water) there is a black spar-buoy (No. 1), thirty-five feet. Yellow Rock bears E. ½ N., one mile. This buoy may be passed on either side; is left on the port hand to enter thoroughfare.

On Field's Ledge (thirteen feet low water) there is a red spar-buoy (No. 2), thirty-five feet. Mark Island bears W. by S., one half mile. This buoy is fifty feet N. of the ledge, which is awash at low water.

On Indian Narrows and Gangway Rock (twelve feet low water) there is a red and black spar-buoy, thirty-five feet. Yellow Rock bears W., one half mile; and Greek Island Point, S., one half mile. Gangway or Middle Rock has from five to six feet of water at low tide. The S. channel is the best, it having from fifteen to twenty-one feet at low water. The buoy is one hundred and twenty feet N. from the rock.

On Staple's Ledge (twelve feet low water) there is a black spar-buoy (No. 3) thirty-five feet. Staple's Point bears N. W., one eighth of a mile; and Green Island, W. by S., three eighths of a mile. The ledge has on it two feet at low water.

On Rust Island Ledge (seventeen feet low water) there is a red spar-buoy (No. 4), thirty-five feet. Knowlton's Rock bears N. by E.; and Rust Island Point, E., one half mile. The buoy lies one eighth of a mile N. W. of the island.

On Bold Island Ledge (fourteen feet low water) there is a red spar-buoy (No. 6), thirty-five feet. Grog Island bears W. N. W.; and the E. point of Bold Island, S., one half mile. Bold Island Ledge has from four to five feet of water at high tide.

On Haskell's Ledge (fourteen feet low water) there is a black spar-buoy (No. 5), thirty-five feet. Grog Island bears W. by S., one mile and a half; and Sheep Rock, E. ½ N., one mile. Haskell's Ledge has deep water all around it, with muddy bottom; left on port hand going E.

On White Rock (fifteen feet low water) there is a black spar-buoy (No. 7), thirty-five feet. Grog Island bears W. by S., two miles and a half. There is good anchorage N. E. of this buoy. The ledge has about three feet on it at low water.

On Haycock Rock there is a red spar-buoy (No. 6), thirty-five feet. Sheep Rock bears N. N. W., one fourth of a mile; and Grog Island, W., two and three fourths miles. Haycock Rock is from thirty to forty feet long, and is out three feet at low water; has good water all around, and is left on the starboard hand going E.

On Lazygut Ledge (eighteen feet low water) there is a black spar-buoy (No. 9), thirty-five feet. The E. end of Lazygut Island bears N. N. E., one half mile. The ledge has two or three feet over it at low water; has good water all around it. The ledge is small.

On Long Ledge there is a black spar-buoy (No. 11), thirty-five feet. Lazygut Island bears W. N. W., two miles; and Green Island, N., one mile. Long or Mansfield's Ledge is about one fourth of a mile in circumference, and is generally left on the port side going E.

To mark the approach to outside Buoy S. of Isle-au-Haut Bay—

Buoy. On Bay Ledge (eighteen feet low water) there is a red nun-buoy, third class. Saddleback light bears E. N. E., seven miles; and Heron Neck light, N. by E. ¼ E., four miles. This ledge shows thirty by twenty feet at low water; falls off very fast on E. and S. E. sides, and gradually on N. and N. W. sides. The buoy is fifty feet N. W. of the dry part of the ledge.

In making Saddleback light, coming from sea, bring it to bear from N. W. by N.

to N. by W., and run it close aboard, leaving it on your port hand. If you are bound up the bay, bring the light to bear S., steering N. for Eagle Island light, which you may near within one cable's length, by leaving it on your port hand. After passing Eagle Island light, steer N. N. W. about eight miles, which course and distance will bring you up with Channel Rock, which you leave on your starboard hand. Give it a berth one eighth of a mile, and steer N. by E., about thirty miles, for Dice's Head light. In running this course you will pass Cape Rosier, a high bluff, which you will leave on your starboard hand. When up with Dice's Head light, if you wish to go into Castine, or up the Penobscot, follow the directions given.

Channel Rock may be known by its being a small rock of a yellowish cast, lying to the Westward of a small group of islands, and may be seen at all times above water.

N. B. In coming from sea, and bound for the Isle-au-Haut Bay, you leave the Wooden Ball and Seal islands on your port hand. The Seal Island is the N. Easternmost island, and you may near it within three fourths of a mile.

If coming from the Westward, and intend going to the Northward of Martinicus Island, and are bound for Saddleback light, bring it to bear E. N. E. and run for it: follow the directions before given.

Wooden Ball Island bears from Seal Island W. S. W., three and a half miles distant; Wooden Ball from Matinicus Rock light, N. N. E. four and a half miles.

Malcolm's Ledge.

MALCOLM'S LEDGE, dangerous, bears from S. W. point of Seal Rock S. W. by S. ¼ S., distance one mile; Wooden Ball Rock bears from N. point of Martinicus S. E. ¼ E., distance three miles. Between Martinicus and Ragged islands there are two small islands, viz.: Ten Pound and Pudding islands. Ragged Island bears from the S. point of Martinicus S. by E., distance one mile.

Martinicus Island.

MARTINICUS ISLAND is an island of one mile and a half in length and three fourths of a mile in width, nine and one fourth miles S. of the entrance to Penobscot Bay. There are a number of small islands immediately round it.

Martinicus Rock. Lights.

MARTINICUS ROCK bears S. by E. from the S. point of Martinicus, distance four and a half miles. On this rock there are two fixed lights one hundred and eighty feet apart, and eighty-five and ninety feet above the level of the sea, bearing N. N. W. and S. S. E. from each other. There is also a fog-bell rung by machinery.

Martinicus Seal Island

MARTINICUS SEAL ISLAND.—N. half a mile from the lights is a ledge with eight feet at low water. E. N. E. from Little Seal Island a reef two cables' length. No Man's Land bears N. E. by E. ½ E. from the N. point of Martinicus, distance three fourths of a mile.

Fox Island Passage. Light.

FOX ISLAND PASSAGE.—On Brown's Head, at the Western entrance of Fox Island Thoroughfare, a light-house, showing a fixed light, is erected on Southern Fox Island. It stands two rods from the shore, and is forty-two feet high.

Buoys and Beacons.

To mark the approach to Fox Island Thoroughfare, going Eastward from Penobscot Bay—

On Drunkard's Ledge (eighteen feet low water) there is a black spar-buoy (No. 1). Brown's Head light-house bears E. N. E., two miles. The buoy is two hundred feet from the ledge.

On Fiddler's Ledge there is a stone beacon, mast and cask on top, painted black. Brown's Head light-house bears N. E., one mile.

On Dogfish Ledge (twenty-six feet low water) there is a red spar-buoy (No. 2). Brown's Head light-house bears N. E.; and the beacon on Fiddler's Ledge, N. W. one mile. This buoy lies at the Western entrance of the Thoroughfare, and one hundred feet N. of the rock. The ledge is out three feet at low water.

On Cross Island Ledge (seventeen feet low water) there is a black spar-buoy (No. 3). Cross Island bears N. by E., one fourth of a mile; and Brown's Head light, S. by W. Cross Island Ledge is out at low water from two to three feet.

On Post-Office Ledge there is a red and black spar-buoy. Iron Point bears E. ¼ N., three fourths of a mile.

On Lobster Rocks (eighteen feet low water) there is a black spar-buoy (No. 5). Hopkin's Point bears S. S. E., one half mile; and Iron Point, E. ¼ N., one half mile.

On Grindstone Ledge (fifteen feet low water) there is a black spar-buoy (No. 7). Iron Point bears N. E. by E.; and Simpson's Point, S. S. E. This ledge may be left on either side by small vessels.

On Iron Point Ledge (twenty-one feet low water) there is a red spar-buoy (No. 4). Iron Point bears N. N. W., one fourth of a mile; and Simpson's Point, E. This ledge is out of water at half-tide; may be left on either side. The buoy is two hundred feet N. W. from the ledge.

On Waterman's Ledge (nine feet low water) there is a red and black spar-buoy. Iron Point bears S. W. by W., three fourths of a mile. This ledge lies N. W. by N., one half mile from Iron Point; has five feet over it at ordinary low water. The buoy lies about one hundred feet S. of the shoalest part of the ledge.

On Thomas' Ledge (fourteen feet low water) there is a black spar-buoy (No. 9). Fish Point bears N. N. W., one fourth of a mile; and Iron Point, S. W., three fourths of a mile. This ledge is out three feet at common low water.

On Goose Rocks (fifteen feet low water) there is a black spar-buoy (No. 11). Bold Point bears W., three fourths of a mile; and Winslow's Island, S. by E. This ledge is dry at half-tide, one mile from E. end of Winslow's Island.

Directions. In running from Owl's Head light for Fox Island Thoroughfare, bring the light to bear W., and steer E. ½ S., until you bring the light on Brown's Head to bear E. N. E., and then steer for it until you are within one cable's length from the light. In running this course you pass between Crabtree's Ledge and Dogfish Ledge, leaving Crabtree's Ledge on the port hand, and Dogfish Ledge on the starboard, which is separated by a channel one mile and a half broad; you may then run half a cable's length of either of them. When abreast of the light, and between the light and Sugar-loaves, steer N. E. ½ E., for Young's Narrows. The Sugar-loaves are two high rocks, formed somewhat like sugar-loaves, and are located nearly in the centre of the passage. There is good anchorage between the Sugar-loaves and light, in seven and a half fathoms at low water.

The entrance to Young's Point is narrow at low water, off which lies a ledge of rocks, which are covered at high water. There is also a quantity of sunken rocks at the port hand, near a mile to the W. N. W., which lie off the Dumplins. These Dumplins are three islands, which you leave on your port hand. Your course in this passage is E. S. E. and W. N. W., keeping your starboard hand on board. When you pass this point on your starboard hand, you must keep your starboard hand on board, and steer E. S. E. about two miles, when you will make Deep Cove on your starboard hand, which lies to the Eastward of a very high bluff of rocks. If you have neither cables nor anchors, you may run into said cove, or secure your vessel with the main or fore sheet, or come to anchor in seven fathoms water off the said cove. There the flood meets, one from the W. N. W., the other from the E. N. E., which makes an eddy against this cove and highland; here you may ride safe with any wind. When you leave this place, and are bound to the Eastward, you steer E. S. E., and keep your starboard hand on board till you come up to a clear spot of land, where the trees have been cut off. As soon as said spot bears W. S. W., you steer E. N. E. for the middle narrows. When you draw near the narrows, you will see two large white rocks in the middle of the passage, unless at high water, at which time they are covered about one hour, but may be seen at all other times of tide. You may go on either side, but the deepest water is at the Southward of them. Continue your course E. N. E. about one league, when you must keep your starboard hand on board, as there are several sunken rocks and ledges on your port hand, which are covered at high water. You will make the Eastern narrows on your starboard hand, and, as soon as you bring it to bear S. S. E., you may run through, where you will have a fine harbor, which is safe to ride in with all winds, except at E. N. E., but you may remain in the W. passage with the wind at E. N. E., or anchor at the Northward of a bare island, that you will see on your starboard hand as you go back to the Westward. When you pass the Eastern passage of Fox Island, you must steer E. N. E. about four miles, which course will carry you into the bay that is between Fox Island and the Isle-au-Haut.

Heron Neck Light. HERON NECK LIGHT is a fixed red light, ninety-two feet above the level of the sea, on the S. point of Green Island (the Southernmost of the Fox Islands in Penobscot Bay). It can be seen fifteen miles.

Bearings.

Bearings from the Light.

To the E. end of Seal Island	S. by E. ¾ E.,	distance	13 miles
To the W. end of Wooden Ball Rock	S. ¾ W.,	"	12 "
To the Martinicus Rock Lights	S. by W. ¼ W.,	"	15 "
To the W. end of Martinicus Island	S. S. W. ½ W.,	"	11 "
To the Hurricane, or Deadman's Ledge, covered at high water,	W. by S.,	"	½ "
To the Saddleback light-house	E. by S.,	"	7 "

The whole distance, from Heron Neck Ledge to Otter Island, Brimstone Island, and Saddleback light, is full of sunken ledges.

Penobscot Bay and River. PENOBSCOT BAY AND RIVER.—This extensive bay is included between Sedgwick Point on the E., and White-Head on the W.; the distance between these points is about eleven leagues; and it includes the Isle-au-Haut, Deer Island, the Fox Islands, Long Island, and a number of small isles, rocks, and ledges. Through the bay to the mouth of the river of its name, the Western channel is by the headland on the W. called Owl's Head, on which there is a light-house containing a fixed light, one hundred feet above the level of the sea; thence by Camden on the W., and Cape Rosier on the E., to Bagaduce Point or Castine River. The Eastern channel is between Isle-au-Haut on the W., and the smaller isles on the E., through a channel called Long Reach

Light-house.

rmed by the shore of Sedgwick on one side, and Deer Island on the other, until it nites with the main channel between Cape Rosier and Long Island. Above this, on he E., stands Fort Castine, near to which is the town of Castine, opposite Penobscot. astine is the port of entry. This noble river, which empties its waters into the bay, nd which is now decorated with numerous townships, is the most considerable in the tate of Maine, and has its sources about one hundred and thirty miles above the inlet f Castine. The head of tide and navigation is, however, at Bangor, about thirty miles rom the same. At the entrance of the river is a depth of ten fathoms.

PENOBSCOT RIVER.—From Seguin to Manheigin, the course is E., but you must not bring Seguin to bear W. until you have passed Bantan Ledge, as it bears E. six miles from Seguin. Manheigan is good land to run for, being bold. There are several igh rocks on the N. W. side, but they are also bold. Thence to White-Head the course s N. E., leaving George's and Mosquito islands on the port, and Mitinick on your starboard hand. The latter is foul. There are two rocks on George's Island, called the Old Man and Old Woman, with a passage between them. The first lies more than a ile off. When you can see Mosquito Island to the Eastward of George's, you are clear f them. There is a ledge between George's Island and Mosquito Island, called Scilly; nd also another about one third of the way from Mitinick to Manheigan, called the Roaring Bull, which latter bears about N. E. ½ E. from Manheigan; but you have a lear bay until you come near White-Head. There is a ledge S. by E., half a mile from he head, and several near the land to the Westward. The head is very bold. When little inside the head, haul up nearly for the N. E. point of a large white island, with rees on it, on the port hand, to avoid a ledge called the Gangway Ledge. It ies directly off the mouth of Seal Harbor, and about N. E. from the light. The ourse from White-Head to the point of Ash Island is N. E. The point of Ash Island is old at low water, but at high water some of the rocks are covered. There is a sunken dge off this point, the kelps on which are seen at low water, called also Gangway edge, which you leave on the starboard hand. Thence to Owl's Head about N. N. E. he course from Owl's Head to Castine is N. E. by N., passing close to Mark's Island, hich is the first you come to, and leaving several small islands and ledges on the starboard hand—Mark Island on the port. The passage is here rather narrow, but with a ir wind there is no danger. The bay, however, is not so clear to the Eastward as to e Westward of Long Island. From Owl's Head up the bay the course is N. N. E. asterly, to Spruce Head, in Northport, seven leagues. You pass a good harbor on ong Island side, called Gilkey Harbor. It is easy of access, but it is bad to find in e night, the land back being higher than that in front of the harbor. A light has been ut on Grindle Point, at the entrance of Gilkey Harbor. It is in a tower on the keeper's ouse. It is the best harbor in the whole bay. It lies directly opposite Ducktrap. rom Spruce Head to Old Fort Point the course is N. E., five leagues, leaving Belfast nd Cape Jellison harbors on the port hand. If you wish to harbor in Cape Jellison, ou enter with Brigadier Island on the port hand, keeping it nearest aboard, as there is long ledge makes off from Squaw Point on the starboard hand, which is covered at gh water.

Penobscot River.

Light.

There is a ledge off Fort Point, in a Southerly direction, called Fort Point Ledge, half mile or more. It lies S. S. E. and N. N. W., and is bare at half-tide. There are two uoys, one off each end of it. There is a light-house on the point, near which it is so old that there is a good channel between that and the ledge for beating. The extreme oint, however, to the Eastward of the light, is shoal, and you must give it a good erth. When you have turned this point, you have an excellent harbor on the port and, called Fort Point Cove. There is one small rock near Sandy Point, on which here are about seven feet at low water, near which there is a log buoy placed. From ort Point to Bucksport Narrows, the course is North, five miles. Above Sandy Point es Odom's Ledge, which is nearly covered at high water. You may go either side of but the Eastern is the best channel. When you open Bucksport village, your course N. E. three fourths of a mile, when you will open Marsh Bay N. W., at the head of hich is Frankfort village, five miles. Run up midway till you come near Marsh River, n the port hand. The point on the opposite side of the bay is called Drachm Point, om which a flat extends three fourths the distance across to Marsh River, on the end which a buoy is placed. Should you not see the buoy, shut Picard's Point, on cKenzie's Point, a handspike's length, and run until you fairly open the reach to Oak oint. Picard's Point is the land on the S. E. side of Marsh River, and McKenzie's oint is the first point on the starboard hand, above Bucksport village. From Marsh iver to Oak Point the course is N. E., five miles, good anchorage all the way. Thence Hinckley's, E. by N. one third of a mile. Thence to Mill Creek, N. by E., one mile, aving Buck's Ledge on which there is a spire and a ball, on the starboard hand. hence to Bald Hill, N. W. by W. one mile and a half. Thence to Higgins', N. N. E., e fourth of a mile. Thence to Bragdor's Castle, N. E., three fourths of a mile. hence to Crosby's, N. N. E., two miles. Thence through Crosby's Narrows, N. E.

Light house.

Log Buoy.

Buoy.

half a mile. Thence to Crosby's Old Wharf, N. N. E., one third of a mile. Thence to Brewer's village, E. N. E., two miles. Thence to Mitchell's Steam Mill, N. E. by N., one fourth of a mile. Thence to High Head, N. E. three fourths of a mile. Thence to Bangor, N. E. by N., three fourths of a mile.

Or, bound up by Penobscot Bay, leave Manheigan on the port hand from one to two miles distant, and steer E. N. E. for Green Island; when up with the Easternmost island, giving it a berth of one mile, steer N. for Owl's Head; then N. N. E. for Castine, as before directed. A light has been put on Indian Island, at the entrance of Goose River; it is in a tower on the keeper's house.

Light.

Rockland.

ROCKLAND.—W. and N. of Owl's Head a large and spacious bay opens, at the head of which is Rockland. There is nothing in the way to enter this bay except a sunken ledge of about nine feet at low water, lying about one mile and three fourths W. by N. from Owl's Head.

To mark the approach to Rockland Harbor—

Buoys.

On the South Ledge (eleven feet low water) there is a red and black spar-buoy. Owl's Head light-house bears S. E. by E. ½ E., three miles, and Steamboat wharf, N. W. by W. ½ W., two miles. This buoy is thirty feet N. by E. of the ledge.

On Jameson's Point (twenty feet low water) there is a red third class nun-buoy (No. 2). Owl's Head light-house bears S. E. by S. ½ S., four miles. This point forms the Northern and Eastern side of Rockland Harbor.

On Jameson's Point ledge (thirteen feet low water) there is a red and black spar-buoy. (No. 4). Owl's Head light-house bears S. E. ½ E., four and a half miles, and Jameson's Point buoy, E. N. E., five eighths of a mile. This buoy is ten feet S. W. of the ledge, which has four feet at low water. About two hundred feet W. S. W. of this ledge lies another small ledge with six and a half feet at low water. The passage N. of the buoy is the deeper, but it is not so wide as that S. of the buoy.

Bay Ledge.

BAY LEDGE.—Bring a pointed hill, called Duck Trap, on the W. end of Hurricane Island to the N. E. Mt. Desert Hill on a small green isle or rock, lying N. W. of Red Island, which lies W. of Brimstone. Little Hurricane lies W. of the High White, or Great Hurricane. The ledge lies S. from Carver's Neck, from the E. point of Wooden Ball, N. W. from the Western point of Matinicus Island, N. E. by N. ½ N.

Buoy.

Bay ledge, red, third class, nun-buoy.

Lights.

Saddleback light, E. N. E. seven miles.

Heron Neck light, N. by E. ¼ E., four miles.

This ledge shows thirty by twenty feet at low water; falls off very fast on the E. and S. E. sides, and gradually on the N. and N. W. sides. Buoy fifty feet N. W. of the dry part of the ledge.

Spar-Buoy.

On the Southeast ledge there is a red and black spar buoy; horizontal stripes.

Hurricane Sound.

HURRICANE SOUND.—Bring Heron Neck light to bear N. E., and run for it; when half a mile from the light you will pass Deadman's Ledge, which you will leave on your port hand, and when mid-way between the ledge and the light you will be in the entrance to Hurricane Sound, which runs in a Northerly direction.

Carver's Harbor.

CARVER'S HARBOR.—Bring the light to bear N. E., and run for it. There is deep water within a ship's length of the rocks. Half a mile from the light you will pass to the Eastward of Deadman's Ledge (the Eastern Hurricane Ledge) dry at low water, one fourth of a mile. S. by W. from the light lies Heron Neck Ledge, always above water. Pass between the light and the ledge (a narrow but deep channel) and you will open Deep Cove, on Green's Island; keep on in an Easterly direction, giving the different points of Green's Island a berth of a cable's length.

When up with the Southeastern point you will be near a dry ledge, one eighth of a mile from the point; leave it on the starboard hand. Carver's Harbor will then be in sight, and may be known by the houses around the harbor, bearing N. E. by N., distant one mile. Give the E. point of Green's Island, opposite the first house, a small berth, and run for the harbor, leaving some dry ledges on the starboard hand. Keep nearest to the starboard shore at the entrance of the harbor, to avoid some sunken ledges on the opposite side; anchor in the middle of the harbor, in ten feet water at low tide; soft bottom, good holding ground.

Light-house.

Camden light-house is situated on the S. E. part of Negro Island, and contains a fixed light, elevated forty-nine feet above the level of the sea.

Camden Harbor.

CAMDEN HARBOR.—In coming from the Westward, and bound to Camden Harbor, bring Owl's Head light to bear S., and steer N. ½ E. for Camden light, leaving the Graves and Northeast rocks on the starboard hand; the Grave is a small black rock, and is above the surface of the water at all times, and you may near it within a cable's length on all sides. When up with the light-house, leave it on the port hand one cable's length, and steer N. W, by N. ½ N., or N. N. W., distance nearly half a mile, and anchor near the N. shore, in from four to five fathoms water, good holding ground. If you are to the Eastward and bound for Camden Harbor, bring the light to bear W. S. W., or S. W. by W., to clear the Northeast ledges, then follow the above directions.

The Northeast Ledges bear from the light on Negro Island, at the mouth of Camden Harbor, N. E. ¼ N., distant about three eighths of a mile. The Northeast Ledges to Morse's Point, N. by W., are distant about half a mile. These ledges are covered at high water, but are above the surface of the water at two hours' ebb. Barrit's Point forms the western side of Camden Harbor, and bears from the light S. W. by S. ½ S., distant about three eighths of a mile. Morse's Point lies opposite the light-house, and forms the Eastern side of the harbor. Barrit's Point to the Graves, S. E. ½ S., distant one mile and a fourth. From the light to the Graves, S by E. ½ E., distant about two miles. Owl's Head light bears from Camden light S. ½ W., distant seven miles. From the Graves to the Owl's Head light S. by W. ½ W., distant five and a half miles.

To mark the approach to Camden Harbor—

On the Northeast Ledge (twenty-four feet low water) there is a red spar buoy (No. 2). Negro Island light-house bears S. W. ¾ W., one fourth of a mile. The buoy is sixty feet S. W. of the ledge, which is dry at half tide, and extends N. by W. about one fourth of a mile. On the N. end of the ledge is a black spindle. *Buoys.*

On the N. point of the Northeast ledge there is a black iron spindle, with copper cylinder on top; cylinder ten feet long, two feet diameter. Negro Island light-house bears S. W. by S., one half mile. This spindle marks the port hand of the passage into the harbor coming from the Northward.

On Morse's Point Ledge there is a red iron spindle, with copper cylinder and gilt ball; same dimensions as other spindles. Negro Island light-house bears S. W. by S. ¾ S. This spindle marks the starboard hand of the passage above mentioned.

On Harbor Ledge (five feet low water) there is a small black spar-buoy (No. 1). Negro Island light-house bears S. E., one half mile. This buoy is fifteen feet from the ledge which has two feet at low water.

CASTINE BAY.—From the Eastward give Isle-au-Haut a berth of two miles, and when the bay is open, bring Saddleback light to bear N. W. by N., and stand within one fourth of a mile of it, leaving it on the port hand; then N. for Eagle Island light, which is distant twelve miles. Give the latter a berth of one fourth of a mile, steer N. W. by N. ½ N., six miles; bring Dice's Head light to bear N. E. by N., and run for it until you are within half a mile of it; then steer E. by N. for the beacon on Hosmer's Ledge, leaving Otter Rock beacon on the port hand, one cable's length distant, and Bull Head, Noddle's Point, and the beacon on Hosmer's Ledge, on the starboard hand. You may near the starboard shore off the entrance of Castine Harbor within one cable's length, and steer E. N. E, which will carry you in ship-channel way. You may anchor off the town, near the wharves, in from eight to ten fathoms water. This harbor is easy of access, and vessels may approach it with safety by following the above directions. *Castine Bay. Directions.*

From the Westward pass Martinicus light, within half a mile, run E N. E. six miles, which course will take you to the N. E. point of Seal Island, which give a berth of one mile and a half; then steer N. by W. from Saddleback, which you leave on your port hand, then follow the directions above.

From Saddleback to Eagle Island you will pass Channel Rock on your starboard hand. A shoal makes from this rock S. W. one third of a mile. Bearing from Saddleback to Roaring Bull.... *Bearings.*

Brandy Rock	S. E. by E	7	miles.
Isle-au-Haut Harbor	E. by N	2½	"
Brown-stone Island	N. E. by E	4½	"
Southeast Point of Seal Island	W. by S	2½	"
Saddleback (sunken ledge)	S. ½ W	7	"
Cabbage Point	N. W. by N	¾	"
Eagle Island	N. by W	7	"
East passage, Fox Island Thoroughfare	N	12	"
	N. N. W	7	"

At Castine there are three stone beacons. Otter Rock bears from Dice's Head light-house S. E. by E. one third of a mile from Long Island N. E. ¼ N. ten miles. From Bald Island N. E. by N. seven miles, to be left on the port hand in entering. *Beacons.*

Hosmer's Ledge beacon bears from Otter Rock beacon E. ¼ S. three fourths of a mile; from the centre of the town, S. by W. one half a mile; from Dice's Head light E. S. E. one mile, to be left on the starboard hand in entering.

Middle Ground beacon bears from Hosmer's Ledge beacon N. E. by E. one mile; from the centre of the town, E. ½ S. half a mile.

CASTINE LIGHT-HOUSE is on Dice's Head at the entrance of Castine Harbor It is a fixed light, one hundred and sixteen feet above the level of the sea, N. W. ½ W. from Fort Point Ledges, and from the eastern end of Long Island, S. E. by E. ½ E. The shore near the light-house is bold. *Castine Light-house.*

Otter Rock is a small round rock, and lies about two cables' length from the North-ern shore, and is about twelve feet above the level of the sea at high water, to be left on the starboard hand entering. Noddle's Island point is a low black rock, and very

bold. Bull Head is a high bluff of rocks, and of a yellowish cast, and lies on the S. side without the entrance of the harbor.

Beacon. Turtle Head is the Northern head of Long Island. Stubb's Point Ledge, on which there is a beacon erected, lies opposite to the town, but is not in the way of vessels going into Castine Harbor.

Light-house. TENANT'S HARBOR.—There is a light-house on the N. E. side of Southern Island and S. W. side of entrance to this harbor; it is a red revolving light, sixty-six feet above the level of the sea.

Tenant's Harbor, Muscle Ridge, and Penobscot Bay. TENANT'S HARBOR, MUSCLE RIDGE, AND PENOBSCOT BAY.—In sailing from this harbor, you may steer E. one league to White-Head light; be careful not to haul in for it till it bears N. E., as there is a large ledge of rocks bearing about W. N. W. from said head, one mile distant, but within it, a pistol-shot from the shore, is safe navigation. In going in, you must give the port hand a berth, as there is a sunken ledge, which extends about two thirds across the mouth of the harbor, that breaks when there is any sea, unless at high water.

Your course from White-Head light is N. E. to Ash Point or Island, one league distant, which has a large rock to the S. W. of it, about half a mile distant, which you must leave on your port hand. It is not in the way unless you are obliged to go about. When you haul round this island, give it a small berth, and steer N. N. E. or N. E. by N., for the Owl's Head, leaving two islands on your starboard hand; but when you draw near the port shore, you steer E. N. E. for the Owl's Head, which has a good harbor on the port hand as you go to the Eastward. This harbor makes with a deep cove. You may bring a rocky point that lies on your starboard hand to bear N. E., and a ledge of rocks that lies without said point to bear E. N. E., and anchor in four fathoms, muddy bottom.

This harbor is open to the wind at E. by N. and E. N. E., but in all other winds you are safe. The tide of flood sets to the Eastward, and the tide of ebb S. W., through the Muscle Ridges.

If it is night when you come to White-Head light, you had better not attempt going through the Muscle Ridges. Your best way is to go by Two-Bush Island, which you must leave on your port hand, keeping the course E. N. E. or N. E. by E. Two-Bush Island is round and barren, but has only one bush on it. Formerly it had two bushes.

If you are in a large vessel, your best way is to go in this passage, as it is the most safe. You must follow your course, as before directed, about two leagues, when you will have Penobscot Bay open, and then you may direct your course to either side of Long Island. If you go to the Westward, your course is N. N. E. to Great Spruce Head, which having passed seven leagues, your course is N. E. by N. five leagues to Old Fort Point. In steering said course, you will leave Belfast Bay and Brigadier's Island on your port hand, which island has a good harbor, and if you mean to go into it, you must leave it on your port hand, and steer in about N., or N. by W.

You may run up above this island, and anchor on the starboard hand, if the wind is to the Eastward; but if to the Westward, or S. W., you must not. There is a bar that lies from this island to the main land, which is covered at high water. There is also a good harbor to the Westward of this island, called Long Cove. If you turn into either of these harbors, you must be careful of some rocks that lie to the Southward of this island, more than half a mile from the main land. But in going to Penobscot, proceed as above, and keep your port hand on board. When you pass this island for the Old Fort Point, which has no trees on it, you must observe before you come to it, that a large ledge of rocks lies about three fourths of a mile to the E. S. E. of it, which is covered at high water, but bare at half tide. You may go within a cable's length of Old Fort Point in smooth water. These rocks may be discovered when the wind blows.

On Fort Point Ledge there is a stone beacon with a wooden spindle. (See list below.)

If you are bound up Penobscot, from Old Fort Point, with the tide of ebb, and the wind ahead, you may make a good harbor in the East River, which lies about E. N. E. from Old Fort Point, about one league. This river lies to the Southwestward of Orphan Island, in which place you will lie safe from all winds, and anchor in six or seven fathoms, good holding ground.

Beacons and Buoys.

Beacons and Buoys, as they are passed in entering Penobscot Bay.

On Old Man's Ledge is a	Black wooden buoy.
On South Breakers	Red nun buoy, No. 2.
On Yellow Ledge	Red iron spindle—copper cylinder on top.
On Lower Gangway Ledge	Red and Black iron can buoy.
On Hay Island Ledge	Black spar buoy, No. 3.
On Burnt Island Ledge	Black do. do. " 5.
On Hurricane do.	Red do. do. " 6.
On Garden Island (sunken ledge)	Black do. do. " 7.

On Otter Island Ledge	Black iron spindle, copper cylinder. and two red balls on top.
On Garden Island Ledge	Black do. do. one red ball on top.
On Ash Island Ledge	Black spar buoy, No. 9.
On Gangway Ledge	Red and black iron can buoy.
On Sheep Island Bar	Red spar-buoy, No. 8.
On Dodge's Point Ledge	Black iron spindle, cylinder on top.
On Owl's Head Ledge	Black iron can buoy, No. 13.
PENOBSCOT RIVER.—On Brigadier Island is a	Black spar-buoy, No. 1.
On Fort Point Ledge	Gray square stone beacon.
On Fort Point Reef	Black spar-buoy, No. 5.
On Sand Point	Black do. do. No. 7.
On Odone's Ledge	Gray square stone beacon.
On Frankfort's Flats	Red spar-buoy, No. 2.
On Buck's Ledge	White wooden spindle, small cask on top.

On Old Fort Point, above Castine, there is a fixed white light, one hundred and five feet above the sea, to indicate the direction to Prospect Harbor. *Light.*

Orphan Island is a large island, which you are to leave on your starboard hand, and sundry rocks on your port hand, which are above water. When you pass Orphan Island, you may anchor to the N. W. of it, on your starboard hand as you go through; but if the wind and tide are in favor, you may proceed up to Marsh Bay, keeping the port hand best on board. Marsh Bay is about two leagues from Orphan Island. When you pass Marsh Bay, you may keep in the middle of the river, and you have neither rocks nor shoals till you get up to the falls. You have no particular course in going up this river, but may sometimes go to the Westward of N., and sometimes to the Eastward of N.

When you enter Penobscot Bay, and are bound to the Eastward of Long Island, you must steer N. E. by N., leaving Long Island on your port hand, which course will carry you up to Castine. If you intend going into this harbor, as soon as it bears E. N. E. you may run in, steering E. N. E., keeping the middle of the channel until you pass the first island, giving it a berth of half a mile; then haul to the Southward until the island bears W. S. W., when you may anchor in eight or ten fathoms, muddy bottom, and lie safe from all winds.

In going into the harbor of Castine, you leave three islands on your starboard hand; but if you are bound up Penobscot River you must steer N., leaving the ledge of rocks off the Old Fort Point on your port hand; then follow the same direction you have for running into the Penobscot River, which will carry you up to the falls. The tide ebbs and flows at full and change, about ten or eleven feet. *Tide.*

WHITE-HEAD.—Vessels bound from the Southward, and intending to fall in with White-Head light-house, should endeavor to take their departure from the high land of Cape Cod, from which to Manheigin light, the course is N. N. E. ¼ E., distant one hundred and eight miles. The shore near Manheigin is bold, with good water on all sides, having no shoals or sunken rocks about it; there are some dry islands and ledges on the N. side, but they are bold, and good water all among them. From Manheigin light to White-Head light the course is N. E., distant fifteen miles, with a fair open sound. There is a small ledge lies about half a mile from White-Head light, bearing S. by E., which is just out of water at common tides; at low water you pass between this ledge and the light to go into the Muscle Ridge channel, or into the harbor. You continue your course N. E. by the light about three fourths of a mile, when you will open the harbor on your port hand, between a small ledgy island near the light, and a high white island, with some spruce-trees on it. When you open the harbor N. W., you steer N. W., and sail on till you pass all the ledges on your port hand, and anchor in about five or six fathoms, good holding ground. *White-Head.*

THOMASTON.—After leaving White-Head, a run of about one mile and a half will bring you to a small bay, the entrance to what is called the W. Keag River in S. Thomaston. No one should attempt to navigate this river unless well acquainted. Those who live about there are often eight or ten days getting a vessel up to what is called the Gig. *Thomaston.*

White-Head light is on White-Head Island, remarkable for the many white rocks on the head. It is fifteen miles from Manheigin, bearing N. E.; is a fixed white light, seventy feet above the level of the sea. Attached to this light is a bell, weighing one thousand pounds, striking in foggy weather twelve times a minute. The light is of great importance, as all vessels bound to Penobscot Bay, going inshore, are obliged to pass by the light through the Muscle Ridges. A stranger wishing to pass the light must if coming from the Westward, run in for the land E. of Manheigin until the light bears S. W.; then steer N. E., and you can pass within half a cable's length of the head. *Light.* *Bell.*

Vessels of sixty or seventy tons may double close around the head of the light, as soon as it bears N. E., and anchor right abreast of the shore. This is called Seal Harbor. Vessels taken with calm and ebb-tide may anchor anywhere off the light, in from twelve to twenty fathoms of water. If the wind takes you at N. E. and ebb-tide, that you cannot get into Seal Harbor, you may run into Tenant's Harbor, which bears W. by S., four miles distant. You will continue your W. by S. course till the first house on the starboard hand bears N. N. W., when you may anchor in about four or five fathoms water, good ground.

Seal Harbor. SEAL HARBOR lies to the Northward and Eastward of White-Head, about three fourths of a mile. If you wish to go into this harbor, haul up round the head within about a cable and a half's length; run until the light bears S. W., then steer N. by W.; run in and anchor in eight fathoms, sticky bottom. This is a good harbor in winter.

To mark the approach to Seal Harbor, &c.—

Buoys. On the Spruce Island Ledge (eighteen feet low water) there is a spar-buoy, twenty-eight feet (No. 2). Long Ledge buoy bears S. W. by S. one fourth of a mile, and Burnt Island Ledge buoy, S. E., three fourths of a mile. This buoy is moored about fifty feet S. of the ledge, in eighteen feet at low water.

On the Long Ledge (fifteen feet low water) there is a black spar-buoy (No. 1). Buoy on Burnt Island bears E. N. E., half a mile, and is one hundred feet N. W. of ledge, which is bare at low water. In entering this harbor, the buoy on Hay Island Ledge, (black, No. 3) is to be left on the port hand, and buoy on Burnt Island Ledge (black, No. 5) is to be left on the starboard hand. These two buoys are to mark the Muscle Ridge Channel and are colored and numbered accordingly.

Manheigin Light. MANHEIGIN LIGHT.—On Manheigin Island, S. of the entrance to George's River is a revolving light of the natural color; time of revolution one minute, elevation one hundred and seventy-five feet above the level of the sea. You can run close to the island on either side, taking care to go between some dry ledges on the Northern side of it. In the island there is a small harbor open to the S. W.; it bears E. N. E. from Seguin light, twenty miles distant.

From Manheigin to Owl's Head. From Manheigin to White-Head the course is N. E., distant fifteen miles. There is a small ledge bearing S. by E. half a mile from White-Head light, which is just out of water at low tide (it has a buoy on it painted red). Pass between this ledge and the light to go in the Muscle Ridge channel. Your course from Whitehead to Ash Point or Island is N. E. four miles; when you haul round Ash Island give it a berth of a fourth of a mile and steer N. by E. for Owl's Head, keeping the port hand best aboard.

Roaring Bull, E. S. E. from Western George's Island, when on the ledge, the Banana of Manheigin will be shut in with the high land of Manheigin Island.

Franklin Island Light. FRANKLIN ISLAND LIGHT is on the N. end of Franklin Island, which is on the Eastern side of the entrance to George's River, and is a fixed light, varied by flashes.

The tower is of brick, painted white, and the dwelling-house is painted brown. The lantern is painted black.

The centre of the light is thirty-five feet above the ground, and fifty-four feet above the level of ordinary high water. It is visible in good weather at the distance of twelve nautical miles.

The following compass bearings have been taken from the new light-house, viz.:

Seguin light-house	S. W. by W. ¾ W.,	distant	22 miles.
Pemaquid Point light-house	W. by S. ½ S.	"	8 "
Marshall's Point light-house	E. ½ N.	"	6 "
Manheigin "	S. ¾ E.	"	9 "

Pemaquid Point Light. PEMAQUID POINT LIGHT, on the S. end of Pemaquid Point, is a fixed light, seventy-five feet above the level of the sea. It is a guide to Bristol, Waldoborough, Friendship, and John's Bay, and bears N. W. ¼ W. from Manheigin light, distant twelve miles.

There is a small ledge with four fathoms water on it, a mile and one fourth S. W. ¾ S. from Pemaquid light-house.

George's River. GEORGE'S RIVER.—Bring the N. Damiscove Island, which is called White Island (from its being white), to bear W. S. W., and steer E. N. E. for Franklin light-house, that you leave on your starboard hand, and which you may pass within a cable's length. When abreast of Franklin Island light (which is on your starboard hand), steer N. E. by E. for Otter Island, four miles distant, and continue until within one fourth of a mile of it, leaving it on your port hand; then steer E. N. E. for Cauldwell's Island, at the S. W. end of which is a high round rock called Goose Rock. When abreast of said rock, which you may pass within one cable's length of, leaving it on your starboard hand, steer N. E. by E. and N. E., keeping Cauldwell's Island best on board, to avoid a ledge in the middle of the river.

Ledges. In beating into George's River, you must be careful of a sunken ledge which bears

E. N. E. from Franklin Island light, six miles distant; also of a ledge off the S. E. end of Gay's Island, which extends one third of the way across the Goose Rock.

Should you fall in with Manheigin Island light, and bound to George's River, you may steer N. N. W., leaving Manheigin Island on your starboard hand until Franklin Island light bears N. E. by E., when you may run for it, and steer as above directed. Franklin light may with safety be run for when bearing from N. E. by N. to E. N. E.

In running from White Island to George's River, be careful of New Harbor Ledges, which bear E. N. E. from Pemaquid Point light one league distant, on which are five feet at low water. After passing these ledges, you will see a large dry rock, called the Western Egg Rock, which bears E. N. E. from Pemaquid Point, two leagues distant, and W. by S. from Franklin light one league, which you leave on your port hand; you will also see the Eastern Egg Rock, which bears S. from Franklin light, one league distant, which you leave on your starboard hand. These Egg Rocks bear E. S. E. and W. N. W. from each other, one league distant, and their appearance much alike, which you pass between, with a clear and open channel. You may distinguish one from the other by their bearings from the light.

Should you have the wind ahead, and be obliged to turn to windward, you may stand to the Northward until Franklin Island light bears E. N. E., and to the Southeastward until it bears N. N. E., without danger.

From the Eastern Egg Rock there is a chain of breaking ledges, extending nearly to Franklin Island. Vessels beating in will avoid these rocks by not standing too far to the Eastward.

To the Northward of the range of Pemaquid Point and the Western Egg Rock and M'Cobb's Island, the ground is foul and rocky, and also to the Eastward of the range of Franklin Island light, and the Eastern Egg Rock.*

To mark the approach to Damariscotta River—

Buoys.

On Heron Island Ledge (thirty feet low water) there is a red spar-buoy (No. 4). White Island bears S. by W., three miles; and Varnum's Point, N. ½ W., three miles. This buoy is three hundred feet W. of the ledge, which is dry at low water.

On Western Ledge (fourteen feet low water) there is a black spar-buoy (No. 1). Fort Point bears N. by E., ½ E., three fourths of a mile; and Hodgdon's mills, S. by W., one mile and a half. This buoy is three hundred feet S. S. E. of the ledge, which is dry one hour before low water.

On Eastern Ledge (fifteen feet low water) there is a red spar-buoy (No. 6). Fort Point bears N. N. W., one fourth of a mile. This buoy is ten feet N. of the ledge, which has five feet at low water; the ledge extends N. and S. half a mile—N. end the shoalest.

On Kelsey's Ledge (eighteen feet low water) there is a red spar-buoy (No. 8). Kelsey's Point bears N. N. E., one fourth of a mile. This buoy is fifty feet W. N. W. of the ledge, which has five feet at low water. Eighteen feet can be carried up by keeping to the Eastward of the ledge, a little nearer the shore than the buoy.

John's Bay Harbor.

JOHN'S BAY HARBOR.—John's Island bears from Thrumcap Island N. N. E., distant about three miles. Thrumcap Island is a small bare island, and forms the Western side of the entrance of John's Bay, bearing from Pemaquid Point W. S. W., distant about two and a half miles. Pemaquid Point forms the Eastern side of the bay, and is a low bare point; but the shores are bold on all sides. The light-house is situated on the S. E. side of Pemaquid, and bears from the Western Point E. N. E., distant about half a mile; from John's Island to Butford's Island, W., distant about one mile; Stuart's Island, N. W. by W., distant about one mile; High Island Head, N. ¾ W., distant about two miles; M'Farling's Point, N. W. by N., distant about a mile and a half—one eighth of a mile from M'Farling's Point there are several ledges covered at high water, but they are not in the way of vessels running into this bay, as they lie so near the Western shore, they may be seen at all times with a little motion of the sea: M'Coun's Point from John's Island, N., distant about a mile and one fourth; Pemaquid Point, S. by E., distant about three miles; Pemaquid Harbor, N. E., distant about half a mile. Thrumcap Island bears from White Island N. E., distant about two miles. High Island Head is a high bluff covered with trees, and you may near it within two hundred feet of the shore.

John's Island is small and high, covered with spruce-trees, located near the centre of the bay, and has a house on the N. W. part of it, which cannot be seen until you are up with the island; if you wish to run into Pemaquid Harbor, you may go to the Eastward of John's Island, leaving two dry rocks on the starboard hand, keeping them close on board; or you may leave them on your port hand, and after passing them you will see the entrance of the harbor, bearing about N. E., half a mile distant, where you may run in, and lie safe from all winds.

Vessels Westward bound, falling in with Manheigin Island and wishing to make a harbor in a strong S. W. wind, must observe the following directions:—Bring Manheigin

* M'Cobb's Island is the Western entrance of George's River, and bears N. W., one mile and one fourth distant from Franklin Island light.

light to bear S. E. and steer N. W. eleven miles, for Pemaquid Point; and when the light on said point bears E. N. E., distant half a mile, you are then up with the Western point of Pemaquid; leave it on your starboard hand, and give it a berth of one eighth of a mile, then steer N. for John's Bay Harbor, leaving John's Island and McCoun's Point on your starboard hand; Butford's Island, Stuart's Island, and M'Farling's Point on the port hand. If you are from the Westward, and bound into this harbor, you may bring John's Island to bear N. by E., and run until you are within one cable's length of it; then steer N. two miles; this course and distance will bring you up with John's Island, which you leave on your starboard hand, give it a berth of a cable's length, and steer N. ¼ W., for a high bluff on your port hand, about twelve miles distant. You may near said bluff within two hundred feet of the shore, and when abreast of it steer N. half a mile, when you may anchor in four to five fathoms. Corbett's Ledge bears from John's Island N. W. by N., one mile and a half, and about one eighth of a mile from the Western shore. If the wind takes you ahead, you may near them within a cable's length. John's Bay lies about five miles to the Eastward of Townsend Harbor, and is a fair open bay, having no rocks or shoals at its entrance, and vessels may run in without fear by following the above directions.

Damariscotta River. DAMARISCOTTA RIVER.—The buoy at the mouth of Damariscotta River, and the bearings of different objects about it, and directions for the river: Hern Island, S. W. part bears from the buoy E. by N., distant about a fourth of a mile; White Island S. ½ W, distant two and three fourths miles; Varnum's Point, N., distant about three and a half miles; Foster's Point, N. by E., distant two and a half miles; from Hern Island to White Island, S. S. W., distant about three miles. Hern Island forms the Eastern side of the entrance to Damariscotta River, and is high, covered with spruce-trees. Varnum's Point is a high bluff point, and is on the Western side of the river, and is also covered with trees. The shores on both sides of the river are bold.

Buoys. *Buoys as they are passed by vessels entering Damariscotta River.*

On Hern Island Ledge	Red spar buoy, No. 2.
On Western Ledge	Black spar buoy, No. 1.
On Eastern Ledge	Red spar buoy, No. 4.
On Kelsey's Ledge	Red spar buoy, No. 6.
On Bantam Ledge	Red can buoy, No. 8.

Directions. In coming from the Westward, and bound to Damariscotta River, bring White Island to bear S. ½ W., and steer N., leaving the buoy, Hern Island, and Foster's Point, on the starboard hand; give the buoy a berth of a cable's length, and steer N. by E., keeping in the middle of the river, and when up with Varnum's Point, which you leave on your port hand, you will see Hodgson's mills on the Western side of the river, about one mile and a half. Hodgson's house and mills are painted red; you may anchor abreast of them, near the middle of the river, in five fathoms water, good holding-ground, where you may lie safe from all winds. The above-mentioned buoy is a spar-buoy, painted red, elevated about twelve feet above the surface of the water, and moored about one hundred feet to the Westward of the ledge, in six fathoms at low water.

Should you fall in to the Eastward of Seguin, and wishing to go outside of Damiscove Islands, bring Seguin light to bear E. ½ N., and steer E. ½ S., five leagues distant, to clear Bantam Ledge, which lies E. ½ N., from Seguin, six and a half miles distant, and S. S. W. from Pumpkin Rock, one league; you then steer N. E. until you make Franklin light, and then steer as above directed, or continue your E. ½ S. course until Pumpkin Rock bears N., then steer N. E. for Franklin light. Your course from Pumpkin Rock to Franklin light is N. E. by E., five leagues distant. In hazy weather you will do well to get a departure from this rock, as you cannot see Franklin light more than four miles distant. You may anchor in Gay's Cove, taking care to avoid a sunken ledge which lies E. from Gray's Cove, near the middle of the channel, and has four feet at low water. This ledge must be left on your port hand, keeping Cauldwell's Island close on board. Gay's Cove lies on your port hand, about eight miles to the E. N. E., of Franklin Island light. You may know this cove, as Gay's house and barn lie to the N. W. of it. But if you are bound through Herring Gut, bring Capt. Henderson's house to bear N. N. W., and steer S. S. E. for Herring Gut. This Herring Gut has a bar from side to side, but you may go over it at two hours' flood, keeping your port hand best on board. As you come on the bar, you will see a large rock on your starboard hand, and the deepest water is within a cable's length of the rock; your course over the bar is S. S. E. You may anchor to the N. W. of the bar in four or five fathoms, muddy bottom, and wait for the tide. The tide of flood sets in to the Northward, and the ebb to the Southward.

Seguin Light-house. SEGUIN LIGHT-HOUSE is on an island near the mouth of Kennebeck River, two hundred feet above the level of the sea, and is a fixed light. Cape Small Point bears N. W. from it, and Wood Island N. N. W., one mile and three fourths distant. There are several rocky ledges near Seguin, which bear from the light as follows: Five-Fath-

om Ledge, S. W., distant three fourths of a mile; Ellingwood's Rock, N. one fourth of a mile; Seguin Ledges, N. N. E., half a mile, always dry; Jack-knife Ledge, N. W., one mile and a fourth, eight feet water; Wood Island Reef, N. N. W., one mile and one eighth, four feet water; Whale's Back, N. N. E., one mile and three fourths; and White's Ledge, with eight feet on it, bears N. E., one mile. A rock eighteen feet bears from the light S. a little W., distant from the S. point of the island three fourths of a mile; the range for it is Pond Island light, just open the S. W. side of Seguin Island.

Marshall's Point Light.

MARSHALL'S POINT.—On Marshall's Point, at the Eastern entrance of Herring Gut, there is a fixed light, elevated thirty feet above the level of the sea.

Herring Gut Harbor.

HERRING GUT HARBOR.—Old Cilly bears from the light on Marshall's Point at the entrance of Herring Gut Harbor, S., distant about three miles; Black Rock, S. ½ W., distant about one mile and a half; Henderson Island, S. S. W., distant one mile; Bradford's Island, W. by S., distant half a mile; Gunning Rock, S. E. by S. ¾ S., distant about one mile; Two Brothers, S. E., distant about two and a half miles; Henderson Island from Gunning Rock, W., distant about half a mile; Gunning Rock to Black Rock, S. W. ½ S., distant about half a mile;—S. E. by S. ½ S. from Gunning Rock, distant a fourth of a mile, lies a sunken ledge, which can be seen breaking at low water in a heavy see;—from Old Cilly to the light on Manheigin Island S. W. by S., distant about nine miles; Mosquito Island from Old Cilly, N. E. by E., distant about four miles; Green Island from the Brothers, S. E. ¾ S., distant about a fourth of a mile. Old Cilly is a low black rock, and can always be seen above the surface of the water. A reef extends off E., distant nearly a fourth of a mile, which must be avoided. Black Rock is a small round rock, and is also above the surface of the water. Henderson Island is a small low island, with no bushes or trees on it. Bradford Island is high, and covered with spruce-trees, and forms the Western side of Herring Gut Harbor. Green Island is also a small bare island. The two islands called the Two Brothers, are small, and covered with spruce-trees. Gunning Rock is high and bare, with a yellowish color; this ledge is very bold, and you may near it within one hundred feet.

Sunken Ledge.

In running from Manheigin for Herring Gut Harbor, bring the light on Manheigin to bear S. W., and steer N. E. by N. and when the light on Marshall's Point bears N. by W. ½ W., then run for it; in running for the light you will leave the Old Cilly, Black Rock, and Henderson Island, on the port hand; Mosquito Island, Green Island, Two Brothers, and Gunning Rock, on your starboard hand. Give the light a berth of two cables' length, and when it bears E. of you, steer N. N. E., distant about one mile, and anchor in from four to five fathoms, where you lie safe from all winds. You will find good anchorage anywhere between Marshall's Point and Bradford's Island.

You may run into the harbor by bringing the light on Marshall's Point to bear W. N. W., leaving the Green Island, Two Brothers, and Gunning Rock, on the port hand, Mosquito Island on the starboard. This passage is full of shoals, and had better not be attempted unless well acquainted.

This harbor is easy of access, and vessels may approach it with safety, by following the above directions.

To mark the approach to Herring Gut Harbor, &c.—

Buoys.

On the Egg Rock Ledge (twenty-four feet low water) there is a black spar buoy (No. 1). Egg Rock bears S. W. by W. one mile and one fourth, and Franklin Island light-house N. N. E. one mile and a half. This buoy is moored fifty feet S. S. W. of the ledge, which is awash at low water.

On the Seal Ledge (twenty-four feet low water) there is a red spar-buoy (No. 2). Egg Rock buoy bears W. by S. one mile. This buoy is placed about one hundred and fifty feet N. by E. of the shoalest part of the ledge, which is bare at half tide.

On the Griffin's Ledge (twenty-four feet low water) there is a black spar-buoy (No. 3). Marshall's Point light-house bears N. E. by E. ¼ E. two miles. This buoy is about fifteen feet S. E. from the ledge, which has eight feet on it at low water.

On the Sisters (twenty-one feet low water) there is a red spar-buoy (No. 4). Marshall's Point light-house bears E. N. E. one mile and a fourth. This buoy is about one hundred feet N. N. W. of the ledge, which is bare at low water.

On the Allen's Ledge (eighteen feet low water) there is a red spar-buoy (No. 6). Marshall's Point light-house bears N. E. by E. ½ E. half a mile. This buoy is in eighteen feet water, fifty feet N. W. of shoalest part of the ledge, four feet at low water.

On the Marshall's Point Ledge (eighteen feet low water) there is a black spar-buoy (No. 5). Marshall's Point light-house bears N. W. one fourth of a mile. This buoy is in eighteen feet water, thirty feet E. of the ledge, which has seven feet at low water.

On the Mosquito Island Ledge (eighteen feet low water) there is a black spar-buoy (No. 7). Marshall's Point light-house bears W. by N. one mile. This buoy is in eighteen feet water, seventy-five feet S. E. of the shoalest part of the ledge, which has four feet at low water.

When you go out of this harbor and are bound to the Eastward, be careful to give the port hand a good berth, for there are two ledges of rocks on the same hand of the East-

ern point, which are under water, and lie off about a cable's length. When you are clear of these ledges, you may steer E. by S., or E. S. E., one mile, to the Barren Island which you leave on the port hand, and three or four islands and ledges on the starboard hand. When you pass these ledges and Mosquito Island, if bound to White-Head, you may steer N. E. by E. two leagues, and when you bring the light to bear N. E., run for it; but when you pass the S. W. White-Head, leave it on your port hand, and be careful of a sunken rock that lies S. E. from the Eastern White-Head, about one cable's length distant, on which is a buoy. Your course through to the Eastward is N. E., and to the Westward S. W., keeping near the middle of the passage. Before you come up with Ash Point, you must be careful of a sunken rock, on which is a buoy, which lies off the point about one third of the passage, which has not more than eight feet at low water. But if you should go through this passage in the night, keep Potato Island (which is right against Ash Island, about S. S. W. from it, and bare of trees), which you leave on your starboard hand, best on board. When you pass Potato Island, and are bound into Owl's Head, your course is N. N. E. about two miles, which will leave two islands on the starboard hand. When you open the passage to Owl's Head, and bound to Edgemoggin Reach, your course is N. E. by N. till you pass the Lime Islands, which you leave on your port hand. Continue said course till you make a large bare rock on your starboard hand, and a little round island to the Eastward on the same hand, which is covered with trees. Continue your course to the N. E., and you will make a large island on your starboard hand. When you pass this island, you have the passage open to Buck's Harbor; continue your course N. E. till you pass by all the islands to the Southward and Northward. In the daytime you may see Blue Hills, bearing E. N. E., over all the land. This passage is safe to go through with a first-rate man-of-war. When you come within two miles of the Reach, you will make a small island on your starboard hand, which has a sunken rock to the Northward of it. Your safest way is to keep the middle of the passage, as there is a sunken rock (or ledge) on the port hand, that lies E. by S. from an island, which you leave on your port hand, about half a mile distant. If you want to make a harbor, you may go into Buck's Harbor, by a N. E. or N. E. by N. course. When you come into this harbor (which is twelve leagues from Owl's Head) you must leave an island covered with young birch-trees on your starboard hand, steering N. N. W., and when you get to the Northward of said island, you steer E. S. E. till you bring it to bear S. S. W., where you will be landlocked from all winds, in four or five fathoms, soft bottom. When you leave Buck's Harbor, bound to the Eastward, you steer S. E. till you come to a large rock and four islands, which you leave on your port hand, keeping the said rock and islands best on board, for there is a sunken ledge that lies S. S. W. from them. You will make a black island on your starboard hand, with burnt trees on it. This ledge lies N. N. E. from said island, near the middle of the passage, but, keeping the Eastern shore best on board, you will go clear of it. When you have passed this ledge you leave two islands on your starboard, and two or three on your port hand. Continue your course to the S. E., till you make two islands, between which and Buck's Harbor the course is S. E. and N. W. six leagues. To the Eastward you may go between both islands, steering E. by S. one league, which course will carry you up with Thrumcap, which island has a bar of rocks, that lie near half a mile to the Northward; but if you have a head wind, and are obliged to run through, you will observe the channel is two miles wide at Channel Rock, which is always above water.

Sunken Rock.

When you leave Thrumcap, steer E. by S., which will carry you between the Ship and Barge and three islands which you leave on your port hand, that are covered with large rock-maple trees. The Barge is a bare rock, which you leave on your starboard hand; but there is a rock about a cable's length to the Northward of the Barge. Continue your course E. by S. for Bass Harbor, distant from Thrumcap five leagues; but you must have some regard to the tide of ebb, which sets very strong to the S. S. E., and the tide of flood to the N. N. W. If you are bound into Bass Harbor, you keep Rich's Point within a cable's length, which you leave on your port hand, for there is a large ledge of rocks, which lies off about half a mile, which is bare at half-tide, and bears S. E. from Rich's barn, and S. by W. from the entrance of Bass Harbor. You give the port hand a good berth in going into Bass Harbor, in entering which you must give both sides a berth, for at low water it is shoal. When you get into this harbor, anchor on the port hand, with a cove to the Westward of you, in three or four fathoms, muddy bottom.

Townsend to Manheigin Harbor.

TOWNSEND TO MANHEIGIN HARBOR.—When you take your departure from Squirrel Island, you steer E. S. E. for Manheigin light, on the N. side of which are some small dry islands and ledges, but good water between them and the other side of the island, keeping that course until the passage between George's Island and Manheigin bears N. E. You may steer N. E about seven leagues, through a fair open sound, for White-Head light, leaving George's Islands (which are three in number) on your port hand. The Eastern island has no trees on it. There are two dangerous rocks, bear-

ing due S. from the middle island, called the Old Man and the Old Woman, which are bare before low water. They lie about one mile from the shore, and at high water, when the wind blows off the land, they do not appear. If you are bound to the Eastward, and the wind should take you ahead, when you are between Manheigin and George's islands, bring the middle of Manheigin to bear S., and run in N., which course will carry you between the Eastern George's Island, and the middle island. You may run as near as you wish to the Eastern island, but the middle island has a ledge of rocks that lies to the Eastward of it, which are always dry—that you are to leave on your port hand. When you get to the Northward of this island you must haul to the Westward, and run up between it and the Western island, so as to bring the body of the middle island to bear N. E. of you. Here you moor your vessel, if you stay any time.

Ledge. If you are bound to the Eastward of this island, you may go to the Northward of the Eastern island, but you must be careful of a ledge that lies to the Eastward of said island, which you must leave on your starboard hand; and when you bring Manheigin light to bear S. W. you may go N. E. If night should come on, or the wind ahead, you may haul up about N. E. by N. for Tenant's Harbor, which lies about eight leagues from George's Islands. You cannot miss this harbor in the daytime. You will make Mosquito Harbor, which lies between two islands, covered with spruce-trees. The entrance to the harbor is N. Having passed this harbor, you will run about two miles, keeping your course N. E. by N., when you will pass an island with burnt trees on it, which you leave on your port hand, and two islands on your starboard hand, which also have burnt trees on them; then you must bring the harbor to bear W. N. W. before you enter. This is a good harbor, provided you have neither cables nor anchors, as you may save your vessel by running up to the head of it on muddy bottom, which will be dry at low water.

Light. On Burnt Island, the W. side of the entrance to Townsend Harbor, there is a fixed light sixty-one feet above the level of the sea.

In Booth Bay there are two rocks and a ledge, distances and bearings from Burnt Island light-house, viz.: A rock with three and one fourth fathoms on it, six hundred yards S. by W.; a rock with only ten feet of water on it, eleven hundred and twenty-five yards S. by E., Easterly, and three hundred and ninety yards from the nearest point of Squirrel Island; a ledge with three and a half fathoms on it, and eight hundred and twenty yards S. ½ E. These rocks are in the channel-way in beating into Booth Bay between Squirrel Island and S. Point Ledge.

Bantam Ledge bears S. ½ W. from Burnt Island light, and E. ½ N. from Seguin light-house.

Townsend Harbor. TOWNSEND HARBOR.—The entrance of Townsend is wide From the Cuckold's to the Damiscove Islands, is about three miles; and Squirrel Island lies N. E. by N. about two and a half miles; and from Squirrel Island to the Western shore is about one mile and a half; and Burnt Island bears N., distant about two miles from the Westerly point of Squirrel Island. If you are outside of Damiscove Islands, be careful to stand so far to the Westward as to bring Burnt Island light to bear N. by E.; then you may run for it without fear.

If the wind should be ahead, and you have to beat into the harbor, you may stand from shore to shore without fear, and beat up either to the Eastward or Westward of Squirrel Island; you may find good anchorage under the lee of Squirrel Island, and go round the island with any vessel.

In coming from the Westward, leave Seguin Island on your port hand, giving it a berth of a mile; then steer N. E. by E. seven miles, when you will, if clear weather, open the light, on Burnt Island, bearing about N. N. E., but still continue your N. E. by E. course, until Burnt Island light bears N. by E., then stand for it, continuing N. by E., leaving it on the port hand, till up the harbor. About three fourths of a mile N. N. E. from the light, there is a small island, called Mouse Island, which you leave on your starboard hand, which is bold; after passing it, you haul up N. E. for the Eastern harbor, or continue your course N. by E., till you get the Western harbor to bear W. N. W.; then you may run in till you shut Burnt Island light in by the land; or you may anchor anywhere inside of Mouse Island, as there are neither rocks nor shoals lying off from the land.

In coming from the Eastward get Manheigin light to bear E. S. E., and steer W. N. W. eleven miles, which course and distance will carry you into the passage between all the outer islands and the main: and in steering said course you will make Burnt Island light, bearing about N. W. by W.; then steer W. by N. till you get Burnt Island light to bear N. W., then haul up for it, keeping it on your port bow till you get up with it, then steer N. by E., and follow the directions before given in coming from the Westward.

To mark the entrance into Townsend Harbor from the Eastward, between Damiscove and Fishermen's islands—

Buoys. On Hypocrite Ledge (twenty-four feet low water) there is a red spar-buoy, forty-five feet. The S. W. end of Fishermen's Island bears W., three fourths of a mile. This buoy is about fifty feet S. S. E. from the ledge, which lies between White Island and Fishermen's Island, and should be left on the starboard hand by vessels bound Westward or into Townsend Harbor. The ledge is awash at the lowest tides. Channel Rock, Card's Rock, and Hypocrite Ledge buoys are not seen by vessels entering Townsend Harbor from the Westward.

To mark the approach to Townsend Harbor—

On Bantam Ledge there is a red wooden can-buoy (No. 2, third class). The outside buoy on the W. end of Damiscove Island bears N. E. by N. ½ N., four miles; and Seguin light-house, W., nine miles. The ledge dries at two thirds ebb; irregular soundings all around it. On the S. W. side it falls off from three and four to seven, eight, and nine fathoms very quick. On the E. and N. E. sides it deepens gradually. The buoy is forty fathoms S. W. by S. of the dry part of the ledge.

On Gangway Ledge (thirty feet low water) there is a red spar-buoy (No. 4), forty-five feet. Burnt Island light-house bears N. W. ½ W., two and one fourth miles; and the N. E. end of Fishermen's Island, S. E., one fourth of a mile. This buoy is fifty feet S S. W. from the shoalest part of the ledge, which has seven feet on it at low water.

On Card's Rock (thirty feet low water) there is a red spar-buoy (No. 6), forty-five feet. Burnt Island light-house bears N. W. ½ W., two miles. This buoy is about fifty feet S. W. of the rock, which is just awash at low water.

Kennebec. KENNEBEC.—If coming into Kennebec River from the Westward, keep about one fourth of a mile from Seguin Island light; in doing which you will avoid Jack-knife Ledge, on which, as hereafter noted, there is a black nun-buoy, and Ellingwood's Rock, lying N., one fourth of a mile from Seguin. After passing Ellingwood's Rock, bring Seguin light to bear S., and steer N. for Pond Island light, which is a fixed light, fifty-two feet above the level of the sea, and bearing N. ¼ W. from Seguin light, distant two and one fourth miles. Leaving Pond Island a cable's length on the port hand, care should be taken, on the flood-tide, to haul quickly round Pond Island Point, to avoid the Sugar-loaves (two small islands N., one half mile from Pond Island), upon which the tide sets very strongly. On Pond Island Reef there is a black nun-buoy (see next page). The course after passing Pond Island, is about N. W. to the fort on Hunnewell's Point (which you will give a berth of a cable's length), and steer N. for Cox's Head (on which also is a fort) one mile. The course is then N. E. to Perkins' Island, which you will leave on the starboard hand, about one mile, and you will give it a berth of a cable's length to shun two sunken ledges that lie nearly abreast of Perkins' Island, and about in the middle of the river; then steering about N., one mile, you will have fine anchorage at Perkins' Flat, in four, five, and seven fathoms. This is as far as it would be prudent for a stranger to attempt with a heavy vessel. On Perkins' Ledge there is a spar-buoy, as noted on the next page.

Light.

Sunken Ledges.

Bring Seguin to bear S. and steer N. for the Kennebec, leaving Seguin on the starboard hand. When Pond Island light bears N. W. haul to Westward, leaving the Sugar-loaves on the starboard hand, and steer for the fort, the course being N. N. W.

There is a good anchorage in moderate weather anywhere between Seguin and Pond Island, within half a mile of the latter, in from five to eight fathoms. Should the wind blow violently, or in case of stress of weather, and if far enough to windward to weather Ellingwood's Rock and Seguin Ledges, it might sometimes be advisable to run to Townsend Harbor.

If bound into Kennebec, and fallen to the Eastward of Seguin, bring the light on Pond Island to bear N. W. by W., and run for it till within a cable's length, then follow the preceding directions.

There is a safe anchorage, with an off-shore wind, anywhere between Small Point and Seguin, and avoiding Jack-knife Ledge, before mentioned.

Safe anchorage may be had from Cox's Head to Perkins' Island, nearest the Eastern shore. The usual rapidity of the tide, between the Seguin and the mouth of the river, is three and four knots.

Tide.

There is also a passage into Kennebec River, leaving Pond Island on the starboard hand; but only sixteen feet can be carried at high water, and it is not recommended.

You have deep water to the Eastward of Seguin. At the Westward the tide of flood sets strong to the Northward into New Meadows, and W. N. W. into Broad Sound, and up to Portland, and the ebb-tide the reverse. Your soundings between Seguin and Cape Elizabeth are various; at times you have eighteen or twenty fathoms, rocky bottom, and within a cable's length you will find thirty or thirty-five fathoms, muddy bottom.

To mark the outer waters and approach to Kennebec River—

Buoys. On Thom's Rock (eighteen feet low water) there is a red third class nun-buoy (No. 2). Seguin light-house bears S. W. by W. ¾ W.; one mile and three fourths; and Pond Island light-house, W. by N. ¾ N., three and a half miles. This buoy is S. S. W. of the rock, distant one fourth of a mile. The rock is dry at low water.

On White's Ledge (thirty feet low water) there is a black third class can-buoy (No. 1), with W. L. marked in white. Seguin light-house bears S. W. by S. one mile and three fourths; and Pond Island light-house N. W., two miles. This buoy is fifty feet E. of the ledge, which has twelve feet at low water.

Both of these buoys are outside buoys, and are used by vessels entering the Kennebec on the E. side of Seguin Island. Vessels entering on the W. side of Seguin pay no attention to them.

On Jack-knife Ledge (eighteen feet low water) there is a black third class nun-buoy (No. 3), with J. K. marked in white. Seguin light-house bears S. E. by S., two miles; and Pond Island light-house, N. E. ½ N., two miles. This buoy is one hundred feet S. of the ledge, which has four feet at low water. The buoy is used by vessels entering the mouth of the river from the Westward of Seguin Island.

On Pond Island Reef (twenty-four feet low water) there is a black nun-buoy (No. 5). Seguin light-house bears S. ½ E., two and one-fourth miles; and Pond Island light-house N. ½ E., three fourths of a mile. This buoy is on the S. E. point of the reef. There is no passage between the buoy and Pond Island light-house.

On Black Jack Rock (twenty-four feet low water) there is a black and red spindle, with iron cage on top; the shaft red, and the top red and black stripes. Pond Island light-house bears S. ½ W.; Frost Island N. N. W.; and Seguin light-house, S. E. by S. *Spindle.*

To mark the main ship channel of Kennebec River—

On Perkins' Ledge (ten feet low water) there is a red and black horizontal striped spar-buoy. Fort on Hunnewell's Point bears S.; and fort on Coxe's Head, S. W. ½ W. *Buoys and Spindles.*

On Parker's Ledge (ten feet low water) there is a black spar-buoy (No. 1). The fort on Coxe's Head bears S. W.; and the S. point of Perkins' Island, S. E.

On Seal Rock there is a spindle, wtth copper cylinder, painted black.

On Lee's Rock there is a spindle like the above, painted red, with a black ball on top.

On Ram Island Ledge there is a spindle like the above, painted red, with two red balls on top.

On Lithcoe's Rock (ten feet low water) there is a black spar-buoy (No. 3). Baker's Point bears S. S. W.; and Bluff Head S. by W.

On Lincoln's Ledge (ten feet low water) there is a black spar buoy (No. 5). The N. point of Fiddler's Rock bears S. ½ E.; and Hospital Point, S. S. W.

On Trufant's Ledge (ten feet low water) there is a black spar-buoy (No. 7). Hospital Point bears S. by W. ½ W.; and Snipe's Point, S. E.

On Winslow's Rocks there is a spindle, with red top in form of a cask. Clapp's Point bears W. by S.; and the E. side of Sagadahock Ferry wharf S. These rocks are dry at half tide.

On Stetson's Rocks (nine feet low water) there is a red spar-buoy (No. 2). The spindle on Winslow's Rock bears S.; and Morse's steam-mill, S. S. W.

On Thorn's Island Rock (ten feet low water) there is a black spar-buoy (No. 9). The telegraph pole on the E. side of the Narrows bears E. by S.; and the telegraph pole on the W. side, S. E. by E.

On Grace Rock (nine feet low water) there is a red spar-buoy (No. 4). Lemont's steam-mill bears S. W. by W.; and Line's Island S. by W.

On Trott's Rock (six feet low water) there is a spar-buoy (No. 6). Sturgeon Island bears S. W. ½ S.; and the N. part of Chopp's Point, S. S. W.

On Ames' Ledge there is a spindle painted red—the top in form of a cask. Abakilldasett bears S. W. This ledge is dry at half tide. The spindle marks the entrance of the channel on the E. side of Swan Island, and which is considered the main ship channel.

On Beef Rock there is a spindle red like the above. Carney's Point bears S. S. W.; and Call Bluff, on Swan Island, S. W. This rock is dry at half tide.

On Lovejoy's Narrows (seven and a half feet low water) there is a red spar-buoy (No. 8). Lewis Point bears S. by E.; and Goodwin's Point, E. S. E.

On Lovejoy's Narrows (six feet low water) there is a black spar-buoy (No. 13); Lewis' Point bears S. E. by S. ½ S.; and Dry Rock, S. E. ½ S.

On Hawthorn Rock (seven feet low water) there is a red spar-buoy (No. 10). Goodwin's Folly bears S. by W.; and Goshen's Point, S. W. by S. This is the first buoy after the junction of the two channels above Swan Island.

On Naumkeag (ten feet low water) there is a red spar-buoy (No. 12). Eastman's Point bears S. W. ½ S.; and Bailey's Point, S. W. by S.

On Hill's Ledge (six and a half feet low water) there is a red spar-buoy (No. 14). Naumkeag Island bears S. W. by S. ½ S.; and Mason's wharf, S. S. W.

On the E. side of Green's Ledge (seven feet low water) there is a red spar-buoy (No. 16). The white house on the point W. of Coburn's mills bears S. S. E.

On the W. side of Green's Ledge (seven feet low water) there is a black spar-buoy (No. 15). The above white house bears S. E. by S.

On Grant's Ledge (ten feet low water) there is a black spar-buoy (No. 17). The stone church in Gardiner bears S. W. by S. ½ S.

On Brown's Island Shoal (six feet low water) there is a black spar-buoy (No. 19). Brown's Island bears S. by W. ½ W.

On Busell's Flats (six feet low water) there is a red spar-buoy (No. 20). Swetland's Point bears S. E. by S.

On Shepard's Point Shoal (seven feet low water) there is a black spar-buoy (No. 21). Shepard's wharf bears W. S. W.

On the lower shoal of Mill Brook (five feet low water) there is a black spar-buoy (No. 23). Shepard's Point bears S.

On the upper shoal of Mill Brook (five feet low water) there is a red spar-buoy No. 22). Shepard's Point bears S. S. E.; and the buoy No. 23, S. E. ½ S.

On Willow Tree Shoal (five feet low water) there is a red spar-buoy (No. 24). Shepard's Point bears S. by E.

On Hinckley's Rock (five feet low water) there is a black spar-buoy (No. 25). The bluff N. of Hallowell's Ferry, E. side of the river, bears S. W. by S.; and the E. end of the cotton factory, S. W.

On the lower end of Brett's Shoal (five feet low water) there is a black spar-buoy (No. 27). The above bluff bears S. W. by S.

On the upper end of Brett's Shoal (six feet low water) there is a black spar-buoy (No. 29). The above bluff bears S. W. by S.; and the buoy No. 27, S. W. by W.

All the buoys in the Kennebec River above Bath, commencing in the main ship-channel at Stitson's Rock, are taken up in the winter and replaced upon the opening of the navigation in the spring.

Hendrick's Head Light. HENDRICK'S HEAD LIGHT is a revolving light, thirty feet above the level of the sea, on the starboard hand going in, near the mouth of Sheepscut River.

Sheepscut River. SHEEPSCUT RIVER.—If you are bound to Sheepscut River from the Westward, and make Seguin light, you may leave it on your starboard hand, giving it a berth of half a mile; when you pass it to the Eastward, you must bring it to bear S. W. by S. and steer N. E. by N., which course will carry you to Ebenicook Harbor, distant three leagues, leaving three dry ledges on your starboard hand, and one on your port. This harbor is very narrow at the entrance, but makes a large basin when you get into it; in the entrance it lies E. N. E. You cannot get in here with a N. E. or Easterly wind, but must have the wind S. or Westerly. After you get into this harbor you must haul up N. E. or N. E. by N., for there are several sunken rocks on the starboard hand as you go in, which you are to avoid. The best anchorage is against Captain Smith's wharf, where there are four fathoms, muddy bottom, and you will lie safe from all winds. But if you are bound up Sheepscut River, in a large vessel, and come from the Westward, pass Seguin light to the Southward, steer N. E. until you bring Hendrick's Head to bear N. a little Westerly, then run for it, keeping the starboard shore close aboard. There are many rocks and ledges, some of them above and some under water, which are all to the Eastward of Seguin. When you get up as high as Ebenicook, you leave the two Mark Islands on your port hand, keeping your course N. a little Easterly; but if you only come here to make a harbor, when you get up to Capt. Hodgson's you will see a bare ledge on your port hand, if it is low water, which is covered at high water; you may anchor at eight fathoms to the Northward of it.

Sunken Rocks.

To mark the approach to Sheepscut River—

Buoys. On Sloop Ledge (eighteen feet low water) there is a black spar-buoy (No. 1). Hendrick's Head light-house bears N. E. by E. ½ E., four miles; and Little River beach, S. W. by W. ½ W., one mile, and two miles from Griffie's Head. The ledge is N. from the buoy about one hundred feet.

On Griffie's Head there is a black and red horizontal striped spar-buoy. Hendrick's Head light-house bears N. E. by E., three miles.

On Monk Ledge (eighteen feet low water) there is a black and red horizontal striped spar-buoy. Hendrick's Head light-house bears S. E. by S., one mile and a half; and Mark Island, S. by W., half a mile—about midway of river, S. of N. breakwater. This buoy is one fourth of a mile from the shore, and the ledge is bare at low water.

Mark Island. MARK ISLAND.—On Mark Island a stone column is erected as a landmark for vessels running into or passing either Harpswell or Broad Sound. It is also a conspicuous mark for the mariner, standing in from sea, in any direction between Cape Elizabeth and Cape Small Point. This island at the entrance of Harpswell Sound (halfway between Portland and the entrance of the River Kennebec), is one fourth of a mile in length, without trees, its elevation forty feet above the level of the sea; the column is placed near the centre of the island, fifty feet high, painted perpendicularly in black and white stripes, except near the top, which is black on each side. Course up Harpswell Sound N. E. ½ N.

Bearings. The bearings by compass and distance in statute miles from the column are as follows: To the column on Cape Elizabeth, S. W. ½ W., thirteen miles; to the Outer Green Island, S. W. by W. six miles; to Halfway Rock, S. by W. ¼ W. four miles; to Drunkard's Ledge, S. ¼ W. to S. ½ W. one and a half miles; to Mark Island Ledge, S. E. ¼ S.

three quarters of a mile; to South Pilot of Jaquish, E. ½ S. one and a half miles; to Turnip Island E. ½ N. one and a quarter miles; to Cape Small Point, E. by S. ten miles; to Whale Rock (out of water) S. W. by W. half a mile; to Haddock Rock or Island (N. point), N. W. ½ W. half a mile; to S. W. point of Haskill's Island, N. N. W. one eighth of a mile; to Middle of Eagle Island, W. N. W. ½ W. one and a quarter miles; to Mackerel Cove, E. N. E. two miles.

If you want to go up to Wiscasset Point, you must keep your starboard hand best aboard, Northeasterly, till you come to Cross River, which you leave on your starboard hand. You will not attempt to go up to Wiscasset Point with a head wind and the tide of ebb, for it is one league and three fourths from Cross River, but when you have a fair wind and tide you may proceed without fear. This river is narrow, and lies more to the Westward. When you are about a mile or a mile and a half up, you must keep your port hand best on board, for there is a ledge of rocks, which reaches nearly halfway across the river, which is on your starboard hand, and the rock near the middle is covered at high water, but may be seen two hours before. The river runs straight to Decker's Narrows, then turn round to the Westward; when you enter these narrows, you may see the town. In case you should go up in the night, you must be careful of two large rocks that lie W. S. W. of these Narrows; the tide of flood sets very strong for them, and they are covered at half tide; you may go on either side of them, and may anchor in ten or twelve fathoms water, muddy bottom.

Tide. It is high water here, at full and change of the moon, about 10h. 45m.

New Meadows. NEW MEADOWS.—This river bears N. E. eight leagues distant from the pyramid on Cape Elizabeth, and W. about one league distant from Cape Small Point. If you should fall into this bay, with the wind at S. E. or S. S. E., and bound to the Eastward, you may make a good harbor in the above river. In standing to the Northward you will have a large round island on your starboard hand, covered with spruce-trees, together with two large rocks, one called the Brown Cow, and the other the White Bull, which are some distance from each other. You must leave the Brown Cow on your starboard, and the White Bull on your port hand, the latter of which you may go within a cable's length of, and, when you have passed it, must stand over for Horse Island, that lies on the starboard, which has a house on it that you may go within a fourth of a mile of. To the Westward of the island lies a large rock, which is covered at high water, but bare at half tide; you may go on either side of it when it is in sight, but the widest passage is to the Eastward. When you have passed this rock steer N. by W. or N. N. W., which course will carry you up with a large island called Bear Island, which is covered with spruce and birch trees. When you have passed this island about one fourth of a mile, you may haul in for the starboard shore, and anchor in five or six fathoms of water. This is the best place to anchor with the wind at S. S. E. or E., but be careful of a ledge of rocks that run to the Northward of the island, about half a mile off. You may anchor in this bay according as the wind may be; if it should be at the Eastward, anchor on the E. side. If you have lost your cables and anchors, there is a large cove on the starboard hand, about two miles from Bear Island, bearing about N., which is sufficient to hold thirty or forty sail of vessels. It is landlocked all round, so that no wind can damage a vessel after she gets into it.

To mark the approaches to New Meadows River—

Buoys. On Jameson's Ledge (eighteen feet low water) there is a black spar-buoy (No. 1). Little Mark Island bears S. W. by S., three miles; and the S. W. point of Wood Island, S. by E., one mile and a half. This buoy is about two hundred feet S. S. W. of the ledge, which is bare two hours before low water. The ledge extends N. N. E. and S. S. W. about half a mile.

On Gouly's Ledge (eighteen feet low water) there is a black and red striped spar-buoy. This buoy is about one hundred and seventy-five feet S. by W. of the ledge, which is bare at one hour ebb. The ledge is small, and good water all round it at one cable's length distance. The buoy on Jameson's Ledge bears S. by E., four miles; and Ben Island N. E., a mile and a half.

Hussey's Sound. HUSSEY'S SOUND.—If bound into Hussey's Sound give Cape Elizabeth a berth of a fourth of a mile, and steer N. by E. ½ E., which will bring you up to the sound, about nine miles distant. When up with the sound, give the N. E. outer point of Peak's Island a good berth, as a reef extends E. N. E. nearly halfway across the passage, and breaks in heavy weather. Then, giving Overset Island a small berth, as its shores are very bold, continue your course midway the passage N. by W. or N. N. W., up to Cow Island, about two miles distant; thence steer N. E. by N., about half or three fourths of a mile, and anchor between Clapboard Island, which is a high island, covered with trees, and the centre of Long Island, bringing Clapboard Island to bear N. W., and centre of Long Island S. E. The anchorage is good holding ground, in five or six fathoms at low water. You will then have Little Jebeig Island to the N. E., and Hog and Cow islands to the E. W. This anchorage is about six miles from the wharves in Portland Harbor. The flood tide sets strong into and the ebb out of Hussey's Sound. Here five hundred sail

may be moored safe from all winds and weather, and, when wind and tide serve, they can be taken to sea in half an hour. Good anchorage can also be had between Little Crow Island at the N. E. end of Peak's Island and Great Hog Island, in six, eight, or ten fathoms, good holding ground. S. E. from Little Crow Island, fifty fathoms distant, there is a sunken ledge, having only twelve feet on it at low water, which will be avoided by keeping the starboard shore of Hussey's Sound best on board.

Hussey's Rock. HUSSEY'S ROCK.—Third class can-buoy; red and black horizontal stripes, in sixty feet. Twenty-five feet S. W. of rock with twelve feet. Middle of Green Island S. E. ½ E., one mile. Portland Head light W. S. W. two and a half miles, in range with Ram Island.

Halfway Rock. HALFWAY ROCK is high and black, about six hundred feet in diameter, elevated sixteen feet above the level of the sea, at high water. At the distance of six hundred feet from the rock, on the N. W., N. E., E., and S. E. sides, there are from five to six, gradually deepening to twenty-five fathoms, within three fourths of a mile of it. A reef extends off W. by S., distant about an eighth of mile. Within one cable's length of said reef you will find from ten to twelve fathoms water. Seguin light-house bears from the rock E. ½ N., distant about twelve and a half miles; Drunken Ledges, N. N. E. distant about two and a half miles; Mark Island N. by E. ½ E., distant about four and a half miles; the light-house on Cape Elizabeth, S. W. by W. ¾ W., distant about nine miles; Bulwark Reef (shoalest part), S. W. by S., distant about four and a half miles; Portland light-house, W. ½ S., distant about seven and a half miles; Green Islands, W. ½ N., distant about four miles; Jewill's Island, N. W. by N., distant about three miles; Eagle Island, N., about four and a half miles. Drunken Ledges may be seen at all times breaking with a little motion of the sea. Mark Island is a small bare island, and has a stone monument erected on it as a guide for vessels running into Broad Sound. Eagle Island is a small high island, covered with trees, at the entrance of said sound. Mark Island and Eagle Island form the Eastern side of the entrance to Broad Sound. Brown Cow and Jewill's Island form the Western side. Green Islands are two in number, and bear from Jewill's Island S. W., distant about a mile and a half.

Webster Rock. WEBSTER ROCK.—About one fourth of a mile N. by W. of the centre of Halfway Rock is a small rock with but eight feet on it at lowest tides, and ten fathoms inside of it. A black spar-buoy has been placed about twenty feet N. ½ E. of the above rock, in three fathoms water. The following are compass bearings from the buoy, viz: Centre of Halfway Rock S. ½ W.; Mark Island Monument N. by E.

Portland Harbor. Lights. PORTLAND HARBOR.—The light on Portland Head is a fixed light, one hundred and one feet above the sea level, and visible in clear weather seventeen miles.

On Cape Elizabeth are two lights, about one hundred and forty-three feet above the level of the sea, placed N. E. and S. W., two hundred and eighty yards apart, which can be seen eighteen miles. The S. W. light is revolving, time one and a half minutes, and the N. E. light is fixed.

Bulwark or Cod Rock Ledge. BULWARK OR COD ROCK LEDGE.—Red and black, horizontal striped, first class nun-buoy, one eighth of a mile S. E. of the ledge, which has twelve feet on it (all soundings are for low water). Cape E. light W. by S. six miles; Portland Head light W. N. W. ¼ N., six and a fourth miles; Green Island, N. N. W., five miles. Water around the ledge deepens gradually from three to twelve fathoms.

Hue and Cry. HUE AND CRY.—Black nun-buoy (No. 1) is in thirty-six feet low water, one hundred and twenty-six feet E. S. E. of the ledge of sixteen feet. Light on Cape Elizabeth bears from it N. W. by N. four miles; Alden's Rock buoy N. ½ W. two miles.

Alden's Rocks. ALDEN'S ROCKS are two in number, bearing from each other E. S. E. and W. N. W. The distance between them is two hundred and forty feet. The Western rock is about twelve feet in diameter, and has five and a half feet on it. The Eastern rock is about thirty feet in diameter and has seven feet on it. Between these rocks are from three to five fathoms; six hundred feet from the Eastern rock, on the Easterly side, are from four to six fathoms; three hundred feet from the Westerly side of the Western rock are from six to eight fathoms. First class nun-buoy, black, three hundred feet S. E. from the rocks. An iron bell-boat, S. a fourth of a mile, in eleven fathoms, marked these rocks, but has gone adrift. Cape E. light, N. W. by W. three miles; Portland Head Light, N. N. W. six and a fourth miles.

Vapor Rock. VAPOR ROCK.—Second class can-buoy; ledge has eighteen feet. Cape Elizabeth Eastern light, N. by W. ½ W. three miles; barn on Richmond's Island, N. W. by W. ½ W. three miles.

Old Anthony Ledge. OLD ANTHONY LEDGE.—Second class can-buoy. Cape Elizabeth Eastern light N. by W. ¾ W. two and a half miles; Wood Island light, W. S. W. ¼ S., nine and a half miles, twenty-two feet.

Taylor's Reef. TAYLOR'S REEF.—Third class can-buoy, eight feet; Cape Elizabeth Eastern light N. by W. ½ W. one mile and a fourth; barn on Richmond's Island W. by S. three miles.

Broad Cove Rock. BROAD COVE ROCK.—First class can-buoy, black, marked B. C. R. No. 7; is in twenty-four feet; Cape Elizabeth Eastern light S. W. ½ S. one mile and a half; Port-

land Head light N. ½ W. three and a fourth miles. Buoy is to the Northward of the rock which is out at low water.

TRUNDY'S REEF.—First class nun-buoy, black, in twenty-four feet, marked T. R. No. 9; Cape Elizabeth Eastern light S. S. W. ½ W. two and a fourth miles; Portland Head light N. N. W. two and a fourth miles. *Trundy's Reef.*

JORDAN'S REEF OR BELL ROCK.—Third class nun-buoy, red and black, horizontal stripes, in forty-two feet; Portland Head light N. W. by W. one mile and an eighth; Cape Elizabeth light S. W. by S. ½ S. four and three fourths miles. Buoy is one hundred and fifty feet S. E. of the ledge, which has eighteen feet on it. *Jordan's Reef.*

CATFISH ROCK.—Red spar-buoy, W. by N. from Bang's Island Point. *Catfish Rock.*

SPRING POINT LEDGE.—Second class can-buoy, black (black spar-buoy in winter), marked S. P. L., No. 11, in eighteen feet; Portland Head light S. by E. two miles; House Island S. E. by E. a half mile. *Spring Point Ledge.*

STANFORD'S LEDGE.—Black nun-buoy (black spar-buoy in winter), marked S. L., No. 13, in seventeen feet; five hundred feet N. by E. ¼ E. from Breakwater light; House Island S. E. by E. one mile and an eighth. *Stanford's Ledge.*

E. END OF MIDDLE GROUND.—Red spar-buoy, in seventeen feet; observatory N. W. ½ W.; breakwater light S. ½ W. three eighths of a mile. *Middle Ground.*

W. END OF MIDDLE GROUND.—Red spar-buoy, in sixteen feet; three hundred feet W. of shoalest part of Middle Ground, which has eight feet; observatory N. W. by N.; breakwater light S. E. by S. ¼ S. half of a mile.

Good anchorage for small vessels on Middle Ground.

Upper Harbor buoy is a black spar-buoy, in twenty-five feet; is twenty feet N. W. of rocks which have four feet; end of Union wharf N. W. ½ N. five hundred yards. Draw in bridge S. W. a half mile.

The following buoys are placed in Whitehead passage:

GREEN ISLAND REEF.—Red spar-buoy No. 2, in twenty feet, on S. W. point of the reef. Outer Green Island S. W. seven eighths of a mile; Halfway Rock E. ½ S. six miles. *Green Island Reef.*

WHITE-HEAD LEDGE.—Black iron spindle, basket top, N. point of Bang's Island S. two hundred feet. The spindle is on a ledge, bare at low water, three and a half fathoms through the passage. Leave it on port hand on entering the harbor. *White-Head Ledge.*

The bearings and distances from Easterly light on Cape Elizabeth are as follows: *Bearings.*

S. E. side of Richmond's Islands	S. W	2¼ miles.
Seguin light	E. by. N. ¼ N	22 "
Wood Island light	S. W. ½ W	8½ "
Portland Head light	N. ½ E	3¾ "

Vessels bound to Portland from the Westward, and making Wood Island light, must bring it to bear W. by S. and run E. by N. twelve miles, which will bring Portland Head light to bear N. W. by W. to N. W. by N. *Directions.*

If from the Eastward, bring Seguin light to bear E. N. E. and run W. S. W. until Portland Head light bears N. W., or as above, from N. W. by W. to N. W. by N.

1. Channel between West Cod Ledge and Corwin Rock.

From the Eastward.—Bring Cape Elizabeth lights to bear W. by N. ½ N., and run for them on that bearing until Portland Head light bears N. W. by N. ⅜ N. This cross-bearing is about three quarters of a mile S. W. by S. from West Cod Ledge (four and a half fathoms), and three quarters of a mile E. by N. from Corwin Rock (three and a half fathoms). Run for Portland Head light on the bearing of N. W. by N. ⅜ N. for two and a quarter miles, until Cape Elizabeth lights are in range; then stand N. by E. nearly half a mile, until Portland Head light bears N. W. ¾ N., when run for it until within half a mile. These courses leave Willard's Rock (five and a quarter fathoms) a quarter of a mile to the Southward and Westward, Pine Tree Ledge (three and a half fathoms) a quarter of a mile, and Jordan's Ledge (three and three quarters fathoms) one third of a mile to the Northward and Eastward. The course N. W. by N. ⅜ N. on Portland Head light leads close to Willard's Rock (five and a half fathoms), and is safe with a smooth sea; with a swell on, the courses given above should be followed. When within half a mile of Portland Head light, as above, steer N. by W. up the harbor until abreast the city.

From the Southward.—Keep five miles from Cape Elizabeth lights. This distance clears well all dangers, with the lights between the bearings of N. E. by E. and W. ½ N. Bring Portland Head light to bear N. W. by N. ⅜ N., and run in as above.

2. Channel between West Cod Ledge and Bache Rock.

With Cape Elizabeth lights bearing W. by N. ½ N. bring Portland Head light to bear N. W. ¼ W.

Run in on this last bearing (leaving West Cod Ledge (four and a half fathoms) one mile to the Southward and Westward, and Bache Rock (four and a fourth fathoms) one mile to the Northward and Eastward) until the Cape Elizabeth lights are in range; then

Directions. steer N. W. by W. ½ W. about one mile and a quarter, until Portland Head light bear N. W. ¾ N., when run in on this bearing (leaving Willard's Rock (five and a quarte fathoms) one third of a mile to the Southward and Westward, Pine Tree Ledge (three and a half fathoms) one quarter of a mile, and Jordan's Reef (three and three quarters fathoms one third of a mile to the Northward and Eastward) until within half a mile of the light, when follow directions given above.

3. To pass to the Northward of Bulwark and Round Shoals.

Run in with Portland Head light on a bearing of W. by N. ¾ N., leaving Round Shoal (four and three quarters fathoms) half a mile, and Bulwark shoal (fourteen feet) two thirds of a mile to the Southward, and passing between, and a quarter of a mile from, Jordan's Reef (three and three quarters fathoms) to the Southward and Westward, and Witch Rock (four fathoms) to the Northward and Eastward.

4. Courses along the Coast from the Eastward.

When two miles south of Small Point, if the weather is clear, Portland Head light should be seen bearing W ¼ N., distant sixteen and a half miles. This bearing leads to the Southward of Temple's Ledge (five fathoms) nearly one mile and a quarter; Lumbo's Ledge (four and a quarter fathoms) nearly one mile and a half; Junk of Pork and Outer Green Island, three quarters of a mile; to the Northward of Witch Rock (four fathoms) quarter of a mile, and to the Southward of Ram Island Ledge, one third of a mile.

5. The Range of Cape Elizabeth Lights—

(Bearing S. W. by W.) leads clear of all dangers, between Mitchell's and Willard's Rocks, to the Eastward of the Junk of Pork, between Jewell's Island and Halfway Rock, up to the entrance of Harpswell Sound.

In thick weather strangers should not approach, from the Southward and Eastward, inside of forty-five fathoms water, with soft or sticky bottom.

The mean rise and fall of tide at Portland is nine feet. The fall of the lowest tide below mean low water, two and a half feet.

Vessels falling in with Cape Elizabeth, and wishing to make a harbor in a strong N. W. wind, must observe the following directions:

Give this cape a berth of one fourth of a mile, and steer N. E. eight miles, leaving the Green Island on the starboard hand, which will carry you up with the S. W. point of Crotch Island. Give this point a berth of half a mile and steer N. N. E. ½ E., which will carry you between Hope Island on the N. and Crotch Island on the S. You may anchor midway between the two islands in about thirteen fathoms water. The shores on each side are very bold.

Portland to Townsend. FROM PORTLAND TO TOWNSEND.—From Portland light steer E., when up with Seguin give it a berth on your port hand about half a mile and steer N. E. by E., you may then run direct for it, giving the Cuckolds, which are two dry ledges, a berth of a cable's length, leaving them on the port hand. In beating up, when inside the Cuckolds, you can stand from shore to shore with nothing in the way except a ledge off the Northern end of Squirrel Island, close in. In running from Portland to Townsend Harbor, if you wish to go inside Seguin, you bring Glover's Rock to bear W. S. W. and steer E. N. E. until you pass the Cuckolds, having particular regard for the tides, which run rapidly off the mouth of the Kennebec River. In coming from the Eastward, and bound for Townsend Harbor, bring Manheigan light to bear E. S. E. and steer W. N. W. about six leagues, which course will bring you into the passage between White Island and the main; and in steering said course you will make Townsend light, bearing about N. W. by W., then steer W. by N. until you get Townsend light to bear N. W. by N., then run direct for it. If bound from Townsend to Portland, and to the Eastward of Seguin, in the night, you had better steer S. W. until Seguin light bears W. by N., then steer W. by S. for Portland light to clear Halfway Rock.

Richmond's Island Harbor. RICHMOND'S ISLAND HARBOR.—To enter Richmond's Island Harbor, stand in by the Western extremity of the island N. ½ W. (giving the W. ledge a berth of about the eighth of a mile) until the Western light on Cape Elizabeth is well open; then haul up until the wharf bears E., is the best anchorage for vessels of heavy draught. Vessels of lighter draught may stand in until the wharf bears S. E.

The anchorage is good holding ground, being of clay, with a crust of coarse sand, from six inches to a foot in thickness.

In beating in, the only precaution necessary is to look out for the Old Proprietor and the Chimney Rock, both of which are out of water at half-tide.

In coming from the Eastward, give the island a berth of one fourth to half a mile, until the Western extremity of the island bears N. E. by N.; then haul up N. ½ W. and proceed as above.

Richmond Island Harbor is a safe anchorage with the wind from any point between N. and S. W., and it is easily entered when vessels cannot get into Portland.

To mark the entrance into Richmond's Island Harbor—

On the Old Proprietor (eighteen feet low water) there is a black spar-buoy (No. 1),

forty feet. The W. end of Richmond Island bears E. by S. three miles; and Wood Island light-house, S. S. W. seven miles. This rock is about one hour before low water. The buoy is one hundred feet S. E. of the ledge.

On Chimney Rock (eighteen feet low water) there is a black spar-buoy (No. 3), forty feet. The W. end of Richmond Island bears S. E. by S.; and the revolving light-house on Cape Elizabeth, E. by N., three miles. This buoy is one hundred feet S. E. from the centre of the ledge, which is just awash at low water.

The soundings on the chart indicate the best water. No pilot is required.

In sailing by Richmond's Island, you must be careful of a sunken ledge, called Watts' Ledge, that lies off about S. E., near half a mile from the N. E. end of the island. It does not show itself except the wind blows fresh, but you need not go so near the island, unless you have a scant wind, or turning to windward.

White Hills.

WHITE HILLS.—These hills lie N. W. from Portland, and N. N. W. from Wood Island light-house. You may see them in clear weather when no other part of the land is in sight. At the first sight they appear like a cloud, and are always white. They have been seen when in latitude 43° 10′ N., twenty-three miles S. from the light-house on Cape Elizabeth. The depth of water in the above latitude is eighty fathoms, muddy bottom. When you steer N. W. or N. N. W. from this latitude you will make Agamenticus Hills, and when bearing W. by N. six or seven leagues, they appear like three hills, the smallest of them to the Eastward. At the same time you will make Well's Hills, bearing W. N. W., and when you are on the Northern part of Jeffrey's Ledge, in forty-five fathoms water, you will see the hills of Agamenticus, bearing W. by N. or W. N. W.

Between Jeffrey's and the Isles of Shoal, you will have seventy and seventy-five fathoms water, muddy bottom, and a strong current setting to the S. W. You may see the Isles of Shoals five or six leagues, when you are to the Eastward of them; but will first see the light-house, which is on White Island, and the meeting-house on Star Island, bearing N. E. and S. W. from each other, distant seven eighths of a mile.

Saco Bay.

SACO BAY.—From Richmond's Island to Fletcher's Neck, the course is S. W. ¼ W. distance seven miles. Within these limits is Saco Bay, which is free of dangers, except the Old Proprietor, before described.

Cape Porpoise to Wood Island Light.

CAPE PORPOISE TO WOOD ISLAND LIGHT.—Wood Island light is situated near the entrance of Saco River, on the E. side of the island. It is sixty-three feet above the level of the sea, and is a red revolving light. Wood Island is a high woody land, and very even, and lies N. E. seven and a half miles distant from Cape Porpoise. In running for the light, bring it to bear N. N. W. or N. W. and run till within a cable's length with safety. You may go into this harbor either at the Eastward or Westward of the island. There are several rocks to the Westward of the island, and also a long bar, which lies to the S. W., about three fourths of a mile distant, together with two ledges, one of which bears S. E. by S. from the light distant half a mile, having ten feet water on it at low tide, and the other is a dangerous ledge called Dunceberry, bearing S. by E. from the light, distant about three fourths of a mile, and breaks at all times. When you have the wind to the Southward, you may lay your course in, and anchor near Stage Island, on which is a monument. This is called Winter Harbor. You may go in the Eastern way, and have room to turn your vessel, which is an advantage you cannot have in going in to the Westward; but here you are exposed to the wind at N. E. and E. N. E., but if your cables and anchors are not good, you may run into the Pool, and lie safe from all winds.

In running in the Eastern passage, you open a small channel for boats only, between Wood and Negro islands, but no man of experience would mistake it. Negro Island is small, with two stores on it, and is left on the port hand.

Hussey's Rock.

HUSSEY'S ROCK of seven feet lies S. W. by S. ⅜ S. one mile and a fifth distant from Wood Island light.

Saco lies about a league to the N. W., but is a barred place, and has not above ten feet at high water, which makes it not fit for a stranger to go in; there is, however, considerable navigation owned here.

Cape Neddick to Cape Porpoise.

CAPE NEDDICK TO CAPE PORPOISE.—Your course from Cape Neddick to Cape Porpoise is N. E. distant thirteen and three fourths miles. Cape Porpoise is a bad harbor and not to be attempted unless you are well acquainted, or in distress. In going in you must leave two small islands on your port hand and three on your starboard. It may be known by the high land of Kennebunk, which lies to the N. W. of it. When the harbor bears N. W., you must haul in, but be careful of the point on your port hand, and not go too near it, as it is very rocky. As soon as you are in the harbor, and clear of the point of rocks on your starboard hand, your course must be N. W. about two cables' length, when you must come to, and moor N. E. and S. W., or run direct for the wharf. A vessel that draws ten feet will be aground at low water. The harbor is so narrow that a vessel cannot turn round; is within one hundred yards of the sea, and secure from all winds, whether you have anchors or not.

Cape Porpoise Harbor.

CAPE PORPOISE HARBOR.—The light-house stands on the S. W. part of Goat Island, and contains a fixed light, elevated thirty-eight feet above the level of the sea.

The following are the directions for the harbor:—If you are to the Eastward and make Wood Island light, and bound to Cape Porpoise Harbor, bring Wood Island light to bear N. E. by N., and run S. W. until you bring Goat Island light to bear N. by W.; then steer direct for the light until you shut Wood Island in by the Eastern head of Cape Porpoise Harbor, then you are abreast of a breaking ledge called the Old Prince, which bears from Goat Island light-house S. E. by S. half a mile distant; then steer N. N. W., until Goat Island light bears E. N. E.; you are then up with the entrance of the harbor. Then, if low water, keep midway between the two points; but if high water, keep the port shore best aboard. When up with the points, steer N. W. a fourth of a mile, and anchor in three fathoms water, at low water. By following these directions you will find from three to six fathoms water. In coming in from the sea, and making Cape Porpoise, and intending to go into the harbor, bring the light to bear N. by W., and follow the above directions. This harbor is not so safe for large vessels, and must not be attempted, unless with a fair wind. Folly Island lies opposite the light-house, and forms the Western side of Cape Porpoise Harbor. The S. S. E. part of Folly Island Point bears from the light S. ½ W., distant about a mile and one fourth. The shoal runs off nearly three fourths of a mile.

NOTE.—A spar-buoy painted red, elevated nine feet above the surface of the water, has been moored near the Old Prince, in eight fathoms water, at low water, and bears from Goat Island light-house S. S. E., distant about five eighths of a mile; Old Prince bears from the buoy N. N. E. distant about one eighth of a mile; Folly Island Point, W. distant about one fourth of a mile. In running for Cape Porpoise Harbor, you may go on either side of the buoy, by keeping it close on board, and after passing it bring it to bear S. E. by S., and steer N. W. by N. for the entrance of the harbor, and follow the above directions.

There is a fixed red light on the pier-head, at the mouth of Kennebunk River. It is a small frame structure, and the lantern is placed on the outer end of the building.

Kennebunk. KENNEBUNK.—A black spar-buoy has been moored near the Fishing Rocks, at the mouth of this harbor. The Fishing Rocks extend E. N. E. and W. S. W., nearly half a mile distant. The shoalest part of the Rocks are bare at two hours' ebb, and may be seen breaking at all times with a little motion of the sea. On this shoal there is a spindle erected with a small cask upon its end; the buoy bears from the spindle N. E. by E. ½ E., distant about one fourth of a mile; from the spindle to the piers, at the entrance of the harbor, N. E. by N. ½ N. distant about one mile; Flying Point, E. by N., distant about three fourths of a mile; Fox Point, N. E. distant about three fourths of a mile: Boothby Point, N. by W., distant about three fourths of a mile; Harding's Rock, W. N. W., distant about three eighths of a mile. This is a barred harbor, and cannot be entered except at high water. If bound to Kennebunk, you must leave the spindle and buoy on Fishing Rocks on the port hand, about a cable's length distant, and Flying Point and Fox Point on the starboard hand, and after passing them steer N., or N. by W. one fourth of a mile, and anchor in from three to four fathoms water, sticky bottom, where you may lie safe, with the wind from N. E., N., or N. W. Flying Point and Fox Point are bold, and you may near them to within an eighth of a mile. The above buoy is a spar, painted black, elevated ten feet above the surface of the water, moored in four fathoms at low water. Kennebunk is not frequented as a harbor, but vessels may, in stress of weather, run in and lie safe, with the wind above-mentioned.

At the mouth of Kennebunk Harbor are two piers, one on the Eastern and one on the Western side of the channel, running from the shore about three or four hundred feet toward the bar, extending a little beyond low water mark, with a flagstaff and beacon on the top, which may be seen about one mile distant. A ledge of rocks lie off the harbor, called the Fishing Rocks, distant about three fourths of a mile from the head of the piers, between which is the anchorage ground. The ledge bears due S. from the head of the piers, and is all covered at high water. Vessels approaching the harbor should keep well to the Eastward of the ledge; though there is a tolerable passage to the Westward, but it ought not to be attempted by a large vessel without a good pilot.

Depth of water on Kennebunk Bar, at low water, from two to three feet; rise and fall of common tides from eight to nine feet, increasing sometimes to ten and twelve on full and change. Time of high water, full and change, 11h. 15m.

Boon Island. BOON ISLAND.—This island is very low, about one fourth of a mile in length. A light-house is built on the W. part of the island, a little to the Westward of the former light. It shows a fixed light, elevated one hundred and thirty-three feet above the sea.

There is a passage between the island and the main, half a mile within the former, between four and five miles wide, in from twelve to twenty fathoms, nearly up with York Ledge. There is a ledge off the N. part of Boon Island, one fourth of a mile distant, which shows at low water.

Boon Island Ledge. BOON ISLAND LEDGE is about two hundred feet long, and the same in width; is bare at low tides, and may be seen breaking at all times in a heavy ground swell.

The ledge bears from the island E. ¼ S., two and three fourths miles distant. There is a passage between the ledge and the island, but it will not do for strangers, as there is a reef extends three fourths of a mile from the S. E. point of the island.

An iron bell boat with red and black horizontal stripes is placed near the ledge, which is bare at low tide. The bell boat bears from Boon Island light E. ½ S. three miles.

Pollock Rock of seventeen feet bears from Boon Island light W. S. W. three fourths of a mile; and Fishing Ledge of nine and a half fathoms N. N. E. ¼ E. five miles.

From Agamenticus Hill, Boon Island bears S. E., twelve miles, and when you come in from sea, and make Agamenticus Hill, bearing N. W. by N., you are then to the Westward of Boon Island Ledge, but when said hill bears N. W. by W. you are to the East of it. From Boon Island to Cape Elizabeth the course is N. E., distant twenty-nine miles.

YORK LEDGE.—This rock is bare at three fourths tide, extending E. N. E. and W. S. W., about four hundred feet. It is about three hundred feet wide. *York Ledge.*

N. E. from the main rock there is a shoal runs off one fourth of a mile, having upon it only two fathoms at low water.

The soundings are gradual, from five to twenty fathoms, half a mile from the rock.

An iron beacon has been placed upon this rock; it is twenty-three and a half feet high, and about twenty-five feet above the level of the water.

Upon the pillars rests an iron tubular column, supporting an iron base of three and a half feet diameter, upon which is inscribed, "York Ledge, 1841."

The Triangles, which break in a heavy sea, bear S. W. two miles from this beacon.

Boon Island light bears from this beacon E. ¾ N., five and a half miles; Whale's Back light, W. by S. ¼ S., five miles; White Island light, S. by W. ¾ W., eight and a third miles; York Nubble, N. by E., four and a half miles.

TRIANGLES.—Murray's Rock of six and a half feet water is on this ledge. From it the monument on York Ledge bears N. E. ½ N. one and three eighths nautical miles. *Triangles.*

The light on Whale's Back bears W. four miles distant.

YORK HARBOR is situated two and a half miles Southeasterly from Cape Neddick. It is a small harbor, but when once entered is safe; twelve feet can be carried in at low water; rise of tide nine feet. *York Harbor.*

PORTSMOUTH.—Whale's Back light-house is on the N. side of the entrance to Portsmouth Harbor. Its height is fifty-eight feet from low-water mark. It is a fixed light varied by flashes every minute and a half. A fog-bell struck by machinery, has been established at Whale's Back Light-house Station. The bell tower is a frame structure twenty-five feet high, whitewashed, standing upon the light-house pier, and attached to the Southerly side of the light-house tower. The signal is a steel bell, which will be struck four times per minute, at regular intervals, during the prevalence of fogs, snow-storms, and thick weather, and should be heard a distance of one fourth of a mile to four miles, according to circumstances of surf, weather, wind, &c. The bell stands at an elevation of fifty-five feet above mean low water. *Portsmouth Light-house.*

The following are the bearings and distance from the light: *Bearings.*

Eastern Sister	E. by N. ¼ N	1½	miles.
Western Sister	E.	1⅛	"
Philip's Rocks	E. ¾ S	⅞	"
Kitt's Rock	S. S. E.	⅛	"
Odiorne's Point	S. W.	1⅛	"
Gunboat Shoal	S. ¼ W.	2⅞	"

Least water (Gunboat Shoal) four fathoms; breaks in heavy weather.

Portsmouth light-house is near the mouth of the harbor, on the W. side, on the N. E. point of Great Island, near Fort Constitution. It is seventy feet above the level of the sea, and shows a fixed light. The bearings and distances from Portsmouth light are as follows: Kitt's Rock buoy S. S. E. ¼ E. 1¼ miles; Odiorne's Point S. by W. ¼ W. 1⅛ miles. *Light-house.* *Bearings.*

In approaching Portsmouth Harbor from the Eastward of the Isle of Shoals at night bring Portsmouth light to bear N. W. ¾ W.; stand on this course till White Island light, revolving, one red and one white flash, bears S. W. by S.; then steer W. N. W. till Portsmouth light bears N. ¾ W. By day give Duck Island the Northernmost of the isles of Shoals, a berth of one mile and steer W. N. W. till Portsmouth light bears N. ¾ W. *Directions.*

Coming from Cape Ann bring White Island light to bear E. distant one mile and a half, and steer N. ¾ W. for Portsmouth light. From Northward and Eastward, inside of York Ledge, half a mile from Cape Neddick, steer S. W. by S. three miles; when Portsmouth light bears N. W. ¾ W., steer W. to bring it to bear N. ¾ W. Outside of York Ledge bring Boon Island light (fixed) to bear E., distant one mile and a half, and steer S. W. by W.; when Portsmouth light bears N. W. ¾ W., steer W. till it bears N. ¾ W.; then run for it when Whale's Back light bears S. E. by E., steer N. ½ E. till abreast of Fort Constitution, rounding it from one third to one fourth of a mile distant, then N. W. till Portsmouth light bears S. by E., where is good anchorage in eight to nine fathoms.

Bound up to the city from the above bearing steer for Fort Washington, W. ¼ N., keeping in mid-channel. When the two S. ship-houses in the navy-yard open to the

Directions. Westward of Seavy's Island, steer N. N. W. ½ W. till the S. W. point of Badger's Island is in range with inner end of the wharf on Noble's Island, when steer for the upper end of the city and anchor abreast the wharves.

Beating into the outer harbor the limits are, on the W. side, Portsmouth light bearing N. ¾ E.; on the E. side, while S. of Wood Island, Portsmouth light bearing N. by W. ½ W.; N. of Wood Island the E. limit is Whale's Back light just open W. of the island.

Give the buoys on Kitt's Rocks and Stielman's Rocks a good berth; the former not less than two hundred yards, and the latter one hundred yards; and in passing up the inner harbor the buoys marking ledges on the port hand a berth of thirty feet.

Dangers. Gunboat Shoal lies S. ¼ W. two and seven eighths miles from Portsmouth light and S. by E. one mile and a fourth from Odiorne's Point, with four fathoms water. The sea breaks on it in rough weather.

S. of Gerrish's Island are numerous small islands, rocks, and reefs, the Southernmost of which, Kitt's Rocks (under water), marked with a buoy, are S. S. E. one third of a mile from Whale's Back light-house.

Philips' Rocks (also under water) lie E. ¾ S. seven eighths of a mile from Whale's Back light, and E. by N. ½ N. from Kitt's Rocks, and three fourths of a mile from the shore of Gerrish's Island. W. Sister (a rock out of water) lies one fourth of a mile (N. E.) from Philip's Rocks.

E. Sister (also out of water) is N. E. ¼ N. half a mile from W. Sister E. by N. ¼ N. nearly one mile and a half from Whale's Back light, and distant one third of a mile from high-water mark on Gerrish's Island.

Stielman's Rocks (a dangerous reef under water), a little more than one fourth of a mile S. by W. of Portsmouth light-house, extending three hundred and fifty yards from high-water mark of Great Island shore, are marked with a buoy.

Logy Ledge, on the N. edge of the channel, N. E. by N. ¾ N. from Portsmouth light-house. The mark to clear it (in beating) is the S. point of Seavy's Island open to the Southward of Clark's Island.

Cod Rock, near Fort Point, at the entrance of the harbor. A black spar-buoy has been placed on this rock in thirteen feet water; vessels, by leaving this buoy on the port hand ten yards distant, will have six fathoms water. A ledge of rock makes off the N. E. of Great Island; its extremity is marked by a buoy.

Beacon Ledge, N. of Pierce's Island and opposite the navy-yard, is a ledge of rock on which is built a stone monument; its Eastern extremity is marked by a buoy; vessels passing up the harbor, by leaving this buoy on the port hand forty feet distant, will have from five to seven fathoms water.

Directions. If you fall in to the Eastward, and make Cape Neddick, and are bound to Portsmouth, when within half a mile of said cape your course is S. W. ¼ S. nine and a fourth miles, which course you will continue until you bring Portsmouth light-house to bear N. ½ W., and the light on Whale's Back to bear N. N. E., then steer N. ½ W., leaving Whale's Back light on the starboard hand until you are abreast of Portsmouth light, which you may round within one fourth of a mile, when you must steer N. W. until it bears S. S. E., and anchor in nine fathoms, good bottom.

If coming from the Eastward of the Isles of Shoals in the night, and wish to pass to the N. of them, bring Whale's Back light to bear N. W. ½ W., which course will carry you N. of Duck Island; keep on this course until White Island light bears S. S. W., when you steer N. W. by W. till Whale's Back light bears N. by E., when follow your directions.

If to the Southward of the Isles of Shoals, and wishing to pass to the W. of them, bring Whale's Back light to bear N. ½ W. and run for it; then follow your directions. Beating into Portsmouth Harbor, it is not prudent to stand to the Eastward farther than to bring the light to bear N. by W. ½ W., or to the Westward farther than to bring it to bear W.; when you come from the S. W. and make Cape Ann, and to the Eastward of the Dry Salvages, bring them to bear S. by E., and steer N. by W. or N. ½ W. In entering this course you will make the Isles of Shoals, whence you may take a new departure by bringing the light-house to bear E., distant one mile and a half, and run N. by W. for Portsmouth light.

If you are bound to the Eastward from Portsmouth Harbor, you steer S. ½ E. one mile and a half from the light-house; then steer N. E. ¼ N. for Cape Neddick, which is nine and one fourth miles from Whale's Back light; if the wind should come from the N., be careful of Murray's Rock and York Ledge, described on page 257.

Buoys. The following buoys are passed, as they are here arranged, in entering the harbor:

On Branscomb's Rock (W. Sister) is a red spar-buoy, No. 2, Whale's Back light-house bearing W. ¼ S., one mile and a half distant.

On Kitt's Rocks is a red spar-buoy, No. 4, the above light bearing N. N. W. half a mile.

On Frost's Point Ledge is a black spar-buoy, No. 1, the above light bearing E. N. E. half a mile.

On Jerry's Point is a red iron beacon, with letters L. H., the above light bearing N. ½ E., three fourths of a mile.

On Stielman's Rock is a black spar buoy, No. 3, the above light bearing S. E. by S. three fourths of a mile. *Buoys.*

On Cod Rock is a black spar-buoy, No. 5, Portsmouth light-house bearing S. S. E. one eighth of a mile.

On Fishing Island Ledge is a red spar-buoy, No. 6, Portsmouth light bearing S. W. by S. half a mile.

On Logy Ledge is a red iron spindle, copper cylinder top, Portsmouth light S. S. W., half a mile.

On Hicks' Rocks is a red spar-buoy, No. 8, Kittery Point church E. N. E., one fourth of a mile.

On Trefethern's Island is a black spar-buoy, No. 7, the above church bearing E. half a mile.

On Oliver's Island is a black spar-buoy, No. 9, the above church bearing N. E. ½ N., one mile; Navy-yard flagstaff N. W., one mile.

On South Beacon Shoal, is a black spar-buoy, No. 11, South Beacon bearing W. one eighth of a mile; North Beacon N. ½ W., half a mile.

On Gangway Rock is a red and black striped buoy; South Beacon S. S. W., one fourth of a mile; North do. N. ½ W. one fourth of a mile.

On South Beacon is a gray stone beacon, eighteen feet square, twenty feet high, with black mast, and lozenge-shaped figure on top.

On North Beacon is a red wooden mast, twenty-five feet high, with four diagonal braces, lozenge-shaped figure on top.

On Seward's Rock is a black spar-buoy, No. 13, Long Wharf W., four hundred and fifty feet distant.

On Willey's Ledge is a red iron spindle, copper cylinder, with gilt ball and vane on top; Navy-yard flagstaff E. by S., half a mile; South Beacon S. E., half a mile.

ISLES OF SHOALS.—White Island light-house is built on the Westernmost island of the Isles of Shoals; it is eighty-seven feet above the level of the sea, and it revolves in thirty seconds, showing in that time a red and white light. *Isles of Shoals. Light-house.*

The following is the description and relative situation of the islands: White Island (the Southwesternmost island) is a rocky island, three fourths of a mile in length, from S. E. to N. W., and about one mile and three fourths distant from the meeting-house. There is a reef that extends about one third of a mile from the N. W. end, which in passing you must give a good berth. The S. E. end bears from the meeting-house S. W. ¾ S., the N. W. end S. W. by W. ¾ W.

In running in for this light, there is nothing in the way when coming from the Southward or Eastward, except Cedar Island Ledge, Anderson's Rock, and White Island Ledge.

Bearings from White Island Light-house.—Portsmouth light-house bears N. N. W., distant seven and a half miles. Square Rock lies directly in the range, distant from White Island five eighths of a mile. Boon Island light N. E. by N., distant twelve miles. Cape Ann lights, S. ¾ W., distant nineteen and a half miles. Rye meeting-house N. W. by W. ½ W., distant nine miles. Star Island meeting-house N. E., distant seven eighths of a mile. N. W. point of Hog Island, N. by E. ¾ E. Cedar Island Ledge E. by N. ½ N., distant one mile. Anderson's Ledge, S. E. by E., ½ E., distant one mile and a half. White Island Ledge, W. S. W., distant one third of a mile. *Bearings from White Island Light-house.*

Londoner's (or Lounging) Island lies about one mile and one fourth to the Northward of White Island, is about five eighths of a mile in length, from S. to N., and is high at each end; in high tides the middle is sometimes covered; a number of rocks lie close about the island, in almost every direction, some of which are always bare. The S. end bears W. from the meeting-house; the N. end W. N. W. ½ W., about half a mile distant. About halfway between this island and Star Island, lies a rock, which is bare at low water; it bears from the meeting-house N. W. by W. ½ W., one third of a mile distant.

Star Island (on which the meeting-house stands) is about three fourths of a mile in length from S. E. to N. W., and about half a mile in breadth; it is covered with buildings on the N. side. The meeting-house stands on an eminence a little to the Northward of the middle of the island; is twelve feet high from the foundation to the roof; to the top of the steeple is thirty feet more; the whole from the surface of the water is about sixty-five feet; it is painted white, and the steeple is placed in the middle of the building; it stands fronting the W., and may be seen at a distance of eight or nine leagues, in almost any direction at sea; it bears from Thatcher's Island lights (Cape Ann) N. E. six leagues distant; from Pigeon Hill, N. by E., six leagues distant: from Newburyport light-houses, N. E. ½ E., six leagues distant; from Portsmouth light-house S. S. E. ½ E, three leagues distant; from the Western Agamenticus mountain, S. ½ E., from the Eastern do. S. ½ E.; from Boon Island light-house, S. W. ½ S., four and a half leagues distant: from Boon Island Ledge (which lies one league E. from Boon Island), S. W. by W. four and three fourths leagues distant. Off the S. end of this island, about three fourths

Rock. of a mile from the shore, lies Anderson's Rock, which is bare at half tide; in passing give it a good berth; it lies from the meeting-house S. S. E.

Cedar Island is small, and about one third of a mile in length from E. to W., situated between Star and Smutty-nose islands. The E. end of Cedar Island bears from the meeting-house E. ½ N., and on the W. end of E. N. E. ½ E., three eighths of a mile distant.

Rock. A rock lies off the S. E. of this island, half a mile distant, bare at half tide, bearing from the meeting-house E. by S.

Between Cedar and Smutty-nose islands the government, a few years since, erected a sea-wall, to afford a shelter to vessels from Easterly gales, and to make the roadstead off the Northerly side of Star Island more secure; the violence of the sea in a short time greatly injured the wall, so that the object of its erection has been but partially effected.

Smutty-nose Island is about one mile in length from E. to W., and about half a mile in breadth; at the W. end is a harbor, called Haley's Cove, where fifteen or twenty small vessels may lie safe from all winds. There are several buildings near this harbor. There is a fine channel between this island and Hog Island. The W. end of Smutty-nose Island bears from the meeting-house N. by E. ½ E., and the E. end E. N. E., about five eighths of a mile distant.

Hog Island is a high island, lying to the Northward of Smutty-nose Island; is about one mile in length from E. to W., and five eighths of a mile from N. to S. The W. end lies from the meeting-house N. by W. ¼ W.; E. end of ditto N. N. E., seven eighths of a mile distant.

Duck Island (the Northernmost island) is a long, low, rocky island: some parts of it are covered, at high water, with rocks projecting in every direction, especially at the N. W. end, where a ledge runs off half a mile. It is the most dangerous of any of the Isles of Shoals, and ought carefully to be avoided: it is about seven eighths of a mile in length from N. W. to S. E. The E. end bears from the meeting-house N. N. E. ¾ E.; the W. end, N. by W. ¾ W., about three and a half miles distant.

Hampton Bar. HAMPTON BAR is S. W. ¼ W., ten and one fourth miles from Whale's Back Light. From Hampton Bar to Newburyport Light, it is S. ⅝ W., six miles.

Newburyport Lights. NEWBURYPORT LIGHTS are on the N. point of Plumb Island, the S. side of the entrance to Merrimac river. The lights are fixed, one in an octagonal tower fifty-four feet high; the beacon is twenty feet high; when in range they show the best water on the bar, five feet at low water.

Newburyport Harbor. A nun-buoy, painted black and white perpendicular stripes, has been placed in five fathoms water at low tide of the bar, the light bearing W. by S., distant one mile and a fourth. Vessels bound in over the bar should bring the buoy in range with the light, and run for it, which will carry them over in five feet at low water.

When over the bar, and halfway to the shore, there will be found a spar-buoy painted black, to the left, on the port hand.

Then steer N. W. ¾ W. past a buoy in mid-channel, painted black and white perpendicular stripes, to the red buoy on Black Rocks, when the course is W. ¾ S., passing a buoy off Joppa Flats, painted black, to the left on the port hand, and a red buoy on Joe Noyes' Point to be left on the starboard hand, to the upper mid-channel buoy, painted black and white perpendicular stripes; thence between the two piers up to the anchorage.

When round Cape Ann, and one mile to the Northward of the Dry Salvage Rock,

Newburyport Bar. steer N. W. ¾ N., which will carry you up with Newburyport Bar, twelve and a half miles distance.

Ipswich. IPSWICH.—The light-house on Ipswich Beach shows a fixed light, varied by flashes once in eighty seconds, forty feet above the sea. Run in close to the beach, and follow it close up to, to avoid the Northern spit on the starboard hand; run up round the first high bluff head, where will be found safe anchorage. There are seven feet water on the bar at low water.

Light. IPSWICH HARBOR.—There is a light, to serve as a range with the light in the Eastern tower, for crossing the bar at night. It is exhibited from a large Fresnal lantern hoisted at the top of a stake twenty feet high, placed near the beach. The stake is painted black.

In running in bring the stake light to range with the harbor light, and run for it. This will take you over the bar in not less than seven and a half feet water at low tide, and by the inner spit buoy in twelve feet at low tide. After passing the buoy, the course up the harbor is N. N. W. Strangers should not rely too implicitly on this range, as the bar is a shifting one.

Buoys. The following buoys are passed in entering Ipswich Harbor:

On North Breaker is a red spar-buoy No. 2; Ipswich light bearing W. S. W. ½ W., Annis Squam light S. E. ¼ S.

On South Breaker is a black spar-buoy, No 1; Ipswich light W. S. W. ¾ W., Annis Squam light S. E. ¼ S.

Inner Spit is a red spar-buoy, No. 4; North Breaker buoy N. E., South Breaker buoy N. E. by E. ¼ E.

ANNIS SQUAM LIGHT-HOUSE is a wooden building, of octagonal form, thirty-five feet high, containing a fixed light, fifty feet above the surface of the water at common high tides. It is painted white, and may be known by being lower than any other light-house on the coast of Massachusetts, and its inland situation. It bears from Portsmouth light-house about S. by W., distant eight leagues, and from Newburyport Bar S. S. E., three and two thirds leagues. *Annis Squam Light-house.*

ANNIS SQUAM HABBOR, IN IPSWICH BAY.—Masters of vessels out of Newburyport should generally be acquainted with the harbor of Squam, as it is of the greatest importance, when obliged to make a harbor from Ipswich Bay, through stress of weather. When a vessel at anchor off Newburyport Bar, cannot get into port, or parts a cable, with the wind at N. E. or E. N. E., if she can carry double-reefed sails, she may run S. S. E., three and one third leagues, which course, if made good, will carry her a little to the Eastward of Squam Bar; and if the weather is so clear as to see half a mile when you make the land to the Eastward of Squam, you may run within a cable's length of the shore; your course is S. S. W. *Annis Squam Harbor, in Ipswich Bay.*

Squam Bar bears from Halibut Point (the N. E. point of Cape Ann) from W. S. W. to S. W., distant about three and a half miles. In running from Halibut Point, you must be careful of Plum Cove Ledge, which shows until near high water, and on which there is a black spar-buoy, bearing from Squam light N. N. E., distant one mile and a half. When you have passed this ledge, you leave a deep cove called Hodgkin's Cove, and a long point or neck of land, called Davis' Neck, on your port hand. When up with this neck, haul S. W. or S. W. by W., for Squam Bar.

Having made Halibut Point, or Folly Cove Point, bring either of them to bear S. from fourth to a half a mile distant from them. Then run W. S. W. until you bring the light to bear S. If you judge there is sufficient water on the bar, you will then run for the ight; you will pass between the two buoys. The black one is on Harraden's Rocks, hich you will leave on your port hand. The red one is on the N. spit of the bar, hich you will leave on your starboard hand. You may pass close to either of the uoys; when you have passed the red buoy twenty or thirty rods, you may run S. by W. W., which will carry you close along by the monument on the Lobster Rocks, which ou must leave on your port hand, and pass on until abreast of Babson's Point; then a S. E. course will bring you into the harbor. If it is so dark that the buoy cannot be en, continue your S. course until within sixty yards of the light, then your course ust be S. S. W., which will carry you abreast of Babson's Point, on your port hand, and pposite the Dry Bar Rocks, on your starboard hand, then S. S. E., as before directed. he bar has six feet of water at low tide. If you should judge there is not water enough the bar to carry your vessel over safe, you will come to outside of the bar, and hoist signal for assistance, which will come off if possible: if not a flag will be hoisted near e light-house, when there is water enough on the bar for a vessel to run in in safety.

On the Lobster Rocks is a monument, twelve feet at the base, seventeen feet high, ilt of stone, and is seven feet at high water. The light-house on Wigwam Point bears om the monument N. E. by N. ½ N., distant one fourth of a mile; the red buoy placed tside the bar, bears N. ¼ E., distant one mile and a fourth; the black buoy, near arraden's Rocks, bears N. by E. ½ E., distant one mile and a fourth; leaving the black oy on the port hand, you may steer direct for the monument, course S. by W. ½ W. e channel abreast of the monument is about forty-five fathoms wide; the monument ing in, is left on the port hand, and may be approached at three fathoms' distance, and en have two fathoms at low water; the red buoy, just without the harbor, lies in fifn feet at low water, and bears from the light-house N. ¼ W., and is to be left on the rboard hand; the black buoy lies in fifteen feet water off the N. W. side of Harra-'s Rocks, bearing from the light-house N. by E. ½ E., distant about one mile, which o be left on the port hand. A red buoy is placed off the Plum Rock Ledges, in three homs water, and bears from Squam light N. N. E., distant one mile and a half. On uam Bar, at low water, there are about six feet. High water full and change of the on, at eleven o'clock. *Monument.*

SANDY BAY PIER.—If from the Southward, in passing outside of Straitsmouth and, be careful of Avery's Rock, which bears N. from the Eastern part of Straits-uth Island, about one third of a mile distant. Run W. by N., until you bring the eting-house to bear S. W. by S., then run in for the pier-head, in approaching which p away a little, and run in until you can see into the pier pool; then luff and run in. se constantly in the habit of entering said pool, when the wind is Easterly, make up headsails, and keep up the mainsail, which enables them to have command of the els, and avoid falling against the wharf built out from the beach. If from the North-d, after having passed Andrew's Point, bring the meeting-house to bear S. S. W., run for it. This course will carry you clear of Dodge's Ledge, which you will e on your starboard hand. *Sandy Bay Pier.*

The passage through Straitsmouth Gap is not safe, except at nearly high water, as there are but three feet water at low tide, and rocky bottom.

Cape Ann Light-houses. CAPE ANN LIGHT-HOUSES are on Thatcher's Island, which is three fourths of a mile from Cape Ann, the Northern limit of Massachusetts Bay. The lanterns are one hundred and sixty-five and a half feet above the level of the sea, and contain fixed lights. The lights range when bearing N. by E. ¾ E., or S. by W. ¾ W., and are eight hundred and ninety-five feet apart. The towers are of gray stone. Cape Ann Lights are thirty miles from Boon Island light, twenty-four miles from Boston light, and forty-three miles from Cape Cod Highland light. There is a fog whistle sounded three times in every minute, with an interval of fourteen seconds.

Thatcher's Island Ledge bears from the body of the island from E. S. E. to S. S. E., extending about two miles from the island. After getting the W. light to bear N. ½ W., you are to the Westward of the ledge; then haul to the N. W. to bring the lights to bear N. E. by E., and steer S. W. by W. for the Eastern point which is about seven and a half miles distant from Thatcher's Island. Then your course is W. by S., distant seven and a half miles, for the lights on Baker's Island.

Seven to ten miles E. S. E. from Thatcher's Island, there are three or four small stony spots, with ten to eighteen fathoms. There are twenty-five and thirty fathoms inside.

Cape Ann. CAPE ANN.—When you come from the Eastward, and make Cape Ann lights, in the night, bring them to bear S. W., and run direct for them, which course will carry you within the Londoner; and when you pass the said rocks bring the two lights in one, at which time they will bear N. by E. ¾ E., and then steer S. S. W. ½ W., keeping said course about one mile, which will carry you clear of Milk Island, which is very low, and cannot be seen in a dark night. When you judge yourself to the Westward of said island you haul to the Westward until you bring the lights to bear E. N. E., when you must steer W. S. W., about five miles, which course will carry you to the Eastern point. When you pass said point, keep your course W. S. W. until you bring Norman's Woe, which is the highest land on the N. side of the harbor, to bear N. N. W., then run N. N. W. till you shut the lights in, then N. N. E. will carry you safe in.

Straitsmouth Island Light-house. If you want to go inside the Salvages, keep close aboard Halibut Point, which has a tree on the Eastern part of it, and steer S. S. E. for Straitsmouth Island, on which there is a fixed light, thirty-three feet above the sea; but be careful to avoid Avery's Rock, by keeping the lights on the dry points of Straitsmouth Island, till you get up close aboard, then haul round the point, and S. S. E. will carry you to the lights. To avoid the Londoner, you must keep the lights close aboard the body of the island on which they stand. The Londoner lies half a mile off, breaks at all times of tide, is quite dry at low water, and bears E. S. E. from the middle of Thatcher's Island. A long shoal runs off N. E., half a mile distant from the Londoner. Between the Londoner and Thatcher's Island there are three fathoms at low water. From the Salvages to Halibut Point and Sandy Bay, there lies a large spot of flat ground, which at low water will take up a small vessel. Outside the Salvages are very bold Halibut Point bears from the Salvages W. N. W., two and a half miles distant; and the Salvages bear from the lights N. N. E., three miles distant.

Beacon. Londoner Beacon is a wrought iron shaft, forty feet high, surmounted by an octagonal lattice, or open work daymark, of cast iron, seven feet high, and five feet diameter, painted black.

The following are the bearings from the beacon:

Dry Salvages, N. ¾ E.
Straitsmouth Island light-house, N. N. W.
Northern light-house, Thatcher's Island, N. W. ¼ N.
Southern " " " N. W. by W. ¾ W.
Eastern Point light-houses, S. W. by W. ½ W.

In sailing from Cape Ann lights to Cape Ann Harbor, you will open Brace's Cove before you come up with the harbor; which will, when open, bear N. N. W., which you must avoid. Cape Ann Harbor lies one mile farther to the Westward, and when open bears N. N. E.

Ten-Pound Island. Ten-Pound Island lies in the harbor of Cape Ann. There is a light-house on it containing a fixed light, forty-nine feet above the level of the sea.

Cape Ann Harbor. CAPE ANN HARBOR, OR GLOUCESTER HARBOR.—Vessels approaching Gloucester from Cape Ann must beware of the Londoner, a rock two hundred yards in extent, half a mile S. E. by E. from Thatcher's Island S. light. There is a channel to the Westward one fourth of a mile, wide, with five and six fathoms, but strangers should pass to the Eastward, not approaching the lights nearer than one mile until they bear N. E. With Thatcher's Island lights in range, bearing N. by E. ¾ E., one mile distant, steer S. W. by ½ W., five miles, until Eastern Point light bears N. nearly. Haul round the Point to the Northward and Westward, keeping half a mile off shore to clear Dog Bar and Eastern Point Ledge.

To enter Southeast Harbor bring Ten-Pound Island light to bear N. N. E. ¼ E., and run for it, when within half a mile of it, steer E. N. E. ½ E. to anchorage in five or six fathoms, muddy bottom

To enter Inner Harbor bring Ten-Pound Island light to bear N. E. and steer N. E. ½ N., leaving Round Rock Shoal, Ten-Pound Island Ledge, on the starboard hand. When the light bears E. S. E., distant three hundred yards, steer N. E. by E. ¾ E. into Inner Harbor.

Eastern Point Light-house.

Eastern Point light is a fixed light, sixty feet above the sea, on the Eastern point of the harbor of Gloucester. A ledge extends one fourth of a mile to the Southward and Westward of the point.

Dangers.

DANGERS.—Webber's Rock, with seven feet water on it, lies S. W. by S., one sixth of a mile from the light.

Round Rock Shoal is in line with, and halfway between Eastern Point and Muscle Point, and has twelve feet water. On it is a black spar-buoy, No. 1.

Ten-Pound Island Ledge is one third of a mile S. W. ¾ W. of Ten-Pound Island light, and has on it seven feet water. On the West Edge is a red spar-buoy, No. 2.

Field Rocks (or Fresh Water Cove Ledge) are half a mile W. of Ten-Pound Island, and one fourth of a mile from the Western shore. They are dry at low water, and have near them a black spar-buoy, No. 3, in fifteen feet water.

Babson's Ledge is two hundred yards S. of Fort Point, at the entrance of Inner Harbor, and has eight feet water on it. On the S. S. E. edge is a black spar-buoy, No. 5, in fifteen feet water.

Pinnacle Rock lies off the large wharf, eighty yards S. W. of Spindle Rock, and has on it nine feet water. Black spar-buoy, No. 7, is placed close to this rock.

Harbor Rock and others, not mentioned above, are marked by iron beacons.

Bound for Gloucester Harbor, and falling in to the Westward, as far as Halfway Rock, on which there is a square granite beacon, painted black, take care not to bring the light on Ten-Pound Island to bear to the Eastward of N. E. by N., until you are a mile or a mile and a half to the Eastward of Halfway Rock, to avoid the S. E. breakers that extend from Baker's Island, which bear from the lights on Baker's Island, S. E. ½ S. to S. E. ½ E., about two and one fourth miles distant. On the S. E. part of these breakers is placed a black spar-buoy, bearing from Halfway Rock, N. E. by E., about one mile distant. When to the Eastward of these breakers, you may bring the light on Ten-Pound Island to bear N. E. and run for it. On this course you will leave Ten-Pound Island Ledge on your starboard hand, and the ledges of Norman's Woe Rock and Fresh Water Cove on your port hand. When up with Ten Pound Island, steer as above directed.

Baker's Island lights bear from Eastern Point light W. by S. ½ S., distant six miles; S. point of Kettle Island, W. ½ S., distant three miles; Halfway Rock, S. W. by W., six miles; light-house on Ten-Pound Island, N. ¾ E., distant one mile and a half; the red spar-buoy on the E. end of Dog Bar, W. N. W., one sixth of a mile.

The outer harbor of Cape Ann is safe and good anchorage against a Northerly or E. wind, where you may anchor in seven and a half to six and a half fathoms, low tide, muddy bottom, the light-house bearing about S. E. by E., distant about one mile or a mile and a half.

Gloucester Canal, which connects the harbor with Squam River, passes immediately by the W. part of the town, or what is called the Harbor Parish. It is about one hundred and twenty rods in length, thirty feet wide, and has for its depth about the whole flow of the tide.

About thirty fathoms off from Norman's Woe Point is a large high rock, called Norman's Woe Rock, of twenty to thirty fathoms diameter; and about one hundred fathoms off this rock, in a Southerly direction, is a ledge that has seven or eight feet water on it at low tide.

Halfway Rock.

HALFWAY ROCK.—This is a high rock of about thirty fathoms diameter, lying S. ¼ E., two miles distant from Baker's Island lights. It is bold all around, and forty feet high. A monument is erected upon it, the stonework of which is fifteen feet high; above the stonework is a spindle fifteen feet high, on which is a copper ball two feet in diameter.

Halfway Rock, and the rock on Ten-Pound Island, bear W. S. W. ½ W. and E. N. E. ½ E. of each other, distant about eight or nine miles.

Satan's or Black Rock

SATAN'S or BLACK ROCK, is above water, steep to, and bears S. W. by S. from Baker's Island, distant one mile and three fourths, and from Halfway Rock N. W. by W. ¼ W., one mile and one sixth On it is a red spar-buoy, No. 10.

Salem Harbor.

SALEM HARBOR.—Vessels inward bound, and falling in with Cape Ann, must observe the following directions, viz.: When abreast of Cape Ann lights, bearing N. N. W., about two miles distant, steer W. S. W. about three leagues, which will carry them up with the Eastern point of Cape Ann, then steer W. by S. ½ S., seven and a half miles, which will carry them up with the lights on Baker's Island. Variation in 1850, 10° 15 W.

Ships bound to Salem, falling to the Southward, and running for the lights, must, when they have made them, keep the Northern or lower light open to the Eastward of the Southern light, and run for them, which will carry them to the Eastward, and clear of the S. breaker of Baker's Island, which bears from the lights S. E. by S., two and one fourth miles distant, and is very dangerous.

Baker's Island Light-houses. BAKER'S ISLAND lies on the S. side of the principal entrance of Salem Harbor, is about a third of a mile in length from N. to S., bearing E. from Fort Pickering, distant about five miles E. from the town of Salem. There are now two separate light-houses on Baker's Island, one of which is sixty-four feet, and the other eighty-seven feet above the sea. They are both fixed, and bear from each other N. W. ¼ W., and S. E. ¼ E. The Southern light is the highest. The water is deep near the island, but there is no convenient landing-place. The N. and E. sides are high and rocky. There is a small channel between the S. rocks and the dry breakers, but it is safe only to those who are acquainted with it.

Misery Island. MISERY ISLAND lies from Baker's Island about one mile, is joined by a bar to Little Misery, which makss the N. side of the channel opposite Baker's Island. Misery Ledge, on which is a red spar-buoy, has eight feet water at low spring tides, and bears from the light-house N. W. by W. ½ W., one mile and one fourth distant. Misery Island, or Great Misery, is four hundred and seventy-four rods in length, from N. to S., and ninety-six rods in breadth. Little Misery is forty rods in length, with its most Western point projecting into the channel. S. part of Little Misery bears from the light N. W. ½ N., three fourths of a mile distant.

The Haste Rock is a broken rock above water, lying near the channel, bearing from Baker's Island lights W. ½ N. distant two and a half miles, and one mile and a half from Salem Rock. On it is a black spar-buoy.

Hardy's Rocks (on which a red beacon is erected) bear W. ¾ N. from Baker's Island lights, distant five eighths of a mile. They are covered at high water, and are dangerous. At half tide they are visible. Rising States Ledge bears W. ¾ N. from them, one hundred and fifty fathoms distant.

Bowditch's Ledge, on the E. end of which is a triangular monument of granite, with a black top, thirty-two feet high, placed in two and a half fathoms, bears from Baker's Island light-house W. N. W., one mile and one fourth distant, and is seen at low spring tides. Off the E. side, in fifteen feet water, is a black spar-buoy.

Cat Island. CAT ISLAND is situated about S. W. by W. from Baker's Island, two miles distant, and about one mile and one fourth to Marblehead Neck, and ranges from Baker's Island, just clear of Marblehead Neck. On the N. W. end is a high beach, directly opposite the point of Marblehead, called Peach's Point. The shore is irregular and rocky. Beyond, and in a line with this island, are two other heads, of nearly the same projection; and on the Southern side are three high rocks, but not so large as the former. Two of them are connected with the island by bars of sand, out of water at the ebb; the other stands boldly up within these two, but more Southerly. The Marblehead Marine Society has erected on Cat Island Rock a spar, forty feet high, to the top of which is annexed a cask of about one hundred and thirty gallons measure, which is seen at sea twenty to thirty feet above the land. A black spar-buoy lies off the S. E. end, bearing from the lights S. E. ½ S. to S. S. E. ½ E., two and one fourth miles distant.

Spar-Buoy.

Eagle Island. EAGLE ISLAND is about one mile and one fourth from Peach's Point, and bears from the light-houses W. by S. ½ S., distant one mile and a half. A bar runs off from the Western point of this island in a N. W. direction, half a mile distant, and has a red spar-buoy on the end of it. It may be avoided by keeping Gray's Rocks to the Southward of Marblehead Fort.

Winter Island. WINTER ISLAND lies on the N. side of the entrance of Salem Harbor, about half a mile in length; the highest part is on the S. of the island, opposite a point of rocks on the neck (which is a point of land running Northeasterly from the town, about one mile). It has a store and a wharf on the Southern end, at the entrance of Cat Cove. On the Eastern point stands Fort Pickering.

The Brimbles bear S. W. by W. from the light-house, distant one mile and a half, S. S. E. from Eagle Island, nearly half a mile distant. They are sunken rocks, bare at low water; near to is a spar-buoy, painted black. It comes out of water at half-ebb.

Spar-Buoy.

Coney Island. CONEY ISLAND is a small island that lies near the mouth of Salem Harbor; it bears from Marblehead Point N. E., one mile distant; from Fort Pickering on Winter Island, E. ¼ S., two miles distant; and from Baker's Island light W. ¼ S., two and a half miles distant.

Marblehead Rock bears S. W. from the Western part of Cat Island, distant three fourths of a mile. It is above water, and may be approached on either side, very near, with safety. On it is a granite beacon, with black and white horizontal stripes.

Gray's Rock bears N. W. from Cat Island, distant three fourths of a mile; W. by S. ½ S. from the light-house, distant two and one eighth miles, is high out of water, and may be approached with safety.

Vessels bound to Salem, having made the lights with a Westerly wind, in beating up, must not stand to the Southward or Westward farther than to shut one light in with the other on account of the South Breaker, nor to the Northward farther than to bring the lights to bear W. by S. ½ S., on account of Gale's Ledge, on which there is a red spar-buoy, which bears from the lights N. E. by E. ⅛ E, one mile and a third distant, having but four feet water at low tide.

In going into Salem by the common or ship channel, between Baker's Island and Misery Island, being up with Baker's Island, you may pass within one hundred fathoms of it, and steer W. by N. for the Haste; this course will carry you clear of Hardy's Rocks, leaving them to the Southward, and will leave Bowditch's Ledge to the Northward. If you are in the mid-passage, between Baker's Island and the Misery, you may steer W. N. W. until you have passed Bowditch's Ledge, or until you get Cat Island open to the Westward of Eagle Island, then haul up for the Haste. Any stranger may there anchor in safety, in about five fathoms of water, good anchorage; but if you choose to proceed into Salem Harbor, you must steer about W. for the Haste, which you will leave on your port hand, about half a mile distant, then steer S. W. by W., which will carry you into Salem Harbor; but you must observe, that there is a ledge runs off from the N. E. end of Winter Island, and that Abbot's Rock, on which there is a square granite monument with black top, lies abreast of it; to avoid which you must keep above one fourth of a mile from the shore. Abbot's Rock is found by bringing Castle Hill and house into the cove N. of Fort Pickering, and Beverly meeting-house well in with Juniper Point (or S. E. point of Salem Neck). Abbot's Rock has seven feet at common ebb. The mean of common tides is twelve feet. In keeping off shore to avoid Abbot's Rock, you must not go too far off, for fear of the Aqua Vitæ, which are sunken Rocks lying E. S. E. from Fort Pickering, distant nearly half a mile. On Little Aqua Vitæ is a red spar-buoy with two prongs; on Great Aqua Vitæ is a granite beacon with black top.

When coming from the Southward, if you are near Cat Island, you may pass to the Eastward or Westward of it; if you are to the Eastward, you must give a berth of a fourth of a mile and steer N. by W. ½ W., or N. N. W., leaving the Brimbles and Eagle Island to the starboard, and Coney Island Ledge, on which there is a black spar-buoy, to port—that course will carry you clear of Eagle Island bar; continue upon the same course till you have passed the Haste, and get into the common ship channel, or you may continue the same course till you get under the N. shore, where there is good anchorage.

If you are to the Westward of Cat Island you may pass in the middle channel between that island and Marblehead Rock, and steer over N. for the ship channel, leaving Gray's Rock and Coney Island to the Westward. After passing the Haste and entering the ship channel, you may proceed as before directed.

If, in coming from the Southward and Eastward, you should find yourself near Halfway Rock, you may bring it to bear S. E. and steer N. W. for the Haste, passing near to Satan's or Black Rock, leaving it on the port hand, and the Brimbles and Eagle Island on the starboard; continue this course, and you will leave the Haste on the port hand, enter the common ship-channel, and proceed as above.

There are several other channels for entering Salem Harbor, but they ought not to be attempted without a pilot.

Beverly and Manchester.

BEVERLY AND MANCHESTER.—To enter Beverly Harbor, follow the directions for Salem Harbor, till you bring the Haste to bear E. S. E., and run W. N. W. about two miles, and you will reach Beverly Bar, which is a spot of sand running out from the Southern or Salem side of the entrance, and has a black spar-buoy upon it. The bar has very shoal water on the Eastern or outward side near it, but good anchorage within. There is good water at the head of the bar. Having passed the bar, there is a sandy point from Beverly, on the Northern side of the entrance, and beyond this point are the Lobster Rocks, on which is a square granite beacon with a fish-shaped vane on top, painted black, and which bear from the head of the bar W. a little S, and not half a mile distant. They are above water at half tide. To avoid this point after having well cleared the bar, you will steer toward Ramhorn Rock, which has a square granite beacon, with red sugarloaf shaped top, and is to be seen at half tide, bearing S. W. by S. from the head of the bar, one eighth of a mile distant. There are several fathoms of water within a vessel's length of Ramhorn Rock. Giving this a good berth, you then clear the sandy point, and steer for the Lobster Rock beacon, bearing from Ramhorn beacon N. W. by W., distant about one fourth of a mile. Giving this a good berth, you are then opposite to the wharves, and may anchor in deep water, in a very safe and excellent harbor.

To enter Manchester Harbor, you must bring the Southern light on Baker's Island to bear S. ¼ E., and run N., one mile distant, where you may anchor on good bottom.

Eastern Point bears from Baker's Island lights E. by N. ½ N., seven and a half miles distant. Halfway Rock bears from the light S. ¼ E., two miles distant. Hardy's Rocks

bear from the lights W. ¾ N., distant five eighths of a mile. On them is a black spar-buoy.

Marblehead Light.

MARBLEHEAD.—On the neck, S. side of the entrance to Marblehead Bar, is a fixed light, forty-three feet above the sea. Vessels bound to Marblehead, and falling to the Southward, and running for the lights, after making them, must keep the N. and lower one open to the Eastward of the Southern light, and run for them, which will carry them to the Eastward and clear of the S. breakers off Baker's Island, which bear from the lights from S. E. ½ S. to S. S. E. ½ E., distant two and one fourth miles. Variation, in 1850, 10° 15′ W.

Having made the lights with a Westerly wind, and beating, when within two and a half miles of them, you must not stand to the Southward and Westward so far as to shut the N. light up with the S. light, on account of the S. breakers, nor to the Northward farther than to bring the lights to bear W. by S. ½ S., on account of Gale's Ledge, which bears from the lights N. E. by E. ⅛ E., distant one mile and a third. Drawing near to the lights, take care of a ledge, called the Whale's Back, on the E. end of which is a red spar-buoy, No. 6, and on the West is a red spar-buoy, No. 8, which bears from the lights N. by E., distant four fifths of a mile, and comes out of water at quarter-ebb.

In going into Marblehead, and being up with the lights, give the N. point of Baker's Island a berth of one fourth of a mile or less. Having the lights one in with the other you are up with the point. When the S. light is open with the N. light, you have passed the point (leaving the Misery Island on your starboard hand, which bears from the lights N. W. ½ N. three fourths of a mile). Then steer S. W. by S. or S. S. W., until you bring the S. light to bear N. E. by E. ½ E.; then steer S. W. by W. ½ W., distant three miles for Marblehead Harbor. You will leave Hardy's Rocks, Eagle Island, and Gray's Rock, on the starboard hand; Pope's Head (which is a large high rock, bearing S. W. by W. from the lights, two thirds of a mile distant, on which is a black spar-buoy), the Brimbles, and N. point of Cat Island, on the port hand. The Brimbles bear from Eagle Island S. S. E. ½ E., distant half a mile; and Gray's Rock from the N. point of Cat Island, N. W. by W., seven eighths of a mile.

Falling in with the S. point of Baker's Island, and it blowing hard from the Eastward, if you cannot avoid it, you may pass the point by keeping it well on board, say at the distance of from twenty to fifty fathoms from the shore, where you will have from four to five fathoms water. When up with the S. W. point, steer W. S. W., which will carry you between the N. Gooseberry Island (which bears S. W. ½ S. from the lights, distant two thirds of a mile), and Pope's Head, leaving the former on your port hand, between which you will have from three and a half to five fathoms of water. As soon as you have passed Pope's Head, haul to the Northward, until the S. light bears N. E. by E. ½ E., then steer S. W. by W. ½ W. for Marblehead Harbor.

The S. entrance of the harbor of Marblehead is bold and may be approached with safety with the light on the point of the neck at the S. E. side of the harbor, bearing from N. N. W. to W. by N., until you are within half a mile of it; then bring the light to bear W. by S., and run for it until within two cables' length; then steer N. W. by W. until the light-house bears S. S. W.; then steer S. W., and anchor with the light bearing from E. by S. to N. E. by E., from one fourth to half a mile distant, in six fathoms, good holding ground and clear bottom, secure from all but Easterly gales. The following are the bearings from the light-house:

Bearings.

Marblehead Rock	S. E. by E. ½ E.	distant	¼	mile
Halfway Rock	E. by S.	"	2½	do.
Cat Island Rock	E. ¼ N.	"	⅞	do.
Baker's Island light	N. E. by E.	"	3	do.
Hardy's Rocks	N. E.	"	2½	do.
Eagle Island	N. E. ¼ N.	"		do.
Gray's Rock	N. E. by E. ½ E.	"	1	do.
Peach's Point	N. by W. ½ W.	"	1	do.
Fort Head	N.	"	½	do.

Vessels coming from the Eastward, and running for Halfway Rock (described on page 263), must not bring the rock to bear to the Southward of W. S. W., to avoid the S. breaker, which bears from Halfway Rock N. E. ½ E., distant one mile. Being up with Halfway Rock, and bound into Marblehead, bring the rock to bear E. by S. ½ S., and steer W. by N. ½ N. for Fort Head, distant three miles, leaving Cat Island on the starboard hand, which bears from Halfway Rock W. N. W., distant one mile and three fourths, and Marblehead Rock on the port hand, which bears from Halfway W. ¾ N., distant two miles. Black Rock bears from Halfway Rock N. W. by W. distant one mile and a half. Cat Island Rock and Point Neck, on which is a red spar-buoy in nine feet water, and a black iron spindle on the dry rock, bear E. and W. of each other, distant about one mile.

Vessels being up in Boston Bay, may, by bringing Boston light to bear S. S. W., run

N. N. E. for Marblehead Rock; they are distant from each other about twelve miles. Halfway Rock and Boston light bear from each other S. W. and N. E., distant fifteen miles.

Hardy's Rocks are covered at high water, and may be seen at quarter-ebb. Whale's Back is covered at high water, and may be seen at quarter-ebb. Gale's Rocks have but four feet water at low tide, and bear N. E. by E. ⅛ E. from the lights, distant one mile and three fourths. The South Breakers off Baker's island are always covered. The Brimbles are covered at high water, and are seen at half-tide. Black Rock is always out of water, but low; Cat Island Rock, Halfway Rock, Marblehead Rock, Gray's Rock, and Pope's Head, are large, and high above water. Halfway Rock is very bold all round it. Eagle Island is bold only on the S. and E.; from the N. E. part of it, quite to Hardy's Rocks, is very shoal water, and no passage for ships.

Bearings. The bearings and distances of the principal islands, rocks, &c., in the vicinity of Salem, from Baker's Island lights, are as follows:

The lights bear from each other N. W. ¼ W. and S. E. ¼ E., 40 feet distant.

Eastern point of Cape Ann bears	E. by N. ½ N	7½	miles
Gale's Ledge, which has a spar-buoy on the S. W. end, and on which are three feet water, low tide	N. E. by E. ⅛ E	1¾	"
House Island, at the mouth of Manchester Harbor	N. N. E	1	"
Saule's Ledge, in Manchester (black spar-buoy)	N. ½ W	¾	"
East part of Whale's Back	N. by E	¾	"
Pilgrim's Ledge (thirteen feet, low common tides), on which is a red spar-buoy	N. E.	1⅛	"
Great Misery	N. by W. ¼ W	1	"
Misery Ledge (has eight feet at low tide)	N. W. by W. ½ W	1¼	"
South part of Little Misery	N. W. ⅛ N	¾	"
Whale's Back (comes out at two thirds ebb)	N. by E. ½ E	¾	"
Bowditch's Ledge	W. N. W.	1¼	"
North part of Hardy's Rocks	W. 1⅛ N	⅝	"
North part of Haste Rock	W. ½ N	2½	"
South part of Coney Island	W. ¼ S	2¼	"
Nagus Head or Marblehead shore	W. ½ S		
Gray's Rock	W. by S. ½ S	2⅛	"
North part of Eagle Island	W. by S. ¼ S	1½	"
South part of Marblehead Neck	S. W. by W. ¼ W		
North part of Cat Island	S. W. by W	2	"
Middle of Pope's Head	S. W. by W	⅜	"
North part of Western Gooseberry	S. W. ½ S	⅜	"
South Gooseberry	S. S. W. ½ W	½	"
Satan, or Black Rock	S. W. by S	1⅜	"
Eastern Gooseberry	S. S. W. ½ W	¾	"
Halfway Rock	S. ¼ E	2	"
South Breakers of Baker's Island	S. E. by S.	2¼	"
Archer's Rock, on which is a red spar-buoy (has seven feet at low tide)	S. W. by W. ½ W	2⅛	"

Outer Breakers, known generally by the name of Outer Middle (on which is a black spar-buoy) and Inner Breakers, are a very extensive and dangerous shoal, extending from Searle's Rocks, in a S. E. direction, about two miles, and in a Westerly direction about three fourths of a mile bearing from the light S. E. ½ S. to S. S. E. ½ E., two and one fourth miles. To pass to the Eastward of this dangerous shoal, have the Northern or low light a little open to the Eastward of the high light.

A small part of Searle's Rocks, on which is a black spar-buoy, comes out of water at low spring tides, and bears from the S. light S. E., three eighths of a mile distant, and from the S. E. point of Baker's Island, S. E., distant a small one fourth of a mile. There is a good channel between the island and Searle's Rocks, by keeping the island best on board, say at a distance of thirty or forty fathoms. In this channel are three to five fathoms water, at low common tides.

Egg Rock off Nahant Light. EGG ROCK OFF NAHANT.—The light, which is fixed and red, is on the keeper's dwelling, eighty-seven feet above the sea, which bears N. N. E. from Nahant Head, and should be seen about ten miles. The former fixed white light at this station has been changed to a red fixed light in order to remove all danger of vessels mistaking this light for Long Island Head light, when approaching Broad Sound from the N. and E.

The following bearings are given from this station:

Graves Bell-boat	S. E. by S.
Nahant (East Point)	S. ½ E.
Methodist Church, Swampscott	N. N. W. ½ W.
Half-tide Rock Beacon	N. ¼ W.
Outer Dry Pig Rock	N. E. ¼ N.

Boston Light-house. BOSTON LIGHT-HOUSE is situated on the Little Brewster Island, on the N. side of the entrance to the harbor. The light is revolving, and eighty-seven and a half feet above the level of the sea.

Narrows Light. There is a fixed red light, thirty-five feet above the level of the sea, on the W. end of the spit which makes out from the Great Brewster Island. It is an iron screw pile tower of a dark color, and is intended as a guide through the Narrows. This light, in range with Long Island Head light, leads clear of Harding's Ledge. The following bearings are given from the light:

False Spit buoy	E. S. E. ¼ E.
Point Alderton buoy	E. S. E. ¼ E.
North Centurion buoy	S. E. ¾ S.
Long Island Head light	W. N. W. ¼ W.
Nix's Mate beacon	N. W ½ W.

Long Island Light. LONG-ISLAND LIGHT, on the N. E. point of Long Island, is a fixed light, eighty feet above the sea, bearing from Boston light W. ½ N.

Stellwagen's Bank. STELLWAGEN'S BANK.—The least water on the bank is ten and a half fathoms at six and a half nautical miles N. 30½° W. (true) from Race Point light, Cape Cod. It lies generally outside of a line from Race Point light to Thatcher's Island light, Cape Ann; is seventeen nautical miles in length, five miles at its greatest breadth, two and a half miles at its least, and three miles in average breadth.

Its direction by compass is nearly N. by W. and S. by E. The N. end of the bank is in the latitude of Nahant nearly, and the S. end in that of a point five miles S. of Scituate light, so that it lies in the direct approach from the Southward to Boston, and being at a convenient depth for sounding while crossing it, is perfectly safe. It will serve as an excellent mark in foggy or stormy weather to determine a vessel's position. From ten and a half fathoms at six and a half nautical miles from Cape Race light, the bank deepens on the average but very slowly, reaching thirteen fathoms at nine and eleven miles, fourteen fathoms at thirteen and a half and fourteen miles, and fourteen and a half fathoms at twenty miles. It then deepens more rapidly to twenty fathoms, and then quite rapidly from this to thirty and thirty-five fathoms. The outer side of the bank slopes off gradually, and the inner quite abruptly, as a general rule.

By it you can ascertain your distances to the Eastward of the coast, and, by attention to the lead after passing inside, a good idea of the latitude may also be obtained—thus, three or four miles to the Westward of the Northern half of the shoal the water deepens generally to fifty fathoms, while at the same distance inside of the Southern half the greatest depth of soundings diminishes gradually from forty-five fathoms, in latitude 42° 15′ N., to thirty-five fathoms, all the way across to the main land.

DANGERS IN APPROACHING BOSTON HARBOR.

Graves' Bell-boat. The Graves are a parcel of dry rocks, which appear white, while lying to the Northward and Eastward of Boston light. On the N. E. ledge is an iron bell-boat in ten fathoms water, Long Island light bearing W. S. W. ½ W., four and three fourths miles distant and Boston lights S. W. ½ S., two and three fourths miles distant.

Thieves' Ledge. Thieves' Ledge, of four and a half fathoms, lies E. ½ S. of Boston light, distant three nautical miles.

Harding's bell-boat. Harding's Ledge, on which there is an iron bell-boat, painted black, is dry at low water. From the bell-boat Boston light bears N. W., two and a half miles distant, and Long Island light N. W. by W. ½ W., five miles distant.

Martin's Ledge. Martin's Ledge lies nearly midway between Thieves' Ledge and the Graves, and has on it thirteen feet at low water. Outside of the ledge, in six fathoms, there is a red nun buoy, No. 2, Graves bell-boat bearing N. ¼ E., one mile and a half, and Harding's bell-boat S. ¼ W., nearly two and a half miles distant. Long Island light W. ¼ S., four and a half miles distant. Between the Outer Brewster and Martin's ledge, on the last-mentioned range, lies Tewkesbury's Rock, with nine feet on it at low water.

N. W. nearly from Martin's Ledge, between Green Island and the Graves, is a ledge of sunken rocks called Roaring Bull, S. W. of which is a shoal spot of ten feet, and N. E. is a spot of eighteen feet water.

Barrel Rock. Barrel Rock lies N. W. by W., from the N. part of Green Island, and has four feet on it at low water. Near it, in twenty-one feet water, is a can-buoy, red and black horizontal stripes, Long Island light bearing S. W. by W. ¼ W., two and a half miles, and Deer Island Point beacon W. S. W. ¼ W. two miles distant.

Devil's Back. W. of Green Island, one half mile distant, is a ledge of rocks, called the Devil's Back, on the Northern part of which is black buoy No. 1, in eighteen feet water, Barrel Rock buoy bearing N. W. one half mile, and Long Island light W. S. W., two and a half miles distant.

E. N. E., one third of a mile from Devil's Back buoy, lies Maffit's Ledge, on which are twelve feet water, and S. S. E. ¼ E. of same buoy are Half-tide Rocks, in Hypocrite Channel, near which is a red spar-buoy (No. 1). *Half-tide Rocks.*

Egg Rocks or Shag Rocks lie E. of the N. point of Little Brewster Island. The ledge is about one third of a mile long, and runs N. E. and S. W. nearly; N. E. of the ledge, about one half mile distant, is a shoal spot with eighteen feet water, and about midway between the Eastern points of Middle and Little Brewster islands is another spot of the same depth. *Egg Rocks. Shoals.*

Nash's Rock, with twelve feet water on it, lies on the Northern side of the main ship-channel, one third of a mile S. W. of the Western part of Little Brewster. *Nash's Rock.*

Kelly's Rock, with fifteen feet water on it, lies to the Westward of Nash's Rock, about midway between it and George's Island, and is also in the main ship-channel. *Kelly's Rock.*

Tower Rock lies off the S. W. extremity of Brewster Bar, in mid-channel. It has on it seventeen feet water. *Tower Rock.*

Black Rock is on Brewster Bar, in Black Rock Channel, Northeastern part.

A ledge of rocks called Ram Head makes off from the Northern part of Lovel's Island. On the Northern part of this ledge is a black can-buoy (No. 5), Long Island light bearing W. S. W. ½ W., one mile and a half distant. *Ram Head.*

Nix's Mate lies between Long Island and Lovel's Island, about half a mile from Long Island light. There is on it a square granite beacon, with octagonal pyramid on top, painted black. *Nix's Mate. Beacon.*

A black nun-buoy (No. 9), has been placed on the N. end of Nix's Mate, in fifteen feet water, low tide.

Between Rainsford Island and George's Island is Hospital Shoal, on the Northern part of which is placed a black nun-buoy (No. 1), in eighteen feet low water, Long Island light bearing N. N. W., nearly one mile and a fourth distant. *Hospital Shoal.*

Toddy Rocks lie E. S. E. ½ E. from the buoy on Hospital Shoal. Near them is placed a black nun-buoy (No. 3). *Toddy Rocks.*

S. of Rainsford Island are the Quarantine Rocks, and S. of the rocks lies Hangman's Ledge, on which is a granite open-work beacon, with a small square cage on top. The rocks are dry at low water. *Beacon.*

There is a rock with twelve feet water on it, bearing S. 45½° W. from Boston light, distant seven hundred yards. The new beacon on the spit open to the N. with the hotel on Long Island leads clear to the S. of it. *Rock and Beacon.*

Another rock, with fifteen feet on it, bears S. 75½° W. from Boston light, seven hundred and seventy yards distant, and from the new beacon on the spit S. and E. distant two hundred and forty yards. *Rock.*

The hotel on Long Island, shut in entirely with the N. part of George's Island, leads clear to the S. of it.

Another rock, with seventeen feet on it, bears S. 85¾° W. from Boston light, two thousand three hundred and forty-three yards distant, and from the old beacon on the spit S. and S. W., one hundred and seventeen yards. *Rock.*

Nix's Mate, on the Northern edge, or at the farthest the centre of Bunker Hill Monument, leads clear to the S. of it.

If Bunker Hill monument is not visible, keep Deer Island beacon on the N. end of Apple Island, while passing the range of the old beacon spit on the little head of the Great Brewster.

Another rock bears E. N. E. from the Outer Brewster, distant one fourth of a mile. There are nine feet water on it. *Rock.*

The outer ledge, of seventeen feet, bears E. N. E. from Boston light, two miles distant.

There is a red nun-buoy (No. 10) on Seventy-four Bar, in fifteen feet low water, about twenty fathoms W. of the old wreck, which has but nine feet on it at low tide. The following magnetic bearings are given: *Buoy.*

Nix's Mate beacon	W. ¾ N.
Nix's Mate buoy	N. W. by W. ¾ W.
Deer Island Point beacon	N. W.

BOSTON HARBOR.—Coming from the vicinity of Cape Cod, keep to the Northward of the direct course, if the wind is N. E., and to the Westward if it is S. W., making allowance always for the tide. With a leading wind the direct course may be made good on the flood, but the ebb sets toward Minot's Ledge light. *Boston Harbor.*

Coming from the vicinity of Cape Ann, no particular precautions are necessary. Falling close in with Scituate light, without having seen the light-boat during the night or thick weather, in ten or twelve fathoms, run N. into seventeen or eighteen fathoms, and steer W. N. W. for Boston light. The bearings from the light-boat are:—Boston light, N. W. ¾ W.; Minot's outer rock, S. ¾ W.; Scituate light, S. E. by S. ½ S. Vessels without a pilot should not pass to the Southward of the light-boat.

Bearings outside.—When near Scituate light, to clear Minot's Ledge, bring the light to bear S. and steer N.; from Minot's Ledge to Boston light, N. W. by W.; and from the light-boat, N. W. ¾ W.; but in thick weather it is most prudent to steer N. W. until up with the Hardings, and then W. N. W., allowing for wind and tide. From Hardings to Boston light, N. W. ¼ N. From Nahant Head, if bound for main ship-channel, steer S. S. E. to pass the Graves, which will give a berth of one half a mile, and from the Graves S. S. W., until up with the bearing for entering the channel. Vessels may pass inside the Graves, keeping one cable's length from the S. W. point.

Beating in Boston Bay.—Working up to Boston Harbor in the day, you may stretch safely anywhere from Minot's Ledge to Nahant Head, until up with the Graves on one side, and the Hardings on the other.

The N. E. part of the Graves must not be approached nearer than one half a mile. At the Hardings it is safe to go close to the buoy. Inside of the line from the Graves to the Hardings you may stand to the Southward to within one half mile of shore, and to the Northward to within three fourths of a mile of the E. end of the Outer Brewster, or the E. end of Egg Rocks.

When up with Egg Rocks, you must go no farther to the N. than will bring Boston and Long Island lights in range; and, in passing Point Allerton, be careful not to go inside the buoy. A stranger may beat up to the anchorage inside of the light in the day, making short tacks, and keeping two cables' length from Light-house Island, but should wait there for a commissioned pilot. Working up for Boston Harbor in the night, you will avoid the rocks off Cohasset and Harding's Ledge, by not going farther to the S. than to bring Boston light to bear W. N. W. When within two miles of the light, go no farther to the N. than to bring it to bear S. W. ½ W., and, when near Egg Rock, you must not pass to the N. of Boston and Long Island lights in range.

Main Ship-Channel.

MAIN SHIP-CHANNEL.—After making Boston light, if the weather is bad, or the vessel one of heavy draught, it must be brought to bear W. N. W. to approach it; this leads S. of the Thieves' Ground and N. of Harding's Ledge. A vessel of light draught may run for it when bearing anywhere from S. W. to W. N. W., until within three fourths of a mile of the light, when it must be brought to bear W. N. W. to enter the channel. When abreast of the light-house bearing N., being in mid-channel, or halfway between the light and Point Allerton buoy, a W. ¾ N. course, made good, leads to the beacon on the False Spit; but if the tide is ebb, or you are on the N. side of the channel, steer W. or W. Southerly, to avoid going on the False Spit. Leave the beacon on the spit on the starboard hand. The course by George's Island is N. W. ½ W., with Nix's Mate and the middle of Bunker Hill monument in range until up with the Eastern end of Gallop Island. From this point the course through the Narrows is N. W. by N., keeping in mid-channel, and steering for the high land on Deer Island until up with Nix's Mate, which leave on the port hand.

Nix's Mate should be passed with Deer Island beacon on the N. E. end of Apple Island for a vessel of light draught, and off the S. part of Apple Island for a vessel of heavy draught, to avoid the shoal ground about it. A W. ½ N. course leads from Nix's Mate into President Roads, and this course is to be followed until the new beacon on the high part of Long Island is just clear of the N. E. bank of Spectacle Island, when the course is N. W., keeping this range on, until abreast of the buoy on the S. E. part of Bird Island.

This range leads safe by the Lower Middle, Castle Island Rocks, Governor's Island Point, the Upper Middle, and in the best water over the shoal ground above the Upper Middle. When up with the buoy on Bird Island, steer N. W. by W. ½ W. toward the State-house, until abreast of the buoy on Slate Ledge, and then N. W. by N. for the anchorage.

Hypocrite Channel.

HYPOCRITE CHANNEL enters between the Outer Brewster and Sunken Rocks, thence it runs between Green and Little Calf islands, and thence to Ram Head, where it enters Broad Sound Channel, leaving the buoys on Half-tide Rocks, Devil's Back, and Alden's Ledge, on the starboard hand. Intending to run this channel, when up with the Graves, bearing N., bring the S. point of Green Island to bear W., and steer for it, passing midway between Green and Little Calf islands. After passing Green Island, steer S. W. by W., keeping the S. part of the Graves open to the Southward of Green Island, until Boston light is shut in with the Great Brewster, when the buoy on Half-tide Rocks will have been passed. Then haul up W. toward Long Island light, leaving the buoy on Alden's Ledge on the starboard hand. This course leads into Broad Sound Channel at Ram Head buoy, which leave on the port hand, fifty fathoms distant. Hypocrite Channel is not safe for strangers.

Black Rock Channel.

BLACK ROCK CHANNEL leads from the main ship-channel at the beacon on the spit into Hypocrite Channel, and is never used by large vessels, except to avoid ice in the Narrows. It is narrow, dangerous, and unsafe for strangers. On leaving the main channel, pass close to the beacon, and steer about N. E. for the outer point of Green Island, keeping George's and the W. end of Pettick's well open. Both the flood

and ebb tides set across this channel. There is a passage on each side of Whiting's Ledge.

BROAD SOUND CHANNELS.—Vessels intending to enter by the South channel, may come in the sound anywhere between Nahant Head and the Graves, and steering to the S. of W. until they bring Nix's Mate to bear S. W. by W. ¼ W., may run for it. The range for this channel is Nix's Mate in the middle of the Northern and highest of the Blue Hills. The channel is short and straight; its range is perfect, and vessels of the largest draught may resort to it with safety and convenience at half or three quarters flood, especially in going out. Vessels in going out this way will leave Ram Head, Allen's Ledge, and Devil's Back buoys, on the starboard hand, and Little Faun, Great Faun and Barrel Rock buoys on the port hand, and in running out of Broad Sound will keep Egg Rock open with Nahant Head. The North Channel passes nearer Deer Island, and is separated from the South Channel by a middle ground. The buoys are left in the same way as in the latter, except Barrel Rock buoy, which, in going out, is left on the starboard hand. The range for this channel is the N. head of Long Island (on which the light stands), in line with the second bluff on the W. side. It should not be attempted in bad weather, even by vessels of the lightest draught. *Broad Sound Channels.*

BACK OR WESTERN WAY.—This channel is used in light winds on the ebb, to escape being set out into the Sound at Nix's Mate, or the E. end of Lovel's Island. Leaving President Roads, steer S. S. E. to run between Spectacle and Thompson's Islands, keeping nearly in mid-channel, and passing halfway between Moon Head and the West Head of Long Island. The bottom is soft in mid-channel. When well past Long Island Head, steer S. E. until Long Island light is open to the S. of the middle head; then N. E. by E. about halfway between Bass Point and Rainsford Island. When well by Rainsford Island, steer for the S. part of George's Island, leaving the buoy on Rainsford Island Shoal and Wilson's Rock on the starboard, which will lead into Nantasket Roads. *Back or Western Way.*

FOR NANTASKET ROADS.—To enter Nantasket Roads from outside, when Boston light bears N., three eighths of a mile distant, steer W. ½ S. to the buoys on the Centurion; leave these on the starboard hand close to, and steer W. S. W, until Long Island Light opens clear of the S. W. part of George's Island, then haul up for the light, and run in for the anchorage. *For Nantasket Roads.*

RANGES.—Long Island light, a little shut in on Point Allerton, or in the Outer Saddle, leads clear of the Hardings to the Southward of them. *Ranges.*

Long Island light, a little open to the Eastward of the Graves, leads clear to the Eastward of the N. E. ledge.

The mark to go between the Graves and the Sunken Rocks, to clear the latter, is Boston light, a little off the Middle Brewster, between that and the Outer Brewster, and when Long Island light shows to the Northward of Green Island, you are clear of the sunken rocks to the N.

Keeping any part of the Graves open to the Southward of Green Island clears the Half-tide Rocks.

To avoid the Rainsford Island Shoals, the high-water mark on the S. part of Moon Head should be kept open with the high-water mark on the N. part of Rainsford Island until to the Northward of the buoy.

Going the South channel, round Long Island, you should be careful not to shut Governor's Island in with Spectacle Island, in order to clear the reef between Spectacle and Long islands.

To stretch up between Long and Spectacle islands, go the Eastward of the buoy and close to it. Go no farther to the W. than to open the East Head of Long Island clear of the middle head: or in the night, to see Long Island light just over the middle head. This clears the flats E. of the reef.

After leaving the anchorage off the city, when Moon Head opens clear of Fort Independence, on Castle Island, you may run for Castle Island wharf, keeping it a little on the starboard bow.

From Castle Island wharf to the President Roads the range is a high steeple in the S. part of the city on with the N. line of Fort Independence.

To clear the Lower Middle in the night, the two lights should be kept about a ship's length open until to the E. of Spectacle Island.

To pass through the channel to the N. of the Lower Middle, the N. end of Lovel's Island should be opened a little with the Southern head of the Great Brewster, so as to show a gap between them.

Small vessels may go very near Bird Island flats with safety, by keeping Long Island light open with the high part of Governor's Island. This answers for day and night. Vessels of large draught can only follow this range at hight water.

The new beacon on the Spit, kept open to the N. with the hotel on Long Island, leads clear to the S. of Nash's Rock.

Shutting in entirely the hotel on Long Island with the N. part of George's Island leads clear to the S. of Kelly's Rock.

Nix's Mate on the centre of Bunker Hill Monument (but not on or beyond the Southern edge of it) leads clear to the S. of Tower Rock. If Bunker Hill Monument is not visible, then Deer Island beacon kept on the N. of Apple Island (while passing the range of the old beacon on the Spit, on the little head of the Great Brewster) will answer the same purpose.

Anchorages. President Roads, S. of a line from Nix's Mate to Castle Island, in sticky bottom.

Nantasket Roads, Nix's Mate just on with Gallop Island, and Boston light shut well on to George's Island, give the best ship anchorage. Heavy vessels-of-war anchor farther S.

There is a convenient refuge for coasters in N. E. winds under Spectacle Island.

Vessels caught in bad weather near Nahant without a pilot, may anchor to the W. of Nahant, in from five to six fathoms, by opening Lynn Harbor, and bringing the hotel to bear E. N. E.

Waiting for a pilot, you may anchor in main ship-channel anywhere between the light-house and Nantasket Beach.

The principal dangers in and about Boston Harbor, are the rocks and ledges near the shore, under the surface, and surrounded by deep water. Persons ignorant of the ground should not approach them without a pilot. The following are particularly to be avoided: David's Ledge, near the Minot's; Martin's Ledge and Tewksbury Rock near the Outer Brewster, and Maffit's Ledge, North of the Devil's Back, which are dangerous to vessels beating in Boston Bay and Broad Sound. The rule is: first, not to go to the Southward of the light-boat off the Minot's; second, not to approach the Outer Brewster nearer than three fourths of a mile on the E.; third, keep to the Westward of Maffit's Ledge, giving a good berth in passing. The directions for avoiding other dangers are given under the head of Ranges.

Buoys. The nun and can buoys in Boston Harbor have been renumbered, and are as follows:

Martin's Ledge	Red,	No. 2.
Boston Ledge	do.	do. 4.
Point Allerton	Black,	do. 1.
*Toddy Rock	do.	do. 3.
*Hunt's Ledge	Red and black horizontal stripes.	
*False Spit	Red,	No. 6.
*South Point of Centurion	do.	do. 8.
*North Point of do	Black,	do. 5.
*George's Island Shoal	do.	do. 7.

Broad Sound.

Devil's Back	Black,	No. 1.
Barrel Rock	Red and black horizontal stripes.	
Great Faun Bar	Red,	No. 2.
Aldridge Ledge	Black,	do. 3.
Little Faun Bar	Red,	do. 4.
Ram Head	Black,	do. 5.
*S. E. end of Lower Middle	Red,	do. 6.
*State Ledge	do.	do. 8.
*Castle Rock	Black,	do. 7.
*N. W. end of Lower Middle	Red,	do. 10.
*Governor's Island Point	do.	do. 12.
*Upper Middle	Black,	do. 9.
*Dorchester Flats	do.	do. 11.
*Bird Island Flats, S. W. Point	Red,	do. 14.
*Four Point Channel	Black,	do. 13.

Buoys marked thus * are replaced by spars during the winter.

Bearings of sundry places from the E. head of Nahant.

S. side of Nahant Rock	N. N. E. ½ E.
Pig Rocks, S. Dry Rocks	N. E. ¼ E.
Halfway Rock	N. E. by E.
Tinker's Island, S. point	N. E. ½ E.
Baker's Island lights	N. E. ½ E.
E. end of the Graves	S. by E. ¾ E.
Long Island light-house	S. W. ¾ W.
N. point of Deer Island	S. W.

Outward bound from Boston light-house, to make Cape Cod, the course is S. E. by E. ½ E., distant eleven leagues, thence three leagues to the light-house. When up with the light-house, and it bears S. W., two leagues distant, steer S. S. E., which will carry you out of the S. channel. *Light-house.*

In Boston Bay, and bound for Cape Cod Harbor, run for Race Point light-house, which contains a revolving light, until within half a mile; and when it bears E. N. E., haul up E. S. E., or as near as the wind will permit, and anchor in from ten to four fathoms, in Herring Cove where there is a good lee, with the wind from N. N. E. to S. E. by E. Should the wind shift to the N. W., Provincetown Harbor is under the lee, to which we refer (page 277). Should you first make Cape Cod light, bring it to bear E. by N., and run for it until you have soundings in fourteen or fifteen fathoms water; then steer N. E., until the light bears E. by S.; then run in N. W. for the harbor.

Between Cape Ann and Cape Cod you will have from fifty to seventeen fathoms, the latter four and a half miles N. by E. from the Race light, with thirty-five fathoms inside. S. E. by E. ¼ E. from Boston light to the Race light, there is ridge of rocks and sand of from seven to twenty-three fathoms water, with a small gully of thirty-seven fathoms, twenty miles from Boston light. To the N. of this ridge the bottom is generally muddy. and the depth from forty to fifty fathoms.

At full and change, it is high water off Race Point at ten hours and forty-five minutes. Vessels in leaving Cape Cod, bound to Boston, should calculate the tide, as the flood sets strong to the S. W. off Cape Cod, from the Race to Chatham; flood sets to the S., ebb to the N.; Southern tide, nine hours; Northern tide, three hours. *High Water.*

BOSTON LIGHT-HOUSE TO CAPE ELIZABETH LIGHTS.—From Boston light-house to Thatcher's Island lights, which lies three fourths of a mile from Cape Ann, the course is N. E. ½ N., and the distance eight leagues; but to clear the Londoner, which you leave on your port hand, when bound to Cape Elizabeth, the course is N. E. by E. About halfway and near the N. shore is a high bold rock, called Halfway Rock, of about thirty fathoms diameter (on which is a monument), bearing S. W. by W., distant seven and two thirds miles from the Eastern point of Cape Ann, before described. *Boston Light-house to Cape Elizabeth Lights.*

MINOT'S LEDGE LIGHT is a granite tower, one hundred feet above the level of the sea; it is on the Outer Minot Rock, and is a fixed light. *Minot's Ledge Light.*

DAVIS LEDGE, of ten feet, bears E. by S. ¾ S., one third of a mile from Minot's Ledge light. There is a black nun-buoy on it. *Davis Ledge.*

From Minot's Ledge light to Scituate Cedar Point the course is S. S. E. ½ E., four and one fourth miles; thence to Brant Point, same course, eight and a half miles; this carries you E. of the seven-foot ledge off Brant Point; thence to the Gurnet lights S. ¼ E., nearly five and a third miles; these courses carry you to the E. of all danger.

Southwesterly from the light there are a number of ledges. (See E. & G. W. Blunt's chart of Massachusetts Bay.)

COHASSET ROCKS, or MINOT'S LEDGE, is six and three fourths miles S. E. ½ E. from Boston light, and consists of fifteen large rocks out of water, with ledges all round these rocks. The nearest land is one mile distant. These rocks extend N. and S. from three and a half to four miles. Small vessels pass between the rocks. The depth of water round the rocks is five and six fathoms. There is a passage within Cohasset Rocks, used by coasters. From the Northerly part of Cedar Point, a ledge, called Long Ledge, extends N. N. W. nearly one mile. *Cohasset Rocks, or Minot's Ledge.*

There is a meeting-house about two miles W. by N. from the point; and a farm-house near the Northwest side of the harbor, with two large barns a little N. To go into the harbor (the mouth of which is about one third of a mile wide), bring the meeting-house, or farm-house, to bear W. by N. from the middle of the entrance of the harbor, and run in W. by N. for the farm-house, until you have passed the bar, which is a hard bed of stones and gravel that does not shift; and after passing the bar, and coming on sandy bottom, haul up and anchor near the beach on the S. side of the harbor.

BRANT POINT.—Howland's Ledge, of seven feet, has a black buoy, No. 3, on it. From it Gurnet lights bear S. ¼ W., four and a half miles distant. Philip's Ledge is three fourths of a mile inshore of it, bearing W. N. W. *Brant Point.*

HIGH PINE LEDGE.—A black spar-buoy, No. 1, has been placed off High Pine Ledge in fifteen feet water. The rock is dry at low water. The following magnetic bearings are given: *High Pine Ledge.*

Gurnet Lights	S. ¼ W.
Captain's Hill	W. ¾ S.
Brant Point	N. by W.

GURNET LIGHTS.—On Gurnet Point, the Northern side of the entrance to Plymouth Harbor, there are two light-houses, ninety-three feet above the level of the sea, eighty-one feet apart, containing fixed lights, which should not be brought in range *Gurnet Lights.*

when to the Northward of them; but to the Southward you may bring them in one, which is a good mark to clear Brown's shoal.

Gurnet Rock. GURNET ROCK, on which there is but four feet, lies S. E. by E. ½ E., a good quarter mile from the light. There is on it a red buoy, No. 2. The S. side of the entrance to the channel is marked by a black buoy, No. 1, which bears from Gurnet Light S. S. E., ¼ S., three fourths of a mile distant.

Plymouth Harbor. PLYMOUTH HARBOR.—Approaching from the Southward, bring Gurnet Lights in range, and run for them when within one half mile, with tree on Saquish Head bearing W.; steer W. by S. till the tree bears N. ¼ E. and Duxbury pier W. N. W. ½ W.; then W. ½ N. till Duxbury pier bears N. N. E. ½ E. and pier-head, on Long Beach, bears W. S. W. ½ W.

If bound into Plymouth, steer S. W. ½ S., passing pier-head, about eighty yards distant; anchor when Gurnet lights are shut in behind Long Beach.

If bound into the Cow Yard from the last bearing, steer N. for one half mile, passing to port of Duxbury pier, giving it a berth of one hundred yards, and anchor in four and a half fathoms.

In beating into Plymouth Harbor, do not stand into less than three fathoms on the Northerly tack; on the Southerly, the best guide is the rip marking the edge of Brown's Shoal, which can be distinctly seen except in very calm weather.

Mary Ann Rocks. MARY ANN ROCKS lie off Manomet Point, which bears N. W. by W. ½ W., distant three fourths of a mile.

Stellwagen's Rock. STELLWAGEN'S ROCK has on it six feet. From it Manomet Point bears N. N. W., distant one and three fourths miles.

In coming in from the Northward in the night, you must not bring the light to bear more Southerly than S. by W. to avoid High Pine Ledge, and keep that course until you have them to bear N. W., or N. W. by W., when you will be clear of the ledge, and may steer up W. by S. until you have the lights to bear E. N. E., where you had best anchor in the night. From the Gurnet to Race Point, Cape Cod, the course is E. ¼ N., fifteen and a half miles; and from the Gurnet to the point going into Cape Cod Harbor, is E. by S. twenty miles.

If you should make the lights in hard Northerly or N. W. winds, and cannot get into Plymouth, you may then run for Cape Cod Harbor, bringing the lights to bear W. by N., and steer directly for Race Point light, following the directions given for entering Provincetown Harbor, by the fixed light on Long Point, and come to anchor. If it should blow so hard that you cannot turn up the harbor, you may anchor off the point, clear bottom; you have eight and nine fathoms very near the shore, so that there is no danger of being on it, unless very dark.

Barnstable Bay. BARNSTABLE BAY.—From Centre Hill Point to Sausett Inlet is about four miles, bearing S. ½ E. This is a clean and bold shore, and may be approached at the distance of one third to half a mile carrying three and a half to four fathoms sandy bottom. There is a bar of sand that lies parallel with the shore, near Centre Hill Point, extending to the Southward, and terminating about three fourths of a mile to the Northward of Sausett. From the shore over this bar to three fathoms water, the distance is two hundred and forty to two hundred and fifty fathoms, and the bar is from one hundred to a hundred and forty fathoms wide, having on it from nine to eleven feet water, and between that and the shore from three to three and a half fathoms. From the S. end of this bar, along the shore to the entrance of Sandwich, are three fathoms, and distant seventy to ninety fathoms, sandy bottom, and regular soundings, as you approach the shore.

On the S. side of Sausett Inlet is a low rocky point of ninety fathoms. Three fourths of a mile off shore are three fathoms, and at the distance of one mile and a half to two miles are nine to ten fathoms, muddy bottom.

Passing from Sandwich toward Barnstable, the flats run off shore one hundred to a hundred and eighty fathoms.

Light. BARNSTABLE LIGHT is a fixed light in a white tower. It is thirty-three feet above the sea.

Barnstable Harbor. BARNSTABLE HARBOR.—When coming from the Northward, the bar must not be approached in less than five fathoms water, until the light-house on Sandy Neck bears S. W. ½ W., which will bring you up with the red spar-buoy on the bar; haul close round it, leaving it on your starboard hand, run two cables' length S. S. W., then steer S. W. by W. ½ W., one mile and a half, which will bring you up with the tongue of Yarmouth Flats, or until the light bears S. W. by S., then steer for the light. Be careful to make the above course good, as the flood sets strong over Yarmouth Flats, and the ebb strong to the Northward over the bar. Continue to run for the light until within a cable's length of the beach, and follow the shore round the point. There is safe anchorage inside, abreast of the light, against all winds, it bearing from S. W. to N. E., in five to two and a half fathoms water.

Vessels drawing eight feet water may, at high water, bring the light to bear S. W. ½ W., and run directly for it.

BILLINGSGATE ISLAND.—There is a fixed light on the E. side of Billingsgate Island, N. side of the entrance of Wellfleet Harbor. The tower is of brick, not painted. The lantern is black and is forty feet above the level of the sea. Billingsgate Island is about thirteen feet above the level of the sea at high water. *Billingsgate Island.*

Billingsgate Shoal affords a good lee for vessels in Northerly storms. The South-western extremity of this shoal bears, from Billingsgate light-house, W. S. W. five and a half miles distant.

In making the anchorage give this shoal a berth, and bring the light-house on Billingsgate Island to bear N. E. by E. ½ E. when stand up the channel E. by N. ¾ N. anchoring in from four to five fathoms water, sandy bottom with the light bearing N. E. ¾ E., distant two and a half miles.

In case of beating up this channel care must be taken not to approach too near the shoal, as the soundings shoal abruptly. Good inner anchorage is found in from three to four fathoms of water, and soft bottom, about one and two thirds of a mile S. ¼ W. from the light-house, but the approach to it should not be attempted by vessels of burden without a pilot. After turning Cape Cod, with Race Point light bearing S. E. ¾ E. two miles distant, steer S. ½ E. seventeen and a half miles, when Billingsgate light will bear N. E. by E. about six and a half miles distant. You can steer between this bearing and E. by N. ¼ N. and anchor in four fathoms.

Tides in Massachusetts Bay. *Tides.*

	H. W.		Spring.		Neap.	
	h.	m.	ft.	in.	ft.	in.
Provincetown	11	22	10	8	7	7
Billingsgate	11	5	13	3	9	4
Plymouth	10	19	11	4	9	0

Statement of the Locations of Life-boats, Mortar Stations, and Huts of Refuge, on the Coast of Massachusetts, under the Care of the "Massachusetts Humane Society." *Life-Boats, &c.*

DIAMOND STAGE, Ipswich River, one mile and a half from the entrance or bar, one boat under the care of Thomas Greenwood.

ISPWICH LIGHT, near the Long Beach, one small boat and carriage, under the care of B. Ellsworth, keeper of the light.

ANNIS SQUAM, Cape Ann, at the light, under the care of N. Parsons, keeper of the light, one boat.

LANE'S COVE, Cape Ann, under the care of W. Saunders.

ROCKPORT, Cape Ann, near the centre of the village, one boat, under the care of N. B. Parsons.

ROCKPORT MORTAR STATION, under the care of W. Thurston.

GLOUCESTER HARBOR, near the centre of the town, metallic boat, under the care of A. H. Tuck.

EMERSON'S POINT, near Thatcher's Islands Lights, J. W. Marshall.

MILK ISLAND, near Emerson's Point, a hut of refuge, with supplies, W. Stillman.

MARBLEHEAD, inside the harbor, two boats, under the care of J. S. Goodwin.

MANCHESTER, under the charge of Captain Tyler Parsons.

SWAMPSCOTT, near Phillips' Beach, one boat and carriage, under the care of Zebedee Small.

NAHANT, on the N. E. side, near the hotel, one boat, handy to launch on either side of the peninsula.

DEER ISLAND, Boston, one large and two small boats, in charge of the superintendent, G. E. Payson.

POINT ALLERTON, inside of the buoy and rocks, on the N. E. part of the point, one boat, under the care of J. Cobb.

HULL BEACH, on the inside of the neck connecting Hull with Nantasket, one boat; also a life-car, mortar, hawser, and other means of communicating with a wreck, under the care of J. Cobb.

NANTASKET BEACH, about two miles from Point Allerton buoy, two new boats also under the care of J. Cobb.

PLEASANT BEACH, situated a mile or so from the entrance of Cohasset Harbor, to the Westward, one boat under the care of Captain P. C. Kimball.

COHASSET HARBOR, two boats, near Hominy Point, inside the Western entrance of the harbor, under the care of Alfred Whittington.

SIMON'S FARM BEACH, North Cohasset, life-boat in care of Thomas Hudson.

Life-Boats, &c.

GLADE'S HOUSE, S. side of Cohasset, a life-boat, J. L. Litchfield.

FOURTH CLIFF, Scituate, a life-boat, formerly at White's Ferry, J. Tilden.

NORTH SCITUATE BEACH, inside of Minot's Ledge and Rocks, one boat in care of H. H. Sylvester.

BASS COVE, about one mile Easterly from Scituate town, two boats in one house, under the general care of A. Jones.

SCITUATE HARBOR, near the light, one large metallic life-boat, placed under the care of the Society by the Secretary of the Treasury, and in keeping of the light-house keeper, Mr. Alonzo Jones.

MARSHFIELD, inside of Cut River, one large boat under the care of George Sears.

MARSHFIELD BEACH, a hut of refuge, O. Baker.

DUXBURY BEACH, at Powder Point, near the village, one small boat, under the general care of Captain E. Holmes.

PLYMOUTH HARBOR, Western part, one boat, and about one mile and a half to the S. E. of her on Long Beach, one boat, under the care of J. V. Baxter and T. Manter.

MANOMET POINT, S. of Plymouth Bay, one new boat, C. Holmes.

RACE POINT LIGHT, one boat under the care of Mr. Crocker, keeper of the light, who has also a chest of seaman's clothing, belonging to the society, for occasional relief.

S. E. of the last, about one mile and a half, is a boat, also under the care of Mr. Crocker.

S. E. of this, about one mile and a half, is a boat, back of the beach, under the care of Mr. Atkins.

PEAKED HILL BAR STATION.—At this point there is a mortar-station, life-car, hawser, and other means of communicating with a wreck; also, a house of refuge, with fuel, straw, &c.; and, on each side of the station, on the beach, are posts with hands pointing toward the station; these posts are continued for a considerable distance each way, and are for the purpose of guiding the shipwrecked seamen to a place of shelter. Watch is kept here during stormy weather. Captain Atkins, who occupies the first house in Provincetown, in the direction of the station, has charge of it and has a supply of clothing belonging to the society. There is also a surf-boat lately put there.

HIGHLAND LIGHT.—About one mile N. of the light, back of the beach, is an old boat under the care of Mr. Small.

NEWCOMB'S HOLLOW.—About five miles S. of the Highland light is a surf-boat, under the care of Capt. Mulford Rich, who has a good surf-boat of his own, at the same station. All the boats, &c., from this point to Race Point, are under the general superintendence of E. S. Smith, Esq., of Provincetown.

NIGGER HOLLOW, a boat and hut in charge of Henry Baker, who has charge, also, of Cahoon's Hollow station.

CAHOON'S HOLLOW.—About two miles S. of last station, is a hut of refuge and a small surf-boat, under the care of Capt. Henry Baker, who resides about two miles from the station.

NAUSETT BEACH.—About one mile S. of the three lights is the surf-boat, under the care of Capt. Michael Collins, keeper of the lights.

NAUSETT HARBOR, N. of the entrance, a short distance, is a government metallic boat, mortar-station, life-car, hawser, house of refuge, &c., under the superintendence of Captain J. Snow, who lives near by.

ORLEANS BEACH, S. of the Harbor of Nausett, one new surf-boat, under the care of D. G. Linnell.

NORTH CHATHAM, in the harbor, near the new opening, one boat, under the care of Capt. Brazilli Stetson.

CHATHAM, a short distance N. of the lights, on the main land, is a surf-boat, under the general care of Capt. J. Hardy, Jr.

CHATHAM BEACH, opposite the town, is a government metallic boat, a life-car, and mortar-station, hawser, &c., with a hut of refuge, in which the apparatus is kept; and another hut farther S., all under the care of Capt. Hardy. This beach is fast wasting away, and the first heavy N. E. gale, with high tide, may wash through into the harbor.

MONOMOY POINT, one metallic boat, furnished like the last two, by government, and one surf-boat—the latter is near the light, and both are under the care of Asa Nye, keeper of the light.

NANTUCKET, EAST END, at Kros Katty Farm, one surf-boat, in a hut of refuge, and one dory, under the immediate care of Thomas Dra, who lives at Folger's Farm, near by.

GREAT POINT, inside near the light, one surf-boat, in charge of the light-house keeper. *Life-Boats, &c.*

NANTUCKET WEST END.—At Smith's Point is a hut of refuge and a surf-boat, under the care of D. G. Patterson.

NANTUCKET BAR, a government metallic life-boat and house, under the care of D. G. Patterson.

TUCKANUCK, one boat under the care of Mr. J. P. Dunham.

NANTUCKET.—At the town, in charge of a committee, of which Capt. P. H. Folger is chairman, and which has charge of all the stations on the island, is a mortar, hawser, and apparatus for communicating with wrecks, which can easily be transported to any necessary point. There is a life-boat on the S. side of Nantucket, in a hut of refuge at Nobadeer Pond, and a hut E. of it.

CHAPPEQUIDIC, W. side of Tuckanuck Channel, on Martha's Vineyard, is a surf-boat, under care of Thomas Huxford, who lives one mile from the boat, inland.

SOUTH BEACH, three miles from Edgartown, one boat, under the immediate care of Mr. Bartlett Stewart.

GAY HEAD, on the inside, Northerly from the light half a mile, one boat, under the care of the keeper of the light.

CUTTIHUNK, near the light, on the N. side, two boats in charge of J. B. Smith, keeper of the light.

Near SQUIBNOCKET POND, S. side of the vineyard near the W. end, is a mortar station, life-boat, under the care of E. Mayhew.

BOSTON LIGHT-HOUSE.—There is also a life-boat at Boston light-house, in charge of the keeper, and one on board of the Nautical School ship, in Boston Harbor.

Besides the huts of refuge attached to and connected with the boats, there are other huts near Marblehead light—on Nantasket Beach two, two on Scituate Beach, one at North Chatham Beach, one at Duxbury, one at Marshfield, and two at South Scituate. Mariners are strongly recommended not to attempt landing from a stranded vessel until near low water, and generally to wait patiently until succor comes from fresh and willing hands on the beach.

R. B. FORBES,
Chairman of Standing Committee Mass. Humane Society.

BOSTON, *March*, 1863.

CAPE COD LIGHT.—A light-house, containing a fixed light, one hundred and seventy-one feet above the sea, is erected on the Clay Pounds, highlands of Cape Cod, two and a half miles S. of the point or the cape. *Cape Cod Light.*

RACE POINT (Cape Cod).—On this point is a fixed light, varied by flashes, thirty-five feet above the level of the sea. It cannot be seen by vessels inward bound, until it bears S. S. W. ¼ S. *Race Point Light.*

LONG POINT.—On Long Point, at the entrance of Provincetown Harbor, is a light-house containing a fixed light, elevated twenty-eight feet above the level of the sea. *Long Point Light.*

CAPE COD HARBOR (Provincetown).—This is one of the best harbors on this coast. If bound into this harbor from the Northward, you may run within half a mile of the light-house on Race Point; after passing it, and it bears E., steer S. S. E. two and one fourth miles, when the light on the highlands will bear E. by N.; then run for it one mile and a half, which will put you in the fair way of the harbor; then haul up N. N. W. Westerly, a good mile, when you may anchor in five or seven fathoms, with the light on Long Point bearing S. W. by S. *Cape Cod Harbor.*

Large ships should bring the light on Race Point to bear N. by W., and steer S. by E. to pass Wood End Bar in ten fathoms; as soon as the light on Long Point bears N. E. by N., steer N. E. until in eight fathoms water, when anchor, the light on the Highlands of Cape Cod bearing from E. ½ N. to E. ½ S.

Good anchorage may be found in a N. E. gale, by running for the Race Point light, giving it one third of a mile distance as you pass it, as soon as it bears E. N. E., when you will be safe with the wind from N. N. E. to S. E. by E.; haul up E. S. E., and anchor in from ten to four fathoms.

Vessels inward bound, who fall in with the back of Cape Cod, may bring the light to bear S. W., two leagues distant, and then steer N. W. by W. ½ W. for Boston light-house.

When up with Race Point, you will find it very bold about one mile to the Westward of the light-house, and it may be known by a number of fish-houses on it. About one mile to the Southward of Race Point, is what is called Herring Cove, where you may have good anchorage half a mile from the shore, the wind from E. to N. N. E., in four or even three fathoms water.

In passing Race Point to the Southward, you must give it a berth of one mile, as there is a long flat of sand that lies to the Southward of said point. You must not haul to the Eastward until you come near Herring Cove.

In running from Race Point to Wood End, after you pass the Black Land or Hummocks, you will come up with a low sandy beach which forms the harbor extending between two and three miles to Wood End, which is difficult to be distinguished in the night; it is very bold, and you will have twenty-five fathoms water within one fourth of a mile from the shore.

In beating into Cape Cod Harbor, you must keep the Eastern shore aboard until you get into five fathoms water. Stand no farther to the Westward than to bring the light to bear E. by S., as there is a long split of sand runs off from the Western shore, which being very bold, you will have eleven fathoms water within a stone's throw of the shore.

If it blows so hard that you cannot beat into the harbor, you will have good anchorage without in from ten to fifteen fathoms water.

CAPE COD TO NANTUCKET.

Cape Cod to Chatham. CAPE COD TO CHATHAM.—From the Highland light to Nausett lights, the course is S. by E. twelve miles; thence to Chatham lights S. ¾ W. eleven and a half miles; the shore is sandy.

Nausett Beach Lights. NAUSETT BEACH LIGHTS.—On Nausett Beach three light-houses one hundred and fifty feet apart, have been erected. They are all fixed and ninety-three feet above the sea.

Chatham Lights. CHATHAM LIGHTS are two fixed lights on James Head, seventy feet above the level of the sea; they are only in use in running over the shoals, as the beach has made out two or three miles to the S. since they were erected.

Chatham Harbor. CHATHAM HARBOR.—Chatham is situated on the exterior extreme of Cape Cod, bounded E. by the ocean, S. by Vineyard Sound, W. by Harwich, and N. by Pleasant Bay. Its harbor is convenient for the fishery, in which they have usually forty vessels employed, and contains twenty feet at low water.

While passing Chatham in thick weather approach no nearer than five fathoms to cross the Pollock Rip; edge off and on from five to seven fathoms, which will carry you over the Pollock Rip in three fathoms. Magnetic variation in 1850, 9° 45′ W.

NANTUCKET SOUND, NORTH SHORE.

Monomoy Point Light. MONOMOY POINT LIGHT is a fixed light, thirty-three feet above the level of the sea, on Monomoy Point, the extreme Southerly point of the peninsula of Cape Cod; to the N. the sea has made an inlet deep enough for small craft, making it an island.

Pollock Rip Light-ship. POLLOCK RIP LIGHT-SHIP, which is painted red, bears S. E. by E. ¾ E., distant three and one fourth miles from Monomoy Point light. The light is forty-five feet above the sea.

This rip, on which there are but five feet water, extends four miles in an E. ¾ S. direction from Monomoy Point light. There are two channels across it, the outer one of thirteen feet, which has the light-ship, and which bears S. 2° W. from Chatham light, distant eight miles.

Light. To cross the rip by the outer channel, bring Chatham lights to bear N. 2° E., and steer S. until you make a black buoy, which bears from the light-ship N. 2° E., half a mile distant, and is in three fathoms water which you leave on the starboard hand, when up with the light-ship, which you can pass on either side; steer W. ¾ S. three miles on this course; you will pass a red buoy on the port hand on the Northern end of the Stone Horse which bears from the light-ship W. ¾ S., distant three miles. You continue this course to the black buoy, No. 7, on the S. W. part of the Handkerchief, which bears from Nantucket (Sandy Point) light N. ½ E., distant six and a half miles.

To cros sthe rip through the inner channel, through which you can carry ten feet, bring Monomoy Point light to bear S. W. ½ W., and run on that course till you judge yourself two short miles from the light, or see a black buoy bearing S. by E. of you, which you steer for, leaving it on the starboard hand (this buoy is in thirteen feet water); keep on this S. by E. course one mile, or until you get into five fathoms, when you shape your course S. W. by W. ¾ W., six and a half miles, for the black buoy on the Handkerchief.

This channel will only do in the daytime.

When one fourth of a mile E. of Bearses Shoal, a N. E. course will carry nine feet over the rip at low water. This channel is half a mile wide, with much shoaler water on either side.

To cross between Shovelful and Bearses Shoal, on the E. end of which is a black spar-buoy, follow the beach until Monomoy light bears N. N. W. ½ W., then steer S. S. E. ½ E., until it deepens, when you will be in Butler's Hole—then steer as above directed.

Bound through the Vineyard from the Northward, to go through Pollock Rip.

When E. of Chatham lights about two miles, bring Pollock light-ship to bear S. by W. ½ W. and run for it, leaving the black buoy No. 1, on the starboard hand. After you have passed the buoy on that course one fourth of a mile, steer W. by S. ½ S., six and three fourths miles, to the black buoy No. 7, on the S. point of the Handkerchief; then W. by S. nine and one fourth miles to the black buoy No. 5, on the S. E. point of the Horseshoe; then W. ½ N. two and a half miles to the Cross Rip light-ship.

STONE HORSE.—This shoal on the N. point of which there is a red buoy, in ten to twelve feet water, which bears from Monomoy Point light S. 1° W., distant one mile and a half, is of a circular shape, the concave part being on the Eastern side, and has a S. S. E. and N. N. W. direction, with four feet on it in places. *Stone Horse.*

Its length from the red buoy to the black buoy of the Little Round Shoal is three and a half miles; the buoys bear from each other S. E. 1° E. and N. W. 1° W. Its width is about one mile and a fourth.

LITTLE ROUND SHOAL.—This shoal, on which there are but two feet water, and which may be considered the S. E. point of the Stone Horse, bears from Chatham lights S. 7° W., distant ten and a half miles. There is a black spar-buoy on it, in eight feet water, which bears from Monomoy Point light S. S. E. 4° E., four and three fourths miles. From Nantucket Point light, N. E. ½ E., distant eight miles. About E. N. E., three miles distant from the buoy on Little Round Shoal in a spot of thirteen feet, Pollock Rip light-vessels bearing N. W. by W., two and three fourths miles distant. *Little Round Shoal.*

GREAT ROUND SHOAL is partly dry at low water. On it there is a black nun-buoy which bears from Monomoy light S. S. E. 4° E., eight and a half miles; from Nantucket Point light N. E. ¾ E., distant eight miles. *Great Round Shoal.*

About a mile and three fourths E. of the buoy on the S. point of Great Round Shoal is a shoal spot of twelve feet water, Pollock Rip light-vessel bearing N. N. W.; Great Point light, W. by S. ¼ S.

The channel between the Great and Little Round shoals should not be attempted by vessels drawing over nine feet, and then only from necessity.

The black buoy off the Little Round Shoal bears from the red buoy of the Great Round Shoal N. N. W. 4° W., distant two miles.

These may be considered the shoals to the Northward and Eastward of Nantucket. Those after described are the Vineyard Shoals.

HANDKERCHIEF.—This is, in fact, two shoals. The black buoy on the S. point of the Western shoal bears from Monomoy light S. S. W. ¾ W., distant four and a half miles. From Nantucket Point light N. ½ E., seven miles distant. From here, the shoal with a width of two thirds of a mile, partly dry, runs N. 8° E., three and a half miles, where there is a red buoy, bearing from Monomoy Point W. by N. distant three and one third miles. *Handkerchief.*

Between the Eastern side of the Handkerchief and Monomoy light there is a channel of twenty feet.

To run through this channel, after you have passed the red buoy on the Stone Horse, steer N. W. by W. ¼ W., for the light-ship on the S. W. point of Shovelful, which is in eight fathoms water, which you leave on your port hand, and which bears from Monomoy light S. W. ¼ W., distant one mile and three fourths. After you have passed the light-ship, steer N. ½ W. for the red triangle buoy on the S. E. part of the Inner Handkerchief, which you leave on the port hand. After passing this buoy steer N. W. by W. one mile and three fourths, when Monomoy light will bear E. by S. ½ S., and you will be up with the red buoy on the N. W. part of the Handkerchief. *Buoy.*

From the black buoy of the Handkerchief to the light-ship on Cross Rip the course is W. ¾ S., distance ten and a half miles.

Crossing the Handkerchief in three or four fathoms water, you will run W. ¾ S., for the black buoy on the Horseshoe, eight and one fourth miles, leaving it on the starboard hand, when you will continue your course for Holmes' Hole light, W. by N. ½ N., sixteen miles distant. As you enter the Swash in the Horseshoe, Hyannis light will bear N. N. E.; Cape Poge light, W. S. W.; Holmes' Hole light, W. Part of the Handkerchief is dry at low water.

A light-vessel has been placed nearly a mile and a half from the S. part of the shoals. From it Monomoy Point light bears N. E. ¼ N.; Shovelful light-vessel, N. E. ¾ N.; Green Point light, S. ¼ W. *Light.*

CROSS RIP LIGHT-SHIP is on the N. point of the Rip, in seven fathoms water. The light is thirty-nine feet above the sea. Two hundred fathoms S. of the light-ship there are eleven feet water. From the light-vessel, Point Gammon bears N.; Chatham light, N. E.; Sandy Point light, N. E. by E.; Nantucket Great Point light, E. S. E. ½ S.; Nantucket Brant Point light, S. E. by S.; Nantucket beacon light S. S. E.; Cape Poge light, W.; centre of Tuckanuck Island, S. W. ¾ S., distant nine and a half miles. *Cross Rip Light-ship.*

From the Cross Rip light-ship to go S. of the Hedge Fence.

W. by N. ¾ N., nine and five eighths miles, will bring you between the buoys of the Hedge Fence and Squash Meadow Shoals: then N. W. by W. ½ W., seven and one fourth miles, make Nobska Point light bear N. W. by W. ½ W., three fourths of a mile distant; the course through the Vineyard is then S. W. by W. ¾ W., fifteen miles. To go N. of the Hedge Fence, from the light-ship, N. W. by W. ¼ W., fifteen and a half miles, makes Nobska Point W. ¼ S., one mile and three fourths distant; the course through the Vineyard then is S. W. by W. ¾ W., sixteen and one fourth miles.

Bound E., to go between Great Point and the Great Round Shoal.

When up with Cross Rip light-vessel, steer E. by S., fourteen and a half miles, which carries you to the buoy on the N. E. point of the Great Rip; ten more on the same course puts you to the Eastward of McBlair Shoals.

Horseshoe. Running from the Horseshoe toward Holmes' Hole, observe the following directions, viz.: when to the Northward of the Horseshoe, in twelve fathoms water, one mile distant from the dry spots, at low water, steer S. W. for Holmes' Hole, three and a half leagues distant. If bound to the Northward of the Hedge Fence, between that and the L'Hommedieu Shoal, get the point on which the windmill stands, which is E. of Wood's Hole, to bear W. by N., and run for it till within half a mile; then W. S. W. will carry you through the Vineyard Sound, leaving Tarpaulin Cove and Cutterhunk lights on your starboard hand, and Gay Head light on your port hand. You will not see Cutterhunk light till four leagues to the Westward of Tarpaulin Cove light, when it will open on the starboard hand; when it bears N. E. by E., distant three and a half miles, you may run W. for Point Judith light (if bound up the sound), ten leagues distant.

Distances from the Cross Rip Light-Boat.

Nantucket Great Point light	12½	miles.
N. end of Tuckanuck Shoal	3	"
Tuckanuck Island	9	"
Cape Poge light	7½	"
East Chop Holmes' Hole	12½	"
Point Gammon	9½	"
Main body of Horseshoe	1¼	"

Shovelful Shoal. SHOVELFUL SHOAL.—A light-boat is moored on the S W. end of Shovelful Shoal (near Monomoy Point), and shows a white light, forty feet above the sea. The bearings from the boat by compass are as follows:

Bearings.

Light-vessel on Pollock Rip bears	E. ½ S.
Buoy on Stone Horse bears	E.
Buoy on Shovelful Shoal bears	E. ½ N.
Monomoy Point light bears	N. E. 1¾ miles.
Red buoy on the N. W. part of the Handkerchief bears	N. by W.
Black buoy on S. point of the Handkerchief bears	S. W. ¾ W.

On the S. point of this shoal there is a black buoy, which bears from Monomoy light S. W. ¼ S., distant one mile and a half, in five feet water.

The shoal extends about one fourth of a mile S. of and around the light-ship, forming a crescent or bight, the Western extremity of which bears from the light-ship S. by E., one fourth of a mile distant, and has on it eighteen feet. Midway between the end of the shoal and the black buoy there are but fourteen feet, with a slue of nineteen feet close to the buoy.

There is a passage for vessels of eight feet at high water, between Monomoy Point and Shovelful Shoal, by bringing Monomoy light to bear S. W. by W. ¼ W., and running until one hundred and fifty fathoms from the outer beach; keep that distance sailing parallel to the beach, until you cross the Rip; on this course you pass a black buoy on your port hand. From the black buoy you steer N. W. ½ W. one mile, or until the light on Monomoy Point bears E., when you are in a fair way for such port as you wish to make.

Tides. TIDES.—The flood tide sets N. about three hours, then E. S. E., when the ebb commences at S., and continues till low water. At Sankaty Head the flood sets N. E., and the ebb S. W. In the middle (or E. N. E. channel) the flood sets N. E. by E. and ebb S. W. by W.

In Butler's Hole the ebb sets W., and the flood E. From Chatham to Pollock Rip the flood sets S. S. W., and ebb N. N. E.

From Butler's Hole to the Horseshoe, ebb W. S. W.; then W. by N. to Holmes' Hole.

At Pollock Rip, Great Rip, Little Round Shoal, Point Rip, and the Handkerchief, the tide rises and falls five to six feet. At the Horseshoe, Cross Rip, Hedge Fence, Squash Meadow and Middle Ground, the tide rises and falls three to four feet. S. ½ E. moon makes full sea in the sound.

POWDER HOLE ANCHORAGE.—From Pollock Rip light-ship steer W. ½ N. until up with the Shovelful light-ship, then N. by W. ½ W., and steer for it until past Monomoy Point, to which give a berth of fifty yards. Anchor close inside the point in two and a half fathoms, to avoid the flats to the Eastward. A safe anchorage in all winds except from Northward and Westward. *Powder Hole Anchorage.*

To enter N. channel, Nantucket Sound, proceed by directions for entering Powder Hole, till Monomoy light bears E., when a N. W. by W. course will clear the Northern end of the Handkerchief.

OLD STAGE HARBOR.—When Monomoy light bears S. E. ½ E. you steer N. by E., leaving a black buoy on your starboard hand; after you have passed the Northern one, or run five and a half miles, which will bring Chatham lights to bear E. by N., you can run in on that course and anchor in five fathoms. *Old Stage Harbor.*

There is an anchorage and breakwater off Bar's River, between Old Stage Harbor and Hyannis, and a bug-light forty feet high W. of Swan Pond River, which is E. by N. ½ N. five miles from Point Gammon. The breakwater off the mouth of Swan Pond River is three fourths of a mile from the light in a S. W. ¾ S. direction. *Light.*

The harbor light of Hyannis is on the main land inside the breakwater, and is a fixed light, thirty-six feet above the sea. It bears from Point Gammon N. 22° 30′ W., two and a fourth miles distant. *Hyannis Light.*

HYANNIS HARBOR.—Vessels coming from the Eastward, bound through the N. channel, must leave the Bishops and Clerks on the port hand, and not go nearer them than four fathoms. They are a dangerous ledge of rocks, bearing S. by E. from the point, two and one fourth miles distant, and are always dry. On them there is a revolving light, throwing a bright flash every thirty seconds, and should be seen in fair weather fourteen nautical miles. The tower is of gray cut granite, on the N. end of the shoal. The light is fifty-nine feet above the level of the sea, and bears, as above remarked, from Point Gammon S. by E., two and one fourth miles. *Hyannis Harbor.* *Light.*

When coming from the Eastward, bring Point Gammon to bear N. N. W. ¼ W. in four and one fourth fathoms water, and steer N. W. by W.; on which course you will have from three and a half fathoms to a fourth less than three. When the harbor light bears N. 1° W., run for it; which course will carry you two cables' length from the beacon on E. end of the breakwater. Give it a good berth toward the shore, and round to in two and a half or three fathoms water. On this course you leave Great Rock Spindle on your starboard hand.

When coming from the Westward, bring Point Gammon to bear E. by N., or E. by N. ½ N., run for it until the harbor light bears N. 1° W., and steer as above.

Vessels bound to the Westward from Hyannis, must run to the Southward until Point Gammon bears E. by N.; then steer W. by S., which course will carry them clear of the S. W. rock, which bears W. from the point, four miles distant, with several sunken rocks near it; said rocks are dry at low water. W. ½ S., four and a half miles distant from the point, is a dangerous ledge, called Collier's Ledge, three miles from the shore, on which is a granite beacon, with a ball and vane on top, bearing from the point W. There are three fathoms water round it, and the ledge is part dry at low water. In running this W. by S. course (the point bearing E. by N.), you will have from three to four fathoms, and sometimes five, as it is ridgy. If farther toward the Horseshoe, to the Southward, you will have four, five, six, seven, and ten, and close to the Horseshoe, thirteen fathoms. Northern part of the Horseshoe dry at low water. On the S. E. part of the Horseshoe is a black buoy placed in twenty-four feet water, bearing from Great Point light N. W. by W. nine and three fourths miles, and from Tuckanuck Island N. by E. ½ E. nine and three fourths leagues. Tide rises about five feet; high water at full and change, at twelve o'clock; and runs from two to three knots E. and W., in the following manner, viz.: it begins to run to the Westward at half-flood, and continues to half-ebb, then runs to the Eastward, the last three hours of ebb and first three of flood. *Beacon.*

CHATHAM TO HOLMES' HOLE, S. of the Great Round Shoal. Outside of the Rip, bring Chatham lights to bear N. N. W., then steer S. S. E., until Monomoy Point light bear N. W. by W. ½ W., seven miles; thence S. by W., five and a half miles, will make Great Point light bear W. ½ S., nine and one fourth miles. A W. by N. ¼ N. course, twenty miles, will carry you up with the Cross Rip light-ship. From the light-ship to Holmes' Hole the course is W. by N. ¾ N., thirteen and one fourth miles, when follow the direction on page 284, for entering the harbor. *Chatham to Holmes' Hole.*

Bound Eastward through the Vineyard—to go North of L'Hommedieu Shoal.

Nobska Point light bearing W. by S., two and one fourth miles distant, steer E. ½ S., eight and three fourths miles, leaving Succonasset light-ship on the port hand, which brings you up with the red buoy No. 6, of Eldridge Shoal, leaving it on the starboard hand, then E. by N. ¾ N., six and a half miles, brings you in the fairway for Hyannis.

If you mean to pass to the S. of the Bishop and Clerks, after you have passed Eldridge's Shoal Buoy, steer E. by N. ¾ N., two and one fourth miles (leaving the red buoy No. 8, on the N. point of the Horseshoe, on the starboard hand), thence E. ½ S., fourteen and one fourth miles (leaving the black spar-buoy No. 5 on the S. point of the Bishop and Clerks on the port hand), will bring you up with the red buoy No. 2, on the N. point of the Handkerchief.

To go North of Hedge Fence Shoal.

Nobska Point light bearing W. ¼ S., one mile and three fourths distant, steer S. E. by E. ¼ E. fifteen and half miles, which brings you up with the Cross Rip light-ship; if bound through Butler's Hole, steer E. ½ S., two and a half miles to the black buoy No. 5. on the S. E. point of the Horseshoe, then E. by N., nine and one fourth miles, to the black buoy No. 7, on the S. point of the Handkerchief, thence E. by N. ½ N., six and three fourths miles, to the Pollock Rip light-ship, thence to sea. The course, if bound outside of all, is E. by S. ½ S.; if between the Rips, is N. by E. ½ E.

To go South of the Hedge Fence Shoal.

Nobska Point light bearing N. W. by W. ½ W., three fourths of a mile distant, steer S. E. by E., seven and one fourth miles, which brings you midway between the red and black striped buoy, on the E. end of the Hedge Fence, and the red buoy No. 6, on the E. end of the Squash Meadow shoals: thence E. by S. ¾ S., nine and five eighths miles, will bring you up with the Cross Rip light-ship. To go to sea, follow the directions in the preceding paragraph.

Nobska Point Light. NOBSKA POINT LIGHT, four miles W. of Falmouth, is a fixed light, elevated eighty feet above the sea. It is intended to guide vessels passing over the shoals through the N. channel into the Vineyard Sound. The following bearings have been taken: W. Chop light-house, S. E. ½ S., distant three and a half miles; E. end of Middle Ground, S. E. ¾ S., two and three fourths miles; W. end of Middle Ground, S. W. by S., four miles; Gay Head light-house, S. W. ½ W., twelve and three fourths miles; Tarpaulin Cove light-house, W. S. W., six and a half miles; Falmouth Wharf, N. E. by E., three miles; Secconset Point, E. ¾ N., seven miles; N. W. part of the Hedge Fence, E. S. E., four miles; Cape Poge light-house, S. E. ¼ E., eleven miles; East Chop Holmes' Hole, S. E., five miles. Keeping the Nobska light open by the East Chop Holmes' Hole, will clear the old town flats.

L'Hommedieu Shoal. L'HOMMEDIEU SHOAL.—On the W. end of this shoal is a red spar-buoy, No. 2, in twenty-four feet water, bearing from the light on West Chop Holmes' Hole, E. ½ S., two and two thirds miles; from Nobska Point light, N. E. by N., three and three fourths miles; from Cape Poge light, N. W. by N., eight and one fourth miles. The shoal extends about four and a half miles in an E. and W. direction nearly, and on its Eastern extremity is placed a red spar-buoy, No. 4, in eighteen feet water, bearing from West Chop light, E. by N., six miles; from Nobska Point light, E. ¾ S., eight and one fourth miles; from Cape Poge light, N. ¼ W., six miles. The least water on this shoal is three feet at low water.

Hedge Fence Shoal. HEDGE FENCE SHOAL lies S. of L'Hommedieu Shoal, and extends W. N. W. and E. S. E., about three and a half miles. On its Western end is a spar-buoy, red and black horizontal stripes, and a similar one on its Eastern end, both in twenty-two feet water. The W. buoy bears from West Chop light N. E. by E. ½ E., two miles; from Cape Poge light, N. W. ½ W., seven and a fourth miles; the East buoy from West Chop light, N. E. by E. ¼ E., five miles; from Cape Poge light, N. N. W. ½ W., four miles. The middle of this shoal is nearly dry at low water.

Horseshoe Shoal. HORSESHOE SHOAL lies about three miles to the Eastward of the above shoals, and extends about seven and a half miles in a N. W. and S. E. direction, having a dry spot on its Northwestern extremity, and a second about one mile and a half S. by E. of the first. On the N. W. edge, near the above dry spot, is a red spar-buoy, No. 8, in four fathoms, low water. There is a black can-buoy, No. 3, in three and a half fathoms, on the Western edge of the Southern part of this shoal, and a black nun-buoy, No. 5, in four fathoms, on the Eastern edge; and about midway between the first and the red buoy, No. 8, on the N. W. part of the shoal, is a black nun-buoy, No. 1, in twenty-two feet water. The shoal is about one mile and a half wide, but the Northern part extends E. and W. about four miles. The red spar-buoy, No. 10, is placed on the Eastern part of the broken ground off the N. E. part of the Horseshoe.

EDWARD'S SHOAL lies about one mile S. ½ E. from Cross Rip light-ship, and extends N. and S. about three fourths of a mile. Least water, ten feet. *Edward's Shoal.*

LONG SHOAL.—S. W. ½ W. from Cross Rip light-ship is a red spar-buoy, No. 8. On the N. E. part of this shoal, in twelve feet at low water. The shoal extends about two and a half miles N. E. and S. W.; least water, two feet. The Southern part curves to the Eastward, extending in that direction about three fourths of a mile to within one eighth of a mile of the Western end of a shoal called the Shovelful, which lies E. and W. two miles, between Long Shoal and Tuckanuck Shoal. Least water on Shovelful, three feet. *Long Shoal.*

TUCKANUCK SHOAL, on the Northeastern part of which is a red spar-buoy, No. 12, bearing from Cross Rip light-vessel S. E. by E., five and a half miles distant, extends from its centre (which bears from Cross Rip light-ship S. by E. ¼ E., three and one fourth miles distant) S. by E., about two and one fourth miles, and E. ½ N. about four miles, and is about one mile and a half wide, having spots on its Northern, middle, and Southern parts, dry at low water. *Tuckanuck Shoal*

NANTUCKET, or GREAT POINT LIGHT, on the N. E. point of Nantucket Island, is a fixed light, and is elevated seventy feet above the level of the sea. *Nantucket, or Great Point Light.*

The buoy-boat bears N. 58° E., three and three fourths miles from Nantucket, or Great Point light. It is in four and a half fathoms water. High water 12h. 3m.; rise, three feet.

Nantucket beacons having been removed, the following directions should be observed for entering that harbor: When up with the bell-buoy, the Cliff Beacon lights (white and red, the bell-buoy and outer bar-buoy, red, No. 2) will be in range.

Then steer for the Cliff Beacon lights until the harbor beacon is in range with Brant Point light. When up with the inner black flat-buoy, steer S. E. by S. for Brant Point buoy until the harbor beacon light is shut in by a farm-house, then S. W. to the anchorage.

From Brant Point N. N. W. ½ W., three hundred and nine fathoms; then N. by W. ¼ W., one hundred fathoms; then N., three hundred and fifty fathoms over the bar.

NANTUCKET HARBOR.—If the light-house on the S. side of the harbor cannot be seen, bring the light on Brant Point (which lies on the starboard hand, and shows a fixed light) to bear S. by E. (none to the S. of that) and run for it till within about a cable's length; then run to the Eastward for the end point, and pass it as near as you please; or, *Nantucket Harbor.*

Bring the S. light and the light on Brant Point in one, at the outer buoy; and the S. light should be opened to the Westward on this range one handspike's length, to run the channel from the bar, or outer buoy, to the shoaling of the water off Brant Point. Variation in 1850, 9° 45′ W.

From the bar N. by W. ¾ W., eight and a half miles, will cross Tuckanuck Shoal, in seventeen or eighteen feet water.

BOUND OVER THE SHOALS OF NANTUCKET FROM THE BAR.—From Nantucket Bar, the course is about N. N. E. to the Great Point; if a W. tide, run for the light-house, pass the Great Point, keeping it about three and three fourths miles distant from you; an E. tide may set you on the Point Rip. Keep the town open, clear of Great Point, until you are three and three fourths miles to the N. N. E. of the point; then running E. will carry you to sea midway between McBlair's and the Great Round Shoal. When you are in twenty-five fathoms, you are without the Great Rip. If a light wind, and a Southerly tide, there is danger of being set by the tide too near the Rip; therefore, it is best, after being sure that you are without the Round Shoal, to run E. by N., or E. N. E., according to the wind and tide. When you have passed the Round Shoal, there is nothing to fear from N. to E. *Bound over the Shoals of Nantucket from the Bar.*

When the town is shut in by the high land of Pocomo or Squam, you are in danger of the N. end of the Bass Rip, also the N. end of the Great Rip.

At the full and change of the moon, it is full sea at Nantucket at 12h. 18m.; rise, springs, four feet, nine inches.

CAPE POGE LIGHT, on the N. E. point of Martha's Vineyard, is a fixed light, and fifty-five feet above the level of the sea. *Cape Poge Light.*

A fixed light is erected at the entrance of Edgarton Harbor, on a pier running from the W. side, one thousand feet from the beach. It is elevated thirty-seven feet above the level of the sea.

EDGARTOWN HARBOR.—Vessels bound Eastward, and wishing to enter Edgartown Harbor from the E. end of Squash Meadow Shoal, will bring the harbor light to bear S. W. by S., and Cape Poge light to bear S. E., then steer S. S. W. (they then will have six and six and a half fathoms water), until the harbor light bears W., then steer W. by S., and pass the light about a cable's length to the right hand, which course will carry them up to the wharves. *Edgartown Harbor.*

Vessels bound Westward, and wishing to enter Edgartown Harbor, after passing near Cape Poge, in four and five fathoms water, bring the harbor light to bear S. W. by S.,

and steer S. S. W. until the harbor light bears W., then steer W. by S., and pass the light about a cable's length, leaving it on the starboard hand, which course will carry them up to the wharves.

If vessels wish to anchor in the outer harbor, they will follow the above directions until the harbor light bears W. by S., and Cape Poge light bears N. E. ½ E., when they may anchor in four and a half and five fathoms water, and very good holding ground. High water 12h. 17m., rises two feet.

Holmes' Hole Light. HOLMES' HOLE LIGHT is a fixed light, sixty feet above the sea, on the West Chop of Holmes' Hole.

Holmes' Hole. HOLMES' HOLE.—Entering this harbor from the Westward, East Chop well open with West Chop light-house, clears you of the middle ground. Give the West Chop a berth of half a mile, until you are past the buoy off Low Point. The chart will then be the best guide. You can beat in with perfect safety, the shores being bold and clear. Ships may anchor in three and a half fathoms, mud, West Chop light just open with woods on Low Point. Small vessels may anchor farther in, and immediately off the town. *High Water.* High water, full and change, 11h. 48m. Spring tides rise two feet.

In leaving Holmes' Hole to pass over the Shoals, keep the West Chop open to the Northward of the East Chop, until you have passed Squash Meadow Shoal, on the N. W. end of which is a red can buoy, placed in twenty-two feet water, bearing from Cape Poge light N. W., four and one fourth miles; from West Chop light, S. E. by E. ¼ E. three and a half miles; and from the red and black buoy on the S. E. part of Hedge Fence, S. S. E. ¼ E., two miles. Shoalest water five feet. The buoy lies about two miles from the East Chop, must be left on the starboard hand, when your course will be E. by S., in ten or twelve fathoms water, which course you must continue till you pass Cape Poge light. If it should be tide of flood, you may steer E. by S. ½ S., as the tide of flood sets very strong to the Northward, between Cape Poge and Tuckanuck Island, and the tide of ebb to the Southward, so that you must govern your course by the tide. In clear weather you may see Nantucket light-house eighteen miles, which you must bring to bear E. by S. ½ S., which course you are to steer, passing it at the distance of one league, when you must bring it to bear W. and steer E., taking care to make this course good, which will carry you over the shoals in ship-channel; the ground is very uneven, and you will have from four to eight fathoms water.

When you have passed over the shoals, you will have from ten to fourteen fathoms water, and then, by steering N., you will make Cape Cod light-house (which contains a fixed light), distant eighteen leagues.

The shoals of Nantucket, between Great and Monomoy points, have been surveyed by Lieut. C. R. P. Rogers, of the U. S. Coast Survey, with great fidelity. The passage between the Great and Little Round shoals was found to be full of narrow sand-ridges lying parallel to one another, and having a N. N. W. and S. S. E. direction, with spots of eight feet.

Bearings. The bearing and distances from the light on Cape Poge, and depth of water of several most dangerous shoals in sight of Cape Poge light-house, and bearings of the East Chop of Holmes' Hole, are as follows:

East Chop	N. W. ¼ W. from said light 6 miles.				
Squash Meadow Shoal	N. W. 5 feet at low water,	5½	"		
Norton's Shoal, buoy on N. E. part	E. ½ S. 9 "	"	5½	"	
Muskeget Long Shoal	E. by S. ½ S., 6 feet at low water,			5¾	miles.
Tuckanuck Shoal	E. by S. ½ S.,	7	"	10½	"
South End Horseshoe, black buoy	E. ½ N.,	7	"	10	"
Dry Spots Horseshoe	N. E. ½ N.,			6½	"
Swash of Horseshoe	E. N. E.	12	"	6½	"
Tuckanuck Shoal from Nantucket light,	W. by N.,	7	"	9½	"
Horseshoe from do	N. W. by W.,			9½	"
Course from Nantucket light bound Westward,	W. by N. ½ N.			5¼	"
From Cape Poge to Skiff's Island	S. ¼ W., dry,			2¾	"
Hawes Shoal, the shoalest part	S. E. ½ E.,	6	"		

Muskeget Channel. MUSKEGET CHANNEL.—Coming from the Northward, pass half a mile to the Eastward of the buoy off Cape Poge. and bring Cape Poge light and Edgartown spire in range, then steer S. ½ W., leaving the buoy on the Hawes Shoal on the port hand and Tom's Shoal buoy on the starboard hand. Continue this course six miles, when you will suddenly deepen your water to about seventeen fathoms, with the buoy on Mutton Shoal ahead of you, about half a mile distant, and the church on Sampson's Hill bearing N. W. ¾ W., then steer S. W. ¾ S., between Mutton Shoal and Skiff Island,

r Shoal, leaving the former on your port hand. Continue this course one mile, until Vasque Bluff bears N. by W., when any course from S. to S. S. W., four miles, will lear all dangers. The shoal water off Cape Poge extends about two thirds of a mile; spar-buoy is placed on its Eastern edge.

Hawes Shoal has as little as four feet water. Its Northern end is about one mile and ree fourths E. by N. from Cape Poge; its Southern end, two and three fourths miles S. E. ¼ E.

Mutton Shoal has seven feet water on it. A spar-buoy is placed on its Western edge, wo miles S. S. E. ½ E. from Wasque Bluff.

Skiff Island or Shoal is low, surrounded by shoals, bearing S. S. E. ½ E., one mile and fourth from Wasque Bluff.

Wasque Shoal extends S. W. from the bluff three and a half miles from the shore, and as seventeen feet water on it. Do not approach too near the shoals off Mnskeget Island. Muskeget Channel should not be attempted at night.

ANTUCKET AND NEW SOUTH SHOALS, &c.

SANKATY HEAD LIGHT is one hundred and fifty feet above the level of the sea. he tower is sixty-five feet high, painted with one red and two white rings, horizontally, e red being in the centre; it is a fixed light, varied by flashes, when seen at the disnce of twelve miles or less; beyond that it is a flashing light, with flashes of ten secds' duration at intervals of fifty seconds. It bears S. by E. nine miles from Long oint light, and from the centre of the New South Shoal, N. ½ W., nineteen and a half iles. *Sankaty Head Light.*

OLD SHOAL.*—This dangerous shoal, which lies in latitude 41° 4′ N., longitude 9° 51′ W., bears S. by E. from Sankaty Head light thirteen and a half miles. It is mposed of hard white sand, over which the sea breaks in the most tremendous manr, having on it in many parts only three feet water, and the tide meeting it obliquely, asses over it in different directions. The course of the tide is N. E. and S. W., beginng to run S. W. at ten o'clock on the day of full moon, and continues in that direction bout seven hours. It extends from E. to W. one mile, and is in breadth two cables' ngth. It often breaks in five fathoms, on the E. and W. of the shoal. The rip which tends from the Western end has about seven fathoms water on it. *Old Shoal.*

S. from the Old South Shoal, half a mile distant, the bottom is uneven, from three to ve fathoms. There is a rip puts off from the W. end of the shoal to the S. and W., nd sweeps round so that the S. end of the rip bears nearly S. from the shoal, on which sometimes breaks in seven or eight fathoms water, at the distance of five miles from the hoal; between the outer part of the rip and the shoal is uneven bottom and full of rips.

The tides run round the compass in twelve and a half hours, but the Southern tide as the greatest duration, and runs the strongest.

All who pass near the South Shoals should, for their own safety, pay particular atention to the tides, sometimes a current sweeping them over the bottom with a velocity great and even much greater, in some instances, than the vessel moves through the ater.

DAVIS' NEW SOUTH SHOAL was discovered and surveyed by Admiral Charles Davis, then on the U. S. Coast Survey. It has on it only eight feet in places, and ears from the middle of the Old Shoal from S. ½ W. to S. S. W. ¼ W., by compass, disnce six and one fourth miles. It is two and three tenths miles long from E. to W.; nd its greatest breadth, from N. to S., nine tenths of a mile. *Davis' New South Shoal.*

Between it and the Old Shoal there are from four to eighteen fathoms water; but to e N. and E. there are ridges of only twenty to twenty-four feet water, to the extent of bout three miles from the New Shoals. Deep water intervenes between these ridges, nd the soundings on the ridges are very irregular.

The tide rips show that two, and perhaps three lines of shoal ground are near each her in parallel directions. The latitude of the centre of the New Shoals is 40° 57′ 50″ , longitude 69° 51′ 40″ W., and bears from Sankaty Head, S. ½ E., nineteen and one ird miles.

The tides set regularly round the compass, the main body of the flood running to the stward and the ebb to the Westward, varying N. and S. of E. and W. *Tides.*

* This shoal, together with George's Bank, has been surveyed at the expense of E. M. Blunt, and blished on a large scale, by E. & G. W. BLUNT, 179 Water street, corner of Burling slip, w York.

But the flood begins to turn to the Southward, passing round to the W., and ebb to the Northward passing round to the E., about an hour and a half before the principal set and strength are attained.

Upon the shoals the tides always run across their line of direction, and are much more rapid, which makes an approach on the side to which the tide is setting very dangerous.

The tide is never still; at even slack water its velocity is seldom less than half a mile, and on the second quarter of the flood and ebb it sets at the rate of two knots.

Seven leagues to the Westward of the South Shoal, in twenty-five or thirty fathoms, you will have black mud of a shining smooth nature, when you will be in Tuckanuck Channel.

To the Westward of the South shoal of Nantucket, you have no shoals, rips, nor tides, to hurt you, until you come near the land; but clear sea, good navigation, and regular soundings. To the Eastward and Northward of the South Shoal you will have a rapid tide and numerous shoals.

Light-ship. There is a light vessel in seventeen fathoms water, about one mile to the S. of the Southern extremity of this shoal, in latitude about 40° 56′ 30″ N., longitude 69° 51′ 30″ W. She has two masts painted yellow, white mast heads, with open work at an elevation of sixty three feet. The whole of the vessel is red. Two lights are shown at an elevation of forty-four feet, and can be seen in good weather about twelve miles from an elevation of fifteen feet above the sea.

There is a bell which will be tolled in foggy weather.

Vessels bound to the Westward, after passing the light-vessel, may steer the following courses and distances:

For Tom Never's Head, N. 26° W	21 miles.
For Block Island light, W. N. W	78 "
For Light-vessel off Sandy Hook, W	180 "

being careful to use the log and lead frequently, particularly in thick weather.

Vessels bound to Boston Bay, or that vicinity, with moderate weather, may, after passing the light vessel, steer E. N. E., eighteen miles; this leaves the fishing Rip on the starboard hand, thence N. by W. ¼ W. thirty-eight miles, which brings them up with Chatham lights.

ochick Rip. POCHICK RIP lies off the S. E. part of Nantucket Island. It commences a few rods S. of Siasconset town, and then runs E. S. E. one mile, when you come to a corner on which are six feet at low water; between this corner and the island there are a few swashes from two and a half to three fathoms, through which vessels may pass. From the corner the rip runs S. one mile and a half, when you come to another swash, half a mile wide, with seven fathoms. W. S. W. one fourth of a mile from this channel is a very shoal spot, with six feet, which runs S. W. by W. one fourth of a mile, when you fall into a swash forty rods wide, Tom Never's Head bearing N. N. W., three miles distant. You then come to the E. end of the Old Man, which runs W. S. W. about four miles, on which are from nine to three fathoms; when over the Old Man, you will drop into seven fathoms, fine sand with black specks.

Between the Old Man, Tom Never's Head, and Pochick Rip, there is a very good roadstead or anchorage; and with the wind at N. W., N. N. E., E. S. E., and far as S. or S. S. W., preferable to any harbor in the Vineyard Sound for vessels bound to the Northward or Eastward, particularly in the winter season, provided your cables and anchors are good. Tom Never's Head bearing E. N. E. ½ N., the Southernmost land W. by N., you will have five fathoms, coarse sand; from which to the Old Man you will have five, six, six and a half, seven, eight, nine, ten, to fourteen fathoms, red sand, then half way between the two; from this you shoalen to thirteen, eleven, eight, seven, five, four, and three fathoms, fine sand with black specks.

Bass Rip. BASS RIP, on which there are from four to eighteen feet water, is four miles long, in a N. N. E. and S. S. W. direction, the N. E. point bears E 10° S. from Sankaty Head light, three miles distant. On it there is a white buoy-boat, with Bass Rip in red letters on each side. It has one mast, with red hoop-iron day-mark.

From Sankaty Head light, N. by the way of E., to the S., a sweep of nineteen miles, the ground is broken and full of dangerous shoals, from nine feet upward. Vessels of nine feet or over should not attempt to navigate within this extent without a pilot.

The following are from the U. S. Coast Survey:

1. A dangerous ridge near the New South Shoal, lying in a N. N. E. and S. S. W. direction, having on it four, five, and six fathoms, and deepening very rapidly outside to twenty and twenty-five fathoms, and inside to thirteen fathoms, on which the sea breaks in bad weather.

The following bearings are taken from the centre of this ridge: Centre of New South Shoal, W. by S., distant four miles; the middle of the Old South Shoal, N. ¾ W., distant six miles.

2. A shoal spot with sixteen feet of water on it in the channel-way to the Eastward of

Bass Rip, from which Sankaty Head bears W. N. W. ¾ W., distant four and half miles; and Great Point light N. W. ¼ N., distant ten and three fourths miles.

3. A shoal, having fourteen feet of water on it, to the Southward and Eastward of Great Point light, and N. of Bass Rip, from which Sankaty Head bears S. S. W. ½ W., distant four and a half miles; and Great Point light N. W. by W. ¼ W., distant five and three fourths miles.

Four shoals, having on them from nine to fifteen feet, bearing from Great Point light E. ½ S., from ten and seven tenths miles to nine and a half miles distant. From Sankaty Head light they bear N. E. ¾ E., from nine and six tenths miles to nine and nine tenths miles distant They are named McBlair's Shoals, from the discoverer.

These shoals can readily be discovered by the rip (or ripples) formed on them by the tides at all stages, except during slack water, when they can no longer be detected by this means; but in daylight they exhibit the usual discoloration of water.

Two small spots of eighteen feet water; one bears from Great Point light E. ½ S., nine and eight tenths miles distant; from Sankaty Head light, N. E. ½ E., nine and four tenths miles distant.

The other from Great Point light, E. ½ S., eleven and two tenths miles distant; from Sankaty Head light, N. E. ½ E., ten and a half miles distant.

GREAT RIP is thirteen miles long, and runs nearly N. ½ E. by S. ½ W. The Northern Point, of five fathoms, bears from Sankaty Head light E. by N. ½ N., distant ten and three fourths miles. On it there is a white buoy boat with Great Rip in black letters on each side; one mast topped with a cedar bush. *Great Rip.*

THE SOUTHERN POINT, of six fathoms, bears from Sankaty Head light S. E. ½ S., distant fifteen miles. *The Southern Point.*

THE ROSE AND CROWN.—The shoal ground on the North end of the rip, having as little as seven feet water, is four miles in extent. The N. end bears from Sankaty Head light E. ¼ N, ten and a half miles distant. *The Rose and Crown.*

The S. end of the Rose and Crown bears from Sankaty Head light E. S. E. ¼ E., distant ten and a half miles.

On the S. end there is a slue of four fathoms, and three fourths of a mile wide. Thence to the S. end of the Great Rip the ground is broken, having as little as four feet water.

DAVIS' BANK.—There is a channel of from seven to twenty fathoms between the Great and Fishing rips of twelve miles in width. In this channel, S. 44° E., eighteen and a half miles distant from Sankaty Head, is a spot of three and a half fathoms, on what is called Davis' Bank. This bank has an extent of thirteen and one fourth miles, in a N. 25° E. and S. 25° W. direction; and four and a half fathoms is the least water, except in the above place. *Davis' Bank.*

THE FISHING RIP, on which there are from four and one fourth to ten fathoms water, is fifteen miles in extent from its N. N. E. to the S. S. W. point. *Fishing Rip.*

THE N. N. E. point bears from Sankaty Head light S. E. by E. ¾ E., distant twenty-five miles; the centre of six fathoms bears S. E. ¾ E., distant thirty miles; the S. S. W. point, S. E. ¾ S., distant twenty-eight and a half miles.

ASIA RIP—PHELPS' BANK.—Near the position given by Captain Lott, of the Asia, is a small, well-defined rip, corresponding with his description, it being about a mile in length and one fourth of a mile in width, with eleven fathoms on the shoal. Half a mile to the Eastward of this lies the S. point of another shoal, which extends to the N. N. E. six and a half miles, with but ten and ten and a half fathoms of water upon it in several places. *Asia Rip.*

These shoals are distinctly marked by the rips on both the flood and ebb tides, but with deep and smooth water, between latitudes 40° 46′ N. and 40° 53′ N.—longitudes 69° 19′ W. and 69° 25′ W., and about twenty-three miles S. E. by E. from Davis' South Shoal light-vessel.

Around the coast of Nantucket and the shoals, you will have sandy bottom, and in moderate weather had better anchor than be driven about by the tide, which is very rapid. The course of the tides at and over Nantucket Shoals is nearly N. E. and S. W., and regular. The N. E. tide makes flood. S. S. E. moon makes high water. S. moon makes full sea at Nantucket Harbor. *Tides.*

S. S. E. and W. N. W. moon makes high water on the shoals. The tide of flood sets N. E. by E., and ebbs S. W. by W., from two to three knots an hour. It ebbs and flows about five or six feet.

BLOCK ISLAND CHANNEL, &c.—*Directions for those running for Block Island Channel, to the Southward of Martha's Vineyard, Vineyard Sound, Nantucket Island, and such as are bound into the Vineyard Sound, and intend going over the shoals to the Eastward.* *Block Island Channel.*

In approaching the S. end of Block Island (on the N. W. point of which there is a light-house, as after described) from the Southward the water shoals gradually.

When the island bears from N. W. to N. by W., the bottom is mud; this is commonly called Block Island Channel. This island, if you come from the Southward, appears round and high; and, if you approach it from the S. E., it appears like a saddle, being high at both ends, but highest to the Southward. Your course from the S. E. point of Block Island to Gay Head light-house is E. by N. thirty-four miles. The current in Block Island Channel is N. N. E. and S. S. W., two knots. If you are to the Southward of Martha's Vineyard, and can see No Man's Land, and intend going over the shoal to the Eastward, bring No Man's Land to bear W. and steer E. by S., eight leagues, which will bring you up with Nantucket Island, to which you must give a distance of two miles, until you have passed Micomic Reef, which extends one mile from the shore, has two fathoms water, and bears from the South Tower of Nantucket S. by W. When you get to the Eastward of this rip, you may nigh the shore to within one fourth of a mile, until up with Tom Never's Head, which lies one and three fourths of a mile to the Southward and Westward of a small village, called Siasconset, where you may anchor, if necessary, in four or five fathoms.

If you wish to continue through the channel, which lies between Nantucket Island and the Old Man, you may run within three cables' length of the shore, which will carry you over Pochick Rip, on which there are but two fathoms, and of course only fit for small vessels. When on this rip, haul to within one cable's length of the shore, and continue in five fathoms till up with Sankaty Head, which is the highest Eastern land of Nantucket. Bring Sankaty Head to bear S. W. when in five fathoms water, and run N. E. till you deepen to fifteen fathoms, when the Round Shoal buoy will bear N. W.; after which you shoal into seven and eight fathoms, fine ridges, which having passed, and come into ten fathoms, a N. course will carry you to the high land of Cape Cod, seventeen leagues distant.

If you wish to go between the Old Man and Pochick Rip, bring Tom Never's Head to bear N. W. by W., and run S. E. by E. till Sankaty Head bears N. N. W ½ W., where you will have nine fathoms water, when you will run direct for Sankaty Head, till in five fathoms, which will be close on board; then continue your course N. E., as before mentioned, for the Round Shoal. In running the S. E. by E. course, you go through a swash half a mile wide, having seven fathoms.

The above directions are only for vessels under ten feet.

When you pass the New South Shoal, bound to Boston Bay, to go to the Eastward of all the shoals and rips, steer N. E. by E. about seven leagues, when you will be up with the Fishing Rip. In running this N. E. by E. course, you will deepen to twenty fathoms, which is about midway of South Shoal and Fishing Rip. From the Fishing Rip, in seventeen or eighteen fathoms, steer N. N. W. for the high land of Cape Cod, eighteen leagues, on which is a light-house containing a fixed light.

Light Muskeget Channel. MUSKEGET CHANNEL.—S. of Nantucket, and between it and the Vineyard, and wishing to make a harbor, you may pass through the channel to the Westward of Nantucket Island, by bringing Cape Poge light-house to bear from N. to N. by W., and steering from N. to N. N. E., until up with the red buoy on Mutton Shoal, which you leave on the starboard hand, then N. E. by N. until abreast of Skiff's Island or Shoal, when a N. ½ E. course will carry, you clear to Cape Poge light, passing a red buoy on the S. W. part of Hawes Shoal on your starboard hand, and a black buoy on Tom's Shoal on your port hand.

Gay Head Light-house. GAY HEAD LIGHT-HOUSE stands on the S. W. end of Martha's Vineyard, on a remarkable promontory, called Gay Head; elevation of light above the sea, one hundred and ninety-one feet. It is a revolving Fresnel light of the first order showing a bright flash of the natural color every ten seconds. It should be seen about nineteen miles.

The cliff, which rises about one hundred and thirty-four feet above the water, is very conspicuous from the different colors of the earth, which have been exposed by the action of the elements.

Lights. Cape Poge light, at the N. E. point of the Vineyard, may be seen over the land from sea; it is a fixed light, to distinguish it from Gay Head; also Cuttyhunk light, at the N. W. part of Cuttyhunk Island, S. entrance of Buzzard Bay, which is also a fixed light. The Devil's Bridge, a rocky shoal, makes off about N. W. from the light, one mile and a half distant.

No Man's Land. Bearings and distances from the light: W. part of No Man's Land Island bears S. 80 W. from Gay Head, six and a half miles distant. The island is about three miles long and one broad. Old Man, S. by E. This is a ledge of rocks which lies two thirds of the distance from the Vineyard to No Man's Land, which has a passage on both sides that is but little used. Those who go through must keep near No Man's Land Island till the light bears N. You will have seven fathoms water in this passage. Sow and Pigs, N. W. by W., three and a half leagues. This is a ledge of rocks which is very dangerous. Beaver Tail, W. by N ½ N., distant twenty miles.

To enter the Vineyard Sound, bring Gay Head light to bear E. S. E., four miles distant, and steer N. E. by E. ½ E.

To enter Buzzard's Bay through Quick's Hole, bring Gay Head light to bear S. ½ W., and steer N. ½ E, to the entrance of Quick's Hole, which is six miles from Gay Head. Menemsha Bight, which lies on the N. side of Gay Head, affords a good anchorage two and a half to three miles E. from the light, with the wind from E. to S. W., but being much exposed to the influence of Northerly winds, it should be resorted to only in the summer, or at other times from necessity. From Gay Head light-house, the S. part of Cuttyhunk Island bears N. 45° W., distant seven and one fourth miles. *Quick's Hole.*

In running from Gay Head light into Vineyard Sound, if you wish to make a harbor on the N. side, bring Gay Head light to bear S. W., and run N. E. three leagues, which will carry you up with Tarpaulin Cove light, where you man anchor in from four to eighteen fathoms, on fine sand, the light bearing from W. by N. to S. W., affording safe anchorage with Northerly winds. You can anchor in this harbor in from four to two and a half fathoms, taking care to avoid two rocks, one on the N., the other on the S. side of the harbor. To avoid the Northern one of fourteen feet, do not bring the light to bear to the S. of S. S. W.; and to avoid the other, of thirteen feet, do not bring the light to bear S. of S. ½ W.

TARPAULIN COVE LIGHT lies on the port hand as you enter that harbor, and shows a fixed light, elevated eighty feet above the sea. It bears about N. E. by N. from Gay Head light. *Tarpaulin Cove Light.*

There is a shoal of thirteen feet, two and half miles S. by E. ½ E. from Tarpaulin Cove. One third of a mile N. E. from the light-house there is a rock of seven feet water, on which there is a black buoy. High water, full and change, 11h. 45m.

When coming from sea you may run for Gay Head light when it bears from N. N. E. to E. S. E., giving it a berth of two miles to clear the Devil's Bridge, which bears from the light N. W., one mile and a half distant. On its outer edge is a red buoy (No. 2). As measuring the distance in the night would be uncertain, you must keep your lead going, and if you should have seven or eight fathoms when the light bears S. E. by E. or S. E. haul up N. till you have ten or twelve fathoms; then with the flood steer N. E., and with ebb N. E. by E. three leagues; then E. N. E. will be the course of the sound, which will carry you to the Northward of the Middle Ground, which has a red and black buoy on the E. end, in sixteen feet water, bearing from Tarpaulin Cove light E. seven miles; from West Chop light, N. W. by W., half a mile; and from the E. buoy on Hedge Fence, W. ½ N., five and one fourth miles (shoalest water on Middle Ground two feet), when you will see the West Chop of Holmes' Hole light, which you may run for; keep one mile from shore till you open the East Chop one cable's length, and with a flood tide steer direct for it, and with ebb keep it one point open, till you open a windmill on the W. side of the harbor about one cable's length, then run up in the middle of the river till you come to four or three fathoms, where you may anchor in good ground. The usual mark for anchoring is the West Chop, bearing from N. N. W. to N. W. by N., but if you lie any time here, the best anchorage will be up the harbor, and close to the shore, mooring S. E. and N. W. in four or five fathoms water. In this harbor, which is about two miles deep, you will lie secure from all winds, except a Northerly one.

You must not keep farther than two miles from the West Chop, as there is a shoal called Hedge Fence, on the E. end of which is a red and black buoy, in sixteen feet water, bearing from West Chop E., five miles, and from the black buoy on Middle Ground E. ½ S., five and a half miles. The Hedge Fence lies about three and a half miles N. E. by N. from Holmes' Hole light, and extends W. N. W. and E. S. E., three and a half miles, is about half a mile broad, and has four feet water on the shoalest part. Between this shoal and Holmes' Hole there are from eight to twelve fathoms water.

If you make the Chop in the night, when it bears S. E. you are clear of the Middle Ground; steer for the E. side of it till you strike in four or three fathoms on the flat ground near the Chop, then steer S. E. by E., observing not to go nearer the land than three fathoms. If, in running S. E. by E., you fall into six or seven fathoms, haul up S. by W., and run into four or three fathoms, as before directed.

If bound into Vineyard Sound, with the wind at the Eastward, and you are near the S. side of Martha's Vineyard, to go between Squibnocket and the Old Man, run round Squibnocket in three and two thirds or four fathoms water, continuing N. N. W. along the beach till you come to Gay Head light, and if ebb-tide, anchor in five fathoms, the light bearing from N. to N. E.

Vessels entering the Vineyard Sound should leave Cuttyhunk light on the port hand, giving it a berth of three miles, to avoid the Sow and Pigs, the Western part of which bears S. 56° W. from the light, two and a half miles distant. Cuttyhunk is one of the Elizabeth Islands.

CUTTYHUNK LIGHT stands on the S. W. part of the island, at the entrance of Buzzard Bay. It is a fixed light, elevated forty-two feet above the sea. *Cuttyhunk Light.*

SOW AND PIGS.—The floating light off Sow and Pigs is moored in nine fathoms water, two miles from Cuttyhunk light-house. It shows two fixed lights, thirty-four and twenty-three feet above the sea. At the distance of half a mile Northeasterly from the *Sow and Pigs.*

light vessel there are three and a half fathoms water on the Sow and Pigs, between which point and the light-vessel there is a safe channel. One mile Northeasterly from the light-vessel the rocks are dry at half-ebb.

Gay Head	S. E. by E. ⅙ E.,	7.2 miles.
Cuttyhunk	N. E. by E. ½ E.,	2 "
Old Cock Rock	N. by W. ¾ W.	4.9 "
Dumpling Light	N. E. by N. ½ N.,	9 "

Bearings. The following are the bearings from Cuttyhunk light-house:

West part of Sow and Pigs, very dangerous	S. 56° W.,	2½ miles
Seaconset Point Rocks	N. 71° W.,	13 "
Old Cock Spindle, a rock N. side entrance Buzzard's Bay	N. 42½° W.,	5 "
Misbaum Point	N. 8° E.,	6½ "
Dumpling Rock light-house	N. 20° E.,	8½ "
Clark's Point light-house	N. 21° E.,	12½ "
West Point Penikes Island	N. 38° E.,	3 "
Gay Head light-house	S. 43° E.,	6 "

In entering Buzzard's Bay, bring Cuttyhunk light to bear E., three miles distant, and steer N. E. by N., which course will carry a vessel to good anchorage, at six and a half and seven fathoms, about one mile from the Dumpling Rock light, with it bearing from N. N. E. to N. E. by N. This is as far as a stranger should venture without a pilot, who can always be had on setting a signal.

Vineyard Sound. VINEYARD SOUND.—(Variation, in 1850, Western part, 9° W.; Eastern part, 9° 20' W.)—In coming into the sound in the night with a strong Northwesterly wind, haul to the Northward till you have smooth water under the Elizabeth Islands, where you may anchor in fourteen or ten fathoms. Should you have the wind to the Southward, it will be best to run down through the South Channel or Vineyard side. When Gay Head light bears S. S. E., your course is N. E. by E. ½ E., or E. N. E., observing not to come nearer the land than into seven fathoms water, till you are abreast of Lombard's Cove, in which is good anchorage, with Southerly or Easterly winds, and may be known by a high sand-bank, called Nikonikey Cliff, on the E. side of it; about midway the cove, opposite which you may come to in five or three fathoms, sandy bottom, where is the best anchoring. The Middle Ground lies about two miles without the cove, and has twelve feet water on it. If you intend running down for Holmes' Hole, your course, when opposite Nikonikey Point, is E. by N., keeping near the land to clear the Middle Ground, the E. end of which bears E. from Tarpaulin Cove light, six and a half miles distant. You may track the shore by the lead in from seven to four fathoms, till you come near the light; but come no nearer than three fathoms; and you may track the Chop around, the same as running down to the Northward of the Middle Ground, which bears from the West Chop light N. W. by W., half a mile, and from the E. end of the Hedge Fence, W. ½ N., five and a half miles. There is good anchoring along this shore, in six or four fathoms, after you are to the Eastward of Nikonikey Point, till you come near the West Chop. If you wish to make a harbor after entering the Vineyard Sound, bring Gay Head light to bear W., distant three miles, and run S. E. till you come into seven fathoms water, which will be on the E. side of the bay in Menemsha, near Clark's spring, where the best water may be had in great abundance, and lie in good anchorage, Gay Head light bearing W. by N. The tide flows, at change and full days of the moon, at nine o'clock, but in the channel between Elizabeth Islands and Martha's Vineyard, the flood runs till eleven o'clock. In this channel there is a Middle Ground, which is a narrow shoal of sand, the Eastern end of which bears N. W. by N. from the light. There are not more than three or four feet on the Eastern end. N. W. from Nikonikey Cliff are three and four fathoms across the ground. Opposite Lombard's Cove are twelve feet, and to the Westward of that are three or four fathoms. The shoal lies W. by S. and E. by N., is about four leagues in length, and has several swashes on it. When the East Chop of Holmes' Hole comes open of the West Chop, you are to the Eastward of the Middle Ground. Your course from Tarpaulin Cove light to Holmes' Hole light is E. ½ S., distant seven miles. In steering this course, you must have regard to the tide, as the ebb may set you too far to the Southward, and stand in for the harbor when you have opened the East Chop, as before directed. From Holmes' Hole light to Cape Poge light, the course is S. E., and the distance about seven and a half miles; in the channel between them there are twelve and eleven fathoms water. In going over the shoals through this channel, you must be careful to keep your lead going.

New Bedford hrough Quick's Hole. NEW BEDFORD THROUGH QUICK'S HOLE.—Bring Gay Head light-house, which contains a revolving light, to bear S. ½ W., and run N. ½ E. till you come to the passage through the islands which form Quick's Hole, when you must enter as near the middle as possible; but if you deviate, keep the starboard hand best on board, to avoid a spit or flat which runs off from the S. E. point of Nashawina, on the port hand, when

you will have from five to six fathoms, then haul square into the Hole, keeping the port hand best on board, following somewhat the bend of the shore. You will keep Gay Head light open about a ship's length by the S. E. point of Nashawina, until you are at least one mile North of the Hole, which will carry you to the Eastward of a hedge and rock that lie that distance from it, with only five to twelve feet water on them, to the Westward of which is a good channel, and five fathoms all round. Then steer N. ½ W. till you strike hard bottom in five fathoms water, on the S. E. corner of the Great Ledge, which is on the Western side of the channel, to New Bedford Harbor.

New Bedford Harbor. Round Hill Channel.

NEW BEDFORD HARBOR, ROUND HILL CHANNEL.—Running in from the Southward and Westward, bring Mishaum Point to bear W. by S. and White Rock a ship's length open to the Eastward of Dumpling light, and steer to the Northward, leaving the red can-buoy, No. 4, on Sand-spit, on the starboard hand, and the black spar-buoy, off Dumpling Rock, on the port hand, and keeping the rock more open as you advance, so as to pass one fourth of a mile E. of the light.

When the light bears W. by N. steer N. E. by N. two and a half miles, leaving the red and black buoys on Middle Ledge and Inez Rock on your port hand, until Clark's Point light is in range with Palmer's Island light, then steer for the beacon on Egg Island Flats, N. by E., nearly two miles, leaving the black buoy on Old Bartlemy on your port hand, until Palmer's Island light is in range with the tall chimney of the Wamsutta Factory; steer for them, passing the black buoys on Butler's Flats and Eleven-Feet Bank on your port, and the red buoys on Egg Island Flat and Fort Flat, on your starboard hand until up with the Southern end of Palmer's Island, then steer for the ends of the Fairhaven wharves, passing a red buoy on the N. end of Fort Flat on your starboard hand, until you are halfway between them and Palmer's Island light, then steer for the most Northern spire in New Bedford, and anchor near the town.

N. B.—Wamsutta Factory is a large stone building, with a very tall chimney on its Eastern side. It is in the Northern part of the town, and may be seen over Fairhaven bridge.

Channel between North and Great Ledges.

CHANNEL BETWEEN NORTH AND GREAT LEDGES.—Run in through this channel, keeping Palmer's Island light open a handspike's length to the Eastward of Clark's Point light, until you are one mile and a fourth from the latter, then steer for the beacon on Egg Island Flats, and proceed as above directed. On the above course you will pass a black buoy on the Eastern part of Great Ledge on your port hand, and a red buoy on Decatur's Rock on your starboard hand.

Eastern Channel.

EASTERN CHANNEL.—Bring the white beacon on Fort Point in range with the high dark spire in Fairhaven, and steer for them until Palmer's Island light and the tall chimney before-mentioned are in range, then steer as above directed. On the above course you will pass Hursell Rock and Packet Rock red buoys, and Henrietta Rock striped buoy on your starboard hand, and the black buoy on North Ledge on your port hand.

Palmer's Island Light.

PALMER'S ISLAND LIGHT is on the N. E. point of Palmer's Island. It is thirty-two feet high, and is a fixed light. With it in range with Clark's Point light, you clear all the ledges outside.

In the river, Palmer's Island light on with the most Northern mill chimney, leads out of the river clear of danger.

Other directions from Quick's Hole to New Bedford are, to make a N. course good, till you strike hard bottom, in five fathoms, on the Eastern side of the channel, and then haul up N. N. W., but the former directions the pilots consider safest.

In coming into New Bedford from the Westward, the Eastern channel is the safest for strangers. Give the Sow and Pigs a berth of one mile, and run N. E. by N. till Penikes Island bears S. E.; then E. N. E. till Gay Head light bears S., and then N. ½ W., as before directed.

A rock lies off N. W. from the N. end of Penikes Island, about one mile distant, on which there are only eight feet at low water. Between this and Wilke's Ledge (on which there is a buoy) is an open ship-channel, free from danger, and the courses may be varied as circumstances require. By those who are acquainted with the bay, the Western channel is most commonly used. Giving the Old Cock and Hen and Chickens a sufficient berth, the only danger to be avoided in approaching Mishaum Point is a rock which lies about five sixths of a mile S. W. from it, on which there are only six feet water. Having passed Mishaum Point, S. W. of which, three fourths of a mile distant, there is a ledge, on which there are not more than three fathoms at low water, and sometimes less, you may steer directly for the Dumpling Rock light, off the Round Hill, and which may be passed within two cables' length to the Eastward. Hence to Clark's Point light the course is N. N. E.; but to avoid the Middle Ledge (on which there is a red buoy), and which lies very near in a direct course from the outer Dumpling to the light, it is better to steer N. E. by N., about a mile, and then haul up N. N. E., when you will leave the ledge on your port hand. You may also carry in four fathoms to the Westward of the ledge, but the channel between it and the Lone Rock, which lies N. W. from it, is narrow.

Dumpling Rock Light-house. DUMPLING ROCK LIGHT is on one of the Dumpling Rocks in Buzzard's Bay, three and a half miles S. S. W. from Clark's Point light-house. The lantern is on a tower on the centre of a dwelling-house, showing a fixed light, forty-two feet above the sea. Buoy on Middle Ledge, N. E. ¾ N., one mile and a third; buoy on North Ledge, N. E. ½ E., two and a half miles; buoy on Great Ledge, E. ¾ S., one mile; Wood's Hole, E. by S. ¼ S., eleven miles; Quick's Hole, S. by E. ¾ E., six miles; buoy on Wilkes' Ledge, S. ½ E., one mile and two thirds; Penikes Island, S. by W., six miles; Cuttyhunk light-house, S. S. W. ¼ W., seven and a half miles; Sow and Pigs, S. S. W. ½ W., nine miles; Mishaum Point, S. W. by W., two miles; White Rock, N. ½ E., two thirds of a mile. *High Water.* High water, 7h. 59m., rise four feet.

When bound to sea, a S. W. by S. course from the Dumpling Rocks light will carry you just without the ledge S. of Mishaum Point, and in a fair channel-way between the Sow and Pigs and Hen and Chickens.

Hen and Chickens. HEN AND CHICKENS.—This is a dangerous reef, extending S. by E. one mile and a half from Gooseberry Neck. On the Old Cock, the outermost rock, there is a spindle and a bell-buoy off this ledge in seven fathoms water. The bell is elevated five feet above the water, and can be heard about one mile.

The following magnetic bearings are given:

Bearings.

Sow and Pigs light-vessel	S. by E.
Seaconset Point	W. ½ N.
Entrance to Westport Harbor	N. W. by N.
Old Cock Spindle	N. by W.

From Seaconset Rocks (giving them a berth of one mile) to the entrance of Buzzard's Bay, the course is E. ½ S. By this course made good, all the danger of the Hen and Chickens will be avoided. Soundings, generally, from nine to seven fathoms, and mostly hard bottom till it deepens to sixteen fathoms, sucky bottom, when Cuttyhunk Island light will be upward of a mile distant, and Clark's Point light will bear N. N. E., and you may run directly for the light till up with the Dumpling Rocks, to which a sufficient berth must be given. Or you may stand on this N. N. E. course till in seven fathoms, sucky bottom, which will be between Mishaum Point and the Round Hills, and come to anchor, or otherwise steer N. N. E. till Penikes Island bears S. E., and then E. N. E., for Quick's Hole channel, as before directed. It may be well to observe, that if, when you have stood in from Seaconset Point toward Cuttyhunk Island light, and the light on Clark's Point is not to be seen, but you can see Gay Head light, you may stand on your course E. ½ S. till you shut it in behind the W. end of Cuttyhunk, but must then immediately change your course to N. N. E. If neither light is to be seen, the soundings are the only dependence, and must be very carefully attended to. In light winds you must take care the flood-tide does not carry you into Buzzard's Bay, or on the Sow and Pigs.

To the S. E. of the Dumpling Rock light, one half to three fourths of a mile distant, is a sand-spit with only seven feet of water on it. Between this spit and the rocks there are five fathoms water. A red buoy, No. 4, is placed on the E. end of the spit.

The soundings across the Western entrance of Buzzard's Bay, between the Sow and Pigs and Hen and Chickens, and some distance within them, are very irregular, varying from five to ten and fifteen fathoms, and bottom generally hard.

A S. E. moon makes high water in the bay, and the average set of tide is one knot and a half.

Monument River. MONUMENT RIVER.—Sailing for Monument River, the best water is near to Wenaumet Neck, and from the point of Wing's Neck nearly up to the Southernmost of Tobey's Islands, are from four to six fathoms water. Nearly to the islands (Tobey's) commences a ridge of flats, extending over to the N. W. shore, on which are seven to nine feet water. Having passed over this ridge, you will have from fifteen to twenty-nine feet water, which depth you may carry until abreast of a large single rock, called the Old Cow, which lies about one fourth of a mile from the shore, when you will come up with a ridge of hard sand from one hundred to one hundred and twenty fathoms wide, on which are from seven to nine feet water, which, after passing, you will have from ten to twenty-two feet water, quite up to Back River Harbor. The soundings are reduced to low water. Rise from three to six feet. High water at full and change, at eight o'clock. Variation, in 1850, 9° 45′ W.

Wing's Neck Light. Wing's Neck light is a fixed light, on the keeper's house, forty-four feet high. Wing's Neck is the S. W. point of Wenaumet Neck.

Bird Island. Bird Island is on the Eastern side of Sippican Harbor, in the town of Rochester, about twelve miles E. N. E. from New Bedford light-house. It is small, not containing more than three acres of land, and is about five feet above the level of the sea. The light and dwelling-houses are built of stone, and are whitewashed. *Light.* The light is thirty-five feet high; it is a fixed light, varied with flashes with an interval of one minute and twenty seconds.

The bearings and distances from Bird Island light-house are as follows:

Bearings.

The S. point of West's Island.....S. W. ¼ S., 7 miles.
West's Island Ledge (black buoy).....S. W. ¾ S., 7½ miles.
The N. entrance of Quick's Hole.....S. W. by S., 14 miles.
Wood's Hole, due.....S., 9 miles.
The entrance of Monument River.....E. N. E. ½ N., 6 miles.

The bearings and distances of sundry places in the vicinity of Buzzard's Bay, are as follows:

From Wenaumet Neck to light-house on Bird Island....W. ½ S., 2½ miles.
Minister's Neck.....S. by E., ⅜ of a mile.
From Great Rocky Point to S. end of Mashne Island....S. W. ½ W., ⅝ of a mile.
Hog Island.....W. by S., ½ of a mile.
Wenaumet Neck.....S. W. 3 miles.
Tobey's Island.....S. S. W., ¾ of a mile.
Old Cow Rock.....S. by E. ½ E., ½ of a mile.
From the S. end of Mashne Island to Bird Island.....S. W. by W. ½ W., 4⅛ miles.
Wenaumet Neck.....S. W. ½ S., 2⅜ miles.

Wareham Harbor in Buzzard's Bay.

WAREHAM HARBOR, BUZZARD'S BAY.—This harbor can only be attempted in the daytime; and the only safety is to keep in between the buoys, which are seventeen in number, leaving, in going in, the red buoys on the starboard hand, and the black on the port.

Ned's Point Light-house.

NED'S POINT LIGHT-HOUSE is situated on the N. side of Buzzard's Bay, and on the E. side of Mattapoisett Harbor, about one mile S. E. from the village, and contains a fixed light. The tower is built of stone and whitewashed, standing forty-five feet from the sea, to the S. W., and two hundred and fifty feet from the sea to the S. E. The lantern is elevated forty-three feet.

The bearings and distances from Ned's Point light-house are as follows:

Bearings.

A red and black buoy on Nye's Ledge, S. S. E. ¼ S., distant 2¼ miles.
A black buoy on the S. E. point of Mattapoisett Ledges, S. ½ E., distant 1⅞ miles.
A buoy on Snow's Rock, S. 10° E., distant 3¼ miles.
A buoy on the N. W. port of Mattapoisett Ledge, S. 3½° W., distant 1½ miles.
Cormorant Rocks spindle, S. ¾ W., distant 3 miles.
Angelica Point, S. E. by E., distant 1½ miles.
Wood's Hole, S. E. ¾ E., distant 9 miles.

Mattapoisett.

MATTAPOISETT.—Before coming up with West Island, bring Bird Island light to bear N. E. by N., and run for it until Ned's Point light bears N. N. W. ½ W., when you may haul up N. W. ½ W. In running this course you will pass a red buoy on your port hand, which stands on the middle of Nye's Ledge; this ledge is about one fourth of a mile over, either way, and not more than eight feet of water on some parts of it. Continuing this course you will pass a black buoy on your port hand, which stands on the S. E. part of Mattapoisett Ledge, in two and a half fathoms of water. Continue the above course and you will pass two buoys, one on your starboard, and the other on your port hand; the latter stands on the E. side of the Sinking Ledge, in three fathoms of water; the former stands by the side of the Snow Rock, in two and a half fathoms of water. This rock has eight and a half feet water on it. Keep midway until you pass them, when you may steer N. W. by W., until Ned's Point light bears E., when you may anchor in three fathoms water, good bottom.

Beacons and Buoys arranged as they are passed by vessels going up Buzzard's Bay by the West Channel, and into New Bedford and Fairhaven Harbors, after passing the Sow and Pigs light-vessel.

NAME OF STATION.	COLOR.	NO.	DESCRIPTION.	BEARINGS FROM BEACON OR BUOY.	REMARKS.
Sow and Pigs	Red	2	Can-buoy with "Sow and Pigs" on head.	Gay Head light, S. E. by E. ½ E.; Ribbon Reef buoy, N. ½ E.	in 25 feet, low water.
Old Cock			Rock	Sow and Pigs light-boat, S. by E	3 feet above high water.
Ribbon Reef	Red & black hor. stripes.		Nun-buoy	Dumpling Rock light, N. N. E. ¾ E.	in 4 fathoms, low water.
Mishaum Ledge	Black	1	"	" " N. E. ¼ E.	in 18 feet, low water.
Wilkes' Ledge	Red & black hor. stripes.		Can-buoy	Sand-spit buoy, N	in 15 " "
Salter's Point Ledge	Black	3	Spar-buoy, 35 feet	" " E. by N.	in 15 " "
Sand Spit	Red	4	Can-buoy	Wilkes' Ledge buoy, S.	in 18 " "
Dumpling Rock	Black	5	Spar-buoy, 40 feet	Salter's P't Ledge buoy, S. W. by W. ½ W.	in 18 " "
Do. Light-house	White		House, with lantern on top, fixed light.	Clark's Point light, N. N. E.	On rock off Round Hill.
Great Ledge, W. part	Red	6	Spar-buoy, 40 feet	Wilkes' Ledge buoy, S. W. by S. ½ S.	in 18 feet, low water.
Middle Ledge	Red & black hor. stripes.		" 40 feet	Great Ledge Buoy, W. and S. by E. ¾ E.	in 18 " "
Inez Rock	Red & black hor. stripes.		" 35 feet	Lone Rock buoy, W. S. W. ¼ W.	in 15 " "
Commodore Decatur's Rock	Red	8	" 40 feet	Clark's Point Light, N. ½ W.; Great Ledge East part buoy, S. by W. ½ W.	in 18 " "
Clark's Point Light	White		Tower 48 feet high, fixed light		The W. side of the entrance to New Bedford Harbor.
Old Bartlemy	Black	7	Spar-buoy, 40 feet	Round Hill light, S. S. W. ¼ W	in 18 feet, low water.
Butler's Flat	Black	9	" 40 feet	Old Bartlemy buoy, S. S. W. ¼ W.	in 18 " "
Egg Island Flat	Red	10	" 30 feet	Eleven-Foot Bank, N. W. by W.	in 12 " "
Egg Island Beacon	White		Granite beacon, spindle and vane on top.	Range Beacon, N. by W. ½ W	Dry.
Eleven-foot Bank	Black	11	Spar-buoy, 30 feet	Fort Flat Buoy, N. by W.; Old Bartlemy buoy, S. ¼ E.	in 12 feet, low water.
Range Beacon	White		Wooden triangular pyramid, 40 ft. high.	Clark's Point light, S. ¾ W	On Fort Point.
Fort Flat, S. part	Red	12	Spar-buoy, 35 feet	End of Railroad wharf, N	in 15 feet, low water.
Palmer's Island, S. part	Black	13	" 35 feet	Egg Island Flat buoy, S. E. by S.	in 15 " "
Fort Flat, N. part	Red	14	" 35 feet	Dix's Ledge buoy, N. by E	in 15 " "
Palmer's Island, N. part	Black	15	" 35 feet	Fort Flat South buoy, S. by E. ¼ E.	in 15 " "

Palmer's Island light	White	....	Tower 28 feet high, fixed light	.....	West side of entrance to New Bedford Harbor.
Dix's Ledge	Red	16	Spar-buoy, 35 feet	Palmer's Island buoy, S. end S. by W. ¼ W.	in 15 feet, low water.
			Going up to New Bedford and Fairhaven between Packet Rock and North Ledge, after passing Great Ledge.		
Great Ledge, E. part	Black	1	Spar-buoy, 40 feet	Inez Rock buoy, N. by W. ¼ W	in 18 feet, low water.
North Ledge	Black	3	" 40 feet	Egg Island Beacon, N. ¼ E	in 18 " "
Henrietta Rock	Red & black hor. stripes	....	" 40 feet	Packet Rock buoy, N. ¾ E	in 20 " "
Packet Rock	Red	6	" 35 feet	Old Bartlemy buoy, N. W. ¾ W	in 15 " "
			For entering Eastern Channel from the Eastward, after passing West Island Ledge.		
West Island Ledge	Red	2	Spar-buoy, 40 feet	Clark's Point Light, N. W. ½ W	in 15 feet, low water.
Mosher's Ledge	Red	4	" 40 feet	West Island Ledge buoy, E. ¼ N.	in 18 " "
			For going into Dartmouth, after passing Middle Ledge Buoy.		
Hussey's Rock	Black	1	Spar-buoy, 35 feet	Sand-spit buoy, S. E. by E. ½ E	in 15 feet, low water.
Lone Rock	Red & black hor. stripes	....	" 40 feet	Inez Rock buoy, E. N. E. ¼ E	in 18 " "
Channel Rock	Red	4	" 30 feet	Hussey's Rock buoy, S. S. E. ¼ E	in 12 " "
Bent's Ledge	Red	2	" 40 feet	" " " S. W. ½ S	in 17 " "
			For going into Mattapoisett Harbor, after passing West Island Ledge Buoy.		
West Island, S. E. part	Black	1	Can-buoy	Dumpling Rock light, W. by S	in 20 feet, low water.
Cormorant Rocks		....	Rock	West Island S. E. Point buoy, S. W. by S.	Dry.
Nye's Ledge	Red & black hor. stripes	....	Spar-buoy, 35 feet	Mattapoisett Ledge buoy, N. W. by N	in 14 feet, low water.
Mattapoisett Ledge	Black	3	" 40 feet	Gallitin Rock buoy, N. by W. ¼ W	in 18 " "
Snow's Rock	Red	2	" 30 feet	Barstow's Rock buoy, N. by W. ½ W	in 15 " "
Barstow's Rock	Red	4	" 30 feet	Ned's Point buoy, N.	in 15 " "
Ned's Point	Red	6	" 30 feet	Landing Rock buoy, N. W. ½ W.	in 16 " "
Ned's Point Light	White	....	Tower 32 feet high, fixed light	.....	on N. side of Harbor.
Landing Rock	Red	8	Spar-buoy, 25 feet	End of Long Wharf, N. W. by W	in 12 feet, low water.
			West Channel for Mattapoisett, after passing West Island Ledge Buoy.		
Gravel Island (S. end)	Black	1	Spar-buoy, 20 feet	Cormorant Rock, S. S. W	in 6 feet, low water.
Lone Rock	Black	3	" 25 feet	Gallitin Rock buoy, S. E. ¾ E	in 12 " "
			To mark the Entrance to Sippican Harbor, after passing Bobel Ledge.		
Bobel Ledge	Black	1	Spar-buoy, 35 feet	Nye's Ledge buoy, S. W.; Angelica Point, S. W. by W. ¾ W	in 15 feet, low water.

Beacons and Buoys to mark the Entrance to Sippican Harbor, after passing Robel Ledge—continued.

NAME OF STATION.	COLOR.	NO.	DESCRIPTION.	BEARINGS FROM BEACON OR BUOY.	REMARKS.
Bird Island light	White	....	Tower 29 feet high, revolving light	Eastern side of entrance to the Harbor	
Charls Neck	Black	3	Spar-buoy, 40 feet	Bird Island light, S. E. ½ E.	in 18 feet, low water.
Black Rock	Black*	5	" 30 feet	Charles Neck buoy, S. by E. ½ E	in 12 " "
Ram Island Point	Red	2	" 25 feet	Black Rock buoy, S by W.	in 12 " "
	Going into Wareham Harbor, after passing Bird Island Light.				
Bird Island	Black	1	Spar-buoy, 40 feet	Wing's Cove buoy, N. ½ E	in 18 feet, low water.
Dry Ledge	Red	2	" 35 feet	Great Flats buoy, N. W. ½ N.	in 15 " "
Wing's Cove	Black	3	" 40 feet	Bird Island buoy, S. ½ W.	in 18 " "
Great Flats	Red	4	" 30 feet	Yantic Rock Flat buoy, N. N. W. ½ W	in 12 " "
Yantic River Flat	Black	5	" 30 feet	Middle Ledge S. W. buoy, N. E. by N.	in 14 " "
Middle Ledge, S. W. part	Red	6	" 30 feet	Cromesset Pt. Ledge S. W. buoy, N. E. by E.	in 12 " "
Cromesset Pt. Ledge, S.W. part	Black	7	" 30 feet	Middle Ledge N. E. buoy, E	in 12 " "
Middle Ledge, N. E. part	Red	8	" 30 feet	Cromesset Pt. Ledge S. W. buoy, W.	in 12 " "
Cromesset Pt. Ledge, N.E.part	Black	9	" 30 feet	" " " " S. W. by W.	in 12 " "
Fox Rocks	Black	11	" 30 feet	Middle Ledge S. W. buoy, S. ¾ W	in 12 " "
Swift's Flats, lower part	Black	13	" 25 feet	Swift's Flats upper buoy, N. E. ¼ N.	in 9 " "
" upper part	Black	15	" 25 feet	Quahaug Bar buoy, N. by W. ¼ W.	in 9 " "
Quahaug Bar	Red	10	" 25 feet	Cotuit Point, N. N. E. ½ E.	in 9 " "
Turn of the Channel	Black	17	" 20 feet	" " S. S. W.	in 6 " "
Lower Middle	Red	12	" 20 feet	Turn of Middle Channel buoy, S. by W	in 6 " "
Upper Middle	Red	14	" 20 feet	Lower Middle buoy, S. E. by E. ¼ E.	in 6 " "
Harlow's Rocks	Red	16	" 20 feet	Upper Middle buoy, S. by W.	in 4 "
	For entering Sandwich Harbor and Monument River, after passing Wing's Neck Light.				
Wing's Neck light	White	....	House with lantern on top, fixed light	On E. side of entrance to Sandwich	
Abial's Ledge	Black	1	Spar-buoy, 35 feet	Bird Island light, W. S. W.	in 15 feet, low water.
Wing's Flats	Black	3	" 35 feet	" " W. S. W.	in 10 " "
Tobey's Island	Red	2	" 30 feet	Fishing Rock buoy, N. E. by N.	in 8 " "
Cow Rock Ledge	Red	4	" 20 feet	Fishing Rock buoy, N.	in 6 " "
Fishing Rock	Red	6	" 20 feet	Tobey's Island buoy, S. W. by S.	in 6 " "

Mashne Flat	Black	5	"	20 feet	Cedar Tree Rock buoy, N. N. E. ¼ E	in 5 " "
Cedar Tree Rock	Red	8	"	20 feet	Hog Island Flat buoy, N. N. W. ½ W	in 6 " "
Hog Island Flat	Black	7	"	20 feet	Mashne Flat buoy	in 6 " "
Agawam Point Rock	Red	10	"	20 feet	Sial's Point buoy, N. W. by W. ¾ W	in 5 " "
Sial's Point	Black	9	"	20 feet	Turn of Channel buoy, N. ¼ W	in 5 " "
Turn of the Channel	Red	12	"	20 feet	Hog Island Flat buoy, S. S. E	in 5 " "
Middle Ground, lower part	Black	11	"	20 feet	Bourne's Flat buoy, S. by W	in 5 " "
Bourne's Flat	Red	14	"	20 feet	Upper Middle Ground buoy, N. N. E. ¼ E	in 5 " "
Middle Ground, upper part	Black	13	"	20 feet	Railroad Bridge draw, N. E. ¾ E	in 5 " "
Thorn Tree Rock	Red	16	"	22 feet	Butler's Flat buoy, N. by W. ¾ W	in 7 " "
Butler's Flat	Black	15	"	20 feet	Butler's Point, S. by W	in 5 " "
Quahaug Flat	Black	17	"	20 feet	Mordecai Flat buoy, N. N. E. ¼ E	in 5 " "
Mordecai Flat	Red	19	"	20 feet	End of Ryder's wharf, N. E. by E	in 5 " "
	Going into Phinney's Passage between Tobey's Island and Cow Rock Buoy.					
Phinney's Rock	Red & black hor. stripes		Spar-buoy	20 feet	Cow Rock buoy, N. by W	in 7 feet water.
	Going into Rock River, after Passing Cow Rock Buoy.					
Phinney's Ledge	Red	2	Spar-buoy	20 feet	Fishing Rock buoy, W. by N	in 5 feet water.
Phinney's Point	Red	4	"	20 feet	" " S. W. by W	in 5 " "
	Going into Quisset Harbor, after passing Woepecket Buoy, Wing's and Wood's Hole.					
West Point	Red	2	Spar-buoy	25 feet	Bird Island light, N. by W	in 11 feet, low water.
East Point	Black	1	"	20 feet	Wing's Neck light, N. by W	in 8 " "
	Going into Hog Island Harbor.					
Hamblin's Point	Red	2	Spar-buoy	35 feet	Bird Island light, N. by W	in 12 feet, low water
Great Marsh Ledge	Red	4	"	35 feet	" " N. by W ¾ W	in 12 " "
Hog Island Ledge	Red	6	"	35 feet	" " N. N. W	in 12 " "
Hog Island Point	Red	8	"	20 feet	Hog Island Ledge buoy, W. ¼ S	in 8 " "
	Going into Nye's Harbor and Catawamut Harbor.					
Smile Point Ledge	Black	1	Spar-buoy	35 feet	Nye's Point Ledge buoy, S. E	in 18 feet, low water.
Nye's Point Ledge	Red	3	"	25 feet	Bird Island light, N. W. by W. ¾ W	in 9 " "
Nye's Flats	Black	3	"	30 feet	End of wharf, S. E. by S	in 10 " "
	Going into Redbrook Harbor between Wing's Neck Light and Scraggy Neck.					
Catawmut Ledge, S. part	Red	2	Spar-buoy	35 feet	Bird Island light, N. W. by W. ¼ W	in 17 feet, low water.
Catawmut Ledge, N. part	Red	4	"	35 feet	" " W. N. W. ½ W	in 17 " "

Block Island. BLOCK ISLAND.—There is a light-house on the N. W. point of Block Island, having a fixed light, and elevated sixty-five feet above the level of the sea. From the point extending into the sea, in nearly a N. ¾ E. course, is a shoal, making it dangerous for a vessel to pass within two miles of the light. From the shoal, Montauk Point light-house bears S. W. by W. ½ W.; Point Judith light-house, N. E. by N.; Watch Hill light-house, W. N. W.; Clay Head (Block Island), S. E. by E.; rocks off Clay Head, S. E. by E. ½ E.; and the S. W. part of Block Island, S. S. W. ¾ W.

Light-house. Vessels coming from the Southward, or S. and Westward, will make Block Island. Give it a berth of about one mile, on the E. and W. sides. Point Judith light bears from this light N. E. ¾ N., distant eleven miles. After passing Point Judith, follow the directions for sailing into Newport.

From the S. E. part of Block Island to Beaver Tail light-house, the course is N. by E. ¾ E., and the distance nineteen miles; about midway between them there are twenty-four fathoms water. If you are on the W. side of Block Island, with the body of the island bearing E. N. E., in eight or ten fathoms water, your course to Point Judith light is N. E. by E. about six leagues. This point appears like a nag's head, and is pretty bold; between Block Island and the point there are from thirty to six fathoms water, except a small shoal ground, which, in thick weather, is often a good departure, say four to five fathoms, bearing about W. by S. from Point Judith light, distant three miles. From Point Judith, when not more than one half of a mile from the point to Newport Harbor, your course is N. W. ½ W., and the distance is six and three fourths miles. When in thirteen fathoms water, Point Judith light bearing W., or W. by N., the course to Newport Harbor is N. E. by N., and the distance to the light-house two leagues. The light-house, together with the Dumplings must be left on your port hand; it stands on the S. part of Conanicut Island. The point is called the Beaver's Tail, and is six and a half miles distant from Point Judith.

Point Judith Light-house. POINT JUDITH LIGHT is a revolving light, sixty-seven feet above the sea, to distinguish it from Beaver Tail light, which is a fixed light. The distance from the light-house to high-water mark is as follows: E. from the light-house to high-water mark sixteen rods; S. E., fourteen rods; S. eighteen rods; S. S. W., twenty-three rods, which is the extreme part of the point, to which a good berth should be given. Point Judith light may be distinguished from Watch Hill light by the light not wholly disappearing when within three leagues of it. *High Water.* High water 7h. 27m., rise three feet.

Newport Harbor. NEWPORT HARBOR.—Conanicut Island lies about three miles W. of Newport, the S. end of which (called the Beaver's Tail, on which the light-house stands) extends about as far S. as the S. end of Rhode Island. The light-house on Goat Island bears N. 60° E. from the light on Conanicut Island, and Kettle-bottom Rock N. E. The E. shore forms the W. part of Newport Harbor.

Beaver Tail Light. Beaver Tail light is a fixed light, ninety-six feet above the level of the sea. *High Water.* High water 7h. 44m.; rise four feet.

A sunken rock lies S. of Beaver Tail, called Newton Rock, on which it breaks if there be any sea, distant two hundred yards from the light-house. S. W. from the rock, in fifty feet water, is a black and red horizontal striped buoy, Beaver Tail light bearing N. E. The rock is about midway between the light and the buoy.

The following are the bearings by compass, from Beaver Tail light-house, of several places:

Whale Reef	W. ¾ S.
Brenton's Rock	E. S. E. ¼ E.
S. point of Rhode Island	E. ½ S.
Highest part of Castle Hill	E. N. E. ¼ E.
Brenton's Point	N. E. by E.
Fort on Goat Island	E. N. E. ½ N.
Southeasternmost Dumpling	N. E. ¾ E.
Kettle Bottom	N. E.
Newton's Rock	S., near 200 yards.
Anchoring place between Newport and Coaster's Harbor,	N. E. by E.

Brenton's Reef. BRENTON'S REEF.—Brenton's Reef extends about one mile S. by W. from the main shore, on the Eastern side of the entrance; some portions of it are bare at low tide, and may at all times be seen breaking, with a little motion of the sea. A buoy has been moored on the extreme S. W. part of the reef, in five and a half fathoms at low spring tides; it is a spar painted red, the top of which is twenty-five feet above the level of the sea, and may be seen in clear weather from three to four miles. Point Judith light house bears from the buoy S. W. by W., distant nine miles; Beaver Tail light-house W. by N. ½ N., two miles; Seaconset Rocks, E. by S., eight miles; Castle Hill, N. ½ E., one mile. The buoy may be neared on all sides within a cable's length, but vessels should not pass to the Northward of it, unless well acquainted.

There is a light-ship, showing two white lights, off Brenton's Reef, having the following bearings, viz.: Point Judith light-house, S. W. ½ W.; Beaver Tail light-house, N. W. ½ N., 1⅞ miles distant; Buoy on end of Brenton's Reef, N. E. by E.

Fort Dumpling N. by E., just open with Castle Hill Point; thirteen fathoms water at half-tide; bottom fine gray sand, and there is plenty of water between the light-ship and the buoy on the S. point of Brenton's Reef.

NEWPORT HARBOR.—Bound into Newport, it is only necessary to give the shores on either side a berth of one sixth of a mile, as they are very bold. If you draw over ten feet water, after passing Beaver Tail light, you steer N. E. ¾ E., about four miles, for the light on the N. point of Goat Island. You can pass within a short distance of the light, and anchor in the harbor to the N. of the Long wharf, in three and a half fathoms. *Newport Harbor.*

If you have ten feet or less, when past Fort Adams, steer S. E. by E. ¼ E., seven eighths of a mile for the black buoy off the S. point of Goat Island, which leave on the port hand. After passing the buoy, steer N. by E. ½ E., one fourth of a mile, until under the lee of Goat Island, and anchor in twelve feet water.

If night, after passing Fort Adams, steer for the light on Lime Rock, which is a fixed light, elevated thirty feet above mean low water, and when past Goat Island follow the above directions. *Lime Rock Light.*

ROCKS.—Seven hundred yards west of the Poorhouse on Coaster's Island there is a rock of fifteen and a half feet. Three hundred and twenty-five yards from the Rose Island spindle, nearly on the line with Goat Island light, there is a rock of fourteen and a half feet. *Rocks.*

GOAT ISLAND, opposite the town of Newport, about four miles N. E. from Beaver Tail light, has a light-house on the extreme N. end of the breakwater, containing a fixed light, thirty-three feet above the sea, from which the following bearings have been taken: Beaver Tail light-house, S. W., distant four miles; W. shore of Castle Hill, S. W. ¾ S., two and one third miles; S. Dumpling Rock, S. W. ¾ W. one mile and five eighths; Conanicut Ferry, W., two and one fourth miles; Gull Rock, N. N. W. *Goat Island Light.*

You must take care to avoid the rocks which lie off S. from Castle Hill, some of which are above water. Castle Hill is on the E. side of Rhode Island Harbor.

Coming from the Eastward, to clear Brenton's Reef, bring Beaver Tail light to bear W. N. W. and steer for it until you see Goat Island light from the deck, which will then bear N. E. ¾ E.; then run for Goat Island light until it bears E. (or continue your course until it bears E. S. E.), at the same time keeping Beaver Tail light bearing S. W. by W., and anchor in seven to nine fathoms, good bottom. In coming from the W., after passing Point Judith, on which is a revolving light, steer N. E. by N., until you draw up with Beaver Tail light, to which giving a berth, run for Goat Island light, and anchor as above indicated.

Vessels coming from the Westward through Long Island Sound, bound to Rhode Island, will leave Fisher's Island on the port hand, and steer E. by N., which will carry them to Point Judith, keeping in not less than ten fathoms water, giving the point a berth of one mile, when you will see Beaver Tail light bearing N. E. ¼ N., distant six miles; steer for it, leaving it on your port hand; you will then steer for Goat Island light, which bears from Beaver Tail light N. E., distant about four miles; keeping the latter bearing S. W. by W. until you bring Goat Island light to bear E. or E. S. E., and anchor in from seven to nine fathoms water, good holding ground.

Narragansett Bay lies between Conanicut Island and the main. Your course in is about N., taking care to avoid Whale Rock; you may pass in on either side, and anchor where you please. From Beaver Tail light to Gay Head, on Martha's Vineyard Island, the course is E. S. E., and the distance twenty-six miles.

If, after passing Point Judith, as before directed, you wish to proceed toward Providence through the West Passage, your course is N. E., leaving Beaver Tail light on your starboard hand, half a mile distant, when your course will be N. by W., one league and a half to Dutch Island light (erected on the S. part of the island, showing a fixed light, thirty-six feet above the sea), which you also leave on your starboard hand, one fourth of a mile distant, from which you steer N. ½ E., fourteen miles, for the light on Warwick Neck, leaving it on the port hand, one fourth of a mile, where you may anchor in three fathoms water, as it is not safe to proceed farther without a pilot, unless you choose to depend on finding the channel, which is marked out by stakes. 2

In entering this passage, keep nearest Conanicut Island, to avoid the Whale Rock, which bears from Beaver Tail light, S. 82° 30′ W., distant about three fourths of a mile, with some scattering rocks N. and S. of it.

Warwick Neck light-house is erected on the S. part of Warwick Neck, and shows a fixed light, fifty-four feet above the sea. A spar-buoy has been placed on Long Island Point, off Warwick Harbor, one mile and a half distant, which must be left on the port hand going into East Greenwich. *Light-house.*

BUOYS AND SPINDLES PLACED AT NEWPORT HARBOR.—A spindle on Saddle Rock S. E., Eastward of Rose Island, on either side of which there is a passage. *Buoys and Spindles.*

A spindle with a ball, on a rock at the S. end of the island, which you leave to the Northward.

One on red buoy, with a cross, on Dyer's Reef, S. part of Coaster's Harbor, which you leave on the starboard hand.

One on the ledge off the Bishop's Rock, called the Triangle Rock, on either side of which you may pass, giving the buoy a berth.

One black spar-buoy at the S. and one at the N. end of Gull Rocks, both of which you pass to the Eastward.

One spar-buoy on Providence Point, which is the N. end of Prudence Island, to the Northward of which is the main channel.

A spindle on the Halfway Rock, which you can pass on either side.

Prudence Island. PRUDENCE ISLAND.—A light on Sandy Point, E. side of Prudence Island, fixed, thirty feet above the sea. A black buoy on the S. E. part of the shoal off Hog Island, which you leave on the port hand going in.

A beacon on the N. end of Rhode Island, S. of Bristol Neck, which you leave on the starboard hand going in.

At Plumb Beach a can-buoy, painted black, in fourteen feet at low tide, bears from Dutch Island light E. by N. Vessels bound up the bay must leave it on the port hand, and give a berth of one cable's length, and continue the course up the bay.

Brig Ledge, off Wickford, a spar-buoy, painted black and white perpendicular stripes, in ten feet at low water.

Mana Rock, a spar-buoy, painted red. This buoy bears from Poplar Point light-house E. by N. ½ N. These buoys are in a range, and the channel varying, no proper directions can be given.

A dolphin has been placed on Long Bed in Providence River, in lieu of the buoy formerly placed there.

Newport to Providence. NEWPORT TO PROVIDENCE.—Pass Halfway Rock, which lies nearly in the middle of the river, about five and a half miles from Newport, and one mile and a half from the S. end of Prudence Island; there is a passage on both sides of the rock. W. from Prudence Island lies Hope Island, having a passage all round, giving the N. E. end a small berth.

From the Triangle Rock, which lies off the Bishop's Rocks, on which is a buoy that may be passed on either side, to Warwick Neck light, the course is N. ¾ W. After leaving Prudence Island three miles N. E. by N. from Warwick Neck light, you pass on your port hand a spar-buoy, which you may go very close to. E. ½ S. from Warwick Neck light lies a spar-buoy, which you leave on the starboard hand. When Warwick Neck light bears W., steer N. N. E for Nyatt Point light, leaving the spar-buoy on Providence Point on the starboard hand, and running so far to the Eastward as to bring Prudence Island to bear S., by which you leave the Middle Ground, which has a buoy on it, on the port hand. Nyatt Point light is on the starboard hand, and nine miles from Providence. Soon after passing the light you come up with a pyramid, directly opposite the village of Patuxent, the base of which is painted black, with a white top, erected on a ledge of rocks, which you may approach very near, leaving it on the port hand. At a short distance you come to another pyramid and a stake, both of which you leave on your port hand. One fourth of a mile from the last pyramid lie Lovett's Rocks, having a spar-buoy on them, which must be left on the starboard hand, going very near to them.

Bristol Harbor. BRISTOL HARBOR.—Bristol Harbor lies nine miles from Newport, and E. of Warwick light. At the mouth of the harbor lies Castle Island, having a pyramid on it, which is left on the starboard hand, and a red spar on the port, steering N. E. when entering.

Beaver Tail Light and through the Sound. BEAVER TAIL LIGHT AND THROUGH THE SOUND.—The first course from the light-house on Beaver Tail is S. W. ¼ S., distant two leagues, to Point Judith light, thence through the Race to Little Gull light the course is W. ¾ S., eleven leagues distant, leaving Watch Hill Point light, Stonington light, and Fisher's Island, on your starboard hand, and Little Gull light on your port hand.

Watch Hill light is situated on Watch Hill, at the entrance of Fisher's Island Sound. The light is fixed, sixty-two feet above mean low water.

Stonington Light-house. STONINGTON LIGHT-HOUSE shows a fixed light, fifty feet above the sea, on the extreme point of land at Stonington, and bears from Watch Hill Point light-house N. W. ¼ W., two and a half miles distant; from Napatree Point on which there is a red can-buoy (No. 4), N. N. W. ¼ W., one mile and a half; from Catumbsett Rock spindle N., two miles; Wicopesset, N. by E. ½ E. two miles; Latimer's Reef, on which there is a black and red striped buoy, N. E. ½ E., one mile and three fourths; Wamphasgett Shoal, on which there is a red spar-buoy (No. 6), E. by N. ½ N., three fourths of a mile; North Dumpling, E. by N. ¾ N., five and a half miles distant. *High Water.* High-water, 9 h. 5m.; rise, three feet.

STONINGTON HARBOR AND FISHER'S ISLAND.—If off the S. E. part of Fisher's Island, bring the highest steeple in Stonington open to the E. of Stonington light-house, and steer for it N. 6° E., until Watch Hill bears E., when you will have passed through Lord's Channel, which is between Wicopesset Ledge spindle and the spindle on Catumb Ledge; you will then be in twelve to thirteen fathoms water; then steer Northwesterly to clear the shoal water extending from Bartlett's Reef, until the light bears N. by E., when you may steer directly from the light-house, or the break-water, into the harbor. *Stonington Harbor and Fisher's Island. Light-house.*

If you should be to the Eastward of Watch Hill light, and bound through Fisher's Island Sound, give the light a berth of one third of a mile, and steer W. ½ N., until the light on Stonington Point ranges with the highest steeple in the town, when you may steer as above directed into Stonington; or, if bound W., you may continue your course on, passing the red and striped black buoy on Latimer's Reef on your starboard hand, about one hundred and fifty yards off, until Morgan's Point light bears N. N. E. ½ N., when a W. by S. course will lead you in a fair way for the sound. In steering the last course you will pass Eel Grass Shoal and Ram Island Reef on your starboard hand, and Seal Rocks, Young's Rock, East Middle, and West Clumps, on your port hand. If you wish to go through the Southern Channel, you will, on passing Latimer's Reef, continue on your W. ¾ N. course, until Stonington light bears E. N. E. and the house on Ram's Island N. W., when you may steer W. S. W., and pass directly between the N. and S. Dumplings, which are two small islets of moderate height. You are then clear of all danger, and in a fair way for the sound. The North Dumpling is bold to, except on the E. side. There is on it a fixed red light, seventy feet above the sea. *Light.*

YOUNG'S ROCK, which just washes, lies S. of Latimer's Reef, Blake's Rock, four feet water, a short distance E. of Latimer's Reef buoy. *Young's Rock.*

S. of the Dumplings and Flat Hummock, is the W. harbor of Fisher's Island, where there is good anchorage in two and a half fathoms, soft bottom, Flat Hummock bearing N., and the W. point of the harbor W. N. W. Ram Island Reef, on which is a spindle, lies S. of the house on Ram Island, distant about one third of a mile; there is a very narrow passage between of five fathoms water. Potter's Reef lies N. W. ½ W. from the North Dumpling, distant one mile. Between them there is a fine passage, free from all danger; this reef is of small extent, and has on it a spindle, which may be passed, with a berth, on either side. W. ½ S. from Ram Island, and halfway to Potter's Reef, is the extreme point of Groton Long Reef. This is a conspicuous point on Fisher's Island Sound, and may be known by being cleared of trees at the S. part; it is not to be approached from the S. nearer than half a mile. A shoal called the Horseshoe, on which there is a red spar-buoy No. 18, lies W. of Groton Long Point, and N. E. of Potter's Reef; vessels should avoid going much to the N. of Potter's Reef.

There is a good anchorage to the E. of Groton Long Point, in two and one fourth fathoms, soft bottom, one third of a mile off shore.

After you have passed Fisher's Island Sound, you should be careful to keep the South Dumpling in range with the N. E. point of Fisher's Island, to clear the Triangle Rocks, which form the S. point of Bartlett's Reef, on which there is a light-ship. When Two-tree Island bears N. by W., or Little Gull, S. by E., you are passed this danger, and may follow the general directions up the sound. *Light-ship.*

If bound through from the Westward, you should not go to the Southward of the South Dumpling, but should, after passing either between the Dumplings, or N. of them, bring Morgan's Point light to bear N. N. E. ½ N., and steer E. ¾ S., until the Break-water bears N., when you may steer for the anchorage.

If you wish to pass through the sound, when Stonington light bears E. N. E., and the house on Ram Island N. W., steer E. ¾ S. for Watch Hill light, leaving Latimer's Reef on your port hand, and giving Napatree Point and Watch Hill Point a berth of one third of a mile, leaving Watch Hill Reef, on the E. end of which there is a spar-buoy, on your starboard hand. This buoy bears from Watch Hill light S. S. W. ½ W., distant about two thirds of a mile. A rock, with six feet water on it, lies S. from Watch Hill Point, distant about one eighth of a mile.

High water, 9h. 5m.; rise, three feet. *High Water.*

The Spindles on Ellis', Turner's, Watch Hill, and Latimer's Reef, having been carried away by the ice, the positions of the first three have been marked by spar-buoys. On Latimer's Reef is placed a can-buoy, painted red and black horizontal stripes. *Marks changed.*

Fisher's Island Sound is perfectly safe with the foregoing directions, and to be preferred if bound E. on the flood, or W. with an ebb-tide, to going through the race; but it should not be attempted without a leading wind, by strangers, and great attention should be paid to the lead.

The Eel-Grass Shoals lie between Ram Island and Stonington light, and extend in spots for some distance; the largest of these shoals lie S. of the White Rock, which is E. N. E. from Ram Island, halfway to the light-house on Stonington Point, and is always *Eel-Grass Shoals.*

conspicuous; but you are clear of them when Stonington light bears E. N. E. On the

Light-ship. is a light-vessel and a red spar-buoy, No. 10.

Spar-buoys. A spar-buoy painted black, is moored on the Middle Ground of the Harbor of Stonington, in twelve feet water at low tide, and Stonington light-house S. by W., one mil distant. Vessels bound into Stonington Harbor, of a larger draught than twelve feet must give the buoy a berth of one fourth of a mile on the starboard hand, and steer N. by E. for the light-house. E. end of Fisher's Island from the buoy S. W. by S. ½ S., distant two miles; Napatree Point S. E. by S., one mile

A spar-buoy, painted black, is moored upon Bartlett Reef, in nine feet water, Stonington light-house bearing N. by W. one fourth of a mile distant. Vessels bound to Pawcatuck River, must leave this buoy on the starboard hand.

Folly Rocks Spindle. At Folly Rocks (mouth of Pawcatuck River) is an iron spindle, with a keg upon the top. It bears from Stonington light-house E. by S.

Race Rock Buoy. Race Rock buoy is a spar, painted black with a red top, the top of which is fifteen feet above the level of the sea. It is moored in two and a half fathoms at low tides, and bears from the light-house on Watch Hill S. one fourth of a mile.

Watch Hill Reef Buoy. Watch Hill Reef buoy is a spar, painted black, moored E. from the reef about one cable's length, in twenty-one feet water at low tides, the top of which is elevated twenty feet above the level of the sea, and may be seen in clear weather three miles. This buoy bears from the Watch Hill light-house, S. by W. ¾ W., one mile and a fourth.

Napatree Point Buoy. Napatree Point buoy is a spar painted red, with a white top, which is elevated twelve feet above the sea, moored in twenty-one feet water, at low tides and bears from Watch Hill light-house W. by N., two and a half miles. Napatree Point bears from the buoy N. by E. ¾ E., one fourth of a mile. Watch Hill Reef buoy bears E. S. E., about two miles distant; depth of water between Race Rock buoy and Watch Hill Reef buoy six, five, and four fathoms, and three fathoms may be found within one cable's length of either buoy. Vessels from the Eastward which intend going through Fisher's Sound, should leave Race Rock buoy on the starboard hand, and Watch Hill Reef buoy on the port hand; after passing them follow the directions.

LONG ISLAND SOUND.—[Magnetic variation, in 1850, Western part, 6° W.; Eastern part, 8° 20′ W.]—Little Gull light is situated on Little Gull Island, at the entrance of Long Island Sound, through the Race. This light may be considered as the key to the sound. The lantern is elevated seventy-four feet above the level of the sea, and contains a fixed light. High water 9h. 38m.; rise, two feet nine inches.

Little Gull Light.

High Water.

You must be careful to avoid a reef which runs off from the W. of Fisher's Island, and W. S. W. toward Race Rock, on which is a spindle, distant half a mile from the point of the island, which you must leave on your starboard hand, and continue your course until the Little Gull is S. of you, if the tide should be flood, about one mile; if the tide should be ebb, you should, as soon as the Little Gull bears W. and New London light in range with the highest steeple in the town (N. 2° W.), steer Northwesterly until it is S. of you two miles, when you may steer W. for Faulkner's Island light, elevated ninety-eight feet above the level of the sea, which exhibits a fixed light, distant eight leagues, on which course you should be careful to avoid the Long Sand Shoal, off Cornfield Point, which extends E. and W. five miles. Off Cornfield Point there is a light-vessel to mark this shoal. She is sloop-rigged, and has a square cage-work day-mark, and is moored in seven and a half fathoms, sand bottom, Cornfield Point bearing N. and Faulkner's Island light S. E. by E. ¾ E. Should you make the above courses good, you will, when off Cornfield Point, be one mile and a half S. of the shoalest part. This shoal is very narrow, and as you approach it, you will shoalen your water from twelve to two fathoms very suddenly. You should in the night-time come no nearer to Faulkner's Island, when N. of you, than fourteen fathoms (three fourths of a mile distant), when you may steer S. W. by W. ¾ W., for Old Field Point light, eight leagues, which carries you to the S. of the Middle Ground, on the S. end of which there is a light-ship.

Faulkner's Island Light.

Cornfield Point Light-ship.

Middle Ground Light-ship.

Old Field Point Light. The light-house on Old Field Point shows a fixed light, elevated sixty-seven feet above the sea. It bears from Eaton's Neck light E., twelve and three fourths miles distant; from Stratford light, S. 9° W., ten and two thirds miles distant; from Black Rock light, S. ½ E., eleven miles distant; from New Haven light, S. W. ½ S., eighteen and three fourths miles distant.

You should come no nearer Old Field Point, than eight fathoms (distant half a mile) in the night; and when it bears S. of you, steer W. ¼ N., seventeen miles, which will take you to the N. of Lloyd's Neck, in thirteen fathoms water, leaving Norwalk light, which is fixed with a red flash, on your starboard hand, and Huntington light (on Eaton's Neck) on your port hand, whence you may steer S. 66° W., which will take you between the lights on Sands' Point and Execution Rocks, on the latter of which are two spar-buoys, red and black horizontal stripes, one on E. and one on W. end, both in eighteen feet water. Off Sands' Point is a black spar-buoy, No. 9, in twenty-one feet water. If, when up with Faulkner's Island, you should prefer going to the N. of the Middle

Execution Rocks Buoy.

Sands' Point Buoy.

Ground, steer W. ¼ S. for Stratford light, twenty miles, and giving it a berth of half a mile, in three and a half fathoms water, steer S. 66° W., for Sands Point light-house.

Eaton's Neck Light.

Eaton's Neck light-house, fronting from the E. round N. to the Southwest, is elevated one hundred and thirty-eight feet above the level of the sea, and shows a fixed light. It bears S. 5° 15′ E., from Norwalk light, distant five and nine tenths miles. A reef extends from the light N. N. E. half a mile, on which are a number of rocks. High water 11h. 1m.; rise nine feet two inches.

Vessels should not come nearer the shore than three fourths of a mile, when the light bears between W. and S. On the W. side the shore is sandy and pretty bold.

Sands' Point Light.

Sands' Point light-house is N. 42° 30′ E. from Throg's Point light, distant four and six tenths miles; it is sixty-three feet above the level of the sea, and is revolving, showing a flash once in thirty seconds. The rocks extend from the shore opposite the light N.W., one eighth of a mile. High water 11h. 12m.; rise eight feet seven inches.

Stratford Light.

Stratford light-house contains a revolving light fifty-three feet above the sea. The revolution is such as to exhibit the light once in seventy seconds. From it old Field Point light, on Long Island, bears S. 9° W.; New Haven light, N. 63° E., ten miles distant; Middle Ground, S. 5° W., five and a half miles distant; Black Rock light W. There is a fog-bell at this light-house.

In case of flood-tide and Southerly winds, when you come through the Race, your course should be W. ¾ S., until you come up with Old Field Point light, distant sixteen leagues, taking care to allow for the tide, which runs very strong, and flows on the full and change days of the moon until eleven o'clock. In coming up with Old Field Point light, you should not bring it to bear to the W. of W. by S. ½ S., on account of a shoal off Mount Misery; or if in the daytime, keep Crane Neck, which is a bluff, two miles to the W. of the light, open clear of the light, and pass the point in eight fathoms, as above directed.

If a ship could have a fair departure from the middle of the Race, and is compelled to run in a dark night, or in thick weather, the best course would be W., fifteen leagues, toward Stratford light, as it would afford the largest run on any one course, and if made good will carry you one mile and a half S. of Stratford Point light, in six fathoms water, and four miles to the N. of the Middle Ground; on this course you will leave Saybrook, Faulkner's Island, and New Haven lights on your starboard hand, Plumb Island light on your port hand, and will pass three miles S. of Faulkner's Island, in seventeen fathoms water. When up with Stratford light, and it bears N. one mile and a half distant, your course to Sands' Point light is W. S. W., eleven leagues. West of Stratford light, one mile and a half, is Point-no-Point, which is shoal for some distance from the shore, but you are clear of it when Black Rock light bears W. ¾ N.

Plumb Island Light.

Plumb Island light is a revolving light, sixty-three feet above the level of the sea, on the S. W. point of the island.

Faulkner's Island light is fixed, varied by flashes, ninety-eight feet above the sea.

Kimberly's Reef.

KIMBERLY'S REEF, on which there are thirteen feet water, bears E. ¼ N., from Faulkner's Island light, distant one mile and a fourth.

Should you wish to anchor under Faulkner's Island, there is good holding ground on the E. and W. side, in two and a half and three fathoms water; but the best place with the wind from the W., is close to the N. E. point of the island, the light-house bearing S. W. by S., in two and a half fathoms. N. from the island a narrow shoal puts off three fourths of a mile, and is bold to, but you are to the North of it, when the centre of Goose Island bears S. W. by W.; and when the light bears S. E. by E., you may run for it and anchor.

The passage inside of Faulkner's Island is perfectly safe, but you should not, in standing over toward the Connecticut shore, bring Hammonesset Point to the S. of E. This point may be known by having two small bluffs at the extremity, and it bears E. N. E. ½ E. from Faulkner's Island, distant five and a half miles. When standing to the S. toward Goose Island, you should be careful of the shoal extending to the N. of it, and you are just clear of it when Faulkner's Island light bears E. S. E. and Goose Island S. by W. in two and a half fathoms, rocky bottom; after you have passed Goose Island you should keep more to the Southward, to avoid Wheaton's and Brown's reefs, lying off the Thimble Islands, and Branford Reef, which is dry at very low tides; on this reef is a spindle bearing from Faulkner's Island light W. ¾ N., distant six and three fourths miles, and from New Haven light, S. E. by E. ¾ E., distant four and three fourths miles. To the N. of Branford Reef there is a good passage, but it should not be attempted by strangers without a favorable opportunity; but in case you should be compelled to navigate, you may, after passing Goose Island, bring the light-house to bear E. S. E., and steer W. N W. for the Outer Thimble, giving it a berth of thirty or forty yards, then steer W. ½ S., on which course, if made good, you will keep the outer rock of the Thimble in range with the large Hotel on Sachem's Head, astern of you. Vessels of any draught of water may go through this passage, and you will leave Wheaton's Reef, which is one fourth of a mile S. S. W. from the Outer Thimble, and Brown's Reef, on which there is a buoy on your

Wheaton's, Brown's and Branford Reefs.

Thimble Buoy. *Negro Head Buoy.*

port hand, and Thimble buoy to the W. of the Thimble, half a mile, and the buoy on the Negro Heads, on your starboard hand; this range takes you within one hundred yards of the Negro Head buoy, and about seven eighths of a mile N. of Branford Reef when you may steer W. by S. ½ S. for Stratford Point. Goose Island is W. S. W. from Faulkner's Island, one mile distant; it is shoal on the E. and N. sides, and a resting place for gulls, which are purposely left undisturbed, as their noise serves to give notice of approach to the island in thick weather.

Middle Ground.

S. ½ W. from Stratford light, distant five and a half miles, is the Middle Ground which bears from Eaton's Neck light E. by N. ⅜ N., fourteen and three fourths miles; from Black Rock light, S. E. ½ S., seven miles; and from Old Field Point light, N. by E. ¼ E. distant five miles. On this shoal are two feet water at low tide; on the S. side is a white spar-buoy, and on the N. side a black spar-buoy, both in nineteen feet water, bearing nearly N. by E. and S. by W. from each other, half a mile distant. You may go on either side of the shoal you please; on the N. are from three to eleven fathoms, and on the S. side from eight to twenty-four fathoms water; a mile either to the E. or W. of this shoal you will have twelve fathoms.

Stratford Point light-vessel.

Stratford Point light-vessel is on the S. end of the Middle Ground. It is straw colored, and shows two lights, at thirty-two and forty feet above the sea; Stratford Point light, N. ½ E.

A ledge lies off the N. E. point of Eaton's Neck, three fourths of a mile from the shore, but after the light bears S. E. the shore is bold to all the way up on the E. side of Huntington Bay, where you may anchor in Easterly winds.

Black Rock Light.

Black Rock light is on Fairweather Island, at the entrance of Black Rock Harbor. It is a fixed light, fifty-two feet above the sea. High water, 11h. 1m.; rise, nine feet one inch.

Cockenoe's Island. *Cows Reef.* *Captain's Islands.* *Light-house.*

In beating up sound, when Eaton's Neck light bears S. W. by S., you should not stand over to the N. shore nearer than to bring Norwalk light to bear W. by S. ½ S., on account of the reef which puts off from Cockenoe's Island, E. by S., one mile and a half and on which there is a buoy, red and black horizontal stripes. When Goose Island which is the first Island S. W. from Cockenoe's, is W. from you, you are S. of the reef. There is a passage for small vessels between these islands, but to the W. of Goose Island there is no passage, as the reefs extend to the buoy on Green Ledge, one mile and a fourth W. by S. ½ S. from Norwalk light. W. by S. from Norwalk light, two and three fourths miles distant, is Long Neck Point; there is good anchorage to the Eastward of it when the light bears E. from you, but when you are to the W. of Long Neck Point you should be careful of Smith's Reef, which lies S. W. one mile from it, and also of a reef called the Cows, which is S. W. by W. from Long Neck Point, two and three fourths miles, and S. from Shippan Point three fourths of a mile, on both which there are buoys, and they are bold to until you are close on the rocks. After you pass the Cows, the first point is Greenwich Point, which is bare of trees, and is the S. E. point of a neck of land running into the sound, the S. W. point of which is called Flat Rock Point, and covered with trees; the water off both these points is shoal. The Easternmost of the Captain's Islands lies S.W. by W. ¾ W. from Flat Neck Point, one mile and a fourth distant, between which is a fair passage; but in going in you must keep halfway between Flat Neck Point and the island, on account of the rocks extending N. E. from the island and S. E. from the point, and steer N., and when Flat Neck bears E. you may anchor. The passage between Captain's Islands and the main should not be attempted by a stranger. Captain's Islands are three in number, the largest of which is the Westernmost one, which has a light-house on its E. end, showing a fixed light, sixty-two feet above the sea, bearing from Norwalk light W. by S. ½ S., distant ten and one fourth miles; from Eaton's Neck light W. by N. ¼ N., ten and a half miles; and from Sands' Point light, N. E. ½ N., eight and a half miles. You may approach near these islands, but after you have passed them to the W., you should keep at least half a mile from the shore, on account of several rocks and reefs between those islands and Rye Point. High water 11h. 1m.; rise eight feet, two inches.

Lloyd's Neck Buoy. *Oyster Bay.* *Pulpit Rock.*

On the S. shore of the sound is Lloyd's Neck, the N. point of which is low and sandy, and E. from which is a reef on which is a buoy lying off the highest bluff, half a mile from the shore; the reef is very small, and has three fathoms close to it. To clear this reef and the Sandy Point, you should not bring Eaton's Neck light to the N. of E. ½ S. in passing it. To the W. of Lloyd's Neck is Oyster Bay, standing in toward which you should be careful of the shoal which puts off from the N. point of Hog Island, in a N. N. W. direction, nearly a mile; you are to the N. of it when Oak point is open of a hill on Matinicock Point (S. W. by W.) and Cooper's Bluff, which is the highest up the bay, is open clear of the E. point of Hog Island (S. S. E.), when you may steer S. E. for the Eastern side of the bay, to clear the Middle Ground, and make a harbor either in Cold Spring or Oyster Bay, keeping but a short distance from the shore.

One mile E. of Sands' Point light is the Pulpit, a large rock on the shore; when this rock is between S. S. W. and S. E. from you, you should not bring Sands' Point light to

near W. of S. W. on account of a reef of rocks off it; and in standing to the N., you should when the light is S. by E. from you, make but short tacks, on account of the Execution Rocks, which lie N. N. W., seven eighths of a mile from the light, and also on account of some scattering rocks, one eighth of a mile from the point. After you pass Sands' Point your course is S. W. ¼ S. until you pass City Island; on this course you leave Gangway and Success Rocks, on both of which are buoys, on the port hand. Gangway Rock has six feet water on it, on which there is a black buoy No. 23, and is the North-western point of the reefs off Barker's Point ⅝ of a mile distant, the point bearing S. S. E. Success Rock, bare at low water and on which there is a red buoy, is ⅙ of a mile E. S. E. from Gangway Rock buoy and S. W. from Sands' Point light-house about a mile; there is thirteen feet water between the buoys, but it is a passage a stranger should not attempt; after passing City Island you will pass the buoy off the Stepping Stones, a reef which extends from Elm Point (Great Neck), leaving it on the port hand. After passing that steer S. S. W. to Throg's Point, off which there is a buoy; after passing Throg's Point keep a moderate distance from the shore on either side; on the North shore you will pass Old Ferry Point, Clason Point and Hunt's Point, all of which have good water close to, on the South side you will pass Whitestone Point and College Point, off which there is a reef ⅜ of a mile from the point, on the outer end of which there is a buoy to be left on the port hand. From here you keep your course to the North Brother, passing it to the Northward.

Gangway and Success Rocks. For Buoys, see page 314.

Old Ferry Point. Reef.

The chart is your best guide unless you have a Hellgate pilot; no one should attempt to pilot a vessel of any considerable size from the North Brother to New York without having had experience, as a knowledge of the tides is indispensable to safety.

HUNTINGTON BAY has a fair entrance and good holding ground. There is good anchorage in Lloyd's Harbor, in two fathoms water, secure from all winds. To enter it, steer S. W. ½ S. from the light, when it bears N. E. ½ N., until the N. point of Lloyd's Harbor, which is a low sand-point, is W. from you, when you may steer directly into the harbor, leaving Sandy Point twenty yards on your starboard hand. High water, 11h. 0m.; rise, nine and a half feet.

Huntington Bay.

In going in or coming out of Lloyd's Harbor, you should be careful of the shoal water which is to the E. of Sandy Point, and on the W. side of Huntington Bay.

A fixed light of the natural color has been placed on the S. E. point of Lloyd's Neck. It is forty feet above the level of the sea.

Light.

EXECUTION ROCKS LIGHT is a fixed white light, fifty-four feet above the sea. It bears from Sands' Point light N. N. W., distant seven eighths of a mile; from Throg's Point light, N. E. by N., five miles.

Execution Rocks Light.

The rocks extend one mile in a N. N. E. and S. S. W. direction, and are one fourth of a mile wide in the broadest part, where the light-house is placed, near the middle of the reef.

There is a spar-buoy, with red and black horizontal stripes, on the N. E. point of the reef, in eighteen feet water, and a similar one on the S. W. part, in eighteen feet. High water, 11h. 12m.; rise, eight and a half feet.

Buoys.

MANHASSET OR COW BAY.—This is a good harbor for vessels not drawing over twelve feet water, to run in when West of Gangway Rock ½ of a mile, steer S. S. E. until up with Barker's Point, the Eastern side of the entrance; keep the same course, giving the shore a berth of one quarter of a mile, until up with Plum Beach one mile from Barker's Point, which is very bold. Here you can anchor.

Manhasset or Cow Bay.

THROG'S POINT.—At Throg's Point it is high water, full and change, at 10h. 0m.; rise, seven and a fifth feet.

Throg's Point.

HELLGATE.—It is high water, full and change, at 10h. 4m.

Hellgate.

HART ISLAND affords good anchorage either in Easterly or Westerly winds. To anchor on the E. side you may stand toward a barn which is in the bend toward the S. part of the island, and anchor in three fathoms, the trees bearing S. S. W., distant half a mile. Should you wish to anchor on the W. side between that and City Island, you may haul close round to the S. part of Hog Island, and anchor W. of the trees, in such water as you think proper.

Hart Island.

SHOALS IN THE SOUND.—We will now notice more particularly the shoals in Long Island Sound.

Shoals in the Sound.

Hatchet's Reef, to the E. of Connecticut River; it bears E. by S. from Saybrook light-house, and S. S. W. from Hatchet's Point, and is dangerous. Between this reef and the shore is Burrows' Rock, lying W. N. W. from it. Strangers should not approach the N. shore, on account of these reefs, the bar off Connecticut River, and the shoal off Cornfield Point.

Should you want a pilot to enter Connecticut River, by making a signal off the bar one will come on board. The bar extends one mile and one fourth from the shore.

Pilot.

To the S. W. of Horton's Point, which is on the Long Island side, and S. E. from Faulkner's light, the water is shoal for the distance of three miles, but thence the shore is bold until you come up with Roanoke Point, a distance of ten miles; at this

point you should not come nearer to the shore than two miles until you are W. of Wading River, on account of a shoal off the Friar's Head and Herod's Point; after passing Wading River, you may come within half a mile of the shore; till nearly up with Mount Misery, when you should not bring Old Field Point light to bear W. of W. by S. ½ S., on account of a shoal already described.

Light. On Horton's Point there is a fixed light, one hundred and ten feet above the sea.

The Friar's Head is a remarkable sand-hill to the E. of the Horse and Lion, which resembles the bald head of a friar, it being bare of trees on the top, and the soil white. The Horse and Lion are two small spots in the bank, bare of bushes, which some years ago resembled those animals.

Montauk Point Light. MONTAUK POINT LIGHT is on the E. end of Long Island, bearing W. by S. ½ S., from the S. W. point of Block Island, four leagues distant; from Montauk light-house to the W. point of Fisher's Island, N. W. by N. ½ N., thirteen and a half miles distant. The light is a first order fixed light, varied by a flash once in every two minutes, one hundred and seventy-two feet above the level of the sea.

Block Island to Gardner's Bay. BLOCK ISLAND TO GARDNER'S BAY.—Montauk Point, the Easternmost part of Long Island, is four leagues W. by S. ½ S. from the S. W. point of Block Island (on the N. W. point of which are two light-houses); between the island and the point there are sixteen and eighteen fathoms water. As you approach the point, you will quickly come into nine, seven, and five fathoms water. A flat runs off from the above point, on the outer part of which there are five fathoms water, rocky bottom, and S. by W. from the light, nine miles distant, lies Frisbie's Ledge, extending N. W. and S. E. four miles, with from eight to fifteen fathoms on it, hard, rocky bottom, and deep water very near.

Shoal. Between Montauk Point and Block Island there is a shoal with only four and a half fathoms on its shoalest part, on which the sea breaks in moderate gales from the Southward. It lies nearly halfway between the point of Montauk and the S. W. part of the island, W. by S. from the latter, and about E. ¾ N. from the light-house on Montauk, distant eight and a half miles. You suddenly shoal your water from thirteen to six fathoms on the N. W. side of the shoal, and, before you get a second cast of the lead, you are over the shoalest part, into seven, eight, ten and twelve, and then into fourteen fathoms. The rippling of the tide is very conspicuous when approaching the shoal in fine weather, and the sea breaks on it so in bad weather, that, even in small vessels, it is recommended to avoid coming near it, especially in Southerly or S. W. gales. You will suddenly shoal from thirteen to nine fathoms, and Montauk light bearing W. ¾ S., eight miles distant, you will have five and a half fathoms. The soundings from the shoal toward Montauk are six, nine, fourteen, thirteen, eleven, ten and nine fathoms. Toward the light-house, when it bears from W. to S. W. by W., the bottom is strong; toward the shoal the bottom is coarse sand, and a very strong tide. A shoal runs off from the N. side of Block Island two miles.

In rounding Montauk, come no nearer than nine fathoms, or keep the two bluffs, or high parts of the land (to the Westward of Montauk), open one of the other, until Willis' Point comes open of Montauk False Point. These marks will carry you clear of all the shoals, in three and a half and nine fathoms, and a N. by W. course will then carry you clear of the Shagawanock Reef, which lies N. W. ½ N., three and a half miles from Montauk light-house, and has six feet on its shoalest part, six fathoms on the N. E. and N. W. sides, three and four fathoms on the S. E. and S. W. sides, and three, four, and five fathoms between the shoal and Montauk False Point. The tide sets strong around Montauk Point; the flood N. E., and ebb to the contrary. At the Shagawanock the flood sets W. by S., and ebb to the contrary. The following bearings were taken when on the Shagawanock, in six feet:

Shagawanock Reef.

Tide.

1. Willis' Point in a line with the Westernmost point of Fort Pond Bay, or the bay closed by the points being brought in a line, S. W. by W. ½ W.
2. Montauk False Point S., about one mile and a half.
3. The White Cliff, or high sand-hills, on the W. end of Fisher's Island, called Mount Prospect, N. by W. ¾ W.
4. The Gull Islands N. W., and the bluff sand-cliff of Gardner's Island W. Montauk False Point is two miles N. W. from the light-house. Willis' Point is the Easternmost point of Fort Pond Bay.

In rounding Montauk in the night (when the land or light can be seen) with Westerly gales, you may anchor when the light-house bears S. W. by S., in eight or nine fathoms, coarse sand. Having brought Montauk to the Southward of W., the weather thick, if you cannot clearly ascertain the distance you are from the point, the lead must be your guide. Steer as high as W. N. W., until you have got into nine fathoms. Steer off again into thirteen, and, if you suddenly shoal from ten to six, steer off E. by N. until you are in eleven or twelve, which suddenly deepens (as a bank of not more than five and a half fathoms extends from the N. E. reef to the Shagawanock), and a good lead kept going will prevent you going too near these shoals, by steering off in twelve or thirteen fathoms, before you attempt to steer to the Westward, after having sounded in six or

seven fathoms. In the daytime, having rounded Montauk, and bound to Gardner's Bay, steer N. by W. until you clearly discover that Fort Pond Bay and the red cliff on the Western Point are open of Willis' Point; you may then steer W. by S. for the bluff point of Gardner's Island, and you will pass between the Shagawanock and Middle Ground, or Cerberus Shoal.

On the N. point of Gardner's Island there is a fixed light, twenty-nine feet above the sea. *Light-house.*

The Middle Ground (or Cerberus) is a rocky shoal, having from two and three fourths to five fathoms on the shoalest part; the N. and E. sides are steep, having ten and fifteen fathoms within half a cable's length of the shoalest part. It extends N. by E. and S. by W. three fourths of a mile. The S. and W. sides shoalen gradually from thirteen, ten, nine, eight, seven, to five fathoms, sandy bottom. It lies N. W. ½ N., seven and a half miles from Montauk light-house; E. S. E. ½ S., seven miles, from the Gull light; S. W. by S., nine and three fourths miles from the light-house on Watch Hill Point; five and a half miles S. by E. ½ E. from Mount Prospect, or the high sand-hills, on the W. end of Fisher's Island. The tide in general makes a great rippling over the shoalest part. To avoid these rocks in the daytime, observe a conspicuous hill, with a notch in its centre, at the back of New London, called Pole's Hill. This kept a ship's length open, either to the Eastward or Westward of Mount Prospect (or the sand-hills of Fisher's Island), will keep clear of the rocky shoal, in ten or fifteen fathoms to the Eastward, and in eight or nine fathoms to the Westward. The tide sets strong over the shoal. In calm or little winds, ships should anchor before any of the marks or bearings are too near. *Middle Ground, or Cerberus Shoal.*

Bound for New London, and having brought the Gull light W. by N., and the light on Watch Hill, N. E., steer so as as to open New London light-house of Fisher's Island: and when the spire of New London church is in one with a gap on Pole's Hill, steering with it in that direction will carry you between the Race Rock (on which is a spindle or beacon) and the Middle Race Rock, on which are seventeen feet at half flood, and lies about halfway from the Race beacon and the Gull light; or you may bring New London light-house a sail's breadth to the Eastward of the church spire, bearing N. 5° E., which will carry you to the Westward of the Middle Race Rock, or between that and the Gull light-house. You may then steer direct for New London light-house. *Race Rock Spindle.*

About three miles within Montauk Point, one mile and a half from the shore, lies a reef, bearing N. W. ½ N. from the point, on which there are six feet water, which is very dangerous. *Reef.*

S. by W., about nine miles from Montauk light, is a small fishing bank, having eight, ten, eleven, and fifteen fathoms on it, before mentioned.

In the offing, between Montauk and Block Island, it is high water at half past nine, full and change. *High Water*

Montauk False Point is about two miles W. N. W. from the true point. The Shagawanock, or Six-feet Rocky Shoal, lies N., one mile and a half from it, and has been previously described. Willis' Point is on the E. side of the entrance of Fort Pond Bay. This bay is very convenient for wooding and watering: the ground is clear and good, and you may anchor in any depth you please. In a large ship you may bring Willis' Point to bear N. E. and even N. E. by N., and then have in the middle about seven fathoms water. Near the shore, at the bottom of the bay, there is a pond of fresh water.

The N. E. part of Gardner's Island is ten miles W. N. W. ¼ W. from Montauk Point. With Westerly winds you may anchor off this part of the island, which is sandy; the marks for anchoring are the light-house of Plum Island N. W., and the S. part of Gardner's Island in sight, bearing S. by W. or S.; you will have twelve or ten fathoms water. The bottom is sand and mud.

The entrance of Gardner's Bay is formed by the N. end of Gardner's Island and the S. end of Plum Island. If you are bound through the sound toward New York, your passage from Gardner's Bay is between the W. end of Plum Island and Oysterpond, through which channel you will have from four to twenty fathoms water. When going into the bay, you may go within a cable's length of Gardner's Island, where you will have ten fathoms water. You should be careful not to go too near Gull Rock, which is a single black rock between Plum Island and Great Gull, and called "Old Silas," as there is a rocky spot one mile and a half from it, on which there are three fathoms at low water. *Gardner's Bay.* *Old Silas Rock.*

This shoal lies with the following marks and bearings, viz.: A house on Plum Island (standing about one third of the way between the middle and the N. E. end) on with the Northernmost of the two trees which appear beyond the house; the N. end of Plum Island to bear N. N. W., or N. by W. ½ W., and the Southernmost end of Plum Island on with the Northernmost point of Long Island. In order to avoid this rock, when going into or coming out of Gardner's Bay, you must be sure to keep the S. point of Plum Island open of the N. W. point of Long Island, while the house on Plum Island is on with the Northermost of the two trees, as before mentioned. There are several trees, but they appear when viewed at a distance, to be only two trees. This shoal is

Bedford Rock.

called by some the Bedford Rock. E. by N., one league from Plum Island, lies a dangerous reef, which extends to the Gull Islands, and the passage between is not fit to be attempted, as there are several rocks, some of which may be seen. In Gardner's Bay you may anchor in what depth of water you please, from five to eight fathoms.

On the S. W. of Gardner's Island there is very good riding. If you are to the Eastward of this island, with an Easterly wind, and wish to take shelter under the S. W. side, you must give the N. W. end of the island a large berth, as above directed, and as you open the W. side of the island, you may haul round the N. W. point, and anchor where you please. The soundings are regular.

Ships, in turning up into Gardner's Bay, and standing to the Southward, will observe a single conspicuous tree on the S. E. part of Plum Island, and tacking before it is brought to touch the S. end of the wood on Plum Island, will avoid the Superb's Reef, which lies E. by N. ¼ N. from the low point on Gardner's Island, one third of a mile distant. It then extends S. E. by E. about two thirds of a mile, and is about two hundred yards broad; three fathoms on the middle, six fathoms close to the N. W. end, four, four and a half, and five fathoms close to the S. E. end, five and six fathoms close to the E. side, lying parallel with the low point of the island. To avoid this shoal, the leading mark into Gardner's Bay is to keep Plum Gut a ship's breadth open. Stand to the Northward until Plum Gut is nearly closing on the N. E. bluff of Long Island, nearly touching the S. E. point of Plum Island, until New London light-house is brought to the N. and W. of Gull light-house, but tack before the points close, or stand into no less than seven fathoms water, otherwise you may shoot over on the Bedford Reef, which is a bed of rocks about thirty yards wide and four hundred long, lying S. E. and N. W., with sixteen or seventeen feet on its shoalest part. You may anchor in Gardner's Bay, in five or six fathoms. New London light-house kept a ship's breadth open to the Eastward of Plum Island, will run you up into the middle of the bay, into the deepest water, and out of the tide. Ships going through the Race, or going out of New London, in order to avoid the Middle Race Rock (which has only seventeen feet on it at half-flood, and lies about halfway from the Race beacon and the Gull light-house), having from thirty to thirty-two fathoms on the N. side, and from ten to thirty on its S. side, should observe the following marks: Going out of the roads, and to the Westward of the Rock, which is the best channel, bring the spire of New London church a sail's breadth open to the Westward of the light-house; keep this mark until a grove of trees standing on a high hill on Fisher's Island comes on with the E. side of Mount Prospect, or the white sand hills on the S. W. side of Fisher's Island N. 60° E., or the Gull light W. S. W. High water at the Gull 11h. 30m., full and change.

High Water.

To go to the Northward of this rock, and to the Southward of Race Rock beacon, bring New London church spire in one with the middle of the gap on Pole's Hill, at the back of New London, N. 8° W.; keep this mark until Watch Hill light-house comes a little open of the S. side of Fisher's Island, N. 70° E., and when the Gull light-house is in one with the middle of Great Gull Island, S. 73° W., you are then to the Eastward of the Rock. Coming up the sound through the Race, bring Watch Hill light-house just open of the S. side of Fisher's Island, until the South Dumpling comes open to the Northward of the N. part of Fisher's Island or until New London light-house bears N.; you are then to the Westward of Race Rock, and may steer for the light-house of New London, and anchor in the roads, with Montauk light-house S. E. by S., then just open of the W. point of Fisher's Island, Gull light-house S. W. by S., and New London light-house N. by W. and the Gap and spire of the church in one. You will have twelve fathoms, stiff clay bottom.

Going to the Westward through the Race, and to the Southward of the Race Rock, steer for the Gull light-house, keeping it to the Northward of W. until New London light-house bears N. ½ E., then steer for it, leaving the Gull light-house half a mile on the port hand.

Tide.

The first half-flood sets N. W., the last half about W. N. W., and the ebb E. S. E.

The above is to be observed in case the weather should be thick, and New London church spire not to be seen, or when Gull light-house bears S. by W. you may then steer N. N. E. for the roads, making allowance for tides, which are very strong in the Race. Floods run to the Westward till 9h. 38m., full and change days of the moon; but in New London roads, only 9h. 30m. It rises two and three fourths feet, spring tides. The flood sets through the roads, first half flood, W. N. W., last half, W. S. W. Ebb, first quarter sets S. S. E., the last three quarters, S. E., for the S. W. point of Fisher's Island.

Vessels bound Eastward through the Race, in the night, when abreast of Gull Island light, with the tide of flood, and a leading wind, should steer E. by S., or E. S. E., until Gull Island light bears S. by W.; preserve that bearing until you see Stonington light over the low land of Fisher's Island; they are then clear of Race Point and Race Rock.

Tides.

The spring tides in the Race, run about five knots per hour, neap tides about four knots. High water, full and change, at 9h. 38m. The first half flood sets N. W., the last half

about W. N. W.; consequently, upon steering E. by N. which is the Sound course, they have a strong tide upon the starboard bow, which forces them over to the Northward, and instead of making, as they suppose, an E. or E. by N. course, often carries them on Race Point, from which runs out far off a reef of rocks under water.

To go through Plum Gut to the Westward, give Pine Point, which is steep, a berth of two and a half cables' length, and steer so as to bring the N. bluff of Plum Island N. by W. ½ W. Keep it in that bearing until you have brought the poplar-tree clear of the E. end of Mr. Jerome's house, or until you have got Pine Point to the Southward of E., you will then observe a wood close inland of the high bluff of Long Island, which, when bearing W. ½ S., will be in one with the rocky point, which is the next point to the Oysterpond Point. Steering with the wood and this point in one, will carry you clear of the reef, which lies off the N. bluff. *Pine Point.* *Oysterpond Point.*

In running through to the Eastward, keep the point over the middle of the wood before mentioned, until the poplar-tree is to the W. end of the house; then steer to the Southward, giving Pine Point a berth as before. Pine Point E. ½ S. will lead clear of the shoals coming to the Eastward.

The tide runs four or five knots in the Gut. The flood sets about N. N. W., and the ebb S. S. E. It is high water at 9h. 38m., full and change. *Tide.*

The following are marks for the Valiant or Middle Race Rock, which has only seventeen feet on it at half flood, and lies about halfway from the Race beacon and the Gull light-house:

1. New London light-house in one with two conspicuous trees, which stand on the declivity of a hill, at the back of New London, being remarkable for a gap on its summit, N. 4° W.
2. The W. side of the S. Dumpling just touching with the N. hill or point of Fisher's Island, N. 41° E.
3. The E. bluff Point of the Great Gull Island in one with the W. lower extremity of Little Gull island, or the Gull light-house, a small sail's breadth open to the Eastward of the E. part of Great Gull Island, S. 64° W.
4. The N. end of Long Island just shut in with the N. W. point of Plum Island, S. 76° W.; Gull light-house, S. 63° W., and Mount Prospect, or high white sand-hills, on Fisher's Island, N. 60° E.

The following are marks for the New Bedford Reef, a bed of rocks about thirty yards broad and four hundred yards long, lying S.E. and N. W. with sixteen or seventeen feet on its shoalest part:

1. The N. E. end of the Northernmost grove of trees on Plum Island, touching the S. declining end of the Southernmost of the white sand hills on Plum Island. These sand hills are the two next S. of the houses in the bay.
2. A large notch or gap in the wood on the main land, to the Westward of Black Point, a sail's breadth open to the Northward of a single black rock ("Old Silas," referred to on p. 307), which is between the S. end of Great Gull Island and the N. E. end of Plum Island, N. W. by N.

Appearance of the rock called Old Silas.

There is a bed of rocks, about forty yards square, lying three fourths of a mile off shore, on the S. E. side of Plum Island. At low water the shoalest part has not more than three feet on them, and about the size of a small boat's bottom. It may be seen at low water; three fathoms all round, not more than eight feet from the rock. Other parts of the reef, eight fathoms are around the shoal. This bed of rocks is indicated by the following marks: *Rocks.*

1. The largest house with two chimneys, in the bay, E. side of Plum Island, in one with a large stone or rock on a hill behind the house, N. 33° W.
2. The Gull light-house touching the E. end of Great Gull Island, N. 65° E.
3. The white sand-hills on the S. side of Fisher's Island or Mount Prospect, halfway open to the Westward of Great Gull Island, S. E. part of Plum Island, S. 74° W., and the N. E. end of the same, N. 45° E.

There is a shoal in the Middle of Plum Gut, which is a compound of rocks and large stones, with only sixteen feet on it, having sixteen and seventeen fathoms on the N. E. side, twenty on the N. W., and six and seven on the S. side. When on the shoal, the following marks were taken: *Shoal.*

1. A small poplar-tree in one with Mr. Jerome's door, N. N. E.
2. A single conspicuous tree in one with the E. side of a gray cliff on Gardner's Island, S. E. by E.
3. Oysterpond Point, W. ½ N.; the S. E. (or Pine) Point of Plum Island, E. by N., and the rocky point or bluff point of Plum Island, N. The passage through Plum Gut is to the Northward of this rock.

Light. There is another rock, with only twenty-four feet upon it, about four hundred yards from the rocky or bluff point on Plum Island, on the latter of which is a revolving light.

Marks for Anchoring. The marks for anchoring in Plum Island Roads are as follows:

Mount Prospect, or the white sand hills of Fisher's Island, touching the Gull light-house, N. E., and the N. E. part of Long Island in one with the S. E. end of Plum Island, bearing W., or the E. bluff points of Gardner's Island in one with the low beach which extends from the N. side of the island, S. 45° E. With these marks you will have from seven to eight fathoms, soft mud, and quite out of the tide, and not more than three fourths of a mile from the shore of Plum Island, where there is very convenient and good water.

From Block Island a reef of rocks lies one mile distant from the N. end of the island.

Southwest Ledge lies W. S. W. from Block Island, four miles distant, having four and a half fathoms at low water, and breaks with a heavy sea. As you open the passage between Montauk and Block Island, you will deepen your water, and have soft bottom on an E. N. E. course, and when abreast of Block Island, you will shoalen your water to sandy bottom; when past it, you will again deepen to soft bottom.

Bearings and Distances. The bearings and distances of sundry places from the light-house on Montauk Point are as follows:

The S. E. part of Block Island bears E. by N. from the light-house on Montauk Point, fifteen miles distant.

The Eastern rips lie E. N. E., five miles from the light-house. The Northern rips lie N. N. E., one mile and a fourth from the light-house. These rips, although they may appear to the mariner dangerous, may be crossed with any draught, in six, seven, eight, and nine fathoms.

Shagawanock Reef, on which a black buoy is placed, bears N. W. ½ N. from the light-house on Montauk Point, four miles distant; the reef ranges N. by W. and S. by E., about one half of a mile in length. There is a good channel-way between the reef and Long Island, about one mile and a half wide, in three, four, and five fathoms water.

Frisbie's Ledge is only a place of hard, rocky bottom before you approach the light-house to the Westward, from eight to fifteen fathoms, and nowise dangerous to any vessel. You may keep the shore on board from the highlands (say three fourths of a mile), and haul round Montauk.

The E. end of Fisher's Island bears N. ¼ W. from the light-house on Montauk Point, thirteen and a half miles.

Watch Hill Point light-house (which contains a repeating light), bears N. ¾ E. from Montauk Point light-house, distant fourteen miles. There is a reef extending from Fisher's Island to Watch Hill Point, leaving a passage between the E. end of the reef and Watch Hill Point, half a mile.

The Race Rock, where there is an iron spindle placed, bearing S. W. by W., half a mile from the W. point of Fisher's Island, bears from Montauk light-house N. W. by N. ¼ N., thirteen and one fourth miles distant.

The Gull Islands bear S. W. by W. from the Race Rock, four miles distant. The light-house standing on the West Chop of New London Harbor, bears N. by W. ¼ W., five miles from the spindle on the Race Rock. On the Little Gull Island there is a light-house containing a fixed light, bearing S. W. by W. from the W. point of Fisher's Island, four miles distant.

Bartlett's Reef, on which a buoy and light-vessel, with one mast and a bell, are placed, bears N. W. by W., four and a half miles distant from the Race Rock.

Little Goshen Reef, where a buoy is placed, bears E. N. E., one mile and three fourths distant from the buoy on Bartlett's Reef.

The light-house at New London Harbor bears from the buoy on Little Goshen Reef N. N. E. ½ E., about one mile and three fourths distant, and contains a fixed light.

The S. W. Ledge, New London Harbor, where a buoy, black and red horizontal stripes, is placed, bears N. by W. from the Race Rock, four and a half miles distant.

The East Chop of New London Harbor bears N. by E. ¼ E. from the S. W. ledge, three fourths of a mile distant.

The light-house bears from the buoy on S. W. ledge N. W. by N. one mile distant.

Race Rock. RACE ROCK, which has but four feet water on it at low tide, lies half a mile S. W. of Race Point, the S. W. extremity of Fisher's Island, and has on it an iron spindle, to the S. E. of which, in seventeen feet water, is a red and black striped spar-buoy.

Valiant Rock. VALIANT ROCK, lies about S. W. ½ W. from Race Rock, one mile and a half distant, and has on it seventeen feet at low water. On the S. W. part of the reef, in eighteen feet water, is a nun-buoy, with red and black horizontal stripes. This reef is about midway between Race Rock and Gull Island light.

GARDNER'S ISLAND TO SHELTER ISLAND.—If you fall in with Gardner's

Island, you must sail on the N. side of it, till you come up with a low sandy point at the W. end, which puts off two miles from the highland You may bring the island to bear E., and anchoring in seven or eight fathoms water, as soon as within the low sandy point. *Gardner's Island to Shelter Island.*

GARDNER'S ISLAND TO NEW LONDON.—Your course from the E. end of Gardner's Island to New London is N. ¼ E., about four leagues, to the buoy on Sarah's Ledge, W. side of the entrance to New London Harbor; then steer as directed below. This course will lead you through the Race, to the Eastward of Gull Island light and Westward of Valiant Rock, where you will have a strong tide. This place breaks when there is any wind, especially when it blows against the tide. Your soundings will sometimes be five fathoms, at others fifteen and twenty. *Gardner's Island to New London.*

NEW LONDON LIGHT-HOUSE stands at the entrance of the harbor, on the Western side. The lantern is elevated eighty-six feet above the level of the sea, contains a fixed light, and bears N. by E. from Little Gull light, about six and a half miles. High water 9h. 30m.; rise, two and a half feet. *New London Light-house. High Water.*

NEW LONDON.—If you are bound into New London, after getting to the Northward of the S. W. part of Fisher's Island, keep New London light bearing from N. N. W. to N. N. E., if you are beating to windward, but if the wind is fair bring the light to bear N. when at the distance of two leagues, and run directly for it; leave it on your port hand in running in; when in you may have good anchoring in four or five fathoms water, clayey bottom. In coming out of New London, and bound W., when you have left the harbor, bring the light to bear N. W. by W. ½ W., and steer S. S. W. ¼ S., two and one fourth miles, or until the light bears N. by E., when a W. by S. course will be in a fair way for the sound. *New London.*

NIANTIC HARBOR.—This is one of the best harbors of refuge on the Northern shore of Long Island Sound with the wind anything between W. and E. by the way of N. To run in when you are between Bartlett's Reef and Black Point, run for a small island called on the chart White Rock, which is bold. You can pass it on either side, and anchor to the N. of it in three and a half fathoms. *Niantic Harbor.*

The bottom between Bartlett's Reef and Black Point is soft, which is a good mark when running for an anchorage in thick weather, as off the reef and the point the bottom is hard. High water at 9h. 30m. *High Water*

In coming in or going out of New London (when opposite the Gull light) bring the Gull light to bear S. S. W. ¾ S., and New London light, N. N. E. ¾ E.; leave the light on your port hand in going into the harbor: keep well to the W. if it be winter, and the wind at N. E. and stormy—your course to break off a N. E. gale in good anchorage, is W. N. W. from the Gull, distance five miles, then haul up, if the wind be N. E., and steer W. N. W., until you get into ten fathoms of water, muddy bottom; anchor as soon as possible—you will be between Hatchet's Reef and Black Point; this is the best place you can ride in, if you have a N. E. gale and thick weather, and cannot get into New London. Saybrook light will then bear W. by N. or W. N. W.

SAYBROOK POINT LIGHT is a fixed light, at the mouth of the Connecticut River, on the W. chop of the entrance to that river; it stands on a low sandy point, projecting into the sea, having on its W. side a considerable tract of salt marsh, containing a pond of brackish water, which, by its evaporation, creates a mist, at times, which very much impedes the light, the weather at the same time clear off shore. Height of the light from the sea eighty feet. *Saybrook Point Light.*

Saybrook is not a good harbor to enter, but if you must attempt it, bring the light-house to bear N. N. W., and steer for it until within one mile; then steer N. E. till the light bears N. W. by W., and then run for it until within half a mile distant, from which a N. N. W. course will carry a vessel up the river to good anchorage near the town.

When bound up sound, and off Saybrook light, in clear weather, give it a berth of three or four miles; your sound course then is W. S. W. ½ W., fifty miles distant, which will carry you up with Eaton's Neck light, leaving Stratford Shoal on the starboard hand. This shoal, which has a white spar-buoy on the S., and a black spar-buoy on the N., between which you cannot go, bears N. from Satauket (Long Island) and S. 30 W. from Stratford Point light. The buoys are placed in nineteen feet water. In leaving Faulkner's Island light N. two miles, steer W. until you get into five or seven fathoms water, distance twenty miles to Stratford Point light, hard bottom, which leaves Stratford Shoal, that bears S. by W. from the light, on your port hand: then your course is W. S. W. to Matinicock Point.

FROM PLUM GUT TO GREENPORT.—Vessels bound to Greenport may make their course S. W., and run three miles, which will carry you up to Ben's Point on Low Beach. This beach is three and a half miles long, and covered with low cedar trees, which you leave on your starboard hand going up to Greenport. You will have from Plum Gut to Ben's Point, from four to four and a half fathoms water, and then your course is W. S. W., three and a half miles. In running this course, you will shoal *From Plum Gut to Greenport.*

your water to three fathoms, and if you get any less water, haul to the Southward, and as soon as you get three fathoms, keep your course, and run until you, by heaving your lead, from one heave will have from three to seven fathoms water. As soon as you get seven or eight fathoms water, your course is W. N. W. one mile, which will carry you to Hay Beach Point, on Shelter Island, which you leave on your port hand; haul close round Hay Beach Point, and your course is W. S. W., one mile and a half to Greenport; then you may come to anchor in a good harbor.

From Gardner's Point to Greenport. FROM GARDNER'S POINT TO GREENPORT the distance is twelve miles, and your course is W. by S. Running this course you will shoalen your water from six fathoms gradually to three fathoms, on Long Beach side; and then you follow the above directions to Greenport. Five fathoms of water can be carried into Greenport, but large vessels should take a pilot—one is always to be had.

Oysterpond Point and Plum Island. OYSTERPOND POINT AND PLUM ISLAND.—In sailing through this passage (called Plum Gut), you leave the light on the W. point of Plum Island, which is a revolving light, sixty-three feet above the sea, on your port hand, running boldly for the cliff on which it stands, then steering S. E. by E., till the Gull light bears N. E. by E., when you may shape your course for Point Judith, or wherever you may wish.

When passing the light you will open Gardner's Bay, which is the passage to Sag Harbor, and also leave Oysterpond Point on your starboard hand, off the Eastern part of which a shoal extends one third over toward the S. end of Plum Island.

Bearings. The bearings of the light-house have been taken from the following places: From Oysterpond Point and the reef, N. E. by E., distant from the outer point of the reef one mile; from Saybrook light, S. E. ½ S., distant eight miles; from Pine Point the S. W. part of Plum Island, N. W. by N., distant three fourths of a mile; from Cherry Harbor Point, the S. W. part of Gardner's Island, N. N. W., distant six miles; from Gardner's Point N. W., distant three and a half miles; from New London light, S. W. ¼ S., distant ten miles; from Cedar Island (at entrance of Sag Harbor) N. N. E. ¼ E., distant eight miles.

Light-house. On Cedar Island is a fixed light; it is elevated thirty-four feet above the sea, and as it may be seen from a high-decked vessel over the sandy point of Gardner's Island, vessels should not run for it when passing that point, until it bears S. of S. W.

The bearings and distances by compass, of this light from the following places, are, Ram Head, S. by E. ¼ E., distant two and a half miles; Plum Island light-house, S. S. W. ¼ W., eight miles; Gull Island light-house, S. W. ⅛ S., twelve miles; sandy point of Gardner's Island, S. W. ¼ W., seven and a half miles.

New Haven Light house. NEW HAVEN LIGHT-HOUSE is situated on Five-Mile Point, at the entrance of the harbor and lies on the starboard hand. The lantern is elevated ninety-three feet above the sea, and contains a fixed light. From New Haven light the following bearings and distances are taken, viz.: Stratford Point light, S. W. by W. ¾ W., ten and a half miles; Middle Ground, S. W., fourteen miles: buoy on Adams' Falls, S. W.; buoy on S. W. Ledge, S. 30° W.; beacon on Quick's Ledge, S. 1° E.; Faulkner's Island light, S. E. by E. ½ E., twelve miles.

Luddington Rock. LUDDINGTON ROCK, of twelve feet, bears one mile and five eighths from the light. On it there is a buoy with horizontal stripes.

If bound into New Haven, give Faulkner's Island a berth of one mile, and steer W. by N., until New Haven light is N. of you, in six and a half fathoms water, when you may steer N. W., giving the light a berth of a mile and one fourth, to avoid the S. W. ledge, on which there is a black buoy, bearing from the light house S. W. by S. ½ S., distant one mile, which you leave on your starboard hand, and when the light bears N. E. you may steer up N. E. by N. for the fort, to the N. of the Palisades, leaving the white buoy on Adams' Falls on your starboard hand. When you are nearly abreast of the fort, give it a berth of one fourth of a mile, and steer up N. ¾ W. for the end of the Long wharf, on which there is a small fixed red light, twenty-one feet above the sea, leaving Black Ledge, which is one fourth of a mile N. W. of the fort, on your starboard hand.

Light The buoy on Adams' Falls bears from the light S. W., half a mile, and from S. W. Ledge, N. by E. half a mile.

There is a spindle on Quick's Rock, which bears from the light S. ¾ E., distant three fourths of a mile. The buoy on Adams' Falls bears from the spindle N. W. distant half a mile. The buoy on S. W. Ledge bears from the spindle W. S. W., distant half a mile.

Vessels bound in from the Eastward may pass in between the buoy on S. W. Ledge and the spindle, as there are three fathoms water in this channel, keeping about midway between them, and leaving the white buoy on Adams' Falls twenty rods to the Eastward of them, and then steer for the end of the wharf. On this shore in channel-way, you will have three, four, and five fathoms water, muddy bottom. Bringing the light to bear S. E. you may anchor in Morris's Cove, near the E. shore, in two fathoms water, muddy bottom. Your course from this up the harbor, with a fair wind, is N. Give the Fort Rock, in running for the pier a small berth.

Vessels bound in from the Westward will leave both buoys on the starboard hand, and they may pass with safety within twenty rods of either of them. If beating in, your

soundings will be from two to three and four fathoms. Stand in no farther than two fathoms upon the W. shore, on which you will have hard bottom. In beating up, after getting in muddy bottom (which is channel soundings), it is best to keep the lead agoing often, on account of bordering on W. shore, where you will have hard bottom, and soon aground.—High water 11h. 10m.; rise, six feet, six inches. *High Water.*

BRIDGEPORT.—Vessels bound into Bridgeport must leave the outer buoy on the port hand and steer direct for the beacon on Well's Point, which bears N. E. from the outer beacon that is on the W. flat, about three hundred and fifty yards distant, leaving the buoy on Stony Bar on the starboard hand, and Allen's Flats on the port. *Bridgeport.*

Bridgeport light is a fixed light, twenty-three feet high. *Light.*

In the harbor of Bridgeport are three buoys placed as follows, viz.: one on Marchand Flats, which lies a mile S. ½ W. from the outer beacon; one on Stony Bar, bearing S. E. from the beacon, one hundred and fifty yards distant; one on Allen's Flats, being inside the harbor. High water, 11h. 11m.; rise, eight feet eight inches. *High Water.*

BLACK ROCK HARBOR.—Bring the light on Fairweather Island to bear N. ¾ W., and run for it if it should be in the daytime, when on that bearing it will range with a single hill, situated in the interior several miles, which you must keep in range until you are distant half a mile from the light-house; you will then have passed the spindle on the Cows, and will be in four fathoms water, when you may steer N. N. W. until the light bears E. by S., leaving a rock S. by W. from the light, on which is a buoy, on your starboard hand, when you may anchor. In steering the above courses you will have five fathoms, when up with the spindle on the Cows, and it shoalens gradually. High water, 11h. 2m.; rise, six feet, six inches. *Black Rock Harbor.*

Black Rock light is on Fairweather Island, E. side of the entrance to Black Rock Harbor, and is a fixed light, fifty-two feet above the sea. *Light*

FAIRWEATHER ISLAND OFF BLACK ROCK HARBOR.—In coming from the Westward, if you mean to harbor, to avoid the reef called the Cows, you bring the light to bear N. by W., and run directly for it, until within three fourths or half a mile distant, when, if occasion requires, you may stretch in to the Westward in a fine beating channel, having from five to three fathoms water, and good ground. As you approach the light which stands on the E. side of the harbor, the water gradually shoals to about two fathoms The mouth of the harbor, although not very wide, is not difficult; the light bearing E. brings you completely into the harbor. The island on which the light-house stands, and the reef called the Cows, on the S. and W. sides, form the harbor of Black Rock. On the Easternmost rock of this reef stands a spindle distant from the light half a league, and from which the light bears N The light stands forty-four rods from the S. point of said island at low water. From this point puts off a single rock, thirty rods distant, on which are eight feet at high water, making in all about seventy-four rods distance. The light bears from this rock N. by E. ½ E. As soon as you pass this point or rock, the harbor is fairly opened to the Northward in any point from N. to W. N. W. You can run for the light with safety, observing as you draw nearly in, the above directions and due attention to the lead. The bottom for some distance from this rock, Southerly, is hard, but you may continue your course, and it will soon deepen. It is safe and good anchorage to the Eastward of the light for all winds from W. S. W. to N. N. E. quite down to the mouth of Bridgeport Harbor, which is distant about two miles. The shore on the Eastern side of the light is bold to, in three fathoms, close aboard the light, and so continues until you are quite down to the S. point of the island. This bay, to the leeward of the light, between that and Bridgeport, is one of the best bays for anchorage on the N. shore in Long Island Sound, and affords from four to three fathoms water, the light bearing W. In coming from the Eastward, crossing Stratford Point light close aboard, your course to Black Rock light is W. by N., and you keep sounding on the starboard hand not less than four fathoms, nor more than eight fathoms, to the mouth of Bridgeport Harbor. *Fairweather Island.*

Between Fairweather Island and the entrance of Bridgeport Harbor there is good anchorage in from two and a half to four fathoms, sticky bottom, with the wind from E. N. E. to S. W. by way of N. Bring the woods on the W. of the harbor to bear N. E., and anchor in such depth of water as you wish.

Buoys and Beacons as they are passed in sailing through Main Ship-Channel, Long Island Sound, from Montauk light to East River.

NAME OF STATION.	NO.	DESCRIPTION.	DEPTH OF WATER AT BUOY OR BEACON.
Shagwang Reef	....	Bell buoy-boat, black	33 feet, low water.
Middle Ground, or Cerberus Shoal	....	Can-buoy, red and black horizontal stripes	18 " "
Race Point	2	Spar-buoy, red	15 " "
Race Rock	....	" red & bl'k h. stripes	17 " "
Valiant Rock	....	Nun-buoy, red & bl'k h. stripes.	18 " "
Little Gull Island	1	Spar-buoy, black	16 " "
Bartlett's Reef	....	Light-vessel, black with white streak	10 fathoms.
Black Boy Reef	4	Spar-buoy, red	14 feet, low water.
Hatchet's Reef	6	" "	15 " "
Saybrook Flats	8	" "	18 " "
Long Sand Shoal, E. end	....	" red & bl'k h. stripes.	16 " "
Orient Shoal	3	" black	18 " "
Cornfield Point	6	" red	15 " "
" "	....	Light-vessel, red	7½ fathoms.
Hen and Chickens	8	Spar-buoy, red	16 feet, low water.
Crane Reef	10	" "	14 " "
Long Sand Shoal, W. end	....	" red & bl'k h. stripes.	16 " "
Kimberly's Reef	....	" " "	11 " "
Friar's Head Shoal	5	" black	15 " "
Branford Reef beacon	....	Gray granite black day-mark	dry.
Herod's Point	7	Spar-buoy, black	15 feet, low water.
Pond Point	12	" red	21 " "
Mount Misery Shoal	....	" red & bl'k h stripes.	14 " "
Stratford Shoals light-vessel	....	Yellow, two cage-work day-marks	11 fathoms.
Stratford Point	14	Spar-buoy, red	11 feet, low water.
Black Rock beacon	....	Black iron pile, cage on top	Dry.
Penfield Reef	16	Can-buoy, with staff, red	14 feet, low water.
Cockend Reef	18	Spar-buoy, red	14 " "
Eaton's Neck	11	" black	21 " "
Lloyd's Point	13	" "	16 " "
Green's Reef	20	" red	15 " "
Smith's Ledge	22	" "	dry at half-tide.
Shippan Point	24	" "	dry.
Centre Island	15	" black	20 feet, low water.
Matinicock Point	17	" "	18 " "
Glover's Reef	....	" red & bl'k h. stripes.	dry.
Execution Rocks, Eastern buoy	....	" " "	18 feet, low water.
Sands' Point	19	" black	21 " "
Execution Rock, Western buoy	....	" red & bl'k h. stripes.	18 " "
Gangway Rock	23	" black	20 " "
Success Rock	....	" red	15 " "
City Island	26	" red	18 " "
Stepping Stones	25	" black	

Through Fisher's Island Sound from the Eastward.

Gangway Rock	2	Spar-buoy, red	21 feet, low water.
Watch Hill Reef	1	" black	21 " "
Watch Hill spindle	....	Quarter keg on top, black	dry.
Westward and Southward of Watch Hill Reef	....	Spar-buoy, black and white perpendicular stripes	40 feet, low water.
Sugar Reef beacon	....	Black iron pile, cage and ball on top	

Through Fisher's Island Sound from the Eastward—continued.

NAME OF STATION.	NO.	DESCRIPTION.	DEPTH OF WATER AT BUOY OR BEACON.
Napatree Point	4	Iron can-buoy, red	21 feet, low water.
Sugar Reef spindle	...	Quarter keg on top, black	4 " "
Middle Ground	6	Spar-buoy, red	12 " "
Catumb Reef spindle	....	Keg on top, red	
Channel between Wicopesset and E. point	....	Spar-buoy, red & bl'k h. stripes.	14 " "
Eatward of Latimer's Reef	....	" " "	15 " "
Northward of " "	....	" " "	
Wampasset Reef	8	" red	12 " "
Seal Rocks	....	" black	15 " "
Latimer's Reef spindle	....	Keg on top, black.	
Red Reef	10	Spar-buoy, red	15 " "
Young's Rock	3	" black	15 " "
Eel Grass Shoal light-vessel.	....	Lead color, one fixed white light	
W. End of Eel Grass Shoal.	12	Spar-buoy, red	14 " "
East Clump	5	" black	18 " "
Ellis's Reef	14	" red	11 " "
" " spindle	....	Keg on top, black.	
Middle Clump	7	Spar-buoy, black	17 " "
Sweeper's Ground	16	" red	12 " "
Croton Long Point beacon	....	Iron pile, red, cage-work, cone on top	17 " "
Horseshoe Reef	18	Iron pile, red	24 " "
Seaflower "	....	" red & bl'k h. stripes.	10 " "
" " beacon	....	" black, cage on top.	
North Hill	9	" "	
Black Ledge beacon	....	" black, 2 conical cages on top.	
Black Ledge (These 3 buoys mark the entrance to New London Harb.)	2	Can-buoy, red	18 " "
Mercer's Rock.	....	" red & bl'k h. stripes.	12 " "
Rapid Rock	....	Spar-buoy, red & bl'k h. stripes.	12 " "

Going through the East Channel into Mystic Harbor.

Whale Rock spindle	....	Iron spindle, half barrel on top, black	
N. of Whale Rock	1	Spar-buoy, black	11 feet, low water
North Point, Ram Island	3	" "	18 " "
Ram Island Flats	5	" "	10 " "
Crook's spindle	....	Iron spindle, keg on top, black	

Going through the West Channel, Mystic Harbor.

Croton Long Point beacon	....	Iron pile, red conical cage on top	
First buoy E. of Croton Long Point	....	Spar-buoy, bl'k & white p. stripes	11 feet, low water.
Second buoy E. of Croton Long Point	....	" " "	12 " "
Third buoy E. of Croton Long Point	....	" " "	11 " "
Spindle on the Whale	....	Black iron spindle, keg on top	
E. of Whale Rock	2	Spar-buoy, red	10 " "
Crook's spindle	....	Iron spindle, quarter keg on top, black.	

Going through East Channel, New London Harbor.

Pine Island	2	Spar-buoy, red	18 feet, low water
N. E. point of Black Ledge.	1	" black	12 " "
Frank's Ledge	....	" red & black h. stripes.	13 " "
Melton's Ledge	7	" black	9 " "

Going through West Channel, New London Harbor.

NAME OF STATION.	NO.	DESCRIPTION.	DEPTH OF WATER AT BUOY OR BEACON.
Bartlett's Reef light-ship	....	Bl'k, with white stripes on bulw's	10 fathoms.
Rapid Rocks	....	Spar-buoy, red & bl'k hor. stripes	12 feet, low water.
Little Goshen Reef	1	" black	14 " "
Goshen Reef	3	" "	16 " "
Mercer's Rock	....	Can-buoy, red & bl'k hor. stripes	5 fathoms.
Cormorant Rocks	5	Spar-buoy, black	13 feet, low water.
S. W. point of Black Ledge.	2	" red	18 " "
Black Ledge beacon	....	Iron pile, two conical cages on top, black.	
Southwest Ledge	....	Spar-buoy, red & bl'k h. stripes	16 " "
Frank's Ledge	7	" " "	13 " "
Melton's Ledge	....	" black.	9 " "

Going through the Channel North of Two-Tree Island, from the Eastward.

Rapid Rocks	....	Spar-buoy, red & black h. stripes	12 feet, low water.
Bartlett's Reef light-vessel	....	Bl'k, with white stripes on bulw's	10 fathoms.
Little Goshen Reef	1	Spar-buoy, black	14 feet, low water.
N. point of Bartlett's Reef.	1	" "	12 " "
Two-tree Island	3	" "	18 " "
Millstone Point	2	" red	18 " "
Little Rock	4	" "	15 " "
Pond Reef	5	" black.	14 " "

Going through the Channel, inside of Hatchet's Reef, from the Eastward.

North Hatchet's Reef	1	Spar-buoy, black	12 feet, low water.
Griswold's Rock	2	" red	12 " "

Beacons as they are passed in entering Connecticut River.

Saybrook beacon	....	White stone beacon.	
Calves' Island beacon light.	....	Iron pile, lantern on top, black.	
Hayden's Reef	1	" black	8 feet, low water.
S. end of Pequot Reef	3	" black	10 " "
Brockway's Reach beacon	....	" lantern on top, white.	
S. end of Mud Island	2	" red	12 " "
Devil's Wharf beacon	....	" lantern on top, white	
Chester Rocks	4	" "	8 " "
Sears' Shoal	....	" bl'k & white p. stripes	8 " "

Going into Killingworth Harbor.

Stony Island Reef	2	Spar-buoy, red	15 feet, low water.
Burns' Reef	2	" "	12 " "
Wheeler's Rocks	1	" black	11 " "

Going from Hammonasset Point, North of Faulkner's Island, to New Haven.

Hammonasset Point	2	Spar-buoy red	18 feet, low water.
Madison, E. Reef	4	" "	15 " "
" Middle Reef	6	" "	12 " "
Charles Reef	8	" "	16 " "
Kimberly's Reef	....	" red & bl'k h. stripes.	14 " "
Faulkner's Island	1	" black	5 fathoms.
Chimney Corner Reef	10	" red	18 feet, low water.
East Ledge	12	" "	15 " "
Wheaton's Reef	3	" black	15 " "
Inner Reef	14	" red	4 fathoms.
Negro Head	16	" "	12 feet, low water.
Branford beacon	....	White stone beacon, with iron spindle and ball on top.	
S. of Branford Point	18	Spar-buoy, red	12 " "
Branford Harbor	....	" "	12 " "

Entering New Haven Harbor.

NAME OF STATION.	NO.	DESCRIPTION.	DEPTH OF WATER AT BUOY OR BEACON.
Southwest Ledge beacon	....	Red iron beacon	7 feet, low water.
Middle Reef	2	Spar-buoy, red	4 fathoms.
Quixe's Ledge	....	Black iron spindle, cask on top.	dry.
Adam's Fall	4	Can-buoy with staff, red	19 feet, low water.
Party's Bar	1	" black	11 " "
Black Rock	6	" with staff, red	17 " "
Shag Bank	3	" " " black	15 " "
Beacon light on Long Wharf (red)	....	Square white tower	

Going into Milford Harbor.

Welch's Point	2	Spar-buoy, red	20 feet, low water.
S. end of Charles Island	1	" black	18 " "
E. end of Charles Island	3	" "	12 " "

Entering Stratford River.

Stratford River beacon	....	White wooden crib 13×13, cask on top of spar.	

Entering Bridgeport Harbor.

Outer beacon	....	Beacon, with cask on top of spar, spar painted white and black horizontal stripes.	
Inner beacon	....	Beacon, with cask on top of spar, spar painted white and black horizontal stripes.	

Entering Black Rock Harbor.

Black Rock beacon	....	Red iron beacon.	
" " buoy	....	Spar-buoy, red	21 feet, low water.

Entering Port Jefferson Harbor.

Offshore buoy	....	White and black spar-buoy	18 feet, low water.
East Flat	....	Can-buoy, black	5 " "

Entering Southport Creek.

Southport beacon	....	White wooden crib, 21 × 21, barrel on top of spar.	
" breakwater	....	Forms the E. side of the entrance.	

Entering Norwalk River.

Green Reef buoy	2	Spar-buoy, red	18 feet, low water.
Norwalk beacon	....	White square stone beacon, barrel on top.	

Entering Oyster Bay Harbor.

Oyster Bay Harbor buoy	2	Spar-buoy, red	18 feet, low water.

Entering Greenwich Harbor.

Captain's Island buoy	2	Spar-buoy, red	12 feet, low water.
Cornel Reef	4	" red	20 " "
Greenwich Harbor, S. side	1	" black	15 " "
" " N. side	2	" red	14 " "

Montauk Point. MONTAUK POINT is the Eastern end of Long Island; it is seventy-five feet high, and has on it a fixed light, varied by flashes, once in every two minutes, ninety-seven feet high, making the elevation of the light one hundred and seventy-two feet The S. shore of Long Island is sandy, with the exception of a few boulders about two miles W. from the light-house.

Phelps Ledge. PHELPS LEDGE.—On this ledge is a rock of four fathoms called Great Eastern Rock, which bears E. ¼ N., one and a half miles from Montauk Point light. There is a black buoy to the S. W. of it.

Montauk Shoal. MONTAUK SHOAL lies S. by E. from the light-house, distant two and a half miles, is of hard sand, extending N. W. and S. E. about one mile, having four fathoms on it, shoaling suddenly, and breaks in heavy weather. It has twelve fathoms on the inside.

Frisbie's Ledge. FRISBIE'S LEDGE.—See pages 306 and 310.

From Montauk Point light to that of Shinnecock, the course of the shore is W. by S. ¾ S., thirty-three miles.

Shinnecock Light. SHINNECOCK LIGHT is a first order fixed Fresnel light, and is one hundred and sixty feet above the level of the sea; it is on Pondquogue Point, a short mile N. of the outer Beach of Long Island. From it Fire Island light bears W. by S. ¾ S., thirty-five miles, nearly.

Fire Island Light. FIRE ISLAND LIGHT is on the E. side of Fire Island Inlet. It is a first order revolving light, showing a brilliant flash once every minute. The tower is of brick, one hundred and fifty feet high, and of a cream yellow color. The light is one hundred and sixty-six feet above the level of the sea. From it the Neversink lights bear W. by S. ½ S., thirty-eight and one fourth miles. From Fire Island light to Coney Island, the W. point of Long Island, the course is W. by S., thirty-six miles.

The soundings are in general very regular, shoaling gradually as you approach the shore; there is, however, deeper water to the E. of Fire Island light-house, when opposite Raccoon Woods, near the shore, than in other parts of the coast, as ten fathoms are found about a mile distant. The shoal off Fire Island light-house, composing part of the bar, extends about a mile from the shore, and one mile from where the light-house stands. It is bold to on the Eastern side, having six fathoms close to it; to the W. of the light-house it shoals more gradually.

Fire Island Inlet. FIRE ISLAND INLET is navigable for vessels drawing nine feet water. It is subject to change and those who are acquainted with its entrance are guided by the breakers in entering as much as by anything else.

Oak Island, Gilgo, Crow, and Hog Island Inlets. OAK ISLAND, GILGO, CROW, AND HOG ISLAND INLETS, are all barred harbors, having very little water; they do not extend out more than half a mile from the general line of the shore.

Rockaway Inlet. ROCKAWAY INLET lies N. E. from Sandy Hook, distant nine miles. The bar is subject to change; twelve feet may be about the average depth at low water, and the bar extends about two miles from the shore.

Block Island to New York. BLOCK ISLAND TO NEW YORK.—Bound into New York, if you fall into Block Island Channel, you will have soundings in latitude 40° N., sixty fathoms, mud and ooze, which soundings continue till you get into forty fathoms. In thirty-eight fathoms, Block Island bearing N. by W., four and a half leagues distant, you will have fine red and black sand; two and a half leagues distant, same bearing, you will have twenty-eight fathoms, coarse sand. When Block Island bears N., distant four or five leagues, you cannot see any land to the Northward or Eastward; but as you approach the island you see Montauk Point to the Westward, making a long low point to the Eastward, on which is a light-house. In sailing W. S. W., you will make no remarkable land on Long Island —from the Eastward of said island to the Westward, its broken land appearing at a distance like islands—but may see Shinnecock and Fire Island light-houses. From Fire Island light a shoal extends S. three fourths of a mile, and joins the bar, which is very dangerous, as it shoals suddenly from eight to six fathoms, then directly on the shoal, on which the flood-tide sets very strong. It is not safe to approach the shore nearer than two miles when the light bears to the E. of N. To the Eastward of the light the shore is bold; the bar is subject to change, and has seven feet water on it. When Fire Island light bears N., in ten fathoms water, you may steer W. by S., which will carry you up with Sandy Hook light. The quality of the bottom is various, viz., yellow, red, brown, blue, and gray sand within short distances. About forty miles S. by E. from the Highlands, lies a bank, extending from N. E. by E. to S. W. by W., having ten to fourteen fathoms, pebbles. On the bank is plenty of fish. Within this, a short distance, you will get twenty fathoms, when it shoals into sixteen fathoms, gray sand, which depth you will carry till you get into what is called the Mudhole, where are from twenty to thirty-six fathoms water, marl or green ooze, and sometimes pebbles, the deepest part of which bears E. from the Northernmost part of the Woodlands, ten miles; and S. E. ½ S. fifteen miles from Sandy Hook light. From the Mudhole to the bar of Sandy Hook the water shoals gradually as laid down in the chart.

Light-houses.

Cholera Bank. CHOLERA BANK, twenty-two miles E., 7° S. from the Highland lights, is the centre

of a rocky bank, of ten to eleven fathoms. It is from two and a half to three miles in extent, of a circular form, and abounds with fish.

You will have twenty or twenty-two fathoms water out of sight of the land, sandy bottom in some, and clay in other places. Before you come in sight of Sandy Hook light-house you see the Highlands of Neversink, which lie W. S. W. from Sandy Hook, and is the most remarkable land on that shore. On the Highlands there are two light-houses.

Current. In running for the port of New York, after passing Nantucket, particular attention should be paid to the log as well as to the lead, as the set of the current is about three fourths of a mile per hour to the Westward, and with Northerly and Northeasterly winds, is much accelerated. It requires careful attention to this fact in giving the course to be steered, or vessels will make the land to the S. of the Highlands.

Pilots. New York pilots are to be found from George's Bank to Cape May.

Masters of vessels are requested by the Pilot Commissioners not to give up the charge of their vessels to the pilot until within sight of the marks for the harbor, as it is presumed that the master understands the navigation dependent on astronomical observations better than a pilot.

New York. NEW YORK.—If you fall in to the Southward, and make Cape May, on which is a light-house exhibiting a revolving light, it would be prudent to keep about three leagues off, to avoid Hereford Bar, which lies from four to six leagues from the Cape to the Northward, and eight miles from the inlet of that name. This inlet is frequented by the Delaware pilots, having no other harbor to the Northward until they reach Egg Harbor. After passing Hereford Bar, you may steer N. E. when in ten fathoms water, taking care that the flood-tide, which sets very strong into the inlet, does not draw you too close. This course continued will carry you up with Egg Harbor; you will then have fine white and black sand, intermixed with small broken shells. By continuing the same course you will deepen your water, and so continue till you draw near Barnegat Inlet.

Light. In running along the shore, do not steer to the Northward of N. E., if in ten fathoms water or less, as you will be apt to get on Absecum Shoals or Egg Harbor. On the S. side of Barnegat Inlet there is a light-house containing a flashing light, off which you will get bright, coarse, yellow gravel. The shoal off Barnegat does not extend beyond two miles from the beach, and is steep to. You may turn this shoal in six fathoms water, within pistol shot of the outer breaker. It would always be prudent to keep in nine or ten fathoms water during the night, and not steer to N. of N. E., unless certain of being to the N. of the shoal. The soundings are so much to be depended on, that the moment you lose the above soundings, you are past the shoal, when you will have fine black and white sand, and very hard bottom. You may then haul in for the land, N. by E., which course will bring you along shore in from fifteen to seventeen fathoms water; but if the wind and weather permit, I would recommend hauling in N. N. W., which will bring you in with the Southernmost part of the Woodlands, which is very remarkable, having no other such land in the distance from Cape May up to the Highlands, and can be distinguished by its being very near the beach, and extending to Long Branch.

In passing from Barnegat to Sandy Hook, when to the Southward of the light on the Highlands, you must not open the Northern light (which is a fixed light) to the Westward of the Southern light (which is a revolving light), as that will bring you too near the Jersey shore.

Woodlands.

The S. part of the Woodlands.

By passing Barnegat in the daytime, it may easily be known. Should you be so far off as not to see the breakers, you may perhaps see a grove of woods back in the country, apparently three or four miles long, known to the coasters by the name of Little Swamp, and lies directly in the rear of the inlet of Barnegat; so that, by sailing to the Northward, you having the N. end of this land directly abreast, you are certainly to the Northward of Barnegat. There is also another grove directly in the rear of Egg Harbor, known by the name of the Great Swamp, which has the same references as respects Egg Harbor; but that the one may not be taken for the other, it must be observed the Great Swamp of Egg Harbor will appear much higher, and in length eight or ten miles; neither can they be seen at the same time, as Barnegat and Egg Harbor are fifteen miles apart. Barnegat bears due S. by W., forty-one miles from Sandy Hook. In hauling in for the Woodlands before mentioned, you may, if the wind is off the shore, keep within a cable's length of it all the way, until nearly up with the Highlands.

As a number of vessels have been lost, bound into New York, from heaving to with their head on shore, we cannot too strongly urge on the shipmaster the necessity, *if he is in doubt of his position, of heaving to with the head off shore.*

The bottom on the New Jersey shore is of uncertain depth, not at all dependent on the distance, there being ridges parallel to the shore, with seven and eight fathoms, and nine and ten fathoms inside.

Highlands, N. 63° W.

Light-ship. LIGHT-SHIP.—A light-ship, painted red, of about three hundred and fifty tons burden, and showing two lights, is anchored off Sandy Hook. The forward light is thirty feet above the deck, and the after one forty feet. She is also provided with a bell of eight hundred pounds weight, which will be rung in thick weather. She is placed in thirteen fathoms water. Sandy Hook light-house bears from the light-ship W. by N., distant six and three fourths miles; Highland light-houses W. S. W., distant seven miles.

Highlands of Neversink. HIGHLANDS OF NEVERSINK.—Neversink Hills, on which two light-houses are built, extend N. W. and S. E. about S. W. from Sandy Hook, on the Atlantic ocean to Raritan Bay. The correct altitudes of the following places, which present themselves to mariners as they approach them, are—

Mount Mitchell, the highest point of Neversink, Monmouth co. (N. J).	282 feet.
Tompkins' Hill, on Staten Island	307 do.
Hempstead Hill, Queen's county, Long Island	319 do.

Highland Lights. HIGHLAND LIGHTS.—The two light-houses on the Highlands of Neversink bear N. 23° W. and S. 23° E. from each other, distant one hundred yards. Both lights are now fixed. Elevation two hundred and forty-eight feet above the level of the sea. In clear weather, from the deck of a vessel fifteen feet above the sea, they should be seen twenty-five and a half miles.

Sandy Hook Light. SANDY HOOK LIGHT is on the Northern point of Sandy Hook, and is a fixed light, ninety feet above the level of the sea.

Two beacons are erected on the Hook, thirty-five feet above the sea; the Easternmost one ranges for the buoy of the Upper Middle, and the Westernmost one ranges for the buoys of the S. W. spit; they are both lit at night.

Ledge South Sandy Hook. LEDGE SOUTH SANDY HOOK.—On this reef there are but nine feet water. The Northern light on the Highlands, a little open to the Eastward of the Southern one, leads right on the reef.

This ledge is S. ½ E. from Sandy Hook light, seven miles distant, and one mile and one fourth from the shore, and on which the ship William Thompson struck.

Oil Spot. OIL SPOT.—E. S. E. one mile and three fourths from Sandy Hook light, is the Oil Spot, having only ten feet water in one spot, at low water; it is of a triangular shape, and about half a mile on each side in extent; the Along-shore Channel is inside of it.

False Hook. FALSE HOOK.—One mile and a fourth E., a little Northerly, from Sandy Hook light, there is a small shoal spot, with only twelve feet water upon it at low water; it is the remains of the old False Hook.

New York Harbor. NEW YORK HARBOR.—There are four channels over New York Bar: the first is that along and parallel to the Jersey shore, inside of the Outer Middle; the second is the S. channel; between the black can-buoy No. 1 and the red can-buoy No. 2; the third is the main ship-channel, between the red can-buoy No. 2 and the black nun-buoy No. 1; the fourth is Gedney's Channel, between the black nun-buoy No. 1 and the red nun-buoy No. 2. This channel runs nearly W. by N., and is used by our largest class ships-of-war.

Lights. There are six lights intended as ranges for the channels:

1st. GEDNEY'S CHANNEL lights are two in number; the front one on Point Comfort, Jersey shore, is on the keeper's house, in a turret. The focal plane of the light is forty feet above high water. The rear light is in a tower, seventy-six feet above high water. These lights in range will, after crossing the bar, clear everything until inside of Sandy Hook.

2d. SWASH CHANNEL lights, two in number, are on Staten Island. The front one is in a tower—the focal plane of the light is fifty-nine feet above high water. The rear light is on the keeper's house, in a turret, one hundred and eighty-nine feet above high water. These in range, when outside of the bar, will cross the bar in twenty feet water, and lead through the Swash Channel up to the red buoy of the Upper Middle, seventeen feet at low water.

3d. MAIN SHIP-CHANNEL lights, two in number, are on the Jersey shore. The Northern light bears from Sandy Hook light S. W., three and a half miles, to be used after turning the S. W. Spit buoy. The front light is in a tower—the focal plane of the

light is sixty feet above high-water mark. The rear light is on the keeper's house, in a turret. The focal plane of the light is two hundred and twenty-four feet above high water. After turning the S. W. Spit, by keeping these in range, you run in mid-channel until Robbin's Reef light is open with the light at the Narrows; keeping these open clears the West Bank.

They are all fixed lights.

ALONG-SHORE CHANNEL.—If bound into New York from the Southward, and close in with the Jersey shore, and you do not draw over ten feet water, you may continue on parallel to the shore, one hundred and fifty yards distant, until you get Sandy Hook light to bear W., or W. by N., when you steer N. by E., to avoid the point of the False Hook, until you get deep water, say seven fathoms, Sandy Hook light bearing S. W. ½ S.; then steer W. ½ N., until Point Comfort lights are in range; keep them in range, and run up the main ship-channel, passing red nun-buoy (No. 12) of the S. W. Spit on the starboard hand, a N. 10° E. course, which keep until you open Robbin's Reef light with the bluff of the Narrows; then a N. by W. course carries you clear. *Along-Shore Channel.*

SOUTH CHANNEL.—The red can buoy (No. 2) of the South Channel bears from the Hook light E. ½ N. To cross the bar, steer W. by N. ½ N, leaving the above buoy on your starboard hand, and the black can-buoy (No. 1) on your port hand, until you are up with the striped buoy on the Outer Middle, and the Swash Channel lights are in range, when steer for them N. W. 4° N., until you get the Hook light to bear S. W. by W. ½ W., when, if you wish to go the main channel way, you steer W. ½ N. until you get Point Comfort lights in range, when steer as before directed. *South Channel.*

SWASH CHANNEL.—To pass through Swash Channel, continue your N. W. 4° N. course, keeping the range lights on Staten Island in one until you are up with the striped buoy on the N. W. end of Swash Channel, when the new lights on the Highlands will be in range, and a N. 10° E. course will carry you to the Narrows. *Swash Channel.*

In going over the East Bank, be careful you do not get set by the ebb tide on Romer. The mark to keep clear of Romer is, to keep Sandy Hook light open with the E. end of the Highlands.

BEACON ON ROMER.—A granite beacon, twenty-five feet high, has been placed on the Northwestern point of Romer, nine feet above water. *Beacon on Romer.*

It bears from the light on Sandy Hook N. 10° W.; from the light at the Narrows, S. 15° E.

This beacon was intended to mark out the Swash Channel. It is on the wrong end of the shoal.

Vessels bound in will infallibly get on shore if they run for it

N. B.—The Iron beacon on Romer Shoal, S. E. part, was carried away by the ice during the winter 1856–7.

NORTH CHANNEL.—The black buoy (No. 1) of the North Channel bears E. by N. 4° N. from Sandy Hook Light; the light and Mount Pleasant in range is a mark for it; the course is W. until you get Point Comfort lights in range, then steer as before directed. To go through Swash Channel, when the channel lights are in range, steer as directed under that head. *North Channel.*

GEDNEY'S CHANNEL (the best water).—From the light-ship to the striped buoy, off the entrance to Gedney's Channel, the course is N. W. ½ W., distance four and one eighth miles. The course is W. by N., leaving the red buoy on the port hand, until you get the light-houses on Point Comfort in range; keep them in range (the course is W. by S. ¼ S.), and they carry you between the Hook and Flynn's Knoll into Sandy Hook Bay. When the new lights on the Highlands are in range steer as before directed; or *Gedney's Channel.*

If you can see Prince's Bay light (page 323), get it to bear W. by N., and run for it until you get the Point Comfort lights in range, when steer as before directed; or, if you cannot see any of the distant ranges or Prince's Bay light, bring the light-house on Sandy Hook to range with the black buoy, and the beacon on Romer to bear W. N. W. Steer W. N. W. with the ebb, and W. by N. on the flood, until you drop into six fathoms water, when the light-house will range with a clump of trees on the Highlands, with the Eastern side cut down square. You then steer from the E. beacon on the Hook, keeping it a little open on the port bow, until you get mid-channel way, when you steer for the buoy of the S. W. Spit.

EAST CHANNEL.—N. of Gedney's Channel buoys there is a channel over the East Bank; it is buoyed with spar-buoys, having a general direction from N. W. by W. to S. E. by E.: it may only be attempted with safety in the daytime, with fourteen feet. The only directions are to keep between the buoys. *East Channel.*

When you open the light on the bluff of Staten Island with that on Robbin's Reef, keep them open until you pass the Narrows; this keeps you clear of the West Bank. When in the Narrows, the course to Quarantine is N. N. W. ¼ W.; thence to the Battery the course is N. E. ¾ N. On the Eastern side of the channel extending from

Governor's Island, there is a mud-flat, having on it as little as eleven feet; to avoid this, keep Trinity church steeple open with Castle William.

After you have passed the buoy of the S. W. Spit, steer N. by E. ½ E. for the red buoy of the Upper Middle, which is two and three fourths miles distant from the S. W. Spit buoy: on this course you will leave the black buoy of the Knoll on your port hand; after you get up with the red buoy of the Upper Middle, steer N. by E. until you pass the black buoy (No. 13) of the West Bank, when you open two hummocks in New Jersey; the Westernmost one is called Snake Hill; keep this hummock open with the bluff of Staten Island, and steer N. by W., which course will carry you through the Narrows. When thus far, to pass Fort Diamond, keep near mid-channel, but the shores are bold on both sides. The mark to pass Fort Diamond is to keep Bedlow's Island open with the point of Long Island; for, if you can see Bedlow's Island in coming through the Narrows, there is no danger from the Narrows to come up to New York; you will steer up for Bedlow's Island to avoid the mud-flat from the S. side of Governor's Island, the mark for which is to keep Trinity church steeple open to the Westward of the fort on Governor's Island. This flat is a kind of oyster-bed, or bank of mud and shells, and has not more than eleven feet on it at low water; but to avoid this flat, do not stand too far to the Westward on account of Robbin's Reef, on which there is a light-house. To avoid running on the W. side of the channel, the mark is to keep the point of land up the North River (on which Fort Lee stands) open with the E. side of Bedlow's Island, after which there is nothing in the way to New York, it being bold near the point of Governor's Island and the rocks near the Battery do not extend one hundred yards from the shore. There are two reefs of rocks in the East River below Corlaer's Hook: the Diamond Reef of twelve feet, on which there is a red spar-buoy; Coenties Reef of seventeen feet, and the channel is between Diamond and Coenties Reef, but a pilot is necessary with a draught over twelve feet, unless well acquainted with the set of the tide, and the ranges of run between the reefs.

Light-house.

These directions are for slack water; those following them should remember that the flood-tide below the Narrows sets to the Westward, and the ebb to the Eastward.

Between the buoy of the West Bank and Staten Island there is a shoal, dry at low water; the mark to avoid this is to keep Snake Hill open with the bluff of Staten Island or Robbin's Reef light open with the light on Staten Island.

Other Directions.—Or you may, after making the Highlands of Neversink, run in within three miles of the beach, and, in steering along the Northward, keep in about eight fathoms water, until you get the light-house to bear W. ½ N.; then, if you have a round hill, called Mount Pleasant, some distance in Jersey, in one view with the land about one fourth of a mile to the Southward of the light-house, you are in a situation to pass the bar; steer in W. by N. until you are over it; you will have on it at low water, three fathoms; when over you will be in four and a half fathoms. Pass the Hook about half a mile, at which distance you will have five and six fathoms. When you have the point of the Hook on which the beacon stands bearing S. S. E., you may then haul to the Southward and round the Hook, and come to, from one to two miles distant, the Hook bearing from E. to N. E., in good holding ground, five fathoms water. When you make Long Island, it is necessary to keep somewhat in the offing, on account of the East Bank, and observe the same marks running in as before mentioned.

If sailing up in the night, when abreast of the S. W. Spit, the two lights on the Highlands will range, when you may steer N. by E. ¼ E. until you make the buoy of the Upper Middle, when the E. beacon and Sandy Hook light will range in one. After passing the Upper Middle, you will deepen your water to six fathoms, when you may steer N. up through the Narrows, and you will deepen your water to seven, eight, ten, twelve, and sixteen fathoms.

High Water. High water at full and change of moon, on the bar and Sandy Hook, seven hours, twenty-nine minutes, A. M.

Average rise and fall of the tide on the bar, five and a half feet.

Set of tide on the bar, and between the Hook and Romer,			first quarter	flood,	S. W.
Do.	do.	do.	second do.	do.	W.
Do.	do.	do.	third do.	do.	N. W.
Do.	do.	do.	last do.	do.	N.
Do	do.	do.	first quarter	ebb,	N. E.
Do.	do.	do.	second do.	do.	E.
Do.	do.	do.	third do.	do.	S. E.
Do.	do.	do.	last do.	do.	S.

In the spring of the year, when freshets run, the flood runs to the S. W. and W. S. W.

N. B.—The above answers for the Upper Middle and buoy of West Bank, with the exception of one half hour later.

High Water. High water at Governor's Island, full and change, eight hours, nineteen minutes; rise, five feet, eight inches.

Bearings from the Telegraph at Neversink Hills. *Bearings.*

Sandy Hook light-house N. 7° W., with the W. side of Fort Lafayette in a range. Telegraph on Staten Island N. 10° W. Level of the hill at the Telegraph where the light-houses are erected, two hundred and five feet, making the two lanterns two hundred and forty-eight feet above the level of the sea.

Other Directions.—In coming up with the bar, when midway between the buoys, steer W. by N. till the light on Sandy Hook ranges with the Easternmost of five trees on the Highlands; you may then steer W. until you get the West Beacon on the point and the light-house in range, and so keep them till you make the red buoy of the S. W. Spit; after hauling round the spit, steer N. by E. ¼ E. until you make the buoy of the Upper Middle, but be careful of the flood tide, which sets directly over to the West Bank; after you have passed the buoy on the West Bank (which is the upper buoy), you should not bring Staten Island light N. of N. by W., as the edge of this bank is very shoal, and tends to the point of the island.

If you wish to run for Prince's Bay, bring the light to bear W. N. W., and run for it, anchoring as near the shore as you please. E. S. E. ½ S. from the light will take you on the N. point of the shoal, on which a buoy is placed; this buoy is left on the port hand in going in, but as it is liable to be carried away by the ice, the light should never be brought to bear N. of W. N. W.

PRINCE'S BAY LIGHT-HOUSE stands on a bluff on the W. side of the bay, bearing W. N. W. from Sandy Hook light, distant ten miles, and W. from the Knoll buoy. The light is one hundred and six feet above the level of the sea, and is a fixed white light, varied by a short eclipse, and a brilliant flash once in every two minutes. This distinction will prevent the possibility of mistaking this light for any of the range lights in the Lower Bay. A N. W. ½ W. course made good from the light-vessel will lead to the mid-channel buoy at the entrance to Gedney's Channel on the line of Sandy Hook light and Mount Pleasant in range; and a W. by N. course made good from the buoy (running for Prince's Bay light) will lead through the best water in Gedney's Channel until Point Comfort's lights are in range, when proceed as directed for the various channels. A spar buoy painted with red and black horizontal stripes, has been placed to mark the wreck of the bark Pyron in the main ship channel in the Lower Bay. It lies in five fathoms water on the N. W. side of the wreck, about two thirds of a mile below the West Bank buoy No. 11, and two hundred yards W. of the red nun-buoy No. 10 on the Upper Middle. It may be passed on either side, but best to the Eastward. The main ship channel range lights will lead clear of it. *Light.* *Buoy.*

The spar-buoy on the N. side of the Round and Middle Shoal, at the entrance of Prince's Bay, bears from light S. 86° E.

FORT TOMPKINS LIGHT is on Staten Island, W. side of the Narrows; it is a fixed light, eighty-nine feet above the sea. *Light.*

There is a shoal two thousand and sixty-seven yards S. 30° E. (true) from the light-house on Staten Island. It lies N. and S., and its length in that direction is five hundred and three yards. The breadth from E. to W. is one hundred and sixty-four yards. Soundings eighteen feet at low water. This shoal is composed of sand and shells, or strictly, is a *shell bank.* *Craven's Shoal.*

ROBBIN'S REEF LIGHT is situated on Robbin's Reef, N. ¼ W., three and a half miles from Fort Tompkins light; it is a fixed light; sixty-six feet above the sea. *Light.*

The bearings and distances of the buoys of the harbor of New York are given, so that if one of them is fallen in with in thick weather, the course may be shaped for the next one. Variation in 1850, 6° W.

Nun-Buoys of the Bar.

Striped buoy outside the bar bears from the light-ship N. W. ½ W., distant four miles; from red buoy No. 2, Gedney's Channel, S. E. by E. ¾ E. nearly distant half a mile; from black buoy No. 1, of the bar, N. E. by E., distant nearly two thirds of a mile.

Red buoy No. 2, South Channel, bears from the light ship W. N. W., distant four miles; from black buoy No. 1, South Channel, N. E. ¾ N., distant nearly two thirds of a mile.

Black buoy No. 1, South Channel, bears from the light-ship W. N. W. ½ W., distant four and one sixth miles.

Spar-Buoys, False Hook Channel.

Black buoy No. 1, on reef S. of the Highlands, bears from Neversink lights	S. S. E.,	distant	3½	miles.
Striped buoy bears from Neversink light	N. E. ¾ N.,	"	1⅞	"
Striped buoy bears from light-ship	W. by S.,	" nearly	5½	"
Red buoy No. 2, Oil Spot, bears from striped buoy	N. ¾ W.,	"	1⅝	"
Striped buoy, point of Hook, from red buoy No. 2	N. W. by N. ¼ N.	"	1⅝	"

Buoys.

Red Buoys, Main Ship-Channel—(Nun-Buoys)—to be left on the Starboard Hand in entering the Harbor.

Red buoy No. 4 bears from red buoy No. 2, Gedney's Channel	W. N. W. ¼ W.	distant		1 mile.
Red buoy No. 6 bears from red buoy No. 4, Gedney's Channel	W. by N.	"		½ "
Red buoy No. 4, Swash, bears from red buoy No. 6, Gedney's Channel	W. ¾ N.	"		⅔ "
Red buoy No. 8 bears from red buoy No. 4, Swash	S. W. ¼ W.	"		½ "
Flynn's Knoll Bell-boat bears from red buoy No. 8	W. S. W. ¾ W.	"		⅚ "
S. W. Spit buoy, red, No. 10, bears from Flynn's Knoll bell-boat	W.	"		1⅙ "
S. W. Spit buoy, red, No. 10, bears from black buoy No. 5, point of the Hook	W. N. W. ¾ W.	"		1⅚ "
Red buoy No. 12 bears from S. W. Spit buoy	N. by E.	"		1½ "
Ship channel buoy, striped, bears from red buoy No. 12	N. by E.	"	nearly	1 "
Red buoy No. 14 bears from striped buoy	N. N. E.	"		1⅙ "
Red buoy No. 16 bears from red buoy No. 14	N. E. by N. ¾ N.	"	nearly	1⅚ "
Red buoy No. 18 bears from red buoy No. 16	N. by W.	"		4¼ "
Red buoy No. 20 bears from red buoy No. 18	N. E. by N. ¼ N.	"		1¾ "

Black Buoys to be left on the Port Hand in entering the Harbor—(Nun-Buoys).

Black buoy No. 3 bears from black buoy No. 1	W. N. W.	distant		1⅙ mile.
" " 5 " " " " 3	W. S. W. ⅔ W.	"		1⅚ "
" " 7 " " S. W. Spit buoy	N. ½ W.	"		1⅓ "
" " 9 " " black buoy No. 7	N. by E.	"		2 "
" " 11 " " " " 9	N. N. E. ¾ N.	"	nearly	1 "
" " 13 " " " " 11	N. by E.	"	"	1 "
" " 15 " " " " 13	N. ½ W.	"		1⅔ "
" " 17 " " " " 15	N. ½ W.	"		3¾ "
" " 19 " " " " 17	N. E. by N.	"		1¾ "

Swash Channel—(Can Buoys).

Red buoy No. 4 bears from red buoy No. 6, Gedney's Channel	W. ¾ N.	distant		⅔ mile.
" " 6, Swash bears from red buoy No. 4	N. W. ¾ N.	"		⅓ "
Black buoy No. 3 bears from red buoy No. 4	W. by N.	"		½ "
" " 5 " " black buoy No. 3	N. W. ¼ W.	"	nearly	½ "
" " 5 " " red buoy No. 6	W. N. W. ¾ W.	"	"	⅔ "
" " 7 " " black buoy No. 5	N. W. ¼ N.	"		⅚ "
Red buoy " 8 " " " " 7	N. W. ¾ N.	"	nearly	1 "

East Channel—(Spar-Buoys).

Black buoy No. 1 bears from the light-ship	N. W.	distant		5 miles.
Red " " 2 " " black buoy No. 1	N. E. by N. ¾ N.	"		⅓ "
Black " " 3 " " " " 1	N. W. by W. ½ W.	"	nearly	1½ "
" " " 3 " " red buoy " 2	W. N. W. ¾ W.	"	"	1½ "
Red " " 4 " " black buoy " 3	N. W. ¼ W.	"		1½ "
" " " 6 " " red buoy " 4	N. W. by N.	"		1⅓ "

[NOTE.—In sailing ship-channel, inward bound, the black buoys are to be left on the port, and the red buoys on the starboard hand.]

THE LIFE-SAVING BENEVOLENT ASSOCIATION OF NEW YORK was chartered by the legislature on the 29th of March, 1849. Its object is to furnish means to save lives from shipwrecked vessels, and, by donations, to reward meritorious conduct and acts of courage in the preservation of human life. Its means are derived from voluntary contributions. By the aid of an appropriation from the United States government, the association has erected the following houses, and placed in them Francis' superior metallic life-boats and other facilities for communicating with wrecked vessels, and for taking persons from them to the beach. Houses have been built under the superintendence of Mr. Watts, United States Engineer, between Coney Island and Montauk Point.

Station-houses.

Station-Houses on the South Side of Long Island.

No. 1	is located at	Coney Island Point.		
2	"	4½ miles E. of Coney Island Point.		
3	"	E. side of Rockaway Inlet.		
4	"	4½ miles E. of Rockaway Inlet.		
5	"	17¾ miles E. of Coney Island Point.		
6	"	½ mile W. of New Inlet Point.		
7	"	3½ miles E. of New Inlet Point.		
8	"	9½ miles W. of Fire Island Inlet.		
9	"	4¼ miles W. of Fire Island Inlet.		
10	"	at Fire Island light.		
11	"	3½ miles E. of Fire Island light.		
12	"	8½	"	"
13	"	12½	"	"
14	"	17	"	"
15	"	21½	"	"
16	"	26½	"	"
17	"	31½	"	"
18	"	36	"	"
19	"	41	"	"
20	"	33½ miles W. of Montauk Point light.		
21	"	26½	"	"
22	"	21½	"	"
23	"	16¾	"	"
24	"	11¾	"	"
25	"	7	"	"
26	"	½	"	"

On the North Side of Long Island.

27	"	West end of Fisher's Island.
28	"	Oysterpond, Plum Gut.
29	"	Eaton's Neck.
30	"	Sands' Point.
31	"	Watch Hill Point.

New Jersey Shore, between Sandy Hook and Cape May.

No. 1	is located at	Sandy Hook, E. of light.			
2	"	Spermaceti Cove, Great Beach.			
3	"	Wardell's Beach.			
4	"	Whale or Green's Pond.			
5	"	N. side Courlies' Pond, Deal.			
6	"	Squam Beach, S. side, Shark River.			
7	"		"	N. side Squam Inlet.	
8	"		"	S.	"
9	"		"	near Maxon's.	
10	"	Island Beach, S. side Cranberry Island.			
11	"		"	Eight-Mile House.	
12	"		"	N. side Bat. Inlet.	
13	"	Long Beach, S. side			"
14	"		"	"	"
15	"		"	"	"
16	"		"	"	"
17	"	Tucker's or Short Beach.			
18	"	Brigantine			"
19	"	N. end of Absecum Beach.			
20	"	S.	"	"	"
21	"	N.	"	Peck's	"
22	"	S.	"	"	"
23	"	S.	"	Ludlum	"
24	"	S.	"	7-mile	"
25	"	N.	"	5-mile	"
26	"	S.	"	2-mile	"
27	"	Cape Island City.			
28	"	Cape May light.			

These houses are under the supervision of the Philadelphia Board of Underwriters.

Each house under the charge of the Life Saving Benevolent Association, when complete is to be furnished with the following articles:

One metal surf-boat with air-chambers and cork-fenders, seven oars and two India-rubber bailing-buckets.

One metal life-car, with cork of India-rubber, floats and fenders, and rings and chains for each end.

One Manila hawser, four-and-a-half inch, one hundred and eight fathoms.

One hauling line, two-and-a-half-inch, three hundred and ten fathoms.

Two rocket lines, nine tenths of an ounce per yard, three hundred yards each.

One coiling frame for rocket line and box.

One crotch and the range for throwing rockets.

One sand anchor, strop and bull's eye.

One tackle, with twenty fathoms fall, two-and-a-half-inch Manila.

One heaver and strop.

One mortar of iron, and ten shot fitted with spiral wire.

One copper powder canister, and four pounds powder for same.

Twelve blue lights and box, containing fifty quick matches.

Five rockets and rocket-box of tin.

Eight pieces of match-rope and twelve pieces of port-fire.

Two lanterns and oil can, and oil for same.

One lamp feeder and wick.

One stove and pipe.

One cord of wood.

Two shovels.

One priming wire.

JOHN D. JONES, *President.*
DAVID D LORD, *Vice-President.*
WM. H. H. MOORE, *Treasurer.*
CLIFFORD A. HAND, *Secretary.*

AMERICAN SHIPMASTERS' ASSOCIATION.

This association, in New York, organized under a legislative charter, and now in successful operation, is worthy of the special attention of navigators.

Its objects are to elevate the professional character of the American mercantile marine, to promote the security of life and property on the sea, and to collect and disseminate information upon subjects of marine and commercial interest.

Its affairs are placed under the direction of a council of experienced ship-masters and ship-owners, who have adopted and commenced the enforcement of valuable and efficient rules.

Commissions are issued to persons found experienced or qualified as masters and as mates of vessels. These become recommendations to ship-owners, and will be found valuable or indispensable to obtain employment when the person seeking it is not otherwise well known.

Underwriters sustain or require them, by insuring at less rates of premium, by vessels in charge of officers holding such commissions, as will appear by the following copy of an advertisement:

The undersigned insurance companies concur in charging not less than one half of one per cent. more premium on passage risks between United States ports and the West India Islands and Bermuda, by sailing vessels under command of masters not having commissions from the American Shipmasters' Association, than by vessels commanded by masters having such commissions. To take effect, on outward risks, September 15th, and on homeward risks, October 1st, proximo.

NEW YORK, August, 1862.

ATLANTIC MUTUAL INS. CO., by J. D. JONES, *President.*
SUN MUTUAL INS. CO., by M. H. GRINNELL, *President.*
GREAT WESTERN INS. CO., by RICHARD LATHERS, *President.*
MERCANTILE MUTUAL INS. CO., by ELLWOOD WALTER, *President.*
COMMERCIAL MUTUAL INS. CO., by DANIEL DRAKE SMITH, *Presd't.*
NEW YORK MUTUAL INS. CO., by JOHN H. LYELL, *Vice-President.*
UNION MUTUAL INS. CO., by F. S. LATHROP, *President.*
ORIENT MUTUAL INS. CO., by LEOPOLD BIERWIRTH, *President.*
PACIFIC MUTUAL INS. CO., by ALFRED EDWARDS, *President.*
NEPTUNE INS. CO., by J. P. TAPPAN, *President.*
WASHINGTON INS. CO., by A. W. WHIPPLE, *Vice-President.*

The plan is based upon a voluntary concurrence with and adoption of it, without any legal compulsion; but, in that sense, has a strong basis of practical effect.

The rules adopted require that application for commissions be made in writing, specifying the native place, age, length of sea service, and principal voyages of the applicants; with reference to persons by whom he has been employed. Testimonials as to character and habits are also required. All of these are to be preserved for future reference. Misstatements made by the applicant are declared a sufficient reason for refusing a commission, or of revoking one, if granted. All the commissions reserve the right of revocation, and are to be signed and receipted for with this condition. They continue in force for one year, and may be extended or withheld at the option of the association.

If the applicant for a commission as master, has only served in fore-and-aft rigged vessels, or is not familiar with the management of square-rigged vessels, he may obtain a commission on which the words "*fore and aft*" will appear.

The general qualifications contemplated are experience as a mariner and navigator; skill in sailing and managing a vessel; full age of twenty-one years, good character and habits, particularly as to temperance, and six years' experience at sea.

The word "Extra" may be used for particular qualifications. Applicants for *extra* commissions must possess competent knowledge of nautical science to determine the longitude by observation; which is to be proved by an examination under prescribed rules.

Commissions granted may be revoked for cruel or inhuman treatment of the crew or passengers; for breach of trust or barratry; for unskilfulness or misconduct involving unnecessary loss, or damage to vessel and cargo; for shipwreck not satisfactorily accounted for, and generally, for reasons of the character indicated, satisfactory to a majority of the council.

The revocation may either be by notice to the holder, or by advertisement in the newspapers, or otherwise as the association may direct. These powers are to be reserved in any commission issued.

The council is composed of—

JOHN D. JONES, *President.*	CAPT. KENNEY COUILLARD,
CAPT. AMBROSE SNOW,	" GEORGE W. BLUNT,
" ROB'T L. TAYLOR,	" WM. C. THOMPSON.

I. H. UPTON, *Secretary.*

BARNEGAT TO SANDY HOOK.—Barnegat light-house is one hundred and sixty-five feet above the level of the sea, and contains a revolving light, varied by flashes of ten seconds; it is on the Southern side of the entrance. The tower is red and white. *Barnegat to Sandy Hook.*

The shore from Barnegat to the N. end of Long Branch, is nearly straight, running N by E. ½ E., thirty-three miles. It then bends gradually to the N. latitude of Sandy Hook light-house, distant nine miles from the Northern part of Long Branch. Variation in 1850, 5° W.

The beach N. of Barnegat is bare of timber, until nearly up with Squam Inlet (nineteen miles); but the pines, which are on the main land from two to three miles inside, show plainly over the sand hills.

The woodlands, which commence about one mile S. of Squam, are close to the shore, and extend to Long Branch, eight miles.

Long Branch is that part of the shore where low table-land shows itself close to the beach; numerous houses are built on it, and they are generally known to the seamen as the "Tavern Houses." It is about five miles in length.

N. of Long Branch the beach is low, and nothing remarkable until up with the entrance to Shrewsbury River, opposite the light-house on the Highlands of Neversink, where it is free from sand hills, and when the entrance is closed, which is sometimes the case, it appears perfectly level. After passing this flat part, distant about six miles from Long Branch, the cedars on Sandy Hook commence, and extend to the light-house.

Squam Inlet is navigable for small vessels; and as they are frequently detained at anchor on the inside of the bar, strangers, not knowing their latitude have supposed themselves opposite Barnegat from seeing them at anchor. At Barnegat the pines show as remote from the shore, while at Squam they are near.

The shore between Barnegat and the Highlands may be approached within one third of a mile by all classes of shipping, in clear weather, in the daytime; and there is nothing to fear, save a spot to the N. of Long Branch, about one and one fourth miles from the beach, on which there are but nine feet. It lies S. S. E. from the light-house on the Highlands, distant three miles. (See page 320.)

Although vessels, in clear weather, may venture in safety near this part of the Jersey shore in the daytime, they cannot be too careful in thick weather and at night; and when in less than thirteen fathoms water should keep the lead constantly going, as there are many places on this coast where ten and twelve fathoms depth may be

found within one or two miles of the shore, where the bottom is irregular, and where your approach to the beach can only be known by the rapid change in depths.

Soundings. SOUNDINGS BETWEEN CAPE MAY AND MONTAUK POINT.—The average extent off the coast of New Jersey is sixty miles: this will take you to the Forty-Fathom Line, from which it shortly afterward deepens to fifty and one hundred fathoms. The Forty-Fathom Line extends itself parallel with the coast until up with Barnegat, when it begins to widen, and thence extends over toward Montauk Point; S. S E. from which forty miles, you have forty fathoms; sixty-five miles, fifty fathoms; and eighty miles, one hundred fathoms.

When you get soundings on the edge of this bank, and are uncertain as to your position, never rely on soundings *once* or *twice* to determine it, but sound frequently, projecting your course, distance, and depth of water, the same scale as your chart, on a clean sheet of paper. After you have continued the same for sufficient time to get a profile of the ground sailed over, compare the depth and changes by cutting out such parts of your protection where there are no soundings, so as to enable you to slide it over the chart to such place as it will correspond; or, what is better, make your own projection and soundings on transparent paper, and slide it over such parts, near which you suppose yourself to be, antil the profile of depth corresponds with it, preserving the meridians on both parallels.

NOTE.—The chart of approach to New York has been published by the U. S. Coast Survey, and by attention to the above one may navigate with the greatest safety with it, bearing in mind that a single depth of water will no more give you your location at sea, than your altitude above the sea would give your position on the land. If you wish to navigate with the lead, in addition to having a good chart, you must watch the changes as you would the aspect of a country over which you are travelling.

Coast Southward of Sandy Hook. COAST SOUTHWARD OF SANDY HOOK.—If you continue in near Cape Hatteras, be careful of its shoals: and make your way to the N. N. E., which will carry you on the soundings of the Jersey shore. When you get twenty fathoms water, in latitude 40° N., then haul in to make the land, by which you will avoid the difficulties of the coast, and the shoals nearer in shore; but if you cannot, see the following:

When you are up with Chincoteague, in sixteen fathoms water, it is near enough to approach them; from this station, if bound into the Delaware, steer N. N. E. ½ E., which is the course parallel to the land, until Cape Henlopen light bears W. You may then run in for it; or, if bound to New York, keep on that course until you have passed the pitch of Long Beach, taking care, as remarked before, not to run into less than ten fathoms water, if night. You can then steer for the Hook. If, in running up, you deepen your water suddenly, from fourteen, eighteen, to twenty-five and thirty or thirty-five fathoms, oozy bottom, you are in what is called the Mudhole, the centre of which is thirteen miles from the Taverns, at Long Branch, and S. E., fifteen miles, from Sandy Hook light-house.

Sandy Hook, Cape May, and Cape Henlopen. SANDY HOOK, CAPE MAY, AND CAPE HENLOPEN.—When sailing from Sandy Hook light-house, as soon as to the Eastward of the bar, steer S. if night, till you pass Barnegat; if daytime when passing, you may go nigh the breakers, say five and a half fathoms. In sailing between the Highlands and Barnegat in the daytime, you may go within one fourth of a mile of the land, if the wind is off shore. When you have passed Barnegat, steer S. W. by S., ten or eleven leagues, which will carry you up with Great Egg Harbor, which has a shoal bank one league from the shore, that has not more than six feet water on it.

In the daytime you may go within two leagues of the shore, but in the night it will be prudent to keep farther off. When you have passed Great Egg Harbor, steer S. W. by W. ten leagues, which will bring you up with Cape May light.

Between Barnegat and Cape May there are three inlets, one of which is fit, at high water, for vessels drawing fifteen feet. viz.; Little Egg Harbor, as below. Great Egg Harbor may be run for in time of danger, and will give twelve feet at high water. The navigation is not so safe as other places.

In running for Cape May, while steering your S. W. by W. course, you will pass five inlets before you come up with Cape May light, viz.: Coston's, Townsend's, Hereford, Turtle Gut, and Cold Spring, all of which have bars lying off their entrances: when abreast of Hereford Inlet, you may, if bound to Cape May, steer W. by S., but if bound to Cape Henlopen, steer S. S. W. till the light-house bears W., when you may run for it till within two miles

E. by S. from Cape May light, fifteen and a half miles distant, lies Five-Fathom Bank, with twelve feet water on it. The S. end bears E. S. E. from Cape May, and from Cape Henlopen it bears E. ½ N., twenty-one miles distant, and ranges N. and S. It is dangerous for vessels with over ten feet water.

BARNEGAT.—The following buoys are passed in entering Barnegat Inlet.

Sea buoy is a white and black striped can, No. 1, in eighteen feet water, light-house bearing W. by S., Bar buoy N. W. *Barnegat Buoys.*

Bar buoy is a white and black striped spar, No. 2, in twelve feet water, light-house bearing W. S. W., Channel buoy N. W.

Channel buoy is a white and black striped spar, No. 3, in fourteen feet water, light-house bearing S. W.

Port side of Channel buoy is a black spar with a cross, in ten feet water, light-house bearing S. S. W.

Bulkhead buoy, is a white and black striped spar, No. 5, in thirteen feet water, light-house bearing S. E. by E.

Buoy on a wreck is a red and black striped spar, No. 6, in six feet water, light-house bearing E. by S.

South Bulkhead buoy is a red spar, in five feet water, the light-house bearing E. S. E.

After making the Sea buoy, steer N. W. one fourth of a mile for the Bar buoy No. 2, which pass on either side, and continue on three eighths of a mile to Channel buoy No. 3, from which steer N. W. by N. for the point of the North Beach, and when within one hundred yards of it steer N. W. ½ N., for the black buoy with a cross on it, on the port side of the channel, leaving it on the port hand. Then steer W. three fourths of a mile, for Bulkhead buoy No. 5; thence S. S. E. for buoy No. 6, which is on a wreck, to which you must give a good berth. Leave it on either hand, and steer for South Bulkhead buoy. You have then good anchoring-ground all the way up to the Westward to Point of Beach.

LITTLE EGG HARBOR.—About midway between Little Egg Harbor and Barnegat, there is a large hotel, which is a good mark to know the land by. *Little Egg Harbor.*

SOD CHANNEL.—Coasters bound to the Northward will generally make this harbor, when caught by a Northeaster, after having passed to the Northward of it, and before being able to make Sandy Hook. In running down within sight of the land, pass the house near the point of Long Beach, giving the breakers off the Old Islet a berth of half a mile, and keeping in twenty-four feet water until the boarding-house on Tucker's Island bears N. W. by W. The boarding-house on Tucker's Island is distinguished from that on Long Beach by having three small trees close to the Northward of it and a thick undergrowth on the hillocks on the Northern extremity of the island, whereas the sand hills in the neighborhood of the boarding-house on Long Beach are bare. High water, 7h. 10m.; rise, four feet. *Sod Channel.*

Being in twenty-four feet water, fine black sand, with the boarding-house on Tucker's Island bearing N. W. by W., steer W. by S., for the outer buoy, near the middle of the entrance of Sod Channel.

While abreast of Tucker's Island, and before reaching the outer buoy, there will not be much tide, and the least water will be ten feet at low water. When up with the outer buoy, the S. W. point of Tucker's Island being nine hundred feet distant to the Westward, steer S. W. ½ S. for the middle buoy, keeping on the outside. Strong tide will here be met—the flood setting over the shoal off the point of Sods, and the ebb setting over toward the Round Shoal, for which allowance must be made. Turn the middle buoy in nineteen feet water, and steer for the inner buoy. With a scant wind and an ebb-tide, vessels will be obliged to anchor here, or even before reaching this point.

With a change of tide a better anchorage will be found farther up, between Anchoring Island and the marsh to the Northward. This part of the harbor, from the N. W. extremity of Anchoring Island to Hatfield's store, is one mile and a fourth long, and a fourth of a mile wide.

Vessels coming from the Southward, and wishing to enter by the Sod Channel, will bring the boarding-house on Tucker's Island to bear N. ½ W., and steer for it, giving the Round Shoal a berth. When a hillock on the S. end of the island bears W. ½ N., haul up W. by S. for the outer buoy, and afterward follow the directions given above.

SOUTH CHANNEL.—Vessels from the Southward will give the Brigantine Shoals a good berth, keeping four fathoms water until the Northernmost house on Brigantine Beach bears N. W. by N., then steer N. by W. ¼ W. if the weather be clear. Hatfield's store on the marsh will be seen ahead, four and a half miles distant. Keep on this course until the Northern house on the Brigantine Beach bears N. W. by W. ¾ W., when they will be between the breakers on the S. point of the Round Shoal and those on the beach; then haul up to the N. E. ¾ N., and continue on that course three fourths of a mile, until the Northern house on Brigantine Beach bears W., and the S. E. point of the sand hillock on the S. end of Tucker's Island bears N. ¾ W.; haul in then N. ¾ W., and steer for this hillock until nearly up with the middle buoy, after which proceed as before directed. *South Channel.*

Buoys.

The following buoys are passed in entering Little Egg Harbor by the East Channel:

Sea buoy is a black and white striped spherical buoy, No. 1, with an eight-foot stem, in eighteen feet water, Tucker's Beach boarding-house bearing N. by W., bar buoy of East Channel S. W.

Bar buoy of East Channel is a black and white striped can, No. 2, in eleven feet water, light-house bearing N. by E., East Channel buoy W. N. W.

1st East Channel buoy is a black and white striped can, No. 3, in thirteen feet water, light-house bearing N. N. E. ¼ N., buoy No. 4, W. N. W.

2d East Channel buoy is a black and white striped can, No. 4, in eighteen feet water, light-house bearing N. E. by N., buoy No. 5, N. by W.

East and North Channel buoy is a black and white striped can, No. 5, in twenty feet water, light-house bearing N. E. by E. ½ E., buoy No. 6, N. by W.

Main Channel buoy is a black and white striped spar, No. 6, light-house bearing N. E. by E., B. S Willet's house N. by W.

After making the Sea buoy, steer S. W. half a mile for Bar buoy No. 2, then W. N. W. one mile for No. 4, passing, when halfway, buoy No. 3; then steer N. by W. three fourths of a mile for No. 5, and continue on three fourths of a mile to Main Channel buoy No. 6, thence to B. S. Willet's house, until near Anchoring Island, and giving the E. point of the same a berth of two hundred yards, steer N. by W. into the harbor.

To enter by North Channel, when up with Sea buoy No. 1, as in the East Channel, steer N. W. three fourths of a mile for buoy No. 1½, then W. N. W., half a mile for buoy No. 5, and then as directed above.

Absecum Light.

ABSECUM LIGHT is a fixed light on the S. side of the Inlet, one hundred and sixty-seven feet above the level of the sea.

Absecum Inlet

ABSECUM INLET.—Absecum lies five and a half miles S. W. from Little Egg Harbor. Off Absecum, from E. to E. by S. three miles, lies a shoal, having on it several lumps, on which there are only ten feet water. The ground is broken, having between the lumps four and five fathoms.

To enter the Harbor.—Bring the house, which is on the starboard hand point, to bear N. W., and steer directly for it, until within one fourth of a mile from the house, when you must steer N. till you get to the marsh, where you may anchor in from three to six fathoms. Depth of water on the bar, at low water, nine feet; common rise of the tide, five feet.

There is an iron bell-boat painted red, with the word "*Absecum,*" just outside of the outer shoals off this inlet, in five fathoms water, two and a fourth miles from the S. point of the inlet. The bell is rung by the action of the sea. The following are the compass bearings from the boat, viz.:

Absecum Inlet	N. W. by N.
do. light-house	N. W. ½ N.
Outer buoy of Absecum Bar	N.

The course to clear Brigantine Shoals is N. E. by E.

The following buoys are passed in entering Absecum Inlet:

Sea buoy is a white and black spherical buoy, No. 1, with a six-foot stem, in fifteen feet water. Absecum light-house, W. by S., Holdzkom's house (Brigantine Beach), N. E. by N.

First Channel buoy is a white and black striped can, No. 2, in nine feet water. Holdzkom's house bearing N. E. ½ E., Absecum light-house W. S. W.

Second Channel buoy is a white and black striped can, No. 3, in nine feet water, Holdzkom's house bearing N. E. by E., Absecum light-house, S. W. by W.

Harbor buoy is a black and white striped spar, No. 4, in ten feet water, Horner's house bearing W. by S., Absecum light-house S. W. ¼ S.

When up with Sea buoy, No. 1, steer due W. five eighths of a mile, for buoy No. 3, passing No. 2, about midway, then W. N. W. a fourth of a mile for No. 4, then S. until you can clear the N. beach about one hundred yards, and then follow up the S. beach, steering N. N. W., and anchor at discretion. Least water on the bar nine feet.

Great Egg Harbor.

GREAT EGG HARBOR.—The following can-buoys, white and black, in horizontal stripes, have been placed to mark the channel at Great Egg Harbor:

No. 1 buoy is in twenty feet water. From it the N. point of Peak's Beach bears N. W. by W. No. 2 buoy is in fifteen feet water. No. 3 buoy is in forty-two feet water. From it No. 2 buoy bears S. by E. No. 4 buoy is in twenty-two feet water. From it, the hotel of No. 3 buoy bears E. by N. No. 5 buoy is in twenty feet water. From it, the hotel of Somers Point (the Northern house) bears N. W.

To enter the inlet steer the following courses, viz.: From No. 1 to No. 2 buoy, N. W. ¼ N.; from No. 2 to No. 3 buoy, N. by W.; from No. 3 to No. 4 buoy, W. by S.; from

No. ½ to No. 5 buoy, W. by S. ½ S.; from No. 5 N. W. until halfway to Somers Point, then keep close to the N. Shore, to clear a wreck that lies near the port side of the channel.

FIVE-FATHOM BANK.—Vessels bound into the Delaware, coming from the Northward, or having fallen to the Northward of Cape Henlopen, should be careful not to approach nearer than twelve fathoms water, until they have got into the latitude of said cape, to avoid the shoal called the Five-Fathom Bank, on which a light-vessel, having two masts, with a lantern on each, is moored in twelve fathoms water, Cape May light-house bearing W. by N. ¾ N., distant sixteen miles; the centre of the shoalest ground, on which is found twelve feet water, bears N. W. ½ N. from the light-ship, distant two and a half miles. It extends N. by E. ½ E., and S. by W. ½ W., three fourths of a mile, and is half a mile in breadth, and bold on its Eastern edge, as there are seven fathoms half a mile to the Eastward of the shoal water. On its N. E. edge is a black nun-buoy, marked F. F., in six fathoms. *Five-Fathom Bank.*

The Five-Fathom Bank, having on it four and five fathoms, is nine miles long, in a N. and S. direction, and has an average breadth of one mile and a half, in an E. and W. direction.

There is a passage inside of this shoal, by taking your soundings from the land in six or seven fathoms, but strangers, in large vessels, should not attempt it.

McCRIE'S SHOAL, OFF CAPE MAY.—The shoal bears seven and one fourth miles S. E. from Cape May light-house, and has seventeen feet water upon it. W. by N., one mile and an eighth from McCrie's shoal, there are eighteen feet water on a small spot. *McCrie's Shoal, off Cape May Light-house.*

Another shoal fifteen miles E. S. E. from Cape Henlopon light-house, with four and a fourth fathoms water upon it. There is a red nun-buoy, No. 2, near its S. E. edge in five fathoms water.

S. E. one mile and a half from Congress Hall, there is a shoal one mile in extent, on which there are only six feet water. There are three and a half fathoms inside of it. It is called Old Eph.

CAPE MAY LIGHT-HOUSE is on the extreme S. W. point of the cape, at the entrance of Delaware Bay; its elevation from the sea is eighty-four feet, contains a revolving light, and makes a revolution in four minutes; interval between two flashes of greatest brilliancy eighty seconds, at the distance of ten miles. The light is not totally eclipsed, although much more dim than at the brightest period. It bears N. E. by N. ¾ N. from Cape Henlopen light, distant about ten and a half miles. *Cape May Light-house.*

S. W. from Cape May light, half a mile distant, there is a shoal of one fourth of a mile in extent, having on it ten feet water.

The S. point of Crow Shoal bears W. 22° N. from the light, distant one mile and a fourth.

The shoal is four miles in extent, in a N. direction, having on it only seven feet in places.

There is good anchorage and a harbor under Cape May light, with the wind at N. or N. N. E.; and after passing the light, and keeping the land on board, in three to five fathoms water, vessels will find safe anchorage and a good harbor, with the wind at the Eastward.

CAPE MAY.—Vessels approaching the Delaware Bay by Cape May will get the light to bear N. W. by W. ½ W., in four or five fathoms; then run for it, and make a safe entrance into the Delaware, clear of all shoals, with vessels drawing ten feet water. *Cape May.*

Running for the light, keep about two miles to the Northward and Eastward of it, until about three fourths of a mile from the shore. From this you must keep the shore close on board, when you will be in five fathoms water, till you double round the cape, when you will leave the Great Shoal on your port hand, over which it continually breaks, when covered, bearing S. E. by E. from the light, distant one mile and a half, bare at low water. After you have doubled the cape, steer N. till the light bears S. E. ½ S., when you must steer N. W. till you deepen into seven and eight fathoms. In running the above course, you will have from five to one and a half fathoms at low water on Crow Shoal, before you come into eight fathoms, which is five miles distant from the light. After you have got into eight fathoms, you will immediately come into three fathoms, when you must steer N. W. by W. three leagues, which will carry you into the main channel, between the Brandywine light-house on your port and Cross Ledge on your starboard hand, bearing N. N. W. ½ W. and S. S. E. ½ E. from each other, distant eleven and three fourths miles.

Cross Ledge has a beacon-boat, with one mast, moored on it during the summer season; and in winter it has a buoy. On its S. E. edge a red nun-buoy, No. 10, in five fathoms water.

On the first of the flood the tide sets to the Westward, and in light winds should be

guarded against, by steering from one to two points more to the Eastward, and on the ebb the contrary.

There is a red nun-buoy with a cross on it on this shoal, in seven feet water, on the foundation of the light-house.

The foundation bears .....N. N. E., distant fifteen yards.
The ledge light-vessel .....S. S. W.
The kedge buoy.....S. by W. ½ W., distant three fourths of a mile.

In running the above course, you will have three, three and a half, and two and three fourths fathoms, until you come near the main channel, when you will deepen into five fathoms, which is a swash that runs up to the Eastward of the Cross Ledge; still keep your N. W. by W. course until you have crossed this swash, when you will shoal your soundings into two and a half fathoms, and then deepen into seven fathoms, which is the main ship-channel, when you must steer N. W. until you have only five fathoms, which is on the Fourteen-Foot Bank (which has a black nun-buoy on the S. S. E. end), and then alter your course to N. N. W. for Cross Ledge. High water, 8h. 19m.; rise, six feet.

Cape Henlopen Light. CAPE HENLOPEN LIGHT is one hundred and eighty feet above the level of the sea, containing a fixed light. S. E. by S. of the light-house is the Hen and Chicken Shoal, hereafter described. The nearest part of the Overfalls, which has on it from two to five fathoms, bears N. E. by N. from the land, distant four and a half miles; the outer point, N. E. by E. ½ E., distant seven miles. On the S. W. point is a red nun-buoy, No. 4, in four feet water. Brandywine Shoal bears N. ½ W., distant eleven and one fourth miles. On its N. W. edge is a red nun-buoy, No. 6, in five fathoms water.

The beacon stands on the N. end of Cape Henlopen, four hundred and thirty seven yards from the beach. It bears N. 5° W., three fourths of a mile from the light-house. Ships running in for Old Kiln Roads may, when the beacon light and the light-house are in one, approach the beacon light within one third of a mile; then steer W. N. W. until the light-house bears S. E., and anchor in four fathoms, good holding ground.

E. ½ S. from Cape Henlopen, twenty-five miles, is a shoal, with four fathoms on it, gray sand.

Bring Cape Henlopen light to bear W., and run for it until within two miles; when abreast of it, you will have fifteen or sixteen fathoms water. After you have passed it, steer W. N. W. until you bring it to bear E. S. E., when you may anchor in three or four fathoms, near the breakwater.

There is no difficulty, with common attention, in running into the anchorage to the Southward of the breakwater, even in a gale of wind, either between the two works or by the passage to the S. E. of both. There is a white fixed light, varied by flashes, forty-six feet high, on the N. W. end of the breakwater.

In approaching from sea, and going in by the Southern passage, give the beacon light on the pitch of the cape a berth of about one third of a mile, and when you bring the W. end of the breakwater to bear N. W., steer for it, and anchor as close on the work as you can with safety, the light on the W. end bearing about N., or N. by W.

Brandywine Light. BRANDYWINE LIGHT is an iron light-house. The light is fixed, and forty-seven feet above the sea. It is on the S. part of the shoal, in eight feet at low water.

It bears from Cape May light N. W. by W. ½ W., eight miles distant; from Cape Henlopen, N. ¼ W. twelve and two thirds miles.

Fog-Bell. There is a fog-bell on the light-house, which, in foggy weather, gives seven strokes, at intervals of five seconds, then a pause of half a minute, then seven strokes again.

One and three fourths of a mile, on a N. by W. course from the light-house, there is a red nun-buoy, No. 6, on the Northern point of the shoal, in six fathoms.

Light. There is a fixed light, thirty-eight feet above the sea, at Mispillion, S. side of Delaware Bay.

Delaware Bay and River. DELAWARE BAY AND RIVER.—In running up the bay, Henlopen light bearing S. ½ E., steer N., a little W., for the black can-buoy No. 5, of the Brown, which bears N. 40° W. from the light, nine and a fourth miles distant, which you leave to the Westward; keep on that course until up with the Brandywine light, then steer from the light to the light-boat near Cross Ledge. Your course on the flood tide is N. W. by N. ½ N., and on the ebb N. N. W., the distance eleven and one fourth miles. Soundings from four and one third to eight fathoms. You leave the buoy on the N. end of the Brandywine Shoal to the Eastward, and the one on the Fourteen-Foot Bank to the Westward; the former being one and three fourths, and the latter five miles from the light-boat.

The tides are influenced very much, in direction and strength, by the winds; but as the channel is well defined by the two light-boats (which are moored in line with it), in connection with the buoys, there can be no difficulty in clear weather.

You make Egg Island fixed light bearing about N. soon after leaving the Brandywine; it is upon a dwelling-house, elevated forty-five feet, visible twelve miles. N. W. by W., one mile and a half from the buoy on Fourteen-Foot Bank, is the Southern extremity of Joe Flogger, or Folger Shoal, a narrow ridge running N. N. W., fifteen miles, nearly dry in places and forming for that distance the W. side of the main channel. In beating up do not stand to the Westward into less than four fathoms. In thick weather, Joe Flogger may be safely tracked along the whole extent, hauling on to four fathoms, hard, and deepening off to five and six fathoms soft.

The ledge life-boat shows a single light elevated forty-five feet, visible seven miles, and is moored about mid-channel between Joe Flogger and the buoy on the lower end of Cross Ledge which is a narrow ridge of hard sand on the E. side of the channel, four and a half miles in length, and nearly dry in places. Leave the light-boat to the Westward, close aboard, and the course then to the Middle is N. W. by N. ½ N., on the flood, and N. N. W. on the ebb tide, distance four miles, soundings from seven and a half to five fathoms. These courses carry you about mid-channel between Joe Flogger and Cross Ledge. From the buoy of the Middle unto Bombay Hook Bar, the Thrumcap (the lower of two insulated clumps of trees on the Western shore bearing S. W.), the course is N. W. ½ W. on the flood, and N. W. by N. on the ebb, distance nine miles. Soundings from five to six and a half fathoms. Bombay Hook Bar is very bold; the soundings in the channel off it are from six to six and a half fathoms. It should not be approached nearer than five fathoms. *Light-boat.*

There is a fixed light, forty-five feet above the sea, on the S. W. side of Haystack Island, New Jersey shore, bearing about W. from Egg Island light.

Cohansey light on the Jersey shore is in sight from the buoy of the Middle, bearing N. N. W. ¼ N.; it is upon a dwelling-house, elevated forty-six feet, and visible sixteen miles. Mahon light is also upon a dwelling-house, elevated thirty feet, and visible ten miles and is in sight, bearing W. by S. ½ S. Egg Island light bears E. by S. ½ S. The above three lights are all fixed. *Cohansey Light.*

When nearly up with the Northern end of Joe Flogger, Bombay Hook light will be made just open with Bombay Hook Point, and bearing N. W. It is elevated forty feet, and is visible twelve miles. When up with Bombay Hook Point, Reedy light will be made, bearing N. W. by N., elevated fifty-five feet, and visible fourteen miles. Both of the above are fixed lights. *Lights.*

The channel Westward of Joe Flogger cannot be considered available until it is buoyed.

The following directions are given, because it has sometimes been entered by mistake, and considerable embarrassment experienced in working back to get into the main channel again. This channel is as direct as the main channel, though not so wide. The southern extremity of Joe Flogger Shoal, as already observed, bears N. W. by N., one mile and a half from the buoy on Fourteen-Foot Bank. Entering with that buoy bearing one mile and a half, steer N. W. by N. ¼ N., which course will carry you along the western side of the shoal, in not less than four fathoms, until Mahon light bears W. by S., when you strike a middle ground one mile and a half long, least water thirteen feet; having passed it, you drop into four fathoms again.

When the buoy of the middle (main) channel bears E. by N. ½ N. and Mahon light W. by S. ½ S., steer N. W. by N. ½ N., and you may pass through into the main channel, a little below the Thrumcap, and in not less than three and three fourths fathoms.

The following directions will also serve for this channel, and with a head tide, more safely than the foregoing: Entering as before directed, track the W. side of the channel along, shoaling to three and a half and deepening to four and five fathoms, until Mahon light bears W. N. W., when you take your soundings from Joe Flogger cautiously (not shoaling to less than three fathoms, for the shoal is very bold) and carry three and a half to four and a half fathoms through, between it and the Middle Ground. When past the Middle Ground track the W. of the channel along as before.

NOTE.—Courses and bearings are magnetic, and distances in nautical miles. Variation, 1850, 3° 30' W. *Note*

The name of Blake's Channel has been given to the channel W. of Joe Flogger, which was made known in the progress of the U. S. Coast Survey.

From Bombay Hook Bar to Liston's (the tree bearing S.), the course is N. W. ½ N., distance eleven miles; soundings, as far as Bombay Hook light, six to four and a half fathoms, and between the light and Liston's three and a half to three and one fourth fathoms, being the least water in any part of the channel between Cape Henlopen and the Pea-patch.

From Liston's (the tree bearing S.), to give Stony Point bar a berth, steer for Port Penn piers, a little to the Westward of Reedy Island light, one mile and a half, or until Barney's house on the Delaware shore (yellow, with two single poplars near it), bears N. W. by W., soundings four fathoms; then your course is N. by E. ¼ E., four miles, to Salem or Ellingsborough Point, on the Jersey shore; soundings, up to the middle of

Reedy Island, four to five fathoms; then deepening to seven or eight fathoms. There are two channels to pass the Peach-patch: for the Eastern or Goose Island Channel, track the Salem flats along, which commence at Elsingborough Point hauling on and off, shoaling to three and a half, and deepening to five and six fathoms.

When up with the N. end of the Peach-patch, take your soundings from the New Jersey shore, hauling on to the flat to three, and deepening to four fathoms, tracking the flat along until New Castle spire bears N. by W., when you are clear of the Northeastern end of Bulkhead Shoal, and may haul out into the middle of the river.

The channel Westward of the Pea-patch is divided by a middle ground, commencing about midway between the Pea-patch and Delaware shore, and following the bend of the river about one mile and a half; least water upon it ten feet.

The channel Westward of this Middle is narrow; least water is twenty feet. To take it, run from Elsingborough Point for the Pea-patch, until up with Reedy Point, from which the shore trends suddenly to the N. W.; then track the flats on the Delaware shore along, passing between the E. and W. buoys, and near the W. buoy, up to the Hamburg buoy.

The channel E. of the Middle is not so difficult: least water thirteen feet. When up with Reedy Point, take your soundings from the Pea-patch side, and track the flats up to the E. buoy, and then the middle to the Hamburg buoy.

From New Castle to Marcus Hook the general course of the river is N.E. by N., eleven and a half miles. The best water off the Eastern shore, until past Cherry Island flats, a middle ground of Christiana Creek, about two and a half miles long; least water eleven feet. Having passed the flats, the best water is off the Western shore; keeping it pretty well aboard, you clear Marcus Hook bar, which lies off that place.

At the mouth of Christiana Creek there is a fixed light forty-eight feet above the sea. From Marcus Hook to Chester the course is about N.E. by E., three and a fourth miles; best water off the Western shore. When one mile above Chester, you are up with the buoy on the spit which makes down the river from Tinicum Island, which you leave to the Westward. The trend of the river is then nearly E. of the bar, below Fort Mifflin, upon which there are two buoys.

Cross the bar between the two buoys, and steer for Fort Mifflin, passing to the Northward of the Old Pier, which lies off that work. The river then trends Eastward again up to the Horseshoe, upon which there is a buoy, which is to be left to the Northward.

Light. At Fort Mifflin, on a pier in the river, there is a fixed light, twenty-eight feet above the sea.

Having passed the Horseshoe, the trend of the river is nearly N. up to Kaighn's Point, the best water on the Eastern shore, until the Canal basin, on the Pennsylvania side, bears W. by N.; steer across the river, and keep the Western shore aboard up to the city.

Remarks. REMARKS.—The harbor of Reedy Island is much used, particularly in winter, while ice is running. A small spit makes S. from the lower end of the island, half a mile; being clear of this, your course is N. Anchor off the piers, in four to six fathoms, mud.

Bombay Hook Roads is an anchorage much used by vessels waiting wind or tide. Bring Bombay Hook Point to bear S. by E., the light W. by N., and anchor in from three to four fathoms, sticky bottom.

The above directions are by Lieut. Geo. S. Blake, U. S. Coast Survey, excepting the Goose Island Channel, which was re-surveyed in 1845–6, by Lieut. Arthur, the change in the channel having made it necessary.

Tide Table.

TIDE TABLE.

MOON	S. E. by E. S. E. S. E. S. S. E. S. by E. S. S. S. W. S. W.	makes full sea at	Cape May. Cape Henlopen. Brown and Brandywine. Bombay Hook. Reedy Island. New Castle. Chester. Philadelphia.

Setting of the Tides within the Capes.

First quarter flood	W. N. W.
Second to last quarter	N. N. W.
First quarter ebb	E. S. E.
Second to last quarter	S. S. E.

Lights. Light-houses on Delaware Bay, the Eastern side:

A fixed light on Egg Island Point	Lat. 39° 10′ 28″
A fixed light on Cohansey Creek	" 39° 20′ 15″

On the Western side:

A fixed light at Mispillion Creek, on a dwelling-house.....	Lat. 48°	56′	33″	*Lights.*
A fixed light at Mahon's Ditch, on a dwelling-house.....	39	10	13	
A fixed light at Bombay Hook, on a dwelling-house.....	39	21	43	
A fixed light on Reedy Island.....	39	29	57	
A fixed light at Christiana River.....	39	43	12	

DELAWARE BAY.—The following sailing directions for entering Delaware Bay, are given by Lieutenant R. Bache, in connection with these buoys: *Delaware Bay.*

RICKARD'S CHANNEL.—Vessels drawing fifteen feet water can pass through this channel at ordinary low water, smooth sea. *Rickard's and Blunt's Channels.*

BLUNT'S CHANNEL.—Not yet buoyed.

THROUGH CHANNEL TO BREAKWATER.—Vessels drawing sixteen feet can pass through this channel at ordinary low water, smooth sea. *Through Channel to Breakwater.*

The rise of the tide may be estimated at five feet. Strong tides running, an allowance of two points must be made on the course steered, crossing the direction of the tides. The lead is a guide. The shoals, although pretty steep to, can be avoided by constant and true soundings.

When off the boarding-houses on Cape Island, in the Coaster's or Cape May channel, buoy No. 1, on Eph's Shoal, will be seen W. by. N. ½ N., per compass—steer for it leaving it close on board on starboard hand when passing—when up with buoy No. 1, buoys Nos. 2, 3, 4, 5, and 6, in clear weather will be in sight.

TO PASS THROUGH THE "THROUGH CHANNEL" TO BREAKWATER.—This channel is narrow; on the S. E. is a shoal, with seven feet water upon it, and the Round or E. N. E. shoal is to the Northward, and has four feet water upon it, and the breakers show plainly in any breeze. When abreast of No. 1, on Eph's Shoal, stand W. ¾ N. toward buoy No. 3, keeping it open on the port bow a point, and gradually hauling up for it. When up with No. 3, leave it on the starboard hand, and steer S. W., by S. for No. 2, which leave close on board on starboard hand, and continue on S. W. by S. for Breakwater. *To pass through the "Through Channel" to Breakwater.*

TO PASS THROUGH RICKARD'S CHANNEL.—This channel lies between Crow and the Mummy shoals; the Crow Shoal having on it seven feet water, and the Mummy Shoal six feet water. After passing buoy No. 4, it is a good beating channel. *To pass through Rickard's Channel.*

From buoy No. 1, steer N. W. ¾ W. for No. 4, which will leave No. 1 on the starboard hand at a short distance, and steer N. N. W. Westerly for No. 5, which pass on either hand and haul up N. W. ½ W. Westerly for No. 6, which pass on either hand, and shape your course W. ½ N., which brings you between the buoy of the Brown and lightboat on the Brandywine Shoal, in the main ship channel.

NOTE—All soundings are given at low water.

Beacons and Buoys as they are passed in entering Delaware Bay and River. *Beacons and Buoys.*

NAME OF STATION.	NO.	DESCRIPTION.	DEPTH AT LOW WATER AT BUOY OR BEACON.
Five-fathom Bank, N. E. part.....	....	Nun-buoy, black, marked "F. F."...	36 feet.
S. end of Hen and Chickens.	1	Spar-buoy, red and black horizontal stripes.....	25 "
McCrie's Shoal..... ...	2	Nun-buoy, red.....	5 fathoms.
Tail of the Shears.....	3	" black.....	3 "
S. W. Point of Overfall....	4	" with staff and triangle, red.....	40 feet.
Buoy of the Brown.....	5	Can-buoy, black.....	6 fathoms.
Boyd's Shoal.....	7	" "	20 feet.
Brandywine Shoal, N. W. part.....	6	Nun-buoy, with flag, red.....	6 fathoms.
Fourteen-foot Bank.....	9	" black circular mark....	31 feet.
Tail of Joe Flogger.....	11	Spar-buoy, red & bl'k hor. stripes..	17 "
Miah Maul Shoal.....	8	Nun-buoy, with triangle, red.....	4 fathoms.
Swash of Joe Flogger....	13	" black.....	21 feet.
Foundation of light-house..	10½	" red.....	7 "
Cross Ledge.....	10	" with cross, red.....	5 fathoms.
Buoy of the Middle.....	12	" bl'k & white per. stripes.	33 feet.
Ben Davis' Point.....	14	" with flag, red.....	23 "
North end of Joe Flogger..	15	Can-buoy, black.....	17 "

Beacons and Buoys as they are passed in entering Delaware Bay and River.—continued.

NAME OF STATIONS.	NO.	DESCRIPTION.	DEPTH AT LOW WATER AT BUOY OR BEACON.
Goose Point	15½	Nun-buoy, black	15 feet.
Ship John Shoal	16	" with triangle, black	4 fathoms.
Bombay Hook Bar	17	Can-buoy, with cross, black	6 "
Arnold's Point	18	Nun-buoy, red	20 feet.
Baker Shoal	20	" red	4 fathoms.
Needy Island Spit	19	Spar-buoy, black	15 feet.
S. Spit of the Pea-patch	21	Nun-buoy, red & blk hor. stripes	21 "
S end of Middle Ground	22	Spar-buoy, red	19 "
E. buoy of Main Channel	24	" red	3 fathoms.
W. " " "	23	" black	17 feet.
Bight of Hamburg Bar	25	" black	15 "
N. end of Middle Ground	26	" red, tipped with white	20 "
Finn's Point, East Channel	28	" red	19 "
Goose Island Flats, East Channel	27½	" red	14 "
Bight of the Bulkhead	27	" black	2 fathoms.
Mouth of the East Channel	30	" red	15 feet.
N. end of Bulkhead Shoal	29	Nun-buoy, bl'k & red hor. stripes	15 "
S. end of Cherry Island Flats	31	Spar-buoy, red & bl'k hor. stripes	2 fathoms.
N. end of Cherry Island Flats	33	" " " "	3 "
Marcus Hook	32	" red	25 feet.
S. end of Chester Island Flats	34	" red	21 "
N. end of Chester Island Flats	36	" red	3 fathoms.
Tinicum Spit	35	" black	20 feet.
West Bar buoy	37	Spherical-buoy, black	3 fathoms.
East " "	38	Spar-buoy, red	17 feet.
Horseshoe buoy	39	" black	4 fathoms.

To mark the Channel at Cape May and Maurice River Cove.

East end of Eph's Shoal	1	Spar-buoy, bl'k & red hor. stripes	2 fathoms.
West end of " "	2	" " " "	2 "
South end of Mummy Shoal.	3	" black	21 feet.
Through Channel	4	Spar-buoy, with cross arm marked "W. B.", black and white	4 fathoms.
South end of Crow Shoal	5	Spar-buoy, bl'k & red hor. stripes	2 "
Rickard's Channel	6	" black and white	3 "
" " W. end	7	" " "	3 "
S. end of Dead Man's Shoal.	8	" red & bl'k hor. stripes	11 feet.
N. " " " "	9	" " " "	9 "

The Hen and Chickens. THE HEN AND CHICKENS.—On this shoal there are five feet water, in places. The Southern point, on which there are thirteen feet water, bears S. E. by S. two and a half miles, from Cape Henlopen light. The beacon in range with the light on the breakwater, puts you on the edge of the shoal. On the Southern part is a spar-buoy, red and black horizontal stripes, No. 1, in twenty-five feet water. Coasters may pass inside, and follow the beach around the cape.

Inside of the shoal, and parallel to the shore, there is a channel of four and a half to five fathoms.

Cape Henlopen to Cape Henry. CAPE HENLOPEN TO CAPE HENRY.—The coast is studded with shoals, lying at a distance of from three to six miles to the nearest point of land. The Cap, on which there are three fathoms, lies S. E. Easterly, six and a half miles.

Indian River Shoal, of three fathoms, bears S. S. E. ½ E. eleven miles, from Cape Henlopen light.

Fenwick's Island Shoal. FENWICK'S ISLAND SHOAL.—The centre of this shoal is in 38° 27′ 30″ N. lat., and in 74° 56′ 09″ W. long. It is about two miles long, running from S. W. to N. E.

The least water on it is fifteen feet. It bears S. E. by S. ¼ S., distant eleven leagues S. E. Indian River Inlet, and E. ½ or ¾ N. from the N. end of Fenwick's Island. On the seaward side the soundings change suddenly from ten to two and a half fathoms, and there are ten fathoms about two miles W. of this shoal, which appears to be extending on the W. side and toward the N.

On Fenwick's Island, in latitude 38° 27′ there is a fixed light, varied by a bright flash every two minutes. The light is eighty-six feet above the level of the sea. *Light.*

There is an iron bell-boat off the middle of this shoal, in ten fathoms water, Fenwick's Island bearing by compass W. ¼ S., distant six and a half miles. The boat is close to the outer edge of the shoal, which is very steep, and runs N. E. and S. W. Vessels finding themselves unexpectedly in with the boat, should make Easting before shaping a course for the Delaware or any other Northern port. The hull is painted black, the mast red. The bell rings by the action of the sea. *Bell-boat.*

ISLE OF WIGHT SHOAL, on which there are but three fathoms water, lies four miles S. ½ E. from the centre of Fenwick's Island Shoal. It is nearly six and a half miles E. of the beach, and bears E. from the Isle of Wight woods. There are ten fathoms water within a mile on either side of this shoal. *Isle of Wight Shoal.*

Midway between these two shoals there is a spot with three and a half fathoms water on it.

LITTLE GULL BANK is S. W. by S., ten miles, from the Isle of Wight Shoal, and has twelve feet water on it. *Little Gull Bank.*

GREAT GULL BANK is fifteen miles S. W. by S. from the Isle of Wight Shoal, and has three and a half fathoms on it. *Great Gull Bank.*

THE SINEPUXENT SHOALS are several knolls near the shore, inside of Fenwick's Island Shoal, having three and a half fathoms on them at low water. *Sinepuxent Shoals.*

CHINCOTEAGUE LIGHT is a fixed light, eighty feet above the level of the sea, and is on the S. E. point of Chincoteague Island, lat. 37° 55′, long. 75° 21′. This light can be seen about twelve miles in clear weather. From Chincoteague to Cape Charles the land trends S. S. W. ½ W., with several barred inlets. The land is low, sandy, and marshy. Variation, in 1850, 3° W. *Chincoteague Light.*

WINTER QUARTER SHOAL is one mile long and one third of a mile wide, running in a direction E. by N. ¾ N., and W. by S. ¾ S., with not over three and a half fathoms water upon it. The least water is twelve feet, in several places, at low tide. On the seaward side the soundings change suddenly from nine to four, and then to two fathoms. It is six and one fourth miles distant from the nearest land, with ten fathoms water between it and the shore. In clear weather the lantern of Chincoteague light-house is just visible from it. The centre of the shoal bears from Chincoteague light E. by N. ½ N., distant eleven and a half miles. This is a highly dangerous shoal, as the soundings change suddenly, and it lies directly in the track of vessels. The sea breaks upon it in heavy weather. *Winter Quarter Shoal.*

An iron nun-buoy, painted red, with W. Q. S. in white letters, has been placed in eight fathoms water, E. by S. one fourth of a mile from the shoalest part of the above shoal off Chincoteague Inlet. Green Run bears from the buoy N. W. ¾ N. five and a half miles, and Cape Chincoteague, W. by S. ¼ S. *Buoy.*

CHINCOTEAGUE SHOAL is a long narrow bank or ridge, running in a direction N. E. ½ E. and S. W. ½ W., four and three fourths miles long, with an average width of a fourth of a mile, and distant from four and a half to six miles from the shore, with from three and a fourth to five fathoms water upon it. Its N. end bears E. by S., distant seven and one fourth miles, and its S. end S. E. ½ S., distant five and three fourths miles from the light-house. *Chincoteague Shoal.*

A dangerous shoal lies S. by E. ¾ E., distant four and one fourth miles from the light-house, with three feet water upon it.

Another, with nine feet water upon it, lies S. ¾ E., distant four and a third miles from the light-house.

Another, with nine feet water upon it, lies S., distant three and three fourths miles from the light-house.

Within a semicircle of twelve miles, the light-house being in the centre, the bottom is exceedingly broken and uneven. The general set of the current along this part of the coast is to the Southward and Westward; and vessels from the West Indies and Southern ports, bound into Delaware Bay, have been set inshore among those dangers by it. The coast in this vicinity is dangerous for large vessels navigated by persons not well acquainted with it. Vessels supposing themselves in this vicinity, after striking eleven and twelve fathoms of water, should keep the lead going, and keep a bright look-out. In the daytime, large vessels should not approach nearer the land than eight or nine miles, with the trees just in sight from the deck; nor at night, even in clear weather, when coming from the Southward, nearer than just to keep the light in sight, until it is brought to bear, by compass, to the Southward of W. After that it will be

necessary to keep farther off, and run it out of sight, in order to avoid "Winter Quarter Shoal."

Rehoboth Bay. REHOBOTH BAY lies nine miles to the Southward of Cape Henlopen light-house. This bay is only for small vessels that draw not more than six feet water.

The N. end of Fenwick's Island lies ten miles to the Southward of the light-house, and separates Delaware from Maryland. It has a grove of trees on it, and you will have six or seven fathoms of water within a league of the land, and a strong current setting to the Southward.

Chincoteague Inlet. CHINCOTEAGUE INLET.—The following buoys, black and white, with perpendicular stripes, are placed at the entrance of Chincoteague Inlet:

Buoy No. 1, on Chincoteague Bar, is a can-buoy, in ten feet water. From it Chincoteague light-house bears N. E. by E. Buoy No. 2, inside the bar, is a spar-buoy, in eight feet water; buoy No. 1 bears S. E. Buoy No. 3, in the lower end of Williams' Shoal, is a spar-buoy, in nine feet water. From it buoy No. 2 bears S. E. Buoy No. 4, on the upper end of Williams' Shoal, is a spar-buoy, in twenty feet water. Lone Tree, on Wallop's Island, bears W. by S.

Directions Bring buoy No. 1, or spar-buoy, W. N. W., and run for it, leaving it on the starboard hand, close aboard, then stand for buoy No. 2, which stands in mid-channel, and then for buoy No. 3, thence to buoy No. 4. When up with the last, stand W. by S. for a lone tree on Wallop's Island, and anchor within about two hundred yards.

Matomkin Harbor. MATOMKIN HARBOR has twelve feet water on the bar at spring tides. In running in for the bar, you will have gradual soundings from seven fathoms. One cable's length from the bar you will have two and one fourth to two fathoms.

In running over the bar, keep the N. shore on board, and steer S. W. On the port hand, one mile from the bar, give the point a small berth, and round into the N. W., and anchor in four fathoms water.

To the Northward of the bar, one fourth of a mile, lies the wreck of a vessel. From the outer bar up the inlet the navigation is very dangerous, being filled with oyster-beds.

Matomkin outer bar buoy is a red nun-buoy, No. 2, in ten feet water. Chincoteague light bears N. E.

The inward buoy is a black nun-buoy, No. 1; length of staff ten feet. The S. point of Matomkin Beach bears from the buoy N.; Paramore's Beach, S. W. by S. To cross the bar, run from the outer to the inner buoy. There are eight feet, at low water, on the bar. Rise of tide, five feet.

Hog Island Light. HOG ISLAND LIGHT is a fixed light, sixty feet high, on the S. E. point of Hog Island, sixteen miles N. N. E. from Smith's Island light.

Hog Island outward buoy is a black and white nun-buoy, in twelve feet water. The light-house bears N. by W. ½ W. from the buoy; Revel's Island, N. To cross the bar, range the outward and middle buoys, and run to the middle, then run from the middle to the inward buoy. The shoal water is crossed between the outward and middle buoys, and is nine feet at low water.

The middle buoy on the bar is a black and white nun-buoy, in twenty-four feet water. The light-house bears from the buoy W. N. W.; Prout's Island Point, S. W. ½ W.

The inward buoy is a black and white nun-buoy, in thirty feet water. The light-house bears W. N. W. from the buoy; Prout's Island Point, W. S. W.

White Point buoy is a red nun-buoy, in fifteen feet water, to be left on the starboard hand coming in. Hog Island light bears from the buoy E. N. E.; Prout's Island Point, E. S. E.

Buoy in the mouth of the Deeps is a black and white nun-buoy, in thirteen feet water. Hog Island light bears E.; Prout Island, S. E.

Buoy in lower Draft is a black and white nun-buoy, in thirty-six feet water. Hog Island light bears E. S. E.; upper bluff woods, N.

Buoy in upper Draft is a black and white nun-buoy, in thirty-six feet water. Revel's Island bluff bears N. E. by E.; Hog Island light, S. E. by E.

Elbow buoy is a black and white nun-buoy. Upsher's Point bears from the buoy N. W. by N.; Fowling Point, S. W. by W. Depth of water, twenty-one feet. The tide flows in this channel six feet.

Each of the above buoys has an eight-foot staff, with a cross on top.

These are very dangerous harbors in a gale of wind, but you may ride along shore with the wind from N. W. to S. W. When the wind blows hard at N. E., or E. N. E. and you are in sight of Chincoteague Shoals, your only chance of safety is to stand to the Southward; for you cannot clear the land to the Northward, or go into the harbor of Chincoteague. When the wind is to the Eastward, it is generally thick weather on the coast. After you pass to the Southward of Chincoteague, steer S. S. W. for the light-house on Cape Henry, for the Northern part of Machapungo Shoals lies four or five leagues to the Northward of Smith's Island, and the Southern part of them come

near abreast of said island. In steering to the S. W. Westward five or six leagues S. E. of Smith's Island, you will have twelve or thirteen fathoms, and in some places three or four fathoms. When you are twenty leagues from the land, in the latitude of 37° 30′, you will have from thirty to thirty-five fathoms; but when to the Southward of Cape Henry, you will have from seven to eight fathoms, within a league of the land, and a Southerly current, which in general runs from one to one knot and a half an hour.

CAPES OF VIRGINIA.—In coming from sea, and falling in to the Northward, you may make an island, called Hog Island, which has a shoal on the N. E. side, five miles from the island, and also Machapungo Island; the latter is a smaller island. Hog Island and Smith's Island have lights on them. Hog Island is longer than Smith's; the trees stand more open, and are not so thick as on Smith's Island; and in going on to the Southward from off Hog Island, you will make sand-hills which lie between Hog Island and Smith's Island, being a sure mark you have not passed Smith's Island. Be careful not to come nearer than seven fathoms when off the sand-hills, as nearer than that depth the ground is broken. *Lights.*

CAPE CHARLES LIGHT is a fixed white light, with a flash every minute, one hundred and sixty feet above the sea, and is on Smith's Island, four miles from its S. W. point, lat. 37° 7′ 9″, long. 75° 53′ 13″. Magnetic variation in 1850, 2° W. *Cape Charles Light-house.*

E. by S. ¼ S. nearly, distant seven nautical miles from Smith's Island light-house, is a shoal, with three and one fourth fathoms upon it at low tide, with seven fathoms water between it and the land. *Shoal.*

S. E. by E. nearly, distant four and three fourths miles from Smith's Island light-house, is another shoal, with seventeen feet water upon it at low tide, and five fathoms water between it and the land.

Smith's Island is the first island after passing the sand-hills above mentioned. On the Northern end of it there are some straggling trees, which appear like a grove, but which join on to the island. As you draw up with Smith's Island, you may haul into six and five fathoms, till you get near abreast of it. *Smith's Island.*

Smith's Island is a good place to anchor under, with the wind from N. N. W. to W. N. W., and vessels often come to there if the wind is coming out from N. and Westward.

If you intend to anchor there, bring the light to bear W. S. W., and run for it, and you may go in as near as your draught of water will admit, into three fathoms, or less, if you choose. You will have blue mud and sand; and when you get under way thence, steer S. by W. till you cross the N. channel in seven and one fourth fathoms. Keep on till you raise your ground into five fathoms on the Middle Ground, then steer S. W., which will cross the Middle in four fathoms; keep on S. W. until you deepen into six or seven fathoms, ship-channel; then, with a strong breeze, steer W. by N., which will carry you across in deep water, until you raise your ground on the Horseshoe. When at anchor under Smith's Island, Cape Henry light bears about S. S. W.

In coming in from the Southward, bound to Cape Henry, keep in seven fathoms until you begin to draw up with False Cape, which lies about seven leagues from Cape Henry, toward Currituck; then nine to ten fathoms is full near enough to False Cape. After you have got to the Northward of False Cape, you may then keep again in seven, eight, and nine fathoms (ship-channel) till you get up with Cape Henry. From off Roanoke the soundings along shore are hard sand all along until nearly up with Cape Henry, when it is sticky bottom, and you will be in channel-way.

The shore between False Cape and Cape Henry makes in like a bay, something like Lynhaven Bay, and in thick weather a stranger might mistake it for Lynhaven Bay, and False Cape for Cape Henry, if it is so thick that the light-house on the latter cannot be seen; but in round False Cape it is all hard bottom, and in Lynhaven Bay it is soft or sticky bottom, and in some places very tough bottom.

The passage between Cape Charles and Outer Middle is little known, and not frequented by large vessels. It is only used by small vessels of eight or ten feet water.

CHERRYSTONE INLET.—There is a fixed light on the bar W. side of the entrance of Cherrystone Inlet, one mile and three fourths S. of Sandy Point. It is a screw-pile structure, hexagonal. The house is painted white, and the piles and lanterns painted red. The light is thirty-six and one fourth feet above the water, and should be visible ten miles. *Cherrystone Inlet Light-house.*

CAPE HENRY lies twelve miles S. by W. from Cape Charles, both of which form the entrance to Chesapeake Bay. On it is a light-house, the lantern of which is elevated one hundred and twenty-nine feet above the level of the sea, showing a fixed light. *Cape Henry Light-house.*

When coming in from sea, in the latitude of Cape Henry, you meet with soundings about twenty-five leagues off, which you may observe by the color of the water. In the S. edge of the bank you will have forty fathoms water, which will shoal to twenty, and still decrease as you approach to the shore, generally sandy bottom. In clear weather, you may see the land when in about ten or eleven fathoms, regular soundings, at which time you will be about five leagues to the Southward of it. To the Northward of the land, in six fathoms, the soundings are irregular, and the ground coarser. In coming in with the wind Northwardly, you must be careful of the outer part of the Middle Ground,

which lies nine miles E. N. E. from Cape Henry, and seven miles S. E. by E. from Cape Charles. You may go so near it as to bring Cape Henry to bear W. ½ S., which will carry you round the tail of it, in four and one half or five fathoms water, when you will deepen into eleven, twelve, or thirteen fathoms, and then haul away for the bay, the cape being steep to. The channel between the cape and Middle Ground is about four miles wide, and five and six fathoms water close to the latter. When Cape Henry light-house bears W. N. W. ½ W., distant about three leagues, it appears thus:

With a fair wind you may bring the light-house to bear W.; but if you have the wind ahead and are obliged to turn it, you may stand to the Southward till the light-house bears N. W. by N., and to the Northward till it bears W. by S. You will have nine or ten fathoms within a mile of the light-house, and from six to five fathoms close to the Middle Ground.

For Hampton Roads. FOR HAMPTON ROADS.—When abreast of Cape Henry, and the light-house bears S. S. W., distant about two and a half miles, steer W. by N., till you get on the Horseshoe, in five fathoms, sandy bottom. There are no soundings at five fathoms on that course between Cape Henry and the Horseshoe. The first soundings as you approach the shoe, on this course, are six and seven fathoms, a sticky or tough bottom, at about four miles from the light-house on Cape Henry; and a mile farther on (say about five miles from the light-house) you will have the five fathoms, sandy, on the tail of the Shoe, where vessels can anchor. Then steer W. until you get on the S. side of the channel for an ebb tide; but tide aflood, steer W. ½ N. or W. by N. These courses will carry you into five fathoms on the S. side; then you may steer W. N. W., which will carry you into six or seven fathoms, sticky bottom, until nearly up with Willoughby's Point, and when you deepen your water to nine or ten fathoms on your W. N. W. course, you have passed the bank of Willoughby's Point, where there is a light-vessel; then bring the light on Old Point Comfort W. or W. by S., and steer for it until nearly up with it, say within half a mile; then haul up S. W. by W. till you bring the light on Old Point Comfort to bear N. W., when you steer S. W., passing between Fort Calhoun and Old Point, for the Roads, five, six, or seven fathoms, good anchoring.

The centre of the Castle (Fort Calhoun) is S. 17° E. from the light-house at Old Point Comfort, distant about one mile

Old Point Comfort light bears from Cape Henry light W. N. W., distant fifteen miles; it is a fixed light, forty-eight feet above the level of the sea, and is a guide for vessels bound into Norfolk or Hampton Roads. High water, 8h. 22m.; rise, three feet.

Light-vessel. A light-vessel, painted red, has been stationed off Willoughby's Bank, in three and a half fathoms water, and exhibits two fixed lights.

Old Point Comfort light-house,	bearing	W. ½ N.,	2 miles.
Back River Point	"	" N. ¼ W.,	5 "
Cape Henry	"	" E. S. E.,	13 "

Vessels going out or coming into Hampton Roads should not pass to the Southward of this vessel. She may be distinguished in the night from the light on Old Point Comfort by having two lanterns, the forward one elevated forty-eight feet, and the after one thirty-eight feet. A bell will be rung in foggy weather.

Should you, after passing Willoughby's Point, fall into fourteen or fifteen fathoms, Old Point Comfort light-house bearing W. N. W., steer up S. W. by W., but go no nearer to Hampton Bar, on the N. side, than ten fathoms, it being steep to, until you pass Sewell's Point, when, Old Point Comfort bearing N. E., you will fall into seven, eight, and nine fathoms, good anchoring. After passing Fort Calhoun, be careful of the shoal which extends from it W. S. W., and, bending to the S., connects with the bar off Sewell's Point.

From Hampton Roads to Norfolk the channel is intricate to strangers, and we should recommend anchoring in the Roads; but the following directions, strictly followed, will carry them to Norfolk.

As you approach Old Point Comfort, you will discover a low tree standing to the Westward of the light-house; steer S. W. until you bring this tree over the house occupied by the Colonel, which is the first house to the Westward, and painted white; continue this course till up with Sewell's Point, when you may haul to the Southward till the light-boat off Craney Island bears S. by E., observing at the same time not to shut Old Point light in with Sewell's Point, and continue steering S. by E., till you

pass the light-boat, leaving her on your starboard hand; then take your soundings off Lambert's Point, on the port hand, in four fathoms, and steer S. S. E., till you get into five fathoms: then S. E. ½ E., till you get up to the fort, three miles distant, having from five to six fathoms.

A light-vessel, painted lead color, and having one light at her mast-head, thirty-three feet above the sea, has been placed at the extremity of Craney's Island Flats, in Elizabeth River, in four and a half fathoms.

LYNHAVEN BAY.—When entering the capes, and it is advisable to anchor in Lynhaven Bay, you may run in clear of the Middle Ground, when the light-house on Cape Henry bears W. by S., as this course will lead to the channel-way, in from seven to ten fathoms, sticky bottom. It is then proper to take soundings toward the Southern shore, and in order to do this, steer W. until you have advanced to within a short distance of the light-house (say half a mile); then rounding the point you may haul into the bay and drop anchor as most convenient, in from seven to four fathoms. *Lynhaven Bay.*

REMARKS.—If, in going along the Southern side of the channel bound to Hampton Roads, you shoal your water to less than five fathoms, haul off to the Northward, and keep in about six or seven fathoms, until you judge yourself nearly up with Willoughby's Point. By hauling to the Northward, you will deepen your water. On the Horseshoe side of the channel the bottom is hard sand, and on the S. side it is soft bottom, until drawing on toward Willoughby's Point when it becomes hard; therefore, being on the S. side, where the ground is soft, you may always know your drawing up with Willoughby's Point as soon as you get hard bottom. Go no nearer Willoughby's Point than seven fathoms.

The Thimble is a small lump, E. 15° N. from Old Point Comfort light-house, distant three and one fourth miles, and on the N. side of the channel, with about nine feet water on it; near it, in five fathoms water, is a red nun-buoy, with the name "Thimble" on two sides, in black letters. It is steep to say seven fathoms, but being small, is quickly passed. It lies a little below the shoal off Willoughby's Point (where the channel is about one mile wide); to avoid it is the reason why it is necessary to get soundings first on the Horseshoe. Near the Thimble you will have sticky bottom, and on the Horseshoe hard sand. The Thimble may be considered as on the edge of the Horseshoe, and when Back River Point light, which is a revolving one, bears N. N. W., you are abreast of it. *The Thimble.*

THE HORSESHOE.—The tail of the Horseshoe, on which is a black nun-buoy, with the name "Horseshoe," in large white letters, in twenty-nine feet water, lies about five miles N. W. from Cape Henry light-house, and twelve miles E. from the light-house on Old Point Comfort; the least water in that place is four fathoms, hard sand, broken ground. The Southern edge of this shoal runs W. ½ N., until it connects with the main shore a little to the N. of Old Point Comfort, forming the Northern side of the channel into Hampton Roads. The N. E. side extends in a N. W. direction, until it connects with the Pocosin Flats, nearly up to the entrance of York River, and forms the Western side of the Bay Channel. There is good anchorage on the Horseshoe, from the tail to within three and a half or four miles of the shore, and the smaller class of vessels may go nearer in. *The Horseshoe.*

There is a light-vessel off the tail of the Horseshoe, in five fathoms water, with two masts showing one light, forty-five feet above the water, in the following bearings: *Light-vessel*

To Cape Henry light-house	S. E. by S. ¼ S.
To Willoughby light-vessel	W. ¾ N.
To Back River light-house	N. W. by W. ¼ W.

This range line of the "Tail of the Horseshoe" light-vessel and the Back River light-house or light-vessel brought to bear N. W. by W. ¼ W., and run for on that bearing, will bring vessels through the mid-channel between the point of Cape Henry and the three-fathom curve of the "Outer Middle Ground" on the opposite side.

During hazy, thick, and foggy weather, a large bell will be sounded at short intervals of time, alternated by the blowing of a fog-horn.

The flood tide runs in round Cape Henry and Lynhaven Bay until eight o'clock, on the full and change, in the mid-channel; and out of the way of the Chesapeake stream it flows at 8; in Hampton Roads at 8h. 22m.; rise, three feet. As the tide varies considerably in its direction according to the time from ebb to flood, and is influenced by the wind, attention should be paid to the bearings of the lights, as well as to the soundings when running either up to Willoughby's Point or toward New Point Comfort, for fear you cross the channel. The ebb from James and York rivers sets over the Middle Ground to the Eastward, which renders the navigation there dangerous in the night or in thick weather. *Tide.*

Buoys arranged as they are passed in going from Cape Henry, through Hampton Roads to Norfolk and Portsmouth.

NAME OF STATION.	NO.	DESCRIPTION.	DEPTH AT LOW WATER AT BUOY OR BEACON.
Fog-bell at Cape Henry....	....	Bell on frame-work, forty feet above the sea, strikes seven times per minute.....	
Buoy on Tail of Horseshoe.	....	Nun-buoy, black, with "Horseshoe" in white letters.....	29 feet.
Buoy on the Lump.....	....	Can-buoy, red, "Lump" in black letters.....	17½ "
Lower Crump's Hill Shoal-water.....	....	Nun-buoy, black and white stripes..	32 "
Upper Crump's Hill Shoal-water.....	....	Can-buoy " " "	31 "
Thimble.....	....	Nun-buoy, red, "Thimble" in black letters.....	5 fathoms.
Willoughby's Shoal.....	....	Light-vessel, two lights, name on both sides, painted red.	
Fog-bell at Old Point Comfort	....	Bell on frame-work, thirty feet above the sea, strikes seven times per minute.	
N. E. end of Hampton Bar.	1	Spar-buoy, black.....	9½ feet.
Sewell's Point.....	2	" red.....	22½ "
Lower Shoal water off Sewell's Point.....	...	" white and black stripes.	23 "
Upper shoal water off Sewell's Point.....	....	" " " "	23 "
Boush's Bluff Shoal.....	3	" black.....	4 fathoms.
Stanworth's Stake.....	4	" red.....	25 feet.
Craney Island	....	Light-vessel, lead color, one light, name on both sides.	
Lambert's Point.....	5	Spar-buoy, black.....	22 "
Old wreck.....	....	" black and white stripes.	23 "
Spinner's Point.....	6	" red.....	4 fathoms.
Spit below Portsmouth....	8	" "	

Cape Henry or Lynhaven Bay to York River.

CAPE HENRY OR LYNHAVEN BAY TO YORK RIVER.—As Cape Henry S. by E. would lead you near the tail of the Middle Ground, and as the proceeding with it at S. E. would carry you on the tail and N. edge of the Horseshoe, your keeping the cape on any bearing between S. by E. and S. E. will carry you through between the two shoals. On the tail and along the N. side of the Horseshoe, the shoalings are gradual. With Cape Henry bearing S. S. E. or S. E. by S., steer N. N. W. or N. W. by N., until you bring Cape Charles to bear E. by N.; you are then to the Northward of the Horseshoe, and may steer N. W. or N. W. by W., according as you have the wind and tide. As the ebb sets strong out of the Chesapeake over the Horseshoe, you must not, with a Northerly wind and ebb tide, approach any nearer to the shoal than five or six fathoms water. When you have brought New Point Comfort to bear N. by W., and Back River light to bear S. by W, you are then on the tail of York Spit, in three fathoms water. When you are a little above Long Isle, you must not come any nearer to the shore than five fathoms until you enter the river above the marsh; then keep in nine or ten fathoms, and run up and anchor between York and Gloucester in what depth you please.

Light vessel

A light-vessel, painted yellow, and showing one fixed light, forty feet above the sea, is anchored off York Spit.

With a contrary wind stand toward the Horseshoe in four and half or five fathoms, and from it into six and a half or seven and a half fathoms, until you are abreast of the entrance of Pocosin, where there is a gut of seven fathoms, which runs close to the entrance; you should, therefore, be careful to avoid going too far in, and thereby getting on the tail that extends from Toes' Marsh. When you have got thus far up you should go no nearer to the shore on this side than seven or six and a half fathoms, all the way up to York Town. On the other side you should not stand any nearer to the small isles on York Spit than ten or eleven fathoms. Close to the tail on this side there are six fathoms; close to the middle of it there are ten fathoms; and close to it,

abreast of the islands, you will have thirteen fathoms, and before you can get another cast of the lead, you will be ashore. When you have entered the river, you must not come any nearer to the flat than eight or nine fathoms water. This flat extends from the N. shore almost one third over the river.

The light-house on Back River Point contains a revolving light, elevated thirty-five feet above the level of the sea, and serves as a guide for vessels bound into the river, as well as to assist vessels bound up the bay. *Light.*

NEW POINT COMFORT, MOBJACK BAY, AND SEVERN RIVER.—When you bring Cape Henry to bear S. S. E., you may steer N. N. W., eight leagues, which course and distance will carry you up to New Point Comfort. If you wish to anchor at New Point Comfort, which bears from the Cape about N. W. by N., distant eight leagues, you must take care of the spit that runs off the Point about S. E., two miles. Keep to the Westward of this point of sand, and you may run in under the point, and anchor in four or five fathoms water, fine bottom, in Mobjack Bay, where you will be secure from Northerly or N. E. winds. *New Point Comfort, Mobjack Bay and Severn River.*

On New Point Comfort, which forms the Eastern side of Mobjack Bay, is a light-house containing a fixed light, elevated sixty feet above the level of the sea. *Light.*

JAMES RIVER.—There is a fixed light at White Shoal, James River, twenty-seven feet above the sea. Also one at Point of Shoals, and one at Deep Water Shoals, both twenty-seven feet high, and fixed. There is also a fixed light at Jordan's Point, thirty-three feet above the level of the sea. All the above are furnished with fog-bells. *James River Lights.*

Vessels at anchor in Mobjack Bay are exposed to the wind from E. S. E. to S. E., and should in that case go into Severn River, where they will lie safe from all winds. Your directions for this port are to bring the S. point of New Point Comfort to bear E. by S., and steer W. by N. two leagues, which course you will continue till Severn River bears W. S. W., when you must steer into the river W. S. W., or S. W. by W., which will carry you safe, where you may lie landlocked from all winds. In running for this river, you will make two bunches of trees on your port hand, which at a distance appear like two islands; but, as you approach them, you will find they are on the main land. In going into this river, you must keep your lead going; keep in the middle, and go between two points of marsh, and you will have no more than three fathoms between New Point Comfort and Severn River, muddy bottom. You may go to sea from this river, with the wind from S. W. to N. W. There is a shoal of sixteen feet four miles S. E. of New Point Comfort.

CAPE HENRY UP THE BAY TO THE POTOMAC RIVER, &c.—[Magnetic variation, in 1850, 2° W.]—When you come in from sea, and are bound up the bay, bring Cape Henry light to bear S. S. E., and steer N. N. W., about four leagues, which will carry you to the Northward and Westward of the Middle Ground, that lies between the two capes, and when you have Smith's Island (off Cape Charles) to bear E. by S., or Back River Point light-house W. S. W., you will be to the Northward of the shoal part. *Cape Henry up the Bay to the Potomac River, &c.*

If you have the wind ahead, and are obliged to turn to windward, you must not stand farther to the Eastward after the light-house (or the cape) bears S. S. E., as the Western part of the Middle Ground is steep to. In standing to the Westward, you may go in three and a half or four fathoms without danger; but in standing to the Eastward, do not go in less than eight fathoms, as you will be near the Middle Ground.

Back River Point light is a revolving light, thirty-five feet high, and bears from *Light.*

Cape Henry	N. W. ¼ W.	16 miles.
Old Point Comfort	N. N.E.	5½ "
New Point Comfort	S	13¼ "

After you are clear of the Middle Ground, as before directed (Cape Henry bearing S. S. E.), and having a fair wind, you may steer up the bay, N., six leagues. Do not come to the Westward of N. until you have Gwinn's Island (which is about three leagues N. of New Point Comfort) bearing W. N. W. from you, to avoid a dangerous shoal called the Wolf Trap, which lies N. N. E., two leagues from New Point Comfort light-house, and S. E. from Gwinn's Island, which is small.

A light-vessel, showing two lights, is anchored near the Wolf Trap. The forward light is elevated thirty feet, the after one thirty-eight feet; she is painted lead color, with the name on her sides.

When past the Wolf Trap, steer N. about eleven leagues, which will carry you up the mouth of the Potomac River. In running the above course, you will have from ten to four fathoms before you come up with the Tangier Islands. If, as you approach these islands, you shoalen your water to three fathoms, hard bottom, you must haul a little to the Westward, when you will deepen your soundings. You will pass the light-vessel off the mouth of the Rappahannock on the port hand.

If the wind should be ahead, be careful, as you approach Lower Tangier Island, that

you do not get hooked in behind the spit which extends off from the Southern point S. W. about four miles; and do not, until you pass it, bring the light-house on Smith's Point to bear to the W. of N. W. (See Tangier Islands, next page.)

Light. There is a fixed light on the N. side of the channel leading to Pungoteague Creek, elevated fifty feet above the sea.

Light. When Little Watts Island (which lies E. by S. from the S. end of Lower Tangier, four miles distant, and on which is a fixed light varied by flashes forty-six feet above the sea) ranges with the trees on Lower Tangier, you will begin to deepen your water from five to ten and twelve fathoms, muddy bottom; continuing your course N. until Smith's Point light-house, which is on the Southernmost point of Potomac River, bears W., and keeping rather on the Tangier side, you will be in ten or twelve fathoms water. Should you deepen your water to fifteen or twenty fathoms, you will be very near the spit which extends off from Smith's Point into the bay E. S. E., about four miles, and on the end of which is a light-vessel showing two lights. (See directions from Rappahannock to Smith's Point, p. 345.)

Light. The light-house on Smith's Point shows a fixed light, at an elevation of eighty-two feet above the level of the sea.

When Smith's Point light bears nearly N. by W. ¾ W., nine miles, and appears as represented in the annexed figure, with a house on its W. side open, it leads in a fair way up the channel, equally clear of the shoals to the E. and W.

Smith's Point Light-house.

When Smith's Point light-house bears W. of you, and soundings in ten or twelve fathoms on the Tangier side, as before directed, you may haul up N. W. by N. for Point Lookout, which is the Northern point of Potomac River, and comes to within one mile of the point, the Western side of the bay, and have four or five fathoms, muddy bottom. Or if you wish to harbor, having the wind down the bay, you may run in round Point Lookout, giving it a small berth, and anchor in Cornfield Harbor, so called where you will be sheltered from all Northerly winds.

Light-house. On Point Lookout there is a light-house containing a fixed light, thirty-seven feet above the sea, in a lantern on the keeper's dwelling, of service to those bound into the Potomac or up the bay, with the wind to the Westward. Off the point a bar extends half a mile S. ½ W. The light bearing W., three fourths of a mile distant, you will have three and a half fathoms, sticky bottom.

New Point Comfort to Rappahannock River. Light-ship. NEW POINT COMFORT TO RAPPAHANNOCK RIVER.—From this point a spit extends S. E. two miles, which you will avoid by not going into less than four fathoms water. The Wolf Trap lies about five miles N. N. E. from the light on New Point Comfort; on it there are twelve feet at common tides, and between it and New Point Comfort there are eight or nine fathoms, and near it seven fathoms water. A light-ship is anchored near this shoal, showing two lights. The shore from New Point Comfort up to Cherry Point, the N. point of Gwinn's Island, is not bold to, but you can feel your way, keeping in not less than four fathoms. A spit extends off N. from this point some distance, and should you wish to harbor in the Piaukatank, after turning it, haul over toward Stingray Point light, from which a spit puts off E. about two miles, and keeping your soundings on the starboard side of the river, you may haul up S. W., choosing your anchorage in three fathoms water, secure from all winds.

Light. If you wish to go into Rappahannock River, off which lies a light-vessel painted straw color, with one light, thirty-four feet above the sea, showing the end of the spit extending from Windmill Point, which you leave on your starboard hand, keep your soundings on the port hand, in from three to seven fathoms, and do not deepen your water more than seven fathoms to the Northward, to avoid the sand-spit which runs off from the Northern point of the river (Windmill Point), which is very steep, but keep the Southern side in the above depth of water, when you may anchor in seven or eight fathoms, good bottom; or you may anchor on the Northern side of the river, about one mile above

View of Windmill Point, at the N. Entrance of the Rappahannock.

Windmill Point, within a short distance of the shore, in three fathoms water, good bottom, secure from all winds.

This point is just halfway between New Point Comfort and Smith's Point. The Windmill Reef now extends about three miles from the point to the S. E. by E. and forms a broad shelf at two and a half, two, and one and a half fathoms, thence shoaling to the dry shore, on the end of which is a floating light, bearing S. E. by E. from Windmill Point, two miles distant, and showing one light.

Buoys to mark the Channel up the Rappahannock River, arranged in order as they are passed.

NAME OF STATION.	NO.	DESCRIPTION.	DEPTH OF BUOY OR BEACON.
Sturgeon Creek Bar	1	Black spar-buoy	21 feet.
Punch-Bowl Bar	3	" "	3 fathoms.
Tapley's Point Bar	2	Red "	19 feet.
Lower Jones Point Bar	5	Black "	25 "
Dumpling Rocks	4	Red "	15 "
Corner Rocks	6	" "	16½ "
Bowles' Rock	7	Black "	20 "
Russ' Rocks	8	Red "	22 "
Upper Jones Point Bar	9	Black "	16½ "
Mangorite Marsh	10	Red "	3 fathoms.
Naylor's Hole, East Bank	18	" "	2 "
Naylor's Hole, West Bank	15	Black "	2 "
Mulberry Island Bar	20	Red "	2 "
Blind Point in Gumbottom Reach	17	Black "	20 feet.
Green Bay Point	12	Red "	21 "
Middle Ground Port, Tobago Reach	14	" "	13 "
Lower end of Port Royal Reach	16	" "	13 "

This flat makes out two thirds the way across the river. The buoy is in sticky bottom.

There is a light-vessel off Bowles' Rock, lead color, and showing one light. *Light-vessel.*

In coming up, red buoys with even numbers must be left on the starboard hand; black buoys with odd numbers must be left on the port hand. Buoys with white and black perpendicular stripes are in mid-channel, and may be passed on either hand; and buoys with red and black stripes have channel ways on either side of them. Bearings are magnetic.

RAPPAHANNOCK TO SMITH'S POINT.—From the light-vessel off Windmill Point to the end of the flat off Smith's Point light, which is the S. side of the Potomac River, the course is N. ½ E., and the distance five and a half leagues; you may run this in six or seven fathoms water. After passing Windmill Point, be careful, in standing to the Westward, to keep the light on Smith's Point open, to avoid a spit which puts off from Dammeron Marsh, about nine miles N. of Windmill Point. When you draw near the shoal which runs off from Smith's Point, you should not go into less than seven fathoms. This shoal extends about four miles E. S. E. from the point; on its extremity there are only two fathoms water, and very near to it, Eastward, there are from ten to twenty fathoms. The mark from the shoalest part of this spit is a house with a white chimney, standing among the trees on the shore within Smith's Island (Smith's Point is sometimes called Smith's Island). It is separated from the main land by a creek. We mention this, as there are two other Smith's Islands, one at the mouth of the bay, and the other opposite the mouth of the Potomac (on both of which are light-houses), open to the Northward of the island, and bearing W. When this house bears W. by N., you are to the Southward of the extremity of the shoal, and when it bears W. by S., you are to the Northward of it. *Rappahannock to Smith's Point.*

What add considerably to the danger of this shoal, in going either up or down the Chesapeake, are the broken islands which lie on the Eastern side of the channel, and the flats which extend Westward from them.

A light-vessel has been stationed off this spit in four and three fourths fathoms water, showing two lights; the foremost one elevated thirty-five feet, the after one thirty-nine feet. Vessels passing either up or down the bay, should avoid going between it and Smith's Point. She is lead color. *Light-ship.*

TANGIER ISLANDS.—Lower Tangier lies S. E. from the mouth of the Potomac River; it is about four miles in length, being mostly marsh, with small white hummocks of firm soil, on which the inhabitants have built their houses. A cluster of pine-trees *Tangier Islands.*

on the Southern part of the island is the only timber now standing, and a collection of wooden buildings close to them, whitewashed, used during camp meeting, serve to point out the Southern point of a chain of islands, which extends on the Eastern side of the channel of the bay, as far as Kedge's Straits.

Upper Tangier lies N. a little Westerly of Lower Tangier, separated by an opening, which is very shallow, of three miles in width: it is called generally Smith's Island, is about seven miles in length, being directly opposite the Potomac River, and resembles Lower Tangier, save that it is wooded in several parts, toward the centre and N. end. A light-house, showing a fixed light, thirty feet above the sea, has been erected on Fog Point, the N. W. point of the island; the tower is on the keeper's house. Point Lookout light bears from it W., thirteen miles distant. The light serves as a guide to Kedge's Straits, and also to warn you of the bar which puts off S. W. from Holland's Island.

Fog Point Light.

These islands are intersected by creeks, navigable only by canoes; the shores are not to be approached except by vessels of light draught of water. The flat extending off on the Western side, narrows the channel of the bay, and the spit off the S. end of Lower Tangier extends S. W. about four miles from the cluster of trees spoken of; but you may edge off and on in what manner you please, keeping your lead constantly going. The inhabitants are a hardy, honest, and industrious set of men, accustomed to the navigation of the bay, and on making a signal, should assistance be wanted, it will be rendered promptly.

Tangier Sound.

TANGIER SOUND.—If you wish to go into Tangier Sound, bring Windmill Point to bear S. W. by W.; steer N. E. by E., and you will get soundings on the Tangier Bar, in five fathoms; the cluster of pine-trees and buildings on the S. part of Lower Tangier will then be seen bearing N. E. of you, and you may edge off on the Southern side of the bar in what depth you please, from three to fifteen fathoms, bottom hard and sandy; but it is not advisable to come nearer the Tangier Bar than six fathoms, as it shoalens from six to two fathoms in two hundred yards; should you wish to anchor, when the cluster of trees bears W. of you, haul up to the Northward and Westward, where there is good anchorage for small vessels, secure from Westerly winds, in a bay called Crocket's Bay, about S. E. from the houses in the middle of the island, and N. E. of the cluster of trees. If you proceed up the sound, it is proper to get soundings on the Watts' Island side, as it is rather more gradual, steering parallel with the islands on your starboard hand N., and keeping in mid-channel; when Great Fox Island bears E. of you, which has a few pines on it, you will see a tall poplar on Jaine's Island bearing N. E. by N.; haul toward it, steering N. N. E., and keeping your soundings on the starboard side of the channel, to avoid the flat which puts off from Horse Hummock, on which are some houses and apple-trees; keep this course until the poplar bears S. E. of you, when you will steer N. N. W., getting soundings on your port hand on Terrapin Bar; you will then see a house with a clump of cedars on the N. point of Upper Tangier, called Kedge Island, which you will steer for when it bears W. N. W., keeping in not less than two fathoms water, and giving it a berth of about one hundred yards, continue this course until the fixed light on Fog Point bears S., when you may steer S. W. to clear the point of the spit which puts off from the S. point of Holland's Island. This spit is about four or five miles in length, of hard sand and irregular bottom. Should you wish to go to the Nanticoke, Manokin, or Annemesix rivers, you can obtain a pilot soon after entering Tangier Sound by hoisting a signal.

Light.

There is a fixed light, thirty-six feet above the sea, on Clay Island, at the Northern extremity of Tangier Sound.

Light-ship.

A light ship is moored off the tail of the bar at Jaine's Island, painted cream color, with one light thirty feet above the sea.

Buoys.

The channel leading through Kedge's or Cage's Straits, from the bay into Tangier Sound, is marked by Evans' Island buoy No. 2, red, numbered on four sides, in eighteen feet water. From it Terrapin Point bears S. E. ½ S.; Fog Point light-house, S. W. by W.; Piney Island, N. E. by E. The bottom is sticky. The buoy is twenty feet in length, and must be left on the starboard hand in passing from the bay through the straits into Tangier Sound. Also, Muscle Hole bar buoy No. 1, numbered on four sides in fourteen feet water. From it Solomon's Lump bears W. by S.; poplar-tree on Jaine's Island, S. E. ½ E.; Piney Island, N. E. ½ E. This buoy is eighteen feet in length, and must be left on the port hand passing from the bay through the straits into Tangier Sound. The bottom is sticky.

To mark the channel into and through Tangier Sound from down the bay—

Buoys.

South Tangier buoy No. 1, black, numbered on four sides, is in nineteen feet water. From it the S. end of Tangier Island bears N. N. W. ½ W.; Watt's Island light-house, E. ½ S.; N. end of Upper Watt's Island Bluff Pines, N. E. by E. The bottom is hard. The buoy is twenty-five feet in length and must be left on the port hand in passing up the sound.

Buoy on S. E. bar, black, No. 3, is in nineteen feet water, S. end of Tangier Island bearing W. by N.

Terrapin Sands buoy No. 3, black, numbered on four sides. is in seventeen feet water. From it the poplar-tree on Jaine's Island bears S. E. ½ E.; life-boat off Jaine's Island Spit, S. ½ W.; Deal's Island N. by W. The bottom is hard. The buoy is twenty feet in length, and must be left on the port hand in passing up the sound.

Piney Island Bar buoy, No. 4, red, numbered on four sides, is in sixteen feet water. From it Terrapin Sands Point bears S. W. ½ W.; Fog Point light-house W. by S.; Jaine's Island light-house, S. ¼ W. The bottom is hard. The length of the buoy is twenty-three feet, and must be left on the starboard hand in passing up the sound.

Little Deal's Island Shoal buoy, No. 6, red, numbered on four sides, is in eighteen feet water. From it Fog Point light-house bears S. W.; Piney Island. E. N. E.; centre of Big Deal's Island, N. by E. The bottom is sticky. The buoy is twenty-one feet in length, and must be left on the starboard hand in passing up the sound.

Drumming's Shoal buoy, No. 8, red, numbered on four sides, is in eighteen feet water. From it Clay Island light-house bears N. by W.; lower end of Deal's Island, S. by E.; Stump Point, N. E. This buoy is twenty feet in length, and must be left on the starboard hand in passing up the sound. The bottom is soft mud.

To mark the channel in Wicomico River, Md.—

Evans' Shoal buoy, No. 2, red, numbered on four sides, is in seventeen feet water. From it Scott's Point bears S. E. by S.; Stump Point, N. ½ W.; centre of Sandy Island, N. W. ¼ N. The bottom is soft. The buoy is twenty feet in length, and must be left on the starboard hand passing in.

Wallace's Shoal buoy, No. 4, red, numbered on four sides, is in eighteen feet water. From it Stump Point bears N. W. by N.; Scott's Point, S. by W. ¼ W.; Sandy Island, N. W. by W. The bottom is soft. The buoy is twenty feet in length, and must be left on the starboard hand passing in. The turn here is very short.

Lower Corner buoy of Great Shoal, No. 1, black, numbered on four sides, is in fourteen and a half feet water. From it Scott's Point bears S. W. by W. ½ W.; Stump Point, N. W. ½ N.; Sandy Island, N. W. ½ W. The bottom is soft. The buoy is eighteen feet in length, and must be left on the port hand passing in. The turn here is very short.

Middle Turn buoy of Great Shoal, No. 3, black, numbered on four sides, is in ten feet water. From it Scott's Point bears S. S. W. ½ W.; Stump Point, N. W. ½ W.; Sandy Island, N. W. by W. ½ W. The bottom is soft. The buoy is eighteen feet in length, and must be left on the port hand passing in. The turn here is very short.

Upper Corner buoy of Great Shoal, No. 5, black, numbered on four sides, is in ten feet water. From it Scott's Point bears S. W. by W.; Rock Creek Point, W. S. W. Sandy Island, W. N. W. The bottom is soft. The buoy is twenty-three feet in length and must be left on the port hand passing in. The turn here is short round to port.

Little Watts' Island and Pocomoke Bay Light-house.

LITTLE WATTS' ISLAND AND POCOMOKE BAY.—There is a light-house on this island, exhibiting a fixed light, forty-six feet above the sea. The island is small, and forms the Western point of Pocomoke Bay. A long spit extends off from it S. W. about five miles; you can keep on the edge of it in from three to five fathoms water, if bound up this bay, and anchor either under the E. side of Great Watts' Island, or on the opposite side, when you must take a pilot if bound to either Apes' Hole or Pocomoke River.

Buoys.

The following spar-buoys are placed in Pocomoke Bay (Chesapeake):

On the bar at Little Watts' Island, painted black, No. 1; depth at low water spring tide, sixteen feet; bottom hard. Bearings per compass: light-house on Watts' Island, N. W. ½ W.; N. end of Upper Watts' Island, N. by W.; N. end of Rogue Island, N. E. ½ E.

On Rogue Island Bar, painted red, No. 2, planted in hard bottom.

On the N. E. end of the bar off Upper Watts' Island. painted black, No. 3; depth at low water spring tide, nine feet; hard bottom. Bearings per compass: Watts' Island light-house, S. W. by W.; N. end of Upper Watts' Island, W. by N.

On the end of Sikes' Bar, painted red, No. 4; depth of water at low spring tide, eleven feet; hard bottom. Bearings per compass: centre of Upper Watts' Island, S. W.; Sikes' Island, N. E. by E.

On the Middle Ground, painted black, No. 5; depth of water at low spring tide, eleven feet; hard bottom. Bearings per compass: Apes' Hole Creek, N.; clump of high trees on Upper Watts' Island, S. W. ¼ S.

Off Gunby's Rock, painted black, No. 7; depth of water at low spring tide, nine feet. Bearings per compass: upper end of Sikes' Island, E. S. E.; W. end of Tunnell's Island, S. S. W.

Little and Great Watts' islands, with the Fox Islands, divide Tangier Sound from this bay; there is a narrow passage for vessels drawing five feet water, at the N. of Great Watts' Island into Tangier Sound, and save that, there is no other passage between these islands.

Potomac River. Lights.

POTOMAC RIVER separates Virginia from Maryland. Its entrance is between Smith's Point on the S. side, and Point Lookout on the N.; on both of these points there are light-houses; the distance between them is ten miles.

To enter the Potomac, when up with Smith's Point light-house, bring it to bear S. W., about three miles distant, and steer N. W. five leagues, in from nine to ten and eleven fathoms, which will carry you to the mouth of St. Mary's River, lying on the starboard hand, at the mouth of which lies St. George's Island, making a bluff. From St. George's Island, if bound up the Potomac, steer N. W. ¼ W., six miles, leaving the light-house on Piney Point on your starboard hand, which will carry you abreast of Ragged Point, lying on the port hand, off which you must not go into less than eight fathoms, and continue N. W. ¼ W. till you drop into quarter less five fathoms, when you haul up W. by N. eight miles, which will carry you above Blackstone's Island, lying on the starboard hand, then W. N. W. till you come in sight of the light-boat off Cedar Point, then N. W. till the boat bears N. ¼ E., and keep soundings on the port hand in four and five fathoms. When up to Cedar Point, steer for Mathias Watkins' Point, giving it a small berth; then steer up for Cedar Point, giving it a small berth; thence the courses to Georgetown are about midway the river, the flats showing on each side in most places.

Light-house. The light-house on Piney Point shows a fixed light, thirty-five feet above the sea. It is about a mile above George's Island, on the E. side of Potomac River.

Other lights in the Potomac are: Blackstone's Island fixed light, forty-six feet above the sea; Lower Cedar Point light-vessel, between Cedar Point and Yates's Point: Upper Cedar Point light-vessel, opposite the mouth of Tobacco River, and Jones' Point fixed lights, near Alexandria, thirty-five feet above the sea.

If you are bound to St. Mary's River, you must give the shoal off Point Lookout a good berth: and when you approach St. George's Island, you must keep nearer to the main than to the shoal which extends from the island. Your course into the river is N. W., and as it is all open to your view, you may anchor when you please in five or six fathoms water.

If you are bound to Wicomack, in Potomac River, your course from the E. end of St. George's Island to Ragged Point is N. W. ½ W., and the distance two leagues. On the S., or port side, there are flats lying off from the shore, which in some places extend one mile: come no nearer to them than seven fathoms. In the middle of the channel you will have eleven, ten, thirteen, ten, and eight fathoms. You must give Ragged Point a good berth, to avoid the shoal which extends from it nearly one mile. From Ragged Point to Clement's Island your course is W. ½ N., and the distance two leagues. In the middle of the channel you will have six, five, four and a half, and seven fathoms water. On the S. side, a little below Clement's Island, is Nomine Bay. From abreast of Clement's Island steer W. N. W., in six, five, and four fathoms water, until you have Wicomack River open; then pass pretty near to the island, which is on the E. side of the entrance, in order to avoid the shoal which runs off from the point on the W. side. Steer about N. into the river, and anchor on the S. side of Newton's Point, in five or four and a half fathoms water.

Smith's Point to Cove Point. SMITH'S POINT TO COVE POINT.—From the light-vessel at the end of the shoal off Smith's Point to Cove Point, the course is N. by W. ½ W., distant thirty-two miles, which course will carry you in mid-channel until nearly up with the light-house on Cove Point, which you will make on your port bow: your soundings will decrease to six and seven fathoms, and as you approach Cove Point they will deepen. Should you shoalen your water in steering as above, when you approach Barren Island Bar, you must haul to the Westward.

Light. When you are up as far as Point Lookout, on which is a fixed light, thirty feet above the sea, and have the wind ahead, you have a good channel to beat in, up as far as Patuxent River. You may stand on each tack to four or five fathoms, but in standing to the Eastward, when you have nine or ten fathoms, it is best to tack, as the ground rises suddenly to four or five fathoms, and then lessens into two, hard sand; the Western side is more regular. Your course from Point Lookout is W., three miles distant, to Patuxent River, with a fair wind, is N. by W. ½ W., and the distance five leagues, in six, seven and ten fathoms water, which will carry you up with Cedar Point, which is pretty bold and makes the first point S. of Patuxent River. If the wind is to the Northward, and you cannot get into Patuxent (which is often the case), you may run in under Cedar Point, and anchor in three or four fathoms, good bottom, and secure from the wind down the bay.

Should you be nearer in with Point Lookout than three miles, and the wind from the W., you may steer N. two leagues, which will carry you parallel with the shore, past Point-no-Point; then steer N. by W. ½ W., for Cedar Point, three leagues, which will bring you up with it, and if you continue on up the bay a N. course, five miles distant, will bring you up to Cove Point. (See Holland's Islands and Barren Island, next page.)

If you should stand in toward the "Red Cliffs," between Cedar Point and Cove Point, do not shoalen your water to less than four fathoms, as a spit puts off there some distance.

Light-house. The light-house on Cove Point contains a fixed light, varied by flashes, elevation forty

six feet. It is a leading light, and *should be* seen soon after passing Point Lookout, coming up the bay, and from abreast of Sharp's Island going down.

HOLLAND'S ISLANDS.—On the N. side of Kedge's Straits are several islands, extending to Hooper's Straits, called under the above name. The Southernmost one is properly Holland's Island, and has two poplars on its Southern extremity. The next in order on the bay is Long Island, on the Northern end of which are some cedars; it stands out to the W. more than any of the others. Bloodworth's is the largest and most Northerly of these islands; forms the S. side of Hooper's Straits, and is mostly marsh, with some hummocks of trees on it. On the E. of these are several other small islands, which, with the Tangier Islands, make the Western boundary of Tangier Sound. A sand-spit, or bar, puts off from the S. W. of Holland's Island, which vessels drawing only four feet water would clear on a N. W. course from Fog Point light. It is hard sand bottom, irregular, but you can avoid it by sounding. (See Kedge's Straits.) There are no passages through these islands, and the flats extend out from them on all sides. *Holland's Islands.*

HOOPER'S STRAITS.—A light-vessel has been moored in Hooper's Straits, in two and a half fathoms water. It is necessary to lead vessels clear of the flat off Hooper's Island on the N., and those extending from off Bloodworth's Island on the S. side of the passage. It is of service to vessels bound either to Nanticoke River or to Tangier Sound. In thick weather, by night or day, a bell will be rung on board at short intervals, and if it is thick and blowing, it is ordered to be constantly kept ringing. It is painted lead color, and shows one light, thirty feet above the sea. *Hooper's Straits. Light-ship.*

If from up the bay, and bound through the straits, bring the light-vessel to bear E. by N. and run for it, which course will carry you across Hooper's Island bar, in about four fathoms water; continue your course until you deepen your water into seven fathoms, then steer E. N. E. until the light bears E., and run for it; or you may bring the vessel to E. N. E., and run directly for it; pass on your starboard hand, which will carry you into channel-way; continue your course after you pass the light-vessel E. and E. by S., toward Bishop's Head, keeping rather on the Northern side of the passage, and by showing a signal you can obtain a pilot to take you through Fishing Bay, Nanticoke River, or into Tangier Sound. The flats are steep to on both sides, and you can anchor opposite Todd's house, on Bishop's Head, in three fathoms water, about half a mile from the shore, the extreme S. point bearing S. E. by E., distant about three fourths of a mile.

On the Northern side of the entrance to Hooper's Straits (on the Eastern side of Chesapeake Bay) is the sunken wreck of a schooner laden with coal. This wreck lies a little over one mile S. ½ W. (by compass) from Richland Point, and forms a dangerous obstruction, lying directly in the track of vessels bound into the straits from the Northward. It lies in seventeen feet water, bare on the bottom (which is hard sand), with fifteen to seventeen feet water alongside, and only four to five feet on it. A buoy has been placed on it by the Coast Survey. To avoid the wreck (as also the shoal water to the Westward of Hooper's Island) vessels bound into the straits from the N. should not approach Hooper's Island nearer than two miles, until the light-boat in Hooper's Straits bears (by compass) E. ½ N., in range with Bishop's Head.

If from down the bay, bring the light-vessel to bear N. E., and steer for it, when you will gradually shoalen your water on the S. side; you may with safety course round the shoal in three fathoms until you bring the light to bear E., when you may steer as above.

The following buoys mark the entrance into the Sound through Hooper's Straits: *Buoys.*

A buoy on outer wreck, in four fathoms water, which is painted black.

Hooper's Straits buoy, in fourteen feet water. This buoy is placed near the inner sunken wreck, and is painted black.

Light-vessel, showing one light, abreast of entrance to Honga River. Bishop's Head buoy, No. 1, black, numbered on four sides, is in fifteen water, soft bottom. From it Bishop's Head bears N. ½ W.; Bloodworth's Point, S. by E. ¾ E.; light-boat in Hooper's Straits, W. by N. ¾ N. This buoy is planted just at the entrance of Tangier Sound from Hooper's Straits. It is twenty feet in length, and must be left on your port hand.

Shark's Fin buoy, No. 2, red, numbered on four sides, is in sixteen feet water. From Clay Island light-house bears N. N. E.; Bishop's Head buoy, W. by N.; Deal's Island point, S. by E. This being a turning point for Hooper's Straits, may also be considered as an entrance buoy, to Tangier Sound. It is twenty feet in length, and must be left on the starboard hand in passing into the sound from through the straits. The bottom is soft mud.

BARREN ISLAND BAR.—N. by W., twenty-five miles from light-vessel off Smith's point, will carry you to the S. W. edge of this bar, which is very shoal, and extends off from the S. end of the island about S. S. E., four miles. There is anchorage for small vessels on the Eastern side of it, but there is no passage between it and Hooper's Island. Barren Island may be known from the other islands by its being heavily timbered, and *Barren Island Bar.*

standing out more in the bay than either Hooper's or Taylor's Island. The bar somewhat bold to, but serves well as a guide, bound up the bay, when you get soundings on that side, which is rather to be preferred, unless the wind is from the Westward.

Potomac River to Patuxent River. POTOMAC RIVER TO PATUXENT RIVER.—From Point Lookout, which is the Northern point of the Potomac River, a flat runs off a considerable way, which you must be careful to avoid by not coming any nearer to it than seven or eight fathoms water. There is a light-house (the lantern being on the top of the dwelling-house) on this point, showing a fixed light. *Light-house.*

Opposite to this point the flat of Upper Tangier or Smith's Island extends so far to the Westward as to narrow the channel of Chesapeake to about six miles. This part of the flat is steep, and has ten fathoms close to it. About two leagues to Northward of Point Lookout is Point-no-Point, off which, one mile and a half from shore, lies a shoal, on which there are eighteen feet water. It is steep to, having from five to seven fathoms close to it. It is about fifty feet square.

Cedar Point is three leagues Northwesterly from Point-no-Point. It is low and sandy, with some bushes and scattering trees on it; the water is so bold to on the Northern side, that you cannot be too careful in approaching it in the night. It extends out into the bay, the shore line making a bend to the Westward, between that and Point-no-Point, and if it is sufficiently clear to see the white beach at the distance of one hundred yards, you can run with safety. You may keep in seven or eight fathoms between these points. On the N. side of Cedar Point it is shoal, so that after passing it, if bound into the Patuxent, keep no nearer the shore than five fathoms.

Light-house. Cove Point lies about five miles to the Northward of Cedar Point. A light-house is erected on it, showing a fixed light, varied by flashes, fifty feet above the surface of the water; the point is low and sandy, extending out into the bay, so as to make this the narrowest part of the Chesapeake. Vessels of light draught of water can anchor close under the S. side of Cove Point, secure from the Northerly winds, in three fathoms water; or you may anchor under the yellow cliffs secure from N. W. winds, in case you cannot get up the bay, in four or five fathoms.

Patuxent River. PATUXENT RIVER discharges itself into the bay between Cedar Point and Cove Point; it is easy of access, and Drum Point, which is its Northern point, lies N. W., three miles from Cedar Point. The first high land met in going up the bay is the "Red Cliffs," commencing on the Northern side of the entrance to the River. If you go into this river, give Cedar Point a small berth and stand to the Northward until you have the river open, when you may stand for Drum Point, which is on your starboard hand. This is a low, sandy, bold point. After passing this point you can anchor opposite the first bank or bluff, in two and a half or three fathoms, secure from all winds. In beating into this river, you may stand on the N. side of the high red cliffs to three fathoms water, and to the S. to five fathoms; in the channel you will have seven fathoms. When standing to the S. side of the river, you will see some buildings on the N. side of the river, above Drum Point; as soon as the buildings come on with Drum Point you must tack, to avoid a spit that runs off the S. side of the mouth of the river.

This is one of the most frequented harbors on the Chesapeake, and it is common with those who seek shelter here, waiting for a fair wind, to remain at anchor until daylight before getting under way, even when the flood makes early in the morning, and the wind is from the Eastward. You should always keep in mind the time lost in beating out into the bay; and if bound up the bay, by leaving on the latter part of the ebb-tide, you will have the whole flood to help you in passing between Cove Point and Taylor's Island.

If you should harbor in the Patuxent, when you come out, bound up the bay, give the high land on the Northern side of the river something of a berth, going into not less than five fathoms water, and do not haul to the Northward until you have got into nine or ten fathoms water, as a large spit runs off from the Patuxent cliffs, about S. E., extending from Drum Point nearly to Cove Point, which should be avoided.

Cove Point. FROM COVE POINT BOUND UP THE BAY.—That part of the bay opposite Cove Point, is about five miles in width; the flood and ebb set strong here; a fast-sailing vessel may beat through it.

When up with Cove Point, you may give it a berth of not less than one fourth of a mile, and steer up mid-channel, N. by W., which will carry you up with the N. end of Poplar Island; the distance is about eight leagues. In running this course, you will have from ten to fifteen fathoms, and you pass Sharp's Island on your starboard hand when it bears E., you may have eighteen fathoms, muddy bottom.

Light-house. On the N. end of Sharp's Island is a light-house, the lantern on the keeper's dwelling showing a fixed light, forty-one feet above the sea. The island is about two miles long and well wooded on its N. end. A spit puts off from the S. point, and the shore is no bold to.

If, after leaving Patuxent River, you intend going into Great Choptank River, steer N. by E., five leagues, for James' Island or Point, which you must leave on your star

board, and Sharp's Island on your port hand, giving both a good berth, as there are long spits off from both these places. After you have passed James' Point, steer away about N. N. E. in seven and eight fathoms, which will carry you in under Sharp's Island, where you may anchor within half a mile of the island, and lie secure from Northerly and N. W. winds, and, if you wish it, take a pilot at this place.

NOTE.—The land on the Western side of the bay, from Patuxent to Annapolis River, is somewhat high, with several bays, such as Herring and West River bays, where the soundings are gradual on both sides, near which there are shoals which should be avoided.

POPLAR ISLAND is about two miles in length, having timber on the Northern and S. E. parts; a spit puts off on the Southern part, and vessels may anchor S. W. from the island, secure from Northerly winds. The passage on the Eastern side is only for vessels drawing about eight feet water. *Poplar Island.*

After you are up with Poplar Island, and it bears E., you may then steer away about N., distant five and a half leagues, which will carry you up to Annapolis Roads, which afford a fine anchorage, and protection from N. and N. W. winds. The channel into Annapolis is difficult and narrow; few vessels ever attempt it. The state-house at Annapolis is remarkable for having a large steeple, by which it may be known, and may be seen when abreast of the head of Poplar Island.

In running N. and N. W. from Poplar Island for Annapolis Roads, you pass Thomas Point light, which is a fixed light, sixty-three feet above the sea, and in a S. E. direction lies a shoal, which should be avoided, as it is bold to, making it more dangerous. The dwelling-house of the keeper stands between two large walnut-trees, near the light-house; you will also pass in this distance, on your port hand, three small islands, called the Sisters, lying below South River. *Thomas Point Light-house.*

N. of Poplar Island, four miles distant, is the S. point of Kent Island; you may anchor under it, secure from all winds but the S. W.

To mark Chester River Eastern shore, Md.—

Love Point buoy (No. 2), red, numbered on four sides, is in fifteen and a half feet water. From it Poplar Tree on Love Point bears S. W. ½ W.; Swan's Point, N. ½ E. The bottom is hard. The buoy is twenty feet in length, and must be left on the starboard hand passing in. *Buoys.*

Rouge Island buoy (No. 1), black, numbered on four sides, is in twelve feet water. From it McCullester's or Long Point bears S. W.; Hell Point, N. E. by N.; Cockey Island, N. ½ W. The bottom is very hard. The buoy is eighteen feet in length, and must be left on the port hand passing in. Rouge Island is under water, and cannot be seen at high tide.

Thomas Point light is a fixed light, sixty-three feet above the sea; it is important to the navigation of Chesapeake Bay, and those bound for Annapolis Roads. *Light-house.*

ANNAPOLIS.—Vessels bound into Annapolis Harbor, from down the bay, should give Thomas Point a berth of at least two miles, and not open the poplars at Whitehall Creek to the Westward of the trees on the Western end of Hackett's Point. This range will carry them clear of the shoals off Thomas and Talley's points, in seven fathoms water. When off Thomas Point, steer N. ¼ W. by compass until the whole length of the River Severn is open, then haul in N. W. ½ N.; in this range pass to the Southward of the black buoy off Greenbury Point, and, when near the white buoy off Horn Point, haul up to the Northward toward Fort Madison, and anchor in nineteen feet water, muddy bottom. Vessels drawing under twelve feet water can stand for the inner white buoy or channel buoy, and anchor inside of it, in from thirteen to fourteen feet water, muddy bottom. *Annapolis.*

Vessels bound in from up the bay should give Sandy Point a berth of at least a mile, and steer S. W. by S. by compass, in from seven to eight fathoms water, until the end of Greenbury Point (on which there is a fixed light, fifty feet above the sea) is in range with the state-house, then haul in W. ½ S. until the river opens, when steer N. W. ½ N. in this range, as before directed. *Greenbury Point Light-house.*

Vessels making the Inner Roads for a harbor can anchor in from three to four fathoms water, muddy bottom, with the poplar on Horn Point in range with the state-house, and Talley's Point open with Thomas Point light-house.

The best anchorage in the Outer Roads for large vessels-of-war is in eight fathoms water, muddy bottom, with poplar on Horn's Point in range with the state-house, and Thomas Point light-house bearing S. W. ½ S. by compass. This anchorage is distant four and a half miles from the city of Annapolis. High water, 4h. 43m.; rise, two feet, six inches.

Fort Madison is an old fort, on a high red bank, bearing from Horn Point buoy N. by W.

The following buoys mark the channel into Annapolis and the Severn River: *Buoys.*

Talley's Point buoy (No. 1), black, numbered on four sides, is in eighteen feet water. From it Thomas Point bears S. W. ½ S.; Talley's Point, W. N. W.; Greenbury Point,

N. N. W. Where the buoy is planted the bottom is hard. Oyster-beds around it. In running for Annapolis it must be left on the port hand. The bar makes off some distance from Talley's Point. The length of the buoy is thirty feet.

Hackett's Point buoy (No. 2), red, numbered on four sides, is in fifteen feet water. From it Thomas Point bears S. S. W.; Greenbury Point, W. N. W.; Hackett's Point, N. by E. The bottom is hard sand. The buoy is twenty-five feet in length, and must be left on the starboard hand passing in.

Horn Point buoy (No. 3), black, numbered on four sides, is in fifteen feet water. From it Horn Point bears W.; Greenbury Point, E. by N. The bottom is hard sand. The buoy is twenty-five in length, and must be left on the port hand passing in.

Greenbury Point buoy (No. 4), red, numbered on four sides, is in fourteen feet water. From it Talley's Point bears S.; Horn Point, W. N. W.; Greenbury Point N. by W. The bottom is hard and sticky. The buoy is twenty feet in length, and must be left on the starboard hand passing in.

Mouth of Severn River buoy, black and white perpendicular stripes, is in thirteen feet water. From it Horn Point bears S.; state-house W.; Mud Fort, N. E. The bottom is of hard sand. The buoy is twenty feet in length, is a channel buoy, and can be passed on either side.

Sandy Point Light. SANDY POINT, CHESAPEAKE BAY.—There is a fixed light, varied by flashes once in every minute and a half, on Sandy Point, W. side of Chesapeake Bay, between Greenbury Point light and the mouth of the Magotty River. The house is of brick, painted red. The light is fifty feet above the level of the sea, and should be visible twelve nautical miles.

Baltimore. BALTIMORE.—After you are up with Annapolis, and bound to Baltimore, when in the middle of the channel, your course is N. by E. ½ E., which will give the best water, until you get the Bodkin light-house to bear W. N. W., then due N. till the Bodkin light-house bears W. ¾ S., and the two light-houses at North Point in one, or nearly so, keeping them a little open with each other, until the Bodkin light-house bears S. W. by W., when you will steer W. by N., until you get the Eastern light-house at North Point to bear N., when, if at night, you can anchor in the best water; if in the daytime, when you get the Bodkin light-house to bear W. ¾ S., and the two light-houses on North Point in one, or the bluff of woods on North Point on with a large walnut-tree on Sparrow's Point, steer for either, N. 60° W., until you get the white rocks to range with the centre of a red bank on the W. side of the river; then N. 88½° W., continuing the said course until you get the end of Sparrow's Point to range with a gap in the woods on Sailor's Point and a white house inland, for which you will steer N. 36° W. until you get Leading Point a sail's breadth open with Hawkins' Point (a dusky wood beyond), then N. 64½° W., with these marks on until North Point bears N. 85° E., then steer S. 85° W., till Hawkins' Point ranges with Leading Point; then N. 61° W. with these marks on, until you get the flagstaff on Fort McHenry to range with the Washington Monument, which differs from the shot-towers from its being white, and stands to the Westward of them; steer for these N. 41° W., until you are up with the Narrows between Fort McHenry and Lazaretto Point, taking care to avoid the Lazaretto bar on the port hand, and a heap of ballast stones and Fort McHenry bar on the opposite hand; then steer for Fell's Point, not forgetting a middle ground or shoal just abreast of Easton, on the starboard hand, with which you must not interfere.

You may anchor at Fell's Point, or continue up to the town, as the track is plain. Other directions are: after sailing as before described until you get the Eastern light-house at North Point to bear N., you may bring the two lights a little open with a gap of woods on Sparrow Point, which will carry you in three fathoms water, soft bottom, being the most you will have in this channel, common tides; keep these marks till Bodkin Point light bears S. S. W.; then steer W., or W. by N., into the river, giving North Point lights a berth of about one mile, by which you avoid a shoal off the point, of twelve feet, hard bottom, near which, in eighteen feet, soft bottom, is a spar-buoy, which you may pass on either hand. When abreast of North Point light, steer away for the White Rocks, which you will see on the S. side of the river, until you are abreast of them, when you must haul to the Southward till you bring Leading Point (which is high bluff woods) within two sails' breadth of Hawkins' Point, and keep it till you are almost abreast of the rocks, when you must again haul to the Southward till you bring the said points within a small sail's breadth of each other, which must lead you up to Hawkins' Point, to which give a berth of one fourth of a mile. When up with Hawkins' Point, you may steer away for the Narrows (on which the fort stands) about N. W. by N., which course has nothing to obstruct you, where you will have from two and a half to five fathoms. When you are up with the Narrows, pass between the two points, and give the port side a good berth, to keep clear of a shoal just above the Narrows; then haul to the S. W. up for the wharves, or the point which is on the starboard hand, and there anchor or proceed to Baltimore. If you leave the point, keep your port hand on board, when you will find good bottom, from which you may proceed to the wharves, or come to with safety.

There are several small shoals of about two fathoms, on each side of the channel which are steep, and the channel between them not more than one fourth of a mile wide.

The Bodkin light is discontinued, and a fixed light, forty-three feet above the sea, is placed on Seven-foot Knoll in its stead.

N. B.—The old tower is left standing, and to it the above bearings refer. *The old light.*

The North Point lights serve to show vessels the direction through the Ship-Channel, also through the Swash. *Light-houses.*

There are two white lights on North Point, bearing N. by W. ½ W. from the Bodkin. They are thirty-three and forty-two feet above the sea, respectively.

For vessels of small draught of water, give Sandy Point a good berth, on account of its bar, that makes out considerably, but you may safely pass it in eight fathoms. This point is easily known from its having a few small detached round-topped pine and cedar trees on it, near its outer extremity, and a brick two-story house, with wings, a little inland.

When abreast of the point, and pretty near the bar, with a leading wind, steer N. 12½° W., which will lead you to the Swash Channel, and the course through it, but it will be well to observe the natural inland marks for this channel, which are a small house standing a little to the Westward of a large house having a steeple or dome to it; to the E. of North Point, up the bay, well on with a tree, as in the margin, further inland, until you are abreast of the Bodkin light-house. You will not have less than nineteen feet, common tide, and afterward not less than thirteen feet. Steer with the above marks on until you open a house at the head of Bodkin Creek, or until you open Leading Point a little with Hawkins' Point, when you can cross Bodkin Bar and stand up the river for Hawkins' Point, when, giving a fair berth to Hawkins' Point Bar, you may run for the channel between Fort McHenry and the Lazaretto Bar on the port hand, when you will follow the directions previously given for vessels of heavy draught of water. (See Chart of Chesapeake.)

Navigators who frequent the Swash Channel leading into the Patapsco River, will recollect that a hard knoll or oyster bank lies about two miles above the mouth of Magothy River, having less than seven feet water on it, with four fathoms soft bottom around it, from which the Bodkin light-house bears N. W. by N. ½ N.; bluff off Sandy Point S. 9° W.; and two very light green trees, appearing as one to the naked eye, standing over the Red Bank to the Northward of Magothy, S. 84° W., to the Red Bank, two miles. A spar-buoy, painted black, is placed on the Northern edge of it, and numbered on four sides.

A fixed light, thirty-seven feet above the sea, is placed on Fort Carroll, in the Patapsco River.

There is a fixed light, thirty-five feet above the sea, on Lazaretto Point, N. side of Baltimore Harbor. *Light.*

The following buoys mark the channel in Patapsco River, arranged in order as they are passed in entering: *Buoys.*

Buoy on North Point Bar is red, No. 4, twenty-one feet long, and numbered on four sides. It is in eleven feet water, soft bottom. Sparrow's Point bears N. W. by N.; North Point, N.

Fourteen-foot Bank buoy is red, No. 14, twenty-one feet long, and numbered on four sides. It is in fourteen feet, hard bottom. Upper North Point light-house bears E. by N.; Sparrow's Point, N W. by N.

Buoy of Rock Point is black, No. 5, twenty-one feet long, and numbered on four sides. It is in eleven feet, hard bottom, Hawkins' Point bears N. W. by W. ½ W.; White Rock, W. S. W.

Buoy on Rock Knoll is black with a white ring, No. 7, numbered on four sides, and twenty-two feet long. It is in seventeen feet, soft bottom. This buoy is at the turning point. Hawkins' Point bears N. W. by W. ½ W.; Sparrow's Point, N. N. W.

Buoy in Upper Channel is painted black and white perpendicular stripes. It is twenty-one feet long, and is in sixteen feet water, soft bottom. Sparrow's Point bears N. W. ½ N.; lower light-house, North Point, E.

Buoy on Sparrow's Point Knoll is red, No. 8, twenty-two feet long, and numbered on four sides. It is in seventeen feet, sticky bottom. Hawkins' Point bears W. N. W.; Sparrow's Point, N. by E.

Buoy off Hawkins' Point is black, No. 9, twenty-four feet long, and numbered on four sides. It is in twenty-one feet, sticky bottom. Soller's Point bears N. E. by N. ½ N.; lower North Point light-house, E. by S. ½ S.

Buoy on Soller's Point Flats is red, No. 10, twenty feet long, and numbered on four sides. It is in sixteen feet, hard gravelly bottom. Lower North Point light bears E. by S. ½ S.; Hawkins' Point, W. by S. ½ S.

Buoy in Lazaretto Bar is red, No. 12, twenty-nine feet long, and numbered on four

sides. It is in four fathoms, sticky bottom. Flagstaff on Fort McHenry bears N. W. by W.; Lazaretto light-house, N. W. ½ W.

Buoy off Fort McHenry is black, No. 11, twenty-nine feet long, and numbered on four sides. It is in twenty-one feet, soft bottom. Flagstaff on Fort McHenry bears S. W. by W. ½ W.; Lazaretto light-house, S. E. ½ E.

The following buoys mark the entrance to and through Bodkin Swash:

Buoy off Magothy Shoal is black, No. 19, twenty-one feet long, and numbered on four sides. It is in twelve and a half feet, hard bottom. Lower Magothy bluff bears S. W. by W. ½ W.

Buoy on Belvidere Shoal is red, No. 20, twenty feet long, and numbered on four sides. It is in ten feet, hard bottom. Vessels bound up the bay leave this buoy on the port hand; bound up the Swash, leave it on the starboard hand. Love Point bears S. E. ½ E.; Sand Point, S. ¾ E.

Buoy on S. E. Bodkin Bar is black, No. 1, twenty-one feet long, and numbered on four sides. It is in sixteen feet, hard bottom. Sandy Point bears S. ½ E.; lower North Point light, N. N. W.

Buoy on N. E. Bodkin Bar is black, No. 3, twenty-two feet long, and numbered on four sides. It is in fifteen feet, soft bottom. Rock Point bears W.; North Point, N. W. by N. ½ N.

Buoys. The following buoys mark Pool Island, as above:

S. W. Bar buoy, off Pool's Island, No. 1, black, numbered on four sides, is in twelve feet water. From its S. W. point Pool Island bears N. N. E.; North Point, S. W. by W. ½ W.; Swan's Point, S. ½ W.

The bottom is of hard sand. The buoy is eighteen feet in length, and must be left on the port hand passing up the bay.

S. E. Knoll, or Shark's Fin buoy, No. 2. red, numbered on four sides, is in ten feet water. From it N. E. end of Pool's Island bears N. W. by N. ½ N.; S. W. end of Pool's Island, W. by S. ½ S.; Wharton's Point, N. E.

The bottom is hard sand. The buoy is eighteen feet in length, and must be left on the starboard hand passing up the bay.

N. E. Bar buoy, No. 3, black, numbered on four sides, is in ten feet water. From it S. W. end of Pool's Island bears W. by S. ½ S.; Wharton's Point, N. E. ½ E.; Swan's Point, S. by W. ¼ W.

The bottom is hard. The length of the buoy is eighteen feet, and it must be left on the port hand passing up the bay.

Wharton's Point buoy, No. 4, red, numbered on four sides, is in sixteen feet water From it High Tree, on Wharton's Point, bears S. E. by S.; point on the W. side of Still Pond Cove, E. by N.; Pool's Island light-house, S. W. by W., the bottom is hard. The length of the buoy is twenty-five feet, and it must be left on the starboard hand passing up the bay.

In coming up, red buoys with even numbers must be left on the starboard hand; black buoys with odd numbers must be left on the port hand. Buoys with white and black perpendicular stripes are in mid-channel, and may be passed on either hand; and buoys with red and black stripes have channel-ways on either side of them. Bearings are magnetic. Variations, in 1850, 3° W.

Buoys. The following buoys are placed on Chessenessix and Occahonnock creeks, on the Eastern shore of the Chesapeake:

Three spar-buoys have been planted to mark the entrance to Chessenessix or Chesconnessix Creek, viz.: one on Big Island Bar, painted black, No. 1. Depth of water, at low spring tide, eleven feet, hard bottom. Bearings per compass: Watt's Island light-house, N. W. ½ W.; Rogue's Island Point, N. by E.

One on Scott's Hall bar, painted red, No. I. Depth of water, at low spring tide, twelve and a half feet, hard bottom. Bearings per compass: Rogue's Island Point, N. by E. ½ E.; Watts' Island light-house, N. W. ¾ W.

One on Burrick's bar, red, No. 4, in thirteen feet water. Crab Hummock Bluff pines bear S. W.; Burrick's Bluff, S. S. W.

Two spar-buoys have been planted to mark the entrance of the North Channel leading into Occahonnock Creek, viz.: one on the W. end of Trout Hole Bar, painted black, No. 1. Depth of Water, at low spring tide, ten feet, hard bottom. Bearings per compass: Old John's Bluff, E. by N.; Battle Point, S. by E.

One on Sandy Point Bar, painted red, No. 2. Depth of water at low spring tide five feet, hard bottom. Bearings per compass: Old John's Bluff, E. by N. ½ N.; Battle Point S. by E.

Directions. For coming out of the Susquehanna River with small draught of water only, keep the Eastern ferry-house opposite Havre de Grace (a stone building) astern, and passing near Point Concord light-house, run for a large tree near the thoroughfare of Specutia Island, until you just shut in two Lombardy poplars, or till you get Turkey Point and a gap in the Highlands, S. side of Elk River, to range; run for the last marks until you open a

single tree on the Highlands, S. side of Sassafras River, with the Easternmost point of Specutia Island; then run for a red bank, E. side of the bay, having Langsdale's house, which is a large brick one above Havre de Grace, right astern, until you open a single tree, E. end of a long ridge of black woods, S. side of Elk River, with Turkey Point, then N. W. Westerly, for Poole Island: a short distance below, and on the starboard hand after leaving Point Concord, lies a shoal called Devil's Island, which at low tide is nearly out of water, and on the opposite side of the channel is a very extensive flat or shoal, which also must be avoided by making short tacks when beating in or out of the river.

Concord light, at Havre de Grace, is a fixed light, forty feet above the sea, the navigation to which, in passing, together with the port, is fit only for vessels drawing not over eight feet; the channel is narrow and crooked; on the shoals are only three feet water. It is impossible to give a stranger courses and distances, who must be guided altogether by the lead, and it should not be run in the night. *Light-house.*

On Poole Island is a light-house, containing a fixed light, thirty-five feet above the sea; it shows the way through the Western channel, in which there are only seven feet water. Few vessels take this channel, as the Eastern is the safest, having from three to seven fathoms water. *Light-house.*

A bell is tolled in thick weather.

On Turkey Point there is a fixed light, sixty-five feet above the sea. *Light.*

On Fishing or Donoho's Battery there is a fixed light, thirty-six feet above the sea. *Light.*

CAPE HENRY TO CAPE HATTERAS.

CAPE HATTERAS.—This cape lies about S., 13½° E., one hundred and three miles from Cape Henry. From Cape Henry the coast trends about S. 13° E., and is safe of approach to within a mile, until off False Cape, twenty miles from Cape Henry light. E. of False Cape, one mile and three fourths distant, there is a shoal of fifteen feet. S. of False Cape lie the inlets of Currituck, which are shoal, and New Inlet, on which are five feet water. *Cape Hatteras.*

About six leagues N. by E. from the cape lie the Wimble Shoals, on which are three and four and a half fathoms water, and which consist of three ridges parallel to the coast of North Carolina, lying E. S. E. from the Northern part of the Woodlands on Chicomico, and distant from one and three fourths to three and a half nautical miles from the beacon; the soundings are very irregular, changing sometimes two and a fourth fathoms in a cast of the lead, with coarse sand, gravel, and shells on the shoals, and outside in thirteen fathoms, soft black mud. Vessels of considerable draught should not approach the land here within four miles: there is generally a strong current setting toward the shore, and the water shoals very suddenly. The inner edge of this shoal is about three miles from the shore, and the soundings between them eight, ten, and seven fathoms. *Wimble Shoals.*

About five miles N. by W. from the N. end of this shoal, and three miles S. E. from the N. end of Hatteras Island, there lie some small knolls, on which are only nine feet at low water.

There is a current, with a S. wind, which runs N. N. E. two miles per hour, and with a N. wind S. S. W. two miles per hour.

W. S. W. from Cape Hatteras, eight leagues distant, is Ocracoke Inlet, on the bar of which are nine feet water; this bar is subject to change, and should not be entered without a pilot.

From Cape Hatteras to Cape Henry the ground is fine sand, and to the Northward of Cape Henry coarse sand, with some shells among it.

It is high water at Cape Hatteras Shoals, on full and change of the moon, at about eight o'clock, and the tide flows from four to five feet, being governed by the winds in the offing; in Easterly gales it runs several feet higher. *High Water*

BODY'S ISLAND LIGHT is a revolving light, showing a bright flash every minute and a half, and is ninety feet above the level of the sea. It bears from Cape Henry light S. 18° E., distant seventy miles; from Cape Hatteras light, N. 3° W., distant thirty-three miles, and is in lat. 35° 47′ 20″ N., long. 75° 34′ 20″ W. *Body's Island Light.*

CAPE HATTERAS LIGHT is a first order Fresnel flashing white light, about one hundred and fifty feet above the level of the sea, which should be visible under favorable circumstances, from an elevation of ten feet above the level of the sea, about eighteen and a half nautical miles. The light-house, seventy feet from the top, is red, the remainder being white. Its location is about one mile and a fourth from the point of the cape. *Cape Hatteras Light.*

This light will be recognized by observing that in every twenty seconds of time there will be an eclipse of twelve seconds duration, followed by a brilliant flash of eight seconds duration—or the same proportion, in every fifteen seconds of time, there will be an

eclipse of nine seconds duration, followed by a brilliant flash of six seconds duration. Lat. 35° 15′ 11″ N.; long. 75° 30′ 33″ W.

A beacon is built on the Southern extremity of Cape Hatteras Point, which exhibits a fixed light, thirty-five feet above the sea.

Cape Hatteras light bears N. 37° W., distant about eight and a half nautical miles from the Southeastern edge of the Nine-foot or Outer Shoals. Magnetic variation in 1850, 1° 30′ W.

To clear the Outer Shoals, in approaching them from the Northward and Eastward, bring the light-house to bear W., in ten to twelve fathoms water, when run S. keeping in not less than ten fathoms water, until the light-house bears N. W. ½ N., when any course S. of W. may be steered with safety.

In coming from the Southward and Westward, keep in not less than ten fathoms water, until Cape Hatteras light-house bears N. W., when any course Eastward of N. may be steered.

In bad weather, and especially at night, do not approach the Outward Shoals nearer than fifteen fathoms water from the Northward and Eastward, and twelve to eleven fathoms from the Southward and Westward.

It is necessary to watch the bearings of the light-house, and keep the lead going in beating around or between the shoals. In approaching the shoals at night or in bad weather, if the light-house has not been seen before night, it will not be prudent to run for it.

As ten or eleven fathoms water may be found to the Westward of the shoals, in going outside of them from the Southward and Westward, do not approach the land to the Southward of the cape nearer than eight and a half to ten miles.

To pass between the Diamond and Outer shoals from the Northward and Eastward, bring the light-house to bear W., in ten to nine fathoms water, about four and a fourth miles from it, and run S. until the water shoals to seven or eight fathoms, and the light-house bearing N. W. ½ W., when run S. W., carrying not less than four fathoms through the channel, and deepening gradually to the Southwestern edge of it, until in seven or eight fathoms, with the light-house bearing N.

In approaching this channel from the Southward and Westward, bring the light-house to bear N., in eight to seven fathoms water, about four and a fourth miles distant from it, and run N. E. until in eight to nine fathoms water, and the light-house bearing N. W., when the shoals will be cleared.

To pass between the Diamond and Cape Hatteras Spit from the Northward and Eastward, bring the light-house to bear N. W. by W. ½ W., in eight to seven fathoms water, two and a half miles distant, and steer S. W., giving the end of the spit and breakers a berth of half a mile. On this course not less than three fathoms will be found. When the light-house bears N., in five to six fathoms water, the Diamond will be cleared; and when the light-house bears N. N. E. ½ E., in six to seven fathoms water, the spit will be cleared, and the anchorage in the cove open.

To pass between the Diamond and the spit from the Southward and Westward, bring the light-house to bear North, in five fathoms water, two miles from the breakers and point, and run N. E. until in nine to ten fathoms water, when the shoals will be cleared.

The bottom is hard sand, with an occasional small spot of blue mud. The currents over and in the vicinity of the shoals have a velocity of three to five knots per hour, and are greatly influenced in direction and force by the winds. The surface water of the Gulf Stream extends to within a short distance of the Outer Shoals for some time after a continuation of Northerly and Easterly winds.

High Water.

Greatest rise and fall of tides at Hatteras Cove	5.3 feet.
Mean " " " " "	3.2 "
Least " " " " "	2.2 "

HATTERAS COVE AND INLET are good harbors of refuge for small coasters.

Hatteras Cove.

HATTERAS COVE.—This anchorage affords protection from all winds except those from the Southward and Westward, being exposed from S. to W. N. W.

To enter from the Southward and Westward, bring Hatteras light to bear N. E. by N ¾ N., and run for it. Anchor when in from five to four and a half fathoms water, muddy bottom, with the breakers on the S. W. spit bearing S.

To enter from the Northward and Eastward, giving Hatteras Point (which lies two miles S. S. W. of the light) a berth of half a mile, will carry you across the shoals in three and a half fathoms water. Bring the light to bear N. E. by N. ¾ N., and run for it. Anchor when in from five to four and a half fathoms water, muddy bottom, with the breakers on the S. W. spit bearing S.

To go outside the shoals, keep in twelve fathoms water until the light bears N. N. W., then steer N. W. until the light bears N. E. by N. ¾ N., and steer in for the anchorage as before directed.

Vessels beating in should go about on approaching the Western shore, or in standing towards the spit, on getting into less than four fathoms. *To beat in.*

HATTERAS INLET bears S. 70° W. (W. by S. ¾ S.), twelve miles distant from Cape Hatteras light-house. It is known by a low sand island, which was formerly a round hummock covered with trees, on the E. side of the entrance. *Hatteras Inlet.*

The breakers seldom extend entirely across the entrance, but at nearly all times make on each side, and between them lies the channel.

The bar should be approached from the Northward and Eastward. Keep in from four to five fathoms water, along the breakers, until up with the opening. The course in is N. W. by W., half a mile, keeping the Southern breakers aboard until well up with the point of beach on the Western side of the entrance; then steer E. N. E. for the low sand-island (formerly the round hummock) on the Eastern side, and when up with the island, anchor with it close aboard, and wait for a pilot.

The least water on the bar is fourteen feet, at mean low water. The mean rise and fall of tides is two feet. The tides and currents are much influenced by the winds; the ordinary velocity in the channel is three knots. The bottom is hard sand, except a few sticky spots about the anchorage at the head of the channel.

The following list of buoys is arranged in regular order as they are passed in entering Hatteras Inlet: *Buoys.*

Middle Ground buoy is a black cask	in	6	feet water.
False Channel buoy is a black spar, sixteen feet long, No. 1	in	9	"
2d False Channel buoy is a black spar, fifteen feet long, No. 3	in	8	"
West Mount Swash buoy is a black spar, fifteen feet long, No. 5	in	8	"
2d West Mount Swash buoy is a red spar, fifteen feet long, No. 2	in	8	"
Channel buoy is a black and white striped cask	in	10	"
Northwest Point Reef buoy is a red cask, No. 4	in	12	"

As the channel is constantly shifting, no permanent bearings can be given for these buoys. In entering from sea, leave the first four buoys on the port hand. No one should attempt to enter without a pilot, unless well acquainted, or obliged by stress of weather, in which case anchor between the first and third buoys, and wait for a pilot.

OCRACOKE LIGHT, about twenty-three and a half nautical miles to the Southward and Westward of Cape Hatteras light-house, is a fixed white light, seventy-five feet above the level of the sea, and should be seen, under favorable circumstances, from an elevation of ten feet above the level of the sea, about thirteen and a half nautical miles. Lat. 35° 6′ 31″ 6 N., long. 75° 58′ 27″ 4 W. *Ocracoke Light-house.*

A light-vessel, with two lights, is moored inside of the bar, bearing from it N. N. W. *Lights.*

There is a lighted beacon on Beacon Island, which bears from the bar N. W.; it is thirty-nine feet above the sea.

A floating light is stationed within the point of the Nine-foot Shoal, near Peache's Hole Swash. She is moored in two fathoms water, with the light on Ocracoke bearing S. E., distant two and three fourths miles; Shell Castle bearing S. W. ½ W., four and a half miles, and the light-boat at the S. W. Straddle, W. by S. nine miles. A bell will be tolled at intervals in thick and foggy weather. She shows one light, forty-two feet above the sea.

Vessels bound to Washington from the S. W. end of Royal Shoal, on which is a light-boat, showing a light forty-three feet above the sea, will make their course good N. W. by N., which will bring them up the main channel of Pamlico River, and will be within a fourth of a mile of the light. *Light-boat.*

A light-vessel is on the S. E. end of Brant Island Shoal; she is painted straw-color, and shows one light, forty-five feet above the sea.

On a point of land on the S. side of Pamlico River, thirty-five miles below Washington, running into Pamlico Sound, is a fixed light, thirty-seven feet above the sea.

A floating light is also moored at the mouth of Neuse River, showing one light, thirty-eight feet above the sea. She is moored in four and a half fathoms water, sticky bottom, near the upper edge, or Western side of the shoal, extending out from the point of marsh, with the point bearing due S., distant about three miles; Gum Thicket, bearing S. W. ½ W.; Brant Island due N.; Swan Island, S. E., and the S. W. Straddle light-boat due E. A bell of two hundred pounds weight will be tolled at intervals in thick and foggy weather. *Light.*

Harbor Island light-vessel, of seventy-two tons, is between Pamlico and Cone Sounds, and shows one light, thirty-four feet above the sea. *Light.*

Long Shoal Point floating-light is on the Eastern end of the shoal, and shows one light, forty-six feet above the sea.

The following list of buoys in Ocracoke Inlet and Pamlico Sound is arranged in order as they are passed by vessels entering:

Ocracoke bar-buoy is a black and white striped cask, in fifteen feet water, the light-vessel bearing N. W. by W. *Buoy.*

Buoys. Buoy at the mouth of Wallace's Channel is a black and red striped spar, eighteen feet long, in eight feet water, hard bottom, Beacon Island light-house bearing N. W. by N.; Ocracoke light-house N. E. by E.

Buoy at the point of Gales' Island, is a red spar, No. 2, fourteen feet long, in seven feet water, hard bottom, Ocracoke light-house bearing N. E. by E., and the light-vessel, S. E.

First Bulkhead buoy is a black spar, No. 1, fourteen feet long, in six and a half feet water, hard bottom, Beacon Island light bearing S. E by S.; Nine-foot Shoal light-vessel, N. E. by N.

Second Bulkhead buoy is a black cask, No. 3, in seven feet water, hard bottom, Ocracoke light bearing E.; Beacon Island light, S. S. W.

Third Bulkhead buoy is a black cask, No. 5, in seven feet water, hard bottom, Beacon Island light bearing S.; Ocracoke light, E. by N.

First S. Channel buoy is a red spar, fourteen feet long, No. 4, in seven feet water, hard bottom; Nine-foot Shoal light-vessel bearing N. E. by E.; and Ocracoke light-house, E. by S.

Second S. Channel buoy is a black spar, No. 7, fifteen feet long, in seven feet water, hard bottom; Nine-foot shoal light-vessel bearing N. E.; and Ocracoke light-house E. by S. ½ S.

Third S. Channel buoy is a red spar, No. 6, fifteen feet long, in seven feet water, hard bottom; Nine-foot Shoal light vessel bearing E. N. E.; Royal Shoal light-vessel W.

Tobacco Point buoy is a red spar, No. 8, twelve feet long, in seven feet water, hard bottom; the North point of Ocracoke Island bearing E. by N.; and Flounder Slue Rock, S. by W.

West Mouth Swash buoy is a red can, No. 10, in seven feet water, hard bottom; Ocracoke light bearing N. E.; Beacon Island light, S. E. by S.

Eight-foot Shoal buoy is a black and white striped can, in eight feet water, hard bottom; Beacon Island light bearing E. S. E.; Royal Shoal light-vessel, W. by S.

Albemarle Sound lights. ALBEMARLE SOUND LIGHTS.—Roanoke Island floating light is at the N. end of Croton Sound, and shows one light, three feet above the sea.

Wade's Point floating light, on the N. side of Pastoquash River, shows a single light.

Roanoke River floating light, off Walnut Point, shows one light, forty-one feet above the sea.

Cape Lookout. CAPE LOOKOUT.—Cape Lookout light-house is red, and can be seen twenty-two miles. It contains a red fixed light, elevated one hundred and fifty-five feet above the level of the sea. The house is surrounded by a small growth of trees, from which a bold sand-beach extends, in a S. E. direction, about three miles, in the centre of which are small hillocks of sand. The keeper's dwelling, which is a part of the old tower, is painted in red and white horizontal stripes. This light, although seen clearly all night until near the approach of day, cannot then be discerned, owing, it is thought, to a mist that rises between the vessel and lamps. It is judged imprudent to approach the shoals of Lookout in the night nearer than seven fathoms on the E., or ten on the W. side.

The land on Cape Lookout is very low, and cannot be seen more than a league in the clearest weather, from the deck.

Cape Lookout Shoals. The breakers make S. by E. ¼ E., seven and a half miles from the light-house, which are constant, with the exception of a space of about two and a half miles, where, in moderate weather, the sea does not break; and this space is reported to be used by vessels drawing less than nine feet. From the South point of the constant breakers the shoal continues, in the same direction, three miles farther, or ten and a half miles S. by E. ¼ E. from the light-house. This part of the shoal is indicated by light green water, varying to a yellow tinge on the shoalest lumps. This part of the shoal is also very "lumpy," the water over it varying in depth from about nine to eighteen feet; and it is on this point, S. of the constant breakers, that vessels have recently grounded.

About one and a half miles to the S. E. of the above shoal is one on which there is five and a half fathoms water; and still farther in the same direction, and S. E. by S. ½ S., thirteen and a half miles from the light-house, lies the outer shoal, on which there is five and a quarter fathoms water. Beyond this no indications of shoals were discovered.

With the eye elevated thirteen feet above the water, and ten and a half miles from the light-house, just clear of the dangerous shoal, the ground on which the light-house stands is below, and the lower red stripe of the old light-house is half its width above the horizon. The constant breakers are plain in sight, three miles distant. The lower red stripes well on the horizon will carry a vessel around the dangerous shoal in from six to eight fathoms.

On the five-and-a-half-fathoms shoal the breakers are in sight, with no horizon showing beyond; and when on the outer shoal, in five and a quarter fathoms, the lower edge of the outer red stripe of the old light-house is a little above the horizon, and there are no breakers in sight. With the top of the old light-house just discernible above the horizon, a vessel will be well clear of all the shoals, and fifteen miles from the light-

house. In from seven to eleven fathoms the color of the water is dark green, in five fathoms a pale green, and in three fathoms and less a light green, varying according to the depth.

The outer part of Cape Lookout Shoals lies S. W. ¼ W., twenty-two leagues from Cape Hatteras, and twenty-two leagues S. W. ¾ W., from the outer part of Cape Hatteras Shoals.

The following buoys are passed in going from Pamlico Sound, through Core Sound to Beaufort Harbor.

Buoys. Harbor Island Bar buoy, a red cask, No. 2, in four and a half feet water; Marshy Point buoy, a black spar, twelve feet long, white head and numbered on four sides. The latter is placed in seven feet water; Fort Macon light bearing W. by S., Lennoxville, N.

In entering the sound, leave buoy No. 2 on your starboard hand at least fifty feet, and steer for Harbor Island light-vessel, leaving her on the port hand. The channel is principally marked by stakes.

Beaufort, Old Topsail Inlet. BEAUFORT, OLD TOPSAIL INLET.—Fort Macon, on the W. side of the entrance to this harbor is N. N. W. ½ W., sixteen miles distant from the outer point of Cape Lookout Shoal, in nine fathoms water.

Beaufort Harbor. BEAUFORT HARBOR.—To enable vessels to enter Beaufort Harbor during the night, two beacons have been erected on Shackleford Banks for crossing the outer bar; *Beacons.* the lower or outer beacon showing a white, and the inner higher beacon showing a red light.

Light-boats. Two light-boats exhibiting a single green light each, are placed at turning points in the channel, and serve as guides for crossing the inner bar.

Directions. When off the bar in eight fathoms of water, Cape Lookout light-house bearing E. by S. ½ S., bring the beacon lights on Shackleford Banks in range bearing N. ½ E., and run in on this range, passing close to the outer and the bar buoy, until nearly up with the light-boat abreast of black buoy No. 3.

Leaving her about 100 yards on the starboard hand, change course to W. N. W., and run on this course three fourths of a mile for the second light-boat, passing midway between buoys Nos. 4 and 5, over the inner bar. When up with and about fifty yards to the Eastward of this light-boat, steer in N. by W., one and a fourth miles, which will clear you of Shackleford Spit on the starboard, and the point of shoal at black buoy No. 7 on the port hand, and anchor off the fort in five or six fathoms water, good holding ground. Vessels drawing over thirteen feet should not attempt to run in at night without a pilot.

Fourteen feet of water only can be carried in at high water, and if there is a swell on, not so much.

The harbor of Beaufort is of easy access, and affords a perfect shelter from all winds.

The following buoys are passed in entering Beaufort Harbor from seaward:

Buoys. Outer bar buoy is a black and white striped iron-nun, in thirty-one and a half feet water, Fort Macon light bearing N. W. ¼ W.

Bar buoy is a black iron-can, No. 1, in fourteen feet water; inner bar buoy bearing N. W. ¾ W.; Fort Macon light, N. W. ¼ W.

Inner bar buoy is a black and white striped iron can, in twenty-two and a half feet water, Fort Macon light bearing N. W. ¼ N.; Hillock on Shackleford Bank, N. ¾ W.

Buoy on N. W. end of Shackleford Bank is a red spar, No. 2, in ten feet water, Fort Macon light bearing N. W. ½ W.; inside bar buoy, S. E. ¾ S.

Middle Ground buoy is a red spar, No. 4, in fourteen feet water, between Fort Macon and Bird Island Shoal; Fort Macon light bearing S. W. by W.; beacon, W. by S. ¾ S.

Pilots. Pilots can be obtained by setting a signal at the fore. Vessels should heave to when off the Southeast Spit, in four fathoms, convenient for entering when boarded by the pilot.

The Slue should never be attempted by strangers. Nine feet at low water neap can be carried in the channel, winding near to the beach on Macon Point. High water, 7h. 46m.; rise, two feet nine inches.

W. ten leagues from Cape Lookout, is Bogue Inlet, of eight feet water; W. by S. ½ S., four and a half leagues from Bogue Inlet, lies New River, on which you have eight feet water; S. W. ¾ W., six leagues from New River light, lies New Topsail Inlet, on which are ten feet water; S. W. ¼ W. from New Topsail Inlet, three leagues distant, you make Deep Inlet, on which are seven feet water; S. S. W. from Deep Inlet, six leagues, lies New Inlet, on which are seven feet water. This inlet is between the seacoast and N. E. end of Smith's Island: It will admit vessels drawing six feet, and is about two miles wide at its entrance, having seven feet water, at low tide, over the bar. S. by E., eight leagues from New Inlet, will carry you into fifteen fathoms S. from the Frying-pan Shoals.

Federal Point Light. FEDERAL POINT LIGHT on the N. side of New Inlet is a fixed light, fifty feet above the level of the sea.

New Inlet. NEW INLET.—Buoys at the entrance to New Inlet: The outer sea-buoy (a first class can, white and black perpendicular stripes,) is placed outside the bar in five fathoms water.

Black buoys, Nos. 1 and 3, on the N. E. end of Carolina Shoals, mark the Southern edge of the channel, and should be passed on the port hand, coming in close to.

To guide vessels crossing the "Rip" into Cape Fear River, a red nun-buoy is placed at the turn off the South end of Federal Point, and a red spar-buoy on its Eastern edge, marking the best water across it.

N. B.—The passage between Federal Point and Zeek's Island from New Inlet into Cape Fear River is called the "Rip" or "Swash."

The channel to the Southward and Westward of Zeek's Island is not yet developed.

Oak Island Beacons. OAK ISLAND BEACONS.—There are two of them. The front light is a fixed white light of the sixth order, illuminating an arc of 180°, and placed at an elevation of twenty-seven feet from base of tower to focal plane, and thirty-three feet above sea level. The rear light is a fixed white light of the fourth order, illuminating an arc of 360°. The light is placed on the keeper's dwelling, in a lantern painted black. The dwelling is painted white; the elevation of the light is thirty-eight feet from base to focal plane and forty-five feet above sea level.

Wilmington New Inlet Bar. WILMINGTON, NEW INLET BAR.—When in five fathoms water, with Federal Point light, bearing N. W. ¼ W. and the large house on Zeek's island W. ¾ S., stand in on a W. by N. ½ N. course, passing a few yards to the Northward of the bar buoy, until Federal Point light bears N. ¾ E., when steer W. S. W. passing within fifty or a hundred yards to the Northward of the wharf on the Northwest end of Zeek's Island; then alter the course to S. W. ¾ W., leaving the buoy ten yards to the Northward. When halfway between this last-named buoy and the light-boat, anchor, or if bound up the river, steer N. by E. ¼ E. until abreast of the N. E. point of the Marsh Islands; the course is then N. by E. up the channel-way. The shoalest water in crossing New Inlet bar is eight feet by the buoy at mean low water. Both the Western and New Inlet bars are subject to frequent changes, and should not be attempted without a pilot.

Horseshoe Shoal Light-vessel. HORSESHOE SHOAL LIGHT-VESSEL.—Between New Inlet and Price's Creek, marks the Horseshoe Shoal. Vessel of yellow color, with one fixed light, forty-three feet above the level of the sea, visible twelve nautical miles. There is a Fog bell attached to it.

Cape Fear. CAPE FEAR is the S. point of Smith Island. From it the Fryingpan shoals extend thirteen miles in a S. S. E. ½ E. direction: The soundings in approaching the Cape Fear shoals from the Eastward are regular, but from Westward irregular.

Masters of vessels of heavy draught in passing these dangerous shoals, should be careful to get casts of the lead at short intervals of time, and never run into less than ten fathoms water if in a steamer, and fifteen to eighteen fathoms in a sailing vessel.

Fryingpan Shoals Light-vessel. FRYINGPAN SHOALS LIGHT-VESSEL is schooner-rigged; the hull painted yellow, with the words "Fryingpan Shoals," painted in large black letters, on each side; lower masts yellow, topmasts white, day-marks black (one on each mast). The soundings, in approacing the Cape Fear Shoals from the Eastward, are regular, but from the Westward irregular. The lights are fixed white lights (one on each mast), at an elevation of forty feet above the level of the sea, and in clear weather should be visible from a distance of twelve miles. The vessel is moored in ten fathoms water, and in latitude 33° 35″ (00) North; longitude 77° 50″ (00) West of Greenwich.

Cape Fear or Bald Head light has been discontinued.

Wilmington Western Bar Channel. WILMINGTON WESTERN BAR CHANNEL.—When in four fathoms, bring the high and low lights on Oak Island in range, and keep that range N. E. by N., passing either side of the buoy, until Bald Head bears E. S. E. and Cape Fear is open about two ships' length to the Southward of the S. end of Bald Head point, when steer E. until Bald Head bears S. E. by E. and the citadel in Fort Caswell N. N. E. ¾ E. when steer N. E. by E. ¼ E. until reaching five fathoms; when Bald Head bears S. S. E. ½ E. steer N. N. W. ¼ W. which will clear the spit of Battery Island. Having cleared the point of Battery Island and opened the river, anchor at pleasure in mid-channel abreast of Smithville. Eight feet can be carried in over the Bulkhead at mean low water.

Main Bar. MAIN BAR.—Marshal Shoal is now connected with The Fingers, and has obliterated the old channel. The buoys have been removed.

The general direction of the land from Bald Head to Little River (thirty miles from the bar), is W. ½ S. From the Western projection of Fryingpan Shoals to the mouth of Little River, the soundings are from nine to ten fathoms, sometimes sand and sometimes rock.

It may be necessary to observe to strangers, that, in passing the shoals, especially in a dark night, it is most prudent to steer W. in lat. 33° 20′ or 25° at most, until they

shoal their water to seven or eight fathoms; by doing this they may be sure of being to the Westward of the bar.

Your course from Cape Fear Bar, when in nine fathoms water, to clear Cape Romaine Shoal, is S. W., and distance seventy-two miles. In approaching the coast, in 33° 20', your first sounding will be from thirty to thirty-five fathoms: in this depth you will be very near to the edge of the Gulf Stream. You will have fine gray sand, with black spots, when you will get into seventeen fathoms; there is a long flat in this depth of water.

In steering W., you will, for the first five or six leagues, shoalen the water very little. When you come into fourteen fathoms, you shoalen your water quicker but gradully. You will see the land from ten fathoms water, if the weather be clear, and may then be sure that you are within the Fryingpan, from the outside of this shoal. To the Westward of N. W. no land can be seen, when without the shoals.

The currents on the coast of North Carolina are governed mostly by the wind: during the summer months, the prevailing winds are Southwesterly, and the currents then set in the direction of the coast to the Eastward, and when the Southerly winds cease blowing, they change suddenly to the contrary direction, which is a sure precursor of a N. E. wind.

The following buoys are passed in entering Cape Fear river:

Buoys. Eastern outer slue buoy is a red iron can, in twenty-four feet water, Federal Point light bearing N. ½ W., light-ship, S. S. E.

Western outer slue buoy is a red iron can, in twenty-one feet water, Bald Head bearing N. by W. ½ W.; light-ship S. E. ½ S.

Eastern inner slue buoy is a red iron nun, in twenty-six feet water, Bald Head bearing N. W. ½ N.; Federal Point light, N. ¼ W.

Western inner slue buoy is a red iron nun, in twenty-four feet water, Bald Head bearing N. by W. ¼ W.; Western outer slue buoy, S. S. E.

Entering the slue from the Eastward, the above buoys must all be left on the starboard hand.

The following are Western or Main bar buoys:

Buoys. A red iron conical buoy, No. 2, on the bar, in nine feet water, Oak Island lights bearing N. E. ¼ N.; Bald Head E. by S.

A red can-buoy, No. 4, on Battery Island Shoal, in fourteen feet water, Bald Head bearing S. E. by S. ½ S.; Fort Johnson flagstaff, N. ½ E.

A black iron nun-buoy, No. 1, on the point of shoal below the Horseshoe, in eleven feet water, Bald Head bearing S. by W. ¼ W.; Price's Creek, outer beacon W. ½ N.

There are two beacons, with fixed lights, at Price's Creek: the front one is placed on a tower, and the rear one on the keeper's dwelling. They are arranged for Horseshoe channel.

Horseshoe Shoal light-vessel, one light, forty-three feet above the sea, Bald Head bearing S. W. by S. ¾ S.; Price's Creek outer beacon, W. ¾ S.; she is in ten feet water.

A black iron conical buoy, No. 3, is located on the lower part of Horseshoe Shoal in six feet water, Bald Head bearing S. by W. ½ W.; Federal Point light, N. E. by E.

A black iron conical buoy, No. 5, on the upper end of Horseshoe Shoal, in eleven feet water, Bald Head bearing S. S. W.; and Federal Point light bearing N. E. by E.

A red iron nun-buoy is placed on New Inlet Rip, in six and a half feet water. The wharf at Zeeks Island bears from it, N. E. by E. ½ E.; and the light on Federal Point N. E. ½ E.

A red iron can-buoy, No. 8, on Drum Shoal, in twelve feet water, Federal Point light bearing S. E. ¾ E.; Orton's Point light, N.

A black oil-cask, No. 7, on Wreck Shoal, in eight feet water, Campbell's Island light bearing S. by W.; Cower's Jetty, N. W.

A black oil-cask, No. 9, on the Middle Ground, in eight feet water, Campbell's Island light bearing S. ½ E.; Cower's Jetty, N. W.

A red oil-cask, No. 10, on the Middle Ground, in nine feet water, Campbell's Island light bearing S. S. E.; Cower's Jetty, S.

A red iron can-buoy, No. 12, on the Bulkhead, in nine feet water, Water Point Jetty, bearing N. W. by N.; Chimney of Water's Mill, W.

The following are New Inlet buoys:

Buoys. Outer bar buoy is a black iron nun, No. 1, in twelve feet water, Federal Point light bearing W. by N.

Inner bar buoy is a black oil-cask, No. 3, in twelve feet water, Federal Point light bearing W. ½ N.

Georgetown. GEORGETOWN.—Georgetown entrance is seventy-two miles S. W. ¼ W. from Cape Fear.

In sailing to Little River Inlet, which divides North from South Carolina, you pass Lockwood's Folly Inlet, which lies W. from Cape Fear light, three and two thirds leagues distant. The land appears broken, and contains no safe harbor.

On your course toward Georgetown, several other inlets may be seen, and you pass North Inlet, about three leagues from Georgetown light-house; this inlet is the Northern boundary of North Island. The entrance into this inlet is from the Northward; the S. breaker forming nearly a crescent, runs apparently across the mouth of the inlet; there are generally not less than six feet water on the bar at low water, but the depth varies with the direction and violence of the prevailing winds. The direction of this channel has been within a few years considerably, though gradually, changed by the elongation and curve of the South breaker throwing the channel more to the Northward. In entering it, Georgetown light-house will bear about S. by W., distant three leagues; a small but distinct sand-hill (the most Northern on the N. end of North Island). S. W. ½ S.; the most Southern building on the S. end of the opposite islands, W. by S.; you may then run in between the heads of the two breakers, rounding along the edge of the South breaker, and thus passing between the breakers into the harbor. The flood tide comes in from the S. E., and sets across the South breaker toward the North breaker.

On the North end of North Island, about three leagues from the light, there is a village of about twenty or thirty dwelling-houses (a summer residence) which is distinctly seen from the sea, and often mistaken for Sullivan's Island, near Charleston; there are several houses on the N. point of the opposite island. To small vessels, this inlet affords a safe harbor; there are two passages leading from it up to Georgetown, but from the shoalness of the water, they cannot be conveniently navigated, except by boats; in cases of necessity, however, vessels of six or seven feet draught may be navigated with some delay through the most Southern, which is the deepest passage into the bay or river, leading to the town.

Georgetown Harbor Light. GEORGETOWN HARBOR.—Georgetown light-house is a white tower, erected on North Island, which is on the Northern and Eastern side of the harbor, at the entrance of Winyaw Bay, on a low sandy spot, and exhibits a fixed light, eighty-five feet above the level of the sea at high water, bearing N. ½ W. from the entrance of the bar, six miles distant. From the Southeasternmost part of Cape Romaine Shoals to the entrance of the bar, the course is N. N. E., and the distance seventeen and a half miles.

In approaching Georgetown Bar from the Northward, the harbor is shut out from view by North Island, and the light-house appears to be situated in a low wood.

In passing the light, either Northerly or Southerly, vessels will find five fathoms water within five miles of the land. S. S. E., five and a half miles from Greytown light, there is a shoal bank with seven and a half feet water.

Buoys. There are several spar-buoys placed in the best water on the bar, and in the channel, in sailing by which, the following directions must be observed, viz.: The first buoy on the bar lies directly in the channel, which, of course, may be passed on either side, close to; from this to the second (channel) buoy, the course is about N. W., one mile distant, and when up with it, immediately steer N. E., one mile and a half to the third buoy, which is also in the channel, when you will immediately steer N. by W. for the light-house, four miles distant, keeping that course until within one hundred fathoms of the light, leaving it on the starboard hand, when you will be in good anchorage.

The N. inlet channel to Georgetown cannot be recommended under any circumstances.

Vessels at sea will find deep water, and when the wind is to the Southward and Westward, convenient and safe anchorage near the land, about one and a half or two miles to the Northward of the light-house. *High Water.* A common flood tide rises nearly four feet; it is high water on the bar at the full and change of the moon, about seven o'clock.

The following buoys are passed on entering Georgetown Harbor by Battle Channel:

Buoys. Outer buoy is a red iron can, No. 2, in fourteen feet water; the light-house bearing N. W. ½ W.; Middle buoy, W. N. W.

Middle buoy is a red iron can, No. 4, in eight feet water, the light-house bearing N. W.; inner buoy, W. by N.

Inner buoy is a red iron can, No. 6, in nine feet water, the light-house bearing N.; outer point of South Island, S. W. ½ S.

Light house spit buoy is a red oil cask, No. 8, in ten feet water, the light-house bearing N.; inner buoy of Battle Channel, E. ½ S.

The following buoys mark the S. E. pass:

Buoys. Outer buoy is a wooden conical buoy, black and white stripes, "S. E. Pass" in white letters, in seventeen feet water, light-house bearing N. by W. ¾ W.; middle buoy, N. W. ½ N.

Middle buoy is a black iron nun, No. 1, in eight feet water, light-house N. by W. ½ W.; inner, or N. E. buoy N. W.

Inner or N. E. buoy is a black iron nun, in seven feet water, light-house bearing N. by W.; survey beacon, South Island, W.

Middle Ground buoy is an oil cask, black and red stripes, in nine feet water. This buoy is on the lower point of the Middle Ground.

Buoy on Hance's Bank is a red oil cask, No. 10, in nine feet water.

Sampit Point buoy is black, No. 5, in eleven feet water.

Fort Point beacon is composed of three piles, boarded and whitewashed.

Middle Ground buoy is an oil cask, black and red stripes, moored on the shoal at the junction of Pedee and Wacamaw rivers.

CAPE ROMAIN LIGHT is on the E. end of the Great Raccoon Key, and bears W. by S. from Cape Romain. It is a revolving light, showing a bright flash every minute. *Cape Romain Light.*

The tower is one hundred and fifty-four feet high, and is of dark reddish gray brick. The old tower still stands sixty-five feet high, painted red and white, horizontal stripes.

CAPE ROMAIN.—Cape Romain is very low land; it has neither tree nor bush; and appears when seen at a distance, to be a sand left dry by the tide. *Cape Romain.*

The shoal off Cape Romain runs off S. E., about six miles from the light; the outer point has only four feet water, with a swash channel of two and a half fathoms between that and the light; off the point of the shoal, the water shoals from seven to five fathoms, then directly on the breakers.

There is a nun-buoy, black and white perpendicular stripes, and a black flag on staff; in fifteen feet low water, in the Slue Channel, Cape Romain Shoals, Cape Romain light bearing N. W. by W. ½ W.; N. point of Cape Island, N. W. by N. This buoy must be passed close to on either side. Courses from buoy out of the slue, S. W. by W. and N. E. by E. *Buoy.*

From the S. entrance of Santee River, to six miles S. E. of Cape Romain, the shoal extends to a considerable distance from the land; the S. E. point of it lies seventeen and a half miles S. S. W. from Georgetown light-house. Close to this shoal there are four and three fathoms, and the land is so low that you cannot see it from the deck of a ship, at the extremity of the shoal.

In steering W. N. W. from the S. W. part of Cape Romain Shoal, you will soon see the light, then steer W. S. W., or S. W. by W., in about five fathoms water. As there is a shoal runs off about five miles S E. by E. from the N. E. end of Bull's Island, you should take care to avoid it in passing. Senee Bay, or Bull's Harbor, lies between Raccoon Keys and Bull's Island. There are shoals lying off the W. end of Raccoon Keys, and you should anchor near to Bull's Islands in six fathoms water.

From the shoal off the N. E. end of Bull's Island to Charleston Bar, the course to go clear of the Rattlesnake, is S. W. by W., and the distance seven leagues. There are four islands between Senee Bay and Charleston Bar, viz.: Bull's, Cooper's, Davies', and Long Island. Flats extend from all the islands, along which the soundings are regular. With Charleston churches Northward of Sullivan's Island, you will be in five and a half fathoms water, on the edge of the Rattlesnake; and when the churches are open to the Southward of Sullivan's Island, you are clear of that shoal. You should not approach nearer to this bank than five fathoms water.

GEORGETOWN (S. C.) TO CHARLESTON (S. C.)—From Georgetown Bar, outside of Romain Shoal, steer S. by W., distance fifteen miles. Thence to Charleston Bar, S. W. by W., distance thirty-nine miles. If, after passing Romain Shoal, you wish to go to Bull's Harbor, steer W. by S., until you bring Bull's Island to bear W. N. W. or N. W. by W. In steering for Bull's Island, you will pass Raccoon Keys. *Georgetown (S. C.) to Charleston (S. C.)*

BULL'S BAY entrance is eleven miles S. W. by W. from Cape Romain light-ship. On the N. end of Bull's Island there was a fixed light, thirty-five feet above the sea. Bring the light-house to bear N. W. ¼ W., by compass, and run for it until over the bar, then follow the beach round by the lead, until the point of the island gives you a harbor. This course will give you not less than nine feet at the bar at low tide. Rise of tide about six feet. *Bull's Bay.*

There is a can-buoy, black and white perpendicular stripes, in two and a half fathoms, low water, off the bar at Bull's Bay, N. point of Bull's Island bearing N. W. by W.; Bull's light, W. N. W.; S. point of Raccoon Key, N. W. by N. ¼ N. This buoy must be passed close to on either side.

The S. breaker has a buoy on the E. end in twelve feet water, and in the middle of this channel is a buoy with a small white flag upon it, in eighteen feet water, low tide, either side of which you may go when running in.

RATTLESNAKE SHOAL.—There are two black buoys on the Rattlesnake Shoal, one on the East, the other on the West end of the shoal, two and one eighth miles distant from each other on a W. ¼ S. and E. ¼ N. direction; on this shoal on the South side, midway between the buoys, there is eight feet water; the Eastern one bears from the light-ship N. E. ½ N. six miles, and is three miles from the nearest point of land; the Western one bears from the light-ship N. N. E. four and seven eighths miles. *Rattlesnake Shoal.*

Charleston light-house was destroyed by the rebels, and will not be rebuilt.

CHARLESTON.—*For crossing the Bar.*—A light-ship is moored in six fathoms off Charleston Bar. She is painted *white*, with the name "Charleston Bar," in large black letters, upon each side. She shows no lights at present, but carries two black bay-marks, one at each mast-head. *Charleston Light-ship.*

From the Light-Ship.

Bearings. 1. Light-ship off Port Royal bears S. W. ¼ W., distant fifty and a half miles.
2. Army signal-tower, North end Folly Island, W. ⅝ S., distant five and a half miles.
3. Army signal-tower, North end Morris Island W. by N., distant three and three quarters miles.
4. Fort Sumter, N. W. ¼ N., distant five and three quarters miles.
5. Outer Buoy, Rattlesnake Shoals, N. E. ⅝ N., distant six miles.

Vessels coming in from sea will steer for the light-ship; and on coming up with her, will steer in West over the bar, passing in succession on either side of four buoys, all painted in black and white perpendicular stripes.

The outer and inner buoys are *First Class Nun-Buoys;* the others are *Second Class Buoys.*

The distance from the light-ship to the outer buoy is a little over a half (0.6) mile; from the outer to the inner buoy is nearly two (1.87) miles. The buoys are moored in thirty, sixteen, twelve, and seventeen feet, at mean low water, respectively.

The best sailing line is within one hundred and fifty feet of the buoys, on either side, where will be found eleven and a half feet at mean low water. Mean rise and fall of tide five feet. Strong or long-continued westerly winds reduce the water upon the bar from one to two feet.

The flood and ebb set across the sailing line over the bar, and should be allowed for.

Vessels drawing twelve to fourteen feet may cross at any time after half flood, but should not attempt to cross after the first quarter of the ebb, as the tide falls most rapidly upon the bar at that time.

Vessels drawing fifteen and sixteen feet should cross the bar during the last quarter of the flood, and *should not wait for high water.*

If intending to anchor off Light-house Inlet, steer from inner buoy N. W. by W. half a mile, and anchor in three fathoms.

Good holding ground in five fathoms, at mean low water, with soft, sticky bottom, will be found near the outer bar buoy.

After passing buoy No. 4, steer N. ¼ W. three miles, which brings you abreast of the second red buoy, your course then is N. N. W. ¾ W. until up with the red buoy off Sullivan's Island, thence W. ½ N. three miles until up with the black and red buoy off White Point.

In the harbor there are the following buoys and beacons:

Buoys and Beacons. Red buoy in the main ship-channel, three fifths of a mile N. ¼ W. of black buoy No. 4.

A black buoy on the wreck of the Weehawken, one and and three fourths miles N. a little W. from the red buoy.

Red buoy N. three fourths of a mile from the black buoy off the Weehawken.

Black buoy on the shoal off Fort Sumter, the fort bearing from it N. W. by W. ½ W. three eighths of a mile distant.

Black buoy on the wreck of the Patapsco, bears from Fort Sumter E. ⅜ N., distant three eighths of a mile.

Red buoy off Fort Moultrie bears from the beacon on Sullivan's Island W. S. W. three eighths of a mile.

A beacon on Sullivan's Island.

A light on Fort Sumter.

Red buoy on the S. E. end of the Middle Ground bears from Fort Sumter N. W. by W. ½ W. one and one eighth miles.

Red buoy W. ½ N. one mile from the Middle Ground buoy.

Black and red buoy S. E. ⅜ E. half a mile from the light-house on White Point.

A light-house on White Point.

A red buoy N. W. ½ W. three fourths of a mile from the red buoy off Fort Moultrie.

A red buoy in Rebellion Road W. by N. ¼ N. three eighths of a mile from the last-named buoy.

Lawford's Channel. LAWFORD'S CHANNEL.—There are two black buoys, the outer one is a can-buoy, the inner one a nun-buoy.

To run in, get close to the outer buoy and steer N. ¼ W. until up with buoy No. 4, when follow the directions given above.

There is a black buoy at the entrance of the Swash Channel, bearing from the light-ship N. ¾ W., three miles distant.

Stono Inlet. STONO INLET is seven miles S. W. from the South Channel of Charleston; the bar extends two and a half miles from the land and generally breaks.

In Stono Inlet there are six and a half feet water at low water.

From three fathoms water, S. of Charleston Bar to North Edisto Inlet, the course is S. W. by W. ¾ W., and the distance six leagues; this course will carry you clear of

shoals which lie off Stono Inlet, which lie farther off than any that are in your way to Edisto.

NORTH EDISTO HARBOR is eighteen miles to the Southward and Westward of Charleston light, and ten miles E. N. E. of St. Helena light-boat. The bar is three miles from the shore, with twelve feet water on it at mean low water. *North Edisto.*

SOUTH OR MAIN CHANNEL.—The entering buoy (black and white) is in four fathoms, and bears N. N. W. ¾ W., distant three and a fourth miles from the Southern side of the entrance. It is thirty-two miles N. E. ¾ N. from the light-ship at Port Royal, and eleven miles N. E. ½ N. from the entering buoy at St Helena. From it steer N. by W. two and one eighth miles, passing red nun-buoy close to, and keeping inner black and white buoy on with large gap in wood on Seabrook's Island. When within one hundred yards of inner buoy, in three fathoms at low water, haul up N. W. by N. for large pine on Northern side of entrance, continue on that course until the water deepens to five fathoms, when keep the middle of the river up to anchorage off wharf at "Point of Pines." *Sailing Directions.*

Least water over the bar on above ranges, twelve feet, which will be found close to red buoy. Mean rise and fall of tide, five feet ten inches.

EAST CHANNEL.—Bring Southern side of inlet to bear N. W. ¾ W., and run in on that bearing, keeping inner black and white buoy on with tripod on Botany Bay Island, and both in middle of avenue cut through the woods behind the tripod. This course will take you about sixty yards S. of red spar-buoy on bar, and carry nine feet over the bar at low water.

2. When up with inner buoy, leave it on the port hand, and steer N. W. ¼ W. up middle of river.

SOUTH EDISTO is three leagues W. S. W. from North Edisto. The shore of the islands which lie between them may be approached with your lead without danger. The shoalings toward it are gradual. *South Edisto.*

ST. HELENA SOUND.—There is a light-house on the N. point of Hunting Island. It contains a revolving light. Time of revolution, thirty seconds. The tower is reddish gray, the upper twenty-five feet painted white. It is ninety-five feet high. The light is one hundred and eight feet above the level of the sea. There is also a beacon thirty-nine feet above the level of the sea. It contains a fixed light. The two range N. 77° E., and S. 77° W. This range will put you on the outer buoy of the Blue Channel. The light-ship was removed on the 30th of June, when the light and beacon were lighted. *St. Helena Sound.* *Light.*

The entrance to St. Helena Sound lies between South Edisto Island and the Northernmost Hunting Island; it is about two leagues wide, and is full of sand-banks, many of which are dry at low water. From the entrance of St. Helena Sound, along the Hunting Islands, to the entrance of Port Royal, the course is S. W. ½ S., and the distance about five and a half leagues. The soundings are regular; you will have five or six fathoms water.

To go in by the Ship-channel, get a gap in the Southernmost Hunting Island to bear W. S. W., when you will have a bunch of woods that looks like an island over the centre of it; run for it until you get the sand point of the Northernmost Hunting Island to bear W. N. W., then run for the point until the S. point of Otter Island bears N. W. by N., when you will be in fair channel-way. You can then run for the point of Otter Island, inside of which there is a good harbor of four fathoms, muddy bottom; on the S. end of the N. breaker there is a black buoy, which bears S. E. by S., two and a half miles distant from the light-ship.

To enter St. Helena Sound by the Southeast or Main Channel—

A first class black and white nun-buoy is placed in four and a half fathoms water, at the entrance to St. Helena Sound by this channel. It is twenty-one miles N. E. ¾ N. from the light-vessel at Port Royal, and seven miles S. by E. ¼ E., from the sand-hills on the Northern side of the entrance to South Edisto River. From it steer W. by N. two and a half miles to a black nun-buoy, passing a black can-buoy mid-way on the course, and steering for the middle of opening in wood on Hunting Island; then N. N. W. ¼ W., one mile and a third to a black can-buoy (second class); N. N. W., one mile and three fourths, to a large first class black can-buoy, in four fathoms water, inside the bar; thence N. W. ¼ W., four miles to Otter Island anchorage; or N. W. by W. ½ W., eight miles, to junction of Coosaw and Combahee rivers, at the head of St. Helena Sound. Least water on first course, W. by N., seventeen feet; and sixteen feet on third course, N. N. W., at mean low water. *Sailing Directions.*

Otter Island anchorage is at the mouth of the Ashepoo River. It is safe in all weathers, and has from three to six fathoms water, sticky bottom. A small black can-buoy is moored in twenty feet, on the tail of the "Combahee Bank," in the place formerly occupied by the light-ship, about one mile S. by E. ½ E. from the anchorage.

In running for St. Helena from Port Royal, steer N. E. ½ N. from the light-ship until the sand-hills on the Southern side of Fripp's Inlet bear W. by N., and you are in six

and a half fathoms at low water, when haul up N. N. E. for the entering buoy, distant four and a half miles.

These courses will carry you clear of the dangerous "Hunting Island Shoals," which extend six miles Easterly from Fripp's Inlet.

The other channels into St. Helena Sound, and the adjoining rivers, are not buoyed, and as it is supposed that changes have occurred, and resurveys will therefore be necessary, no sailing directions are given for them. The sailing lines and courses appearing on the chart in those channels are from the survey in 1857.

The light-house on Hunting Island has been destroyed. The frame of the beacon light is standing, but it is washed by the sea at high water, and will not long remain in position.

Dangers. The shoals of St. Helena Bar extend six miles to seaward. The land is low and difficult to distinguish. The sound is full of shoals, and no stranger should attempt its navigation without a pilot. After the prevalence of a strong Northwesterly wind, the bar is usually two and three feet less than the general average.

Buoys. Outer buoy is an iron can, painted black and white stripes, and is in fifteen feet water. N. point of Hunting Island bears W. N. W.; S. point of Otter Island, N. W. ½ N.

Inner buoy is an iron nun, painted black and white stripes, and is in twenty feet water, N. point of Hunting Island bearing W. by N. ½ N.; Inner point of Otter Island, N. W. by N.

Pelican Bank buoy is a black wooden buoy, No. 1, in twenty-seven feet water, on the lower end of the bank, N. point of Hunting Island bearing S. ½ W.; Morgan's Island, W. by N. ½ N.

Cambahee Bank buoy is a wooden buoy, painted black and red stripes, and is in eleven feet water, on the lower end of the bank. N. point of Hunting Island bears S. by E.; Morgan's Island, W. by N.

To mark the Slue Channel—

Buoys. Outer buoy is a large wooden buoy, painted black and white stripes, in eleven feet water, N. point of Hunting Island W. ½ N.; S. point of Otter Island, N. W. ¾ W.

Inner buoy is an iron can, painted black and white stripes, in nine feet water, inside the bar, N. point of Hunting Island bearing W. ¼ N.; Inner point of Otter Island, N. W. ½ N.

Port Royal. PORT ROYAL.—Port Royal is five leagues N. E. ¼ E. from Tybee light-house.

Light-ship. A light-ship has been moored in eight fathoms, off Martin's Industry Shoal, at the entrance of the harbor. She is painted red, with the name "Relief" in white letters on each side. She carries two white lights at a height of forty-two feet above the water, and will be visible thirteen miles in clear weather from a vessel's deck. She is in N. latitude 32° 5′ 57″; longitude W. from Greenwich, 80° 33′ 22″.

Bearings. From the light-ship, large house on W. end of Bay Point (E. side Port Royal Harbor) bears N. N. W. ½ W., distant ten and a half miles; Tybee light-house, W. by S. ¾ S., distant fifteen miles; Entering buoy, S. channel, W. by S. ¾ S., distant two and one eighth miles; Entering buoy, S. E. channel, N. N. E. ½ E., distant two and three eighths miles; large black buoy on S. E. end Gaskin Bank, S. W. by W. ¾ W., distant three and one third miles.

All the bar buoys are on the Martin's Industry side of the channels. There are four red buoys in the S. channel, to be left on the starboard hand entering, and two black buoys in the S. E. channel, to be left on the port hand entering. The best sailing line for steamers is about a vessel's length from the buoys, on the side indicated by their color.

A large black buoy has been placed on the S. E. side of the Gaskin Bank, in five fathoms of water. Vessels coming from or going to the Southward should not cross the shoal to the Westward of this buoy.

Nineteen and a half feet at mean low water may be found in the S. channel, and twenty-one feet in the S. E. channel. Mean rise and fall of tide, six and a half feet.

The entering buoys in both channels are painted in perpendicular stripes—black and white. That at the entrance of the S. E. channel has a staff and cross, with the letters S. E. upon it, to distinguish it in thick weather from the other, which has neither staff nor cross.

S. Channel—Courses and Distances. The courses and distances, in entering Port Royal Harbor, by the S. channel, are as follows:

1. From light-ship to entering buoy, W. by S. ¾ S., distant two and one eighth miles.
2. From entering buoy to first red buoy, N. W. by N., distant one mile.
3. From first red buoy to third red buoy, N. by E., distant two and a half miles, passing second red buoy midway on the course.
4. From third red buoy to fourth or upper red buoy N., distant one mile and three fourths, to point of junction of S. and S. E. channels.
5. From upper red buoy to black buoy on S. E. end Fishing Rip, N. N. W. ½ W., distant three miles.

This course will bring the light-ship over the stern, and the large house with platform on the roof, at W. end of Bay Point, ahead.

6. If bound into Beaufort River, steer from Fishing Rip buoy N. W. ½ N., three miles, until house on Bay Point bears E. N. E., after which the chart will be the best guide up the river.

7. If bound to Hilton Head, steer N. W. by W. from Fishing Rip buoy three miles, and anchor off the piers now erecting there.

S. E. Channel.

Vessels coming from the Northward and steering for the light-ship will make the entering buoy of this channel on the starboard hand, two and a half miles before coming up with the light-ship. On seeing the buoy steer for it, passing it on either hand; then steer W. ¾ N. two and a half miles to the second or inner black buoy, passing the first black buoy midway on this course.*

From the inner black buoy steer N. N. W. ½ W. five miles to Fishing Rip buoy, having the light-ship astern, and the house on Bay Point ahead, and passing the upper red buoy of the S channel at the junction of the two channels, two miles on the course.

From Fishing Rip follow the directions given for the S. channel.

About three and a half miles S. E. from Hilton Head, and four miles S. by E from Phillip's Point, lies the E. end of the Joiner's Bank; it thence extends W. N. W. about two and a half miles, and has three and a half fathoms on it at low water. Hilton Head is on the S. side of the harbor, and is a higher bluff point of land than any thereabouts.

Tybee Inlet.

Tybee Inlet lies five leagues S. W. ¼ W. from the entrance of Port Royal, S. channel; between them is Hilton Head Island; it is large, fertile, and well inhabited. From this island the Gaskin Bank extends about eight miles on the broadest part. You may proceed along this bank in five fathoms water.

Charleston Bar to Tybee.

CHARLESTON BAR TO TYBEE.—When over the bar, in eight fathoms water, the course is S. W., distant sixty miles. As you pass Port Royal entrance, be careful to avoid a very dangerous shoal, called Martin's Industry; it lies nine miles from the S. side of the entrance of Port Royal, which is the N. side of Hilton Head Island, the highest land in sight; come no nearer than seven fathoms, keeping your lead going; and in the night, or thick weather, do not approach nearer than ten fathoms; the tide of flood sets boldly in. Shoal ground, with six or seven fathoms, coarse shells, lies S. E., fourteen or fifteen miles from Tybee light. When you get to the Southward of Hilton Head you will see the light-house, which stands on the Island of Tybee.

Tybee Island.

Tybee Island is at the mouth of the Savannah River, to the Southward of the bar. Warsaw Sound is formed by the Southern end of this island.

Savannah.

SAVANNAH.—If in the night, and you are to the Northward of Tybee, be careful to go no nearer the Gaskin Bank than five fathoms. In fresh winds you take a pilot abreast of the light-house—in moderate weather, without the bar. In clear weather you may see Tybee light at the distance of twelve miles.

Near the Gaskin Bank and Martin's Industry the flood runs strong into Port Royal.

Tybee Light.

TYBEE LIGHT is a fixed light, one hundred and eight feet above the sea, on the N. E. end of Tybee Island.

When in four fathoms water, outside the bar, bring Tybee beacon, which is on the point of the island, and shows one light, sixty-two feet above the sea, open to the Northward of Tybee light about the width of the light-house. This range will carry you near the outer buoy No. 1, which must be passed on the starboard hand, leaving it to the Northward.

Lights.

Other lights in Savannah River are:

A light-vessel at Tybee Island Knoll, showing one light, forty feet above the sea.

A beacon (fixed light) on a knoll off the Eastern end of Cockspur Island.

A beacon (fixed light) on the oyster beds, to mark the South Channel.

A beacon (fixed light) on the Eastern end of Fig Island.

Buoy

After passing the outer bay, keep away to W. ½ S. by compass until Tybee beacon is open to the Northward of Tybee light, just midway between the light-house and the Martello Tower, and until buoy No. 2 (a red buoy) bears by compass N. by E., about a third of a mile distant. From here steer by compass N. W. by W. until Tybee beacon and Tybee light are in range, then by compass W. by N. ½ N.

If intending to anchor under Tybee Point, continue on the last given course until the light-house bears by compass S. W. by W., and the S. point of Tybee Island is nearly shut in with the N. E. end of the island, then keep away by compass due W. for the anchorage, from half to three fourths of a mile, or until Tybee light bears from S. by E. to S. S. E., when anchor in from four to five fathoms, muddy bottom. By these courses, three and a fourth fathoms, at mean low water, may be carried over the bar and up to the anchorage.

* One of the buoys in the S. channel is on this range, but is not to be steered for after coming up with the second or inner black buoy, where the course is changed as above directed.

Buoys. But if not intending to anchor here, follow on the W. by N. ½ N. course, leaving a black buoy (No. 3, at the end of the middle ground), on the port hand, and the next a red buoy (No. 4) on the starboard. Having passed the latter, steer by compass W. ¼ S., keeping the light-boat a little on the port bow, and passing it to the Northward about one hundred yards. Continue until the beacon off Fort Pulaski bears by compass S. W., nearly, when run for it, leaving a red buoy (No. 6) about fifty yards to the N. W. Deepening into three and a half fathoms, at low water, steer by compass W. by N. ½ N., until abreast of Square beacon, when anchor in three and a half fathoms water. The shoalest water, eleven feet at mean low water, will be found between the light-boat and buoy No. 6.

In beating over Savannah Bar, when to the Eastward of buoy No. 2, be careful not to stand to the Northward until buoy No. 2 and Tybee light are in range (it will be prudent to go about as soon as Square beacon opens to the Northward of Tybee Point), as there is a bad shoal just to the Eastward of buoy No. 2. The Southern tacks can be continued (while E. of buoy No. 2) until the light-house bears by compass W. ½ N. Having passed buoy No. 2, the port tacks can be kept on board until buoy No. 1 bears by compass E. S. E., and the starboard until Square beacon is open about two ships' length to the Northward of Tybee Point. The land will be a safe guide, as the soundings are regular in the fair channel-way, except just Eastward of buoy No. 2, and near Tybee Point. The Southern breakers should not be approached nearer than three fathoms water.

High Water. High water, full and change, 7h. 1m. Spring tides rise 8.4 feet, neaps 5.58 feet.

Savannah affords great facilities to vessels in distress, there being a dry dock capable of docking vessels two hundred and thirty-five feet in length by sixty feet over all, and everything necessary for repairing vessels. There are also ways capable of drawing up vessels of three hundred tons. Vessels drawing fifteen feet can proceed to the city at high water. Those drawing eighteen feet can anchor within two miles of the city.

Buoys, Beacons, &c. The following buoys, beacons, &c., are passed in entering Tybee Bay and Savannah River.

Spit buoy is a black iron conical buoy, No. 1, in fourteen feet water, on the lower point of Cockspur Island Shoal, Tybee light bearing S. by E. ½ E.; Fort Pulaski flagstaff W. by S.

St. Michael's buoy is a red iron conical buoy, No. 6, in ten feet water, Tybee light bearing S. E. ½ S.; Fort Pulaski flagstaff S. W. by W. ¾ W.

Lower Oyster-bed buoy is a black iron conical buoy, No. 3, in twelve feet water, Tybee light bearing S. E. by E.; Fort Pulaski flagstaff S. W. by W. ½ W.

Knoll light-ship is printed black, and shows one light; she is anchored in thirteen feet water, Tybee light bearing S. E. by ½ E.; Oyster-bed beacon W. ½ N.

Upper Oyster-bed buoy is a red iron conical buoy, No. 8, in fourteen feet water, Tybee light bearing E. S. E.; Oyster-bed beacon W. by N.

Cockspur Channel beacon light is now in course of erection.

Lower Oyster-bed dumb beacon is a dark colored brick tower.

Oyster-bed beacon light shows one red fixed light, and is painted white.

Upper Oyster-bed dumb beacon is a black brick tower.

Long Island beacon is a square wooden tower, black and white horizontal stripes.

Jones' Island beacon is a square wooden tower, red and black horizontal stripes.

Lower Elba Island beacon is a square wooden tower, painted red.

Upper Elba Island beacon is a square wooden tower, painted white.

Rock Point beacon is a square wooden tower, painted black.

Lower Wreck buoy is a red wooden can, No. 10, in twelve feet water, on the point of Hutchinson's Island shoal; Fig Island light W. by S.; Daniel's Chimney N. W. by N.

Upper Wreck buoy is a black iron can, No. 5, in ten feet water, Fig Island light bearing W. ½ S.; Daniel's Chimney N. W. by N. ½ N.

Tybee Creek has eleven feet through it at low water.

Wassaw Bar. WASSAW BAR is eight and a fourth miles S. W. ½ S. from Tybee bar, and nineteen and three fourths miles S. W. ¼ W. from the light-ship at Port Royal.

A large black-and-white buoy is placed in five fathoms off the entrance. Bring it on with the large sand-hill at N. E., and of Great Wassaw Island, and steer on that range.

1. W. by N. ½ N. ⅝ mile to 1st red-nun buoy.
2. N. W. ¾ N. 1 " to 2d red-can buoy carrying staff and red ball.
3. W. by N. ½ N. 1¼ " to 3d red spar buoy.
4. W. by N. 2 " to anchorage above site of former Rebel earthworks on Great Wassaw Island.

If bound higher up Wilmington River, keep the port shore best aboard, until Romerly Marsh Creek is well open, when the best water is near Cabbage Island.

On the 2d course, as given above, the channel is narrow, and the range of buoys should be closely followed. The tide sets across this part of the channel and allowance should be made for it.

On the 3d course, the deepest water is close to the breakers on the North side. Least depth at mean low water is thirteen feet. Mean rise and fall of tide seven feet.

A barrel-buoy in three fathoms water marks the tail of the shoal running Southwesterly from Cabbage Island. About a mile W. N. W. from it a small spar-buoy, with white flag, is on the westerly edge of the same shoal. Both should be left on the starboard hand going up Wilmington River.

If bound up Tybee River to Wilmington Narrows. From the spar-buoy at the end of 3d course, as above, steer N. W. by W. one and a fourth miles to 4th red spar buoy, carrying from three to four fathoms at low water; thence steer N. E. half a mile across a bulkhead separating the channel of the creek on East side of Cabbage Island from that of Little Tybee River. Nine feet at mean low water may be carried across this Bulkhead. In crossing keep the buoy on with the outermost sand hill of Great Wassaw Island until the water deepens to fourteen feet at low water, when haul up for Western point of Petit Chou Island, keeping the breakers on the starboard hand close aboard. Above Petit Chou Island no courses can be given, and the general direction of the channel is indicated by the banks of the river.

Ogeechee River.

OGEECHEE RIVER.—There are two channels over the bar at this entrance. The North Channel, leading into the mouth of Vernon River, through which eight feet water can be taken; and the South Channel, leading into the mouth of the Ogeechee River, through which seventeen feet can be taken. Through this channel nineteen feet could be taken by a series of buoys carefully placed. Both of these last depths can be taken up only to an anchorage inside of the bar and the great North and East Banks.

Sailing Directions.

THE NORTH CHANNEL TO VERNON RIVER.—When in from three and a half to four fathoms water, bring the S. end of Great Wassaw Island to bear N. W. ½ N., and the N. E. point of Ossabaw Island W. ½ N., the course over the bar is W. N. W. ½ N. direct for the N. end of Racoon Key, for two and three fourths miles, taking over eight feet water, until the S. point of Racoon Key is on with the point of Ossabaw Island to the Northward of Indian Mound, and the mouth of Odingsell River opens out, in nine feet water, hard sand; thence the course is N. W. ¾ N. direct for the S. point of Little Wassaw Island, a mile and a fourth, until in a line between the N. E. point of Ossabaw Island and the S. point of Great Wassaw Island and the S. point of Racoon Key is on with the group of plantation houses, about one mile E. S. E. of Indian Mound on Ossabaw Island. The course is then in mid-channel, which here shows very plainly, as the shoals and banks are steep to, and a rip forms on their edges.

S. Channel to Ogeechee River.

SOUTH CHANNEL TO OGEECHEE RIVER.—The entering buoy off the bar is of the first class, painted in black and white perpendicular stripes.

It is moored in five fathoms, nineteen miles S. W. by S. from Tybee Bar, and thirty miles S. W. ¼ S. from the light-ship at Port Royal.

Bring it on with flagstaff at Fort Seymour, N. E. point of Ossabaw Island, and steer in on that range, N. W. ½ N., one mile and a half to black buoy; thence N. two and a half miles to a black and white buoy, passing a black buoy midway on the course and steering for a gap in the woods of Great Wassaw Island, having a tall tree upon the right side, and a white sand hill upon the left side of the gap. N. W. ½ W., a mile and one fourth for black and white buoy, keeping it on with Easternmost edge of wood on Racoon Island. This buoy is moored in seven fathoms and is at the forks of the channel. W. ½ N., a mile and one eighth to black buoy, keeping it on with flagstaff at Fort Seymour, and crossing the bulkhead or bar of Ogeechee River, in fourteen feet at mean low water. The range should be carefully followed upon this course, and allowance made for the tide which sets diagonally across it.

If bound to Fort Seymour, anchor about half a mile above the black buoy in four fathoms near the shore. If bound up the Ogeechee, steer from the black buoy N. W. for the Western edge of woods on Racoon Island until abreast of the lower end of the island, after which the soundings upon the coast survey chart will prove the best guide.

From sea up to the forks of the channel, the least water is seventeen feet; mean rise and fall of tide six feet and six tenths.

St. Catharine's.

ST. CATHARINE'S.—From the striped buoy of Ossabaw, in four fathoms water, steer S. three miles, then W. ½ S. until you get off the S. point of Ossabaw Island, one mile and a half distant (on this course you can carry ten feet at low water), then W. S. W. for St. Catharine's Island, and anchor in five fathoms. Rise of tide six feet.

Buoys.

There is a red can-buoy, No. 2, in sixteen feet water, outside the bar at Beach Channel, inner point of St. Catharine's, bearing S. W. by W. ½ W.; inner point of Ossabaw, W. by S. ½ S. Leave this buoy on the starboard hand, steer S. W. by W. two and a half miles, to red iron can-buoy, No. 4, inside the bar in ten feet water.

Buoy No. 4 is on the point of a shoal running from Ossabaw Island, and must be left on the starboard hand entering, inner point of St. Catharine's bearing S. W. by W.; inner point of Ossabaw, W. by S.

To go through Swash Channel, when up up with the red sugarloaf buoy on Northern edge of Bull Tongue Bank, in ten feet water (S. end of Ossabaw bearing E. N. E., and N. end of St. Catharine's S. E. by S.), steer S. by W., making allowance for the tide, one mile, to the Southern buoy (a large red nun-buoy, with a white flag on staff).

Both of the other buoys must be left on the starboard hand going S.

Sapelo Inlet. 18 feet at mean low water.

SAPELO INLET.—To enter Sapelo Inlet, get the outer beacon on St. Catharine's open about three handspikes' length to the N. of the inner one, and steer nearly for the N. end of Blackbeard Island, or W. ½ S., leaving both buoys on the port hand. Between the points of the islands the water is deep.

St. Catharine's beacons are two masts with large barrels on top.

Buoys.

Outer bar buoy is a black can-buoy, in eighteen feet water, the beacons bearing W. ½ N.; outer one a little to the Northward of the inner, and Blackbeard Island, N. point, W. by S. Inner bar-buoy is a black can-buoy in twenty feet water, beacons bearing W. by N.; N. point of Blackbeard Island, W. ½ S.

Darien or Doboy Light.

DARIEN OR DOBOY LIGHT.—On the S. point of Sapelo Island is a fixed light, varied by flashes, seventy-four feet above the level of the sea. To distinguish it from any other light-house on the neighboring coasts in the day, the tower is painted red and white in horizontal stripes. Two beacons have been erected on the E. side, and nearly on the N. end of Wolf Island, in a S. S. E. direction from the light-house; the rear one is black, fifteen feet, and the front one white, twenty-five feet above the sea, both lighted.

Directions.

Keep in five fathoms water till the light-house bears N. W. by W. ½ W., when the outer buoy, which is in three fathoms water, will be seen. Stand in W. ½ S., passing to the Northward of the buoy and near it; keep this course to clear the North Breaker Head, till the Black Beacon opens to the Southward of the keeper's house, then haul up W. N. W. ½ W. for the middle buoy, passing it on either side, and steer N. W. ½ W. for the inner buoy, which leave on the port side, giving it a berth of one hundred yards. When past the buoy steer N. W. by W. ½ W., keeping in not less than four fathoms to anchorage abreast of the light-house. The water shoals gradually on the S. side of the channel, but on the N. side the breakers are steep to.

Chimney Spit is bare at half-tide, and is a good guide to the anchorage.

The following are the depths of water, bearings, and distances of the buoys placed in Doboy Inlet, leading to Darien, Georgia:

Buoys.

Outer bay buoy is an iron nun, painted black and white stripes, with a flag on staff, in seventeen feet water, just outside the bar, Sapelo light bearing N. W. by W. ¼ W., Wolf Island beacon, W. ¾ N.

Second bar buoy is a red iron nun, No. 2, with a white flag on a staff, in thirteen feet water, on the S. edge of N. breaker. Give this buoy a berth of fifty yards, and leave it on the starboard hand entering. Wolf's Island beacons bear W. ¾ N.; Sapelo light, N. W. by W.

Third bar buoy is an iron nun, with a black flag on a staff, painted black and white stripes, in seventeen feet water, Sapelo light bearing N. W. ¾ W.; Wolf's Island beacons W. ¾ N.

Fourth bar buoy is a black iron nun, No. 1, with palmetto branches on a staff, in eighteen feet water, near the outer edge of the Knuckle, Sapelo light bearing N. W. ¾ W.; Wolf's Island beacons W. by S. ¼ S. Leave this buoy on the port hand, giving it a berth of one hundred yards.

Tybee to St. Simon's.

TYBEE TO ST. SIMON'S.—Bring Tybee light-house to bear N. W., when in ten fathoms water, and steer S. W. by S., distant twenty-one leagues, to go clear of the shoal of St. Simon's, which lies off St. Simon's, E. S. E., two leagues. There are four and five fathoms close to this shoal, to avoid which, come no nearer than eight or nine fathoms. The island of St. Simon's is on the N. side of the sound or harbor of the same name, which lies in latitude 31° 7′ N., and may be known by four trees standing thus, † † † †. On the S. side of that harbor lies Jekyl Island, on which are remarkable trees, appearing like umbrellas, and thence called the umbrella-trees. St. Simon's and Jekyl Island beaches are remarkably white. The bar at the entrance of St. Simon's Sound lies six miles from the light.

St. Simon's Sound.

ST. SIMON'S SOUND AND BRUNSWICK HARBOR.—The light-house on St. Simon's Sound has been blown up. A whitewashed tripod, surmounted by a barrel on a pole, has been erected upon the ruins, and is visible from the bar, the outer edge of which is six miles from the light.

A large black and white buoy is placed off the bar in five fathoms water. From it steer N. W. by W. ¾ W. three miles (nearly) to a large black can-buoy, passing a black buoy midway on the course, and keeping the Southern end of King's cotton house on with the tripod standing on the ruins of the light-house.

After passing the second black buoy, steer W. by N. ½ N. three miles to the anchorage, keeping the starboard shore best aboard to avoid a dangerous shoal called "Jekyl Spit," making off from the N. E. point of Jekyl's Island. A black spar-buoy is moored in three fathoms water on the outer edge of this shoal, which is bare at very low water. Anchor in from four to seven fathoms water, opposite Mr. T. Butler King's house, on St. Simon's Island.

Fifteen feet, at mean low water, will be found on the above course over the bar. Mean rise and fall of tide, six and three fourths feet. From the middle to the inner

bar buoy the channel is narrow, with twelve feet on the S., and nine feet on the N. side. The N. bank is bare at very low water from the inner buoy up.

If bound to Brunswick.

When on the last course, King's cotton-house bears N. N. E., and the middle of Cedar Hummock is on with Brunswick Point, the course is S. E. by S. one mile and a half, until the mouth of Dubignon's Creek is on with Dubignon's house, and the mouth of Clam Creek is on with the light-house, with five fathoms water, soft clay; then steer on this back range directly for the mouth of a small creek until in a line with between Dubignon's house and Brunswick Point; then the course is W. ¾ S., directly for the upper point of the entrance to the creek, just beyond Cedar Hummock, for one mile and a fourth, until Brunswick Point is on with King's cotton-house, with four fathoms water; when the course is N. W. by W. ¾ W., directly for the extreme S. W. point of Buzzard's Roost Island, for one mile and a half, until the end of the wharves in Brunswick are just in range with the edge of the shore below; when the course is with the N. E. point of Buzzard's Roost Island, open one half point on the starboard bow for one mile; when keep the middle of the river, and haul in for the wharves. Only eight feet can be taken through this channel over the bar abreast the S. E. end of Buzzard's Roost Island, but fourteen feet can be taken to Brunswick, through a very narrow, crooked channel, around the N. side of Buzzard's Roost Island.

Bound up Turtle River.

When one mile above Cedar Hummock, keep the W. bank aboard, with a berth of from three hundred to four hundred yards, until up with the N. W. point of Buzzard's Roost Island, when haul in gradually for the E. bank, giving it a berth of from one hundred and fifty to two hundred yards, until up with Gilson's Creek.

The courses and bearings are magnetic, and the distances are in nautical miles.

Light.

On the N. end of Little Cumberland Island, on the Southern side of the entrance to St. Andrew's Sound, there is a fixed light, seventy feet above the sea. E. S. E. from the light, distant eight miles, there are eleven feet water.

St. Andrew's Inlet and Sound.

ST. ANDREW'S INLET AND SOUND.—The buoys at St. Andrew's Inlet and Sound are arranged in the following manner:

Bar buoy is a second class can, painted red, with No. 2 in white, placed in sixteen feet water at low tide, and must be left on the starboard hand, entering. Little Cumberland light bears W. by N. ½ N.; South Point of Jekyl, N. W. by W.

Middle buoy is a second class can, painted red, with No. 4 in white, placed in nineteen feet water at low tide, near the high North Breakers, and must be left on the starboard hand entering. Cumberland light bears W. by N. ¼ N.; South Point of Jekyl, N. W. ½ W.

Inner buoy is a second class can, painted black, with No. 1 in white, placed in twenty-one feet water at low tide, near a dry shoal, and must be left on the port hand entering. Cumberland light bears S. W. by W. ¼ W.; South Point of Jekyl, N. W. ½ N.

In the sound is the Middle Ground buoy, a second class can, painted with red and black horizontal stripes, placed in ten feet water at low tide, on a point of shoal running down from the Santilla River, and nearly in the middle of the sound. Vessels must not pass to the Westward of it. Cumberland light bears S. by E. ½ E.; inner point of Jekyl, N. W. ½ N.

Buoy at the entrance of Santilla River is a second class can, painted black, with No. 3 in white, placed in ten feet water at low tide, and must be left on the port hand entering the river. Cumberland light bears S. by E.; outer point of Jekyl, N. E.

In running for St. Andrew's bar, give the land a berth of about eight miles, until the light bears W. by N. ½ N., while in four fathoms water. This bearing, as a course, will bring you up to the bar buoy; then haul to the Northward until the middle buoy, No. 4, is in range with the light (to avoid two lumps in a direct line W. by N. ½ N. between the two buoys), when steer for it, passing it to the Southward. From this buoy a N. W. by W. ½ W. course will take you into the sound.

To run in by compass: keep in not less than six fathoms water, until the light-house bears as above, W. by N. ½ N., then steer for the light-house. When the S. point of Jekyl Island bears N. W. ½ W., steer N. W. by W. ¼ W., until the light-house bears W. S. W.; then haul in for the anchorage under the N. W. end of Little Cumberland Island, and anchor when convenient.

High Water.

High water, full and change, at light-house, 7h. 55m. Spring tides rise seven feet.

Santilla River empties into St. Andrew's Sound. Crow Harbor lies up Santilla River, about thirty-one miles; about twenty-three miles above Crow Harbor is the town of Jefferson, where vessels drawing twelve feet can go.

Amelia Island. Light.

AMELIA ISLAND.—On the N. point of Amelia Island there is a revolving light, one hundred and four feet above the sea. There are two beacon lights on the N. point of this island. The outer beacon is a fixed light, with its focal plane sixty feet above the level of the sea; beacon painted red. The inner beacon is on a dwelling-house, painted red, with white roof. It is a fixed light, thirty-five feet above the sea.

Amelia Bar.

Amelia bar has on it, at low water, fourteen feet. Spring tides rise eight and a half feet; ordinary tides, six feet.

Fernandina. FERNANDINA.—A large black and white buoy, carrying a staff and ball, has been placed in six fathoms, off the bar. Bring it on with the light-house on Amelia Island, bearing S. W., and steer in on that course one mile and a fourth, passing a red buoy midway on the course, and keep the inner red buoy on with the light.

From inner red buoy steer W. ½ S. one fourth of a mile toward black buoy on "Kingsley's Bank," until red buoy near "Pelican Bank" bears N. W., when it will be on with large house on Cumberland Island, called "Dungeness," when steer N. W. one mile, keeping the buoy and house in range.

Pass this red buoy from one to three hundred yards to the Southward, and steer W. until abreast of the wharf at Fort Clinch, after which keep the port shore best aboard up to Fernandina.

Eleven feet at mean low water may be brought in on above ranges. Mean rise and fall of tide, six feet. Care should be taken to allow for the tide on the first course, where it sets across the range. All buoys should be passed on the side indicated by their color. The courses and bearings are magnetic, and the distances in nautical miles.

St. John's Light. ST. JOHN'S LIGHT is a fixed light, seventy-five feet above the sea, on the S. side of the entrance to the river.

St. Mary's to St. John's. ST. MARY'S TO ST. JOHN'S.—The course is S. by E., distant seven leagues, to St. John's. In making this place, when bound into St. Augustine, the small craft running in from Amelia to St. Augustine generally make it, and take their departure. On the N. side of the harbor is Talbot's Island, full of trees, lying N. and S. There are nine feet water on the bar at high water. In running into St. John's bring the light-house to bear S. W. ½ W., and open the top of the chimney in the W. end of the dwelling-house, about three feet to the S. and E. of the light; then run in until within the South Breaker head; then steer S. S. W., within one cable's length of the shore, then haul up to the Westward, keeping the shore about the same distance from you to clear the Middle or North Breakers, which show plain, if there is any wind. When nearly opposite the swash, incline toward the N. shore, or Fort George Island, to clear a flat that makes off from the shore a considerable distance. Spring tides rise six feet; neap tides not more than four feet. The currents run out until a quarter flood, and some half-flood. High water, at full and change of the moon, about twenty minutes past seven. The tides are very much influenced by the winds.

Tides.

High Water.

The following buoys are in St. John's River:

Buoys. Outer buoy is a red wooden nun, No. 2, in twenty-nine feet water; St. John's light bearing W. by S., Pilot's Station, W. ½ S.

Bar buoy is a red iron conical buoy, No. 4, in nine and a half feet water; light-house bearing W. by S. ¼ S., Pilot's Station, W. ½ S.

Third buoy is a red iron conical buoy, No. 6, in twelve feet water; light-house bearing W. by S. ½ S., Pilot's Station, W. ¼ S.

Fourth buoy is a red iron conical buoy, No. 8, in fourteen feet water; light-house bearing W. by S. ½ S., Pilot's Station, W.

Fifth buoy is a red iron conical buoy, No. 10, in thirty-one feet water; light-house bearing S. W. ½ W., Pilot's Station, W. ¼ N.

Sixth buoy is a black iron nun, No. 1, in twelve feet water; light-house bearing S. by E. ¾ E., Pilot Station, W.

Dame's Point Middle Ground lower buoy, is a black iron nun, No. 3, in thirteen feet water; Yellow Bluff bearing N. W. by W., house on Dame's Point, N. N. W.

Spit buoy is a red iron nun, No. 12, in thirteen feet water; Dame's Point bearing N. N. E., Mitchell's house, S. S. W.

Middle Ground buoy is a black iron nun, No. 5, in thirteen feet water; Dame's Point bearing E. N. E., Mitchell's house, S. by W.

Upper Middle Ground buoy is a black iron conical buoy, No. 7, in twelve feet water; Broward's house bearing W., Dame's Point, S. E.

Red buoys are to be left on the starboard hand entering, and black buoys on the port hand; striped buoys, pass on either side.

The following buoys are placed in Nassau Inlet:

Buoys. Outer buoy is a red iron nun, No. 2, in twenty-four feet water; N. point of Talbot Island bearing W. by N., St. John's light, S. by W.

Inner buoy is a red iron nun, No. 4, in eight feet water; N. end of Talbot Island bearing W. by N., St. John's light, S. ¼ W.

St. John's and Nassau bars are constantly shifting, and should not be entered without a pilot. The buoys will always be placed so as to be left on the starboard hand entering.

The St. John's is a long and broad bay, which receives the impressions of the tide at more than one hundred and fifty miles from its mouth, running parallel with the ocean.

Lake George is a little sea of nearly sixty miles in circumference, at the extremity of which is found a bank of shells, on which you have only about five feet water; but at

two or three miles above this the branches of the St. John's reunite, and a broad and deep channel conducts you to a lake.

ST. AUGUSTINE LIGHT is on the N. end of St. Anastasia Island, and is a fixed light, varied by flashes. It is a square tower, painted white, sixty-eight feet above the sea. *St. Augustine Light.*

St. Augustine is situated on the main, about two miles within the bar, immediately opposite the inlet. When in nine fathoms water, off the bar of St. John's the course is S. S. E. distant ten leagues. The Northernmost land of the bay is called Point Cartel. When you are as far to the Southward as this point, you will see the island of Anastasia, in length fifteen miles, and on the S. side of the bay, on the N. end of which is a light-house showing a fixed light. *Light-house.*

The bar at the entrance of this harbor has opened in a new place, rendering the passage much more direct and easy. In crossing the bar with the light-house bearing W. by N., steer W. S. W.

Depth on the bar at high water	12 feet.
" " at half tide	9 feet.
" " at low water	6½ feet.

Vessels coming from the Northward will run down till the light house bears W. by N., keeping in three fathoms water.

The pilots, in good weather, board vessels outside the bar. They will be on the bar with a flag, and a wave to the right or left will indicate whether the vessel is to proceed either port or starboard. When the staff is erect, the vessel will bear down for the pilot boat. If the wind be to the S., bring the light to bear W.; if moderate, come to, and anchor in from seven to nine fathoms water, muddy bottom. All vessels bound to this port will show, when off the bar, how much water they draw by signal, hauling down the flag and hoisting it again equal to the number of feet they draw.

Bar-buoy is a red iron conical buoy, No. 2, in twenty-one feet water, St. Augustine light bearing W. ½ S.; Jack's Mount, S. W. ½ W. The inner buoy is a red wooden can, No. 4, in eight and a half feet water, St. Augustine light bearing W. by N.; Jack's Mount, S. S. W. *Buoys.*

Leave the above buoys on the starboard hand in entering.

The tide flows at full and change, S. E. by S. and N. W. by N., 8h. 4m. *Tide.*

MOSQUITO INLET.—Sixty-five miles to the Southward and Eastward of St. Augustine light-house is Mosquito Inlet. On the bar there are five feet at low water; rise of tide three and a half feet. On the S. side of the inlet there was a light-house intended for a fixed light. The town of Smyrna is within this inlet. *Mosquito Inlet.*

CAPE CANAVERAL LIGHT is a revolving light, sixty-five feet above the sea. *Cape Canaveral Light.*

Bearing from the light-house N. E. by N., and distant from it eleven and three fourths nautical miles, there is a shoal with fifteen feet water on it at low tide; and there is one with eight feet water on it at low tide, eleven and a fourth miles from the light-house, bearing from it N. N. E. ¼ E. These shoals, distant from one another one mile and a half, and bearing from each other E. by S. and N. by W., are the extremities of a bank with three, four, and five fathoms water on it. With the eye elevated twenty-six feet above the sea, the land cannot be seen from them in a clear day; and the light-house is only faintly visible. These shoals are the more dangerous, because deep water surrounds the bank on which they lie. In bad weather, breakers point out their place, but with a smooth sea, no indication of their existence is given. A shoal runs out from the light-house very nearly five miles, in a S. E. ½ E. direction. Separated from this by a channel one mile wide and four fathoms deep, is a small shoal with eleven feet water on it at low tide; it bears S. E. by E. ½ E. from the light-house, and is six and one fourth miles distant from it. Between the light-house and the S. E. shoal is a beach channel, with six feet water on it at low tide. Though there are deep channels between the outer shoals and the light-house, there are numerous shoal spots which render the navigation through them dangerous to large vessels. Vessels wishing to lie under the cape in Northerly or Westerly winds, should bring the light-house to bear N. E., and anchor in fifteen or seventeen feet water, about one third of a mile from the beach.

BEACH CHANNEL.—Bring the light-house to bear W. S. W., and run for it—keep the S. end of the stable-roof in a range with the middle of the light-house, until within one hundred and fifty yards of the beach. Then steer S. and pass the cape. *Beach Channel.*

At low tide, the depth of water in this channel is six feet. Especial care must be taken to guard against the current, which was found to set strongly to the Northward. The light-house and stable are so close together that the range must be closely watched.

FORT JUPITER LIGHT.—It is a fixed light varied by flashes. It shows a fixed light of forty-five seconds, then a flash of seven and a half seconds duration, preceded and followed by a partial eclipse of eighteen and three fourths seconds. The light is *Fort Jupiter Light.*

one hundred and forty-six feet above the level of the sea. Long. 80° 5′ 5″, lat. 26° 55′ 26″.

Jupiter Inlet. JUPITER INLET.—The shores of this coast are lined with a bank of regular soundings, which run off a good distance; this regularity of soundings extends from Cape Florida to Cape Canaveral. The soundings off Cape Canaveral, that cape bearing W. by S., are fifty-five, seventy-five, and ninety fathoms, at thirty-two, thirty-six, and thirty-nine miles distance.

From St. Augustine the coast runs about S. E. by S. ½ S. to Cape Canaveral, from there S. S. E. to Jupiter Inlet, and thence S. ½ E. to Cape Florida.

Bound S. from St. Augustine, steer S. E. about eighty-five miles, which will bring you up with Cape Canaveral light. Keep in not less than thirteen fathoms in passing round the shoals of Cape Canaveral. From there the course is S. by E. one hundred and five miles to Jupiter Inlet; then S. ¾ E., sixty miles, to New River Inlet, and S. ¼ W., twenty miles from New River Inlet to Carysfort light.

Four or five miles N. of Hillsborough Inlet, there is a bluff land about seventy-five feet high, of an extent of three miles, running parallel to and close to the shore. It is well wooded with mangrove trees; this is the only land of any height S. of Cape Canaveral, on this coast, until you get to Narrow Cut, where there is a bluff of the same height about one fourth of a mile long and also close to the beach.

Courses. COURSES FOR STEAMERS.—From Hatteras steer S. 46° W., 345 miles, to long. 80° 20′ W., lat. 31° N.; from 80° 20′ to Canaveral, S. 145 miles; from Canaveral to Jupiter, S. 9° E. 95 miles; from Jupiter to New River, S. 5° E. 56 miles; from New River, S. 4° W. 29 miles; to pass Carysfort, S. 23° W. 29 miles; then S. 47° W. 26 miles; then up to Sombrero, S. 65° W. 33 miles; from Sombrero light, S. 39° W. 90 or 100 miles—to make Havana.

When approaching Cape Canaveral, keep the lead going and do not run into less than thirteen fathoms water.

There is a shoal of eighteen feet off Indian River, position not well known, otherwise the coast is free of shoals until up with Cay Biscayno.

BAHAMA BANKS, ISLANDS, AND CHANNELS.

THE following directions are confined to that part of the Bahamas which American vessels navigate in their route from the Atlantic ports to those in the Gulf of Mexico.

Bahamas. BAHAMAS.—Under this general denomination are included all those groups which appear on the banks between the Matanilla Bank on the N. W. and Square Handkerchief on the S. E. The principal islands are situated on those remarkable flats called the Great and Little Banks of Bahamas, which are divided by the Channel of Providence, and of so much importance did we consider a correct description of its navigation, being the passage for vessels from the ports of the United States to those of the Mexican Sea, as to induce the author, in 1820, to send the sloop Orbit, under the direction of E. C. Ward, U. S. Navy, to make surveys.

The banks are generally of sand, with coral. The islands are low, flat, and interspersed with porous rocks of fresh water; but the supply is, however, scanty, it being obtained only from pools formed during the rains, or from wells dug in the sand, into which the sea-water filters. In the woods are found the wild hog and agouti.

Within the jurisdiction of the Bahamas are, therefore, included the Great Bahamas and Abaco Isles, New Providence, Andros, the Berry Isles, Eleuthera, or Ethera, Guannahan, otherwise St. Salvador or Cat Island, Watland's Island, Exuma, Yuma, or Long Islands, the Crooked Islands, Mayuna, the Cayeos, the Inagues, and many smaller groups hereafter described, under the head of West Indies.

The Little Bahama Bank. THE LITTLE BAHAMA BANK, from the S. E. point of Abaco to the N. W. point of the bank, is about one hundred and forty miles in length, but it is so irregularly shaped that it varies from about thirty to fifty miles in breadth.

Great Abaco Island. GREAT ABACO ISLAND, the largest of the numerous islands which skirt the Little Bahama Bank on all sides but the N. W. and W., is inhabited, and forms the Eastern side. It is seventy miles long, and in some parts fifteen miles broad, but it tapers away at both ends. The S. E. extreme is two miles broad and ninety feet high; and at the Eastern end of this headland there is a small narrow tongue of low flat rock, which projects out about one and a half cables' length to the Southward, and close off it a very small rock. This remarkable point is called the Hole in the Wall, from the sea having pierced a large arch through the rock, which is visible from S. S. W. to W. S. W., and the opposite bearings, at the distance of about three miles. A narrow spit of soundings runs out S. E. five miles from this point, and carries a depth of from nine to fifteen fathoms; from its S. E. extreme the light-house bears N. W. ½ W.

Light-house. The light-house on Great Abaco is a conical stone-tower, eighty-five feet high, standing about four cables' length to the Northward of the S. E. point of the island, named Hole in the Wall. It exhibits a *white* light, which *revolves* every *minute*, and is visible when bearing between S. W. (round Westerly and Northerly) and E. S. E. The light is elevated one hundred and sixty feet above high water, and from the height of fourteen feet it may be seen seventeen and a half miles, and from forty feet twenty miles.

S. W. Anchorage. Anchorage in ten fathoms will be found on the W. side of the S. W. point of Abaco, at three fourths of a mile from the shore, with the light-house bearing E. N. E. ¼ E.

Cheeric Sound. CHEERIC SOUND.—From the Hole in the Wall the Eastern shore of Great Abaco trends N. by E. ½ E. fifteen miles, rising gradually to the height of one hundred and twenty feet, and the sandy beach which borders it is steep to. Thence the coast bends in to the N. W., forming a deep bight eight miles wide, called Cheeric Sound, which is everywhere foul except at the N. E. corner, where there is shelter for small coasters locally acquainted. The coast then takes a N. N. E. direction seven miles to the Eastern extreme of the island, which forms a remarkable sandy bluff, situated N. N. E. ½ E. thirty miles from the light-house. The coast line here becomes exceedingly irregular, and skirted by numerous small cays, between which are several narrow openings, navigable for wreckers and vessels of light draught. The first opening lies two cables' lengths to the N. E. of the sandy bluff, and thirteen feet may be carried through it into Little Harbor.

Reef. A reef, about three hundred feet long and forty feet wide, lies off the point on the North side of Cheeric Sound, distant one and seven eighths miles. It has a smooth rocky bottom. A heavy swell sets in from the Eastward, but does not break. Between the reef and the point thirteen feet of water can be found, but do not attempt to run through.

Duck Key. DUCK KEY.—A settlement lies on the Western side of the sound about three miles S. W. by S. from the reef. Good anchorage is found West of the reef in three and a half to four fathoms.

Little Harbor Cay. LITTLE HARBOR CAY, the first of the islets, lies about one mile and a fourth to the Northward of the sandy bluff, and is two and a fourth miles long from N. to S. About two cables' length from the N. end, and between it and the Channel Rock, there is another small cut, which carries a depth of fifteen feet, and leads into Pelican Harbor; but all these places are too hazardous for a stranger to enter without a pilot.

Harbor Cay. HARBOR CAY, the next, is skirted by a reef to the distance of half a mile, and there are ten and twelve fathoms a mile outside it.

Elbow Cay. ELBOW CAY.—From Harbor Cay a range of small islets takes a Northerly direction seven miles to Little Guana or Elbow Cay, the N. end of which is a high sandy bluff, and about a mile to the Southward of the bluff there is a small settlement. This island is situated at the N. E. extreme of the Little Bahama Bank, and as a reef stretches off nearly three miles to the Eastward, it is one of the most dangerous and fatal corners in the Bahamas. The reef lies N. N. E., forty-five miles from Abaco light, and is likely to pick up all vessels bound to the S. W. when they happen to fall to the Westward of their reckoning. It is therefore advisable, as stated on another page, for a vessel to strike the parallel of 26° 30′ N. at least a degree to the Eastward of the cay, and to reach the latitude of 25° 45′ N., before she attempts to bear up for the N. E. Providence Channel. Should the wind be to the Southward when in this neighborhood, and the reckoning at all doubtful, be sure to keep the vessel's head to the Eastward in the night, for the land will not be seen in time to avoid the reef, and the lead will not give sufficient warning. The current sets generally to the N. W., and the tides run through the openings at the rate of two to three knots.

Caution.

Man-of-War Cay. MAN-OF-WAR CAY.—From Little Guana or Elbow Cay, the range of small islets takes a N. W. by W. direction for one hundred and two miles, and skirts the shore of Abaco at the distance of from three to six miles. At three and a half miles to the N. W. of Elbow Cay is Man-of-War Cay, which is about three miles long N. W. and S. E., and between the two are some small low islets, called the Guana Rocks.

The Elbow Reef sweeps round these islets at the distance of about three miles, and joins the N. W. end of Man-of-War Cay, leaving an opening from a half to a fourth of a mile wide, with a depth of fourteen feet between it and the reef, which commences again to leeward. The channel lies close to the Eastward of some small rocks, nearly half a mile W. N. W. from the cay, as there is a small rocky head to be avoided, lying about two cables' length from the end of the cay. There is good shelter within, about half a mile from the cay, and a snug harbor for coasters drawing under twelve feet, off the main land about six miles to the S. W. of the opening. In a case of absolute danger, a vessel of the above draught may save herself by running in here, but it would be attended with very great risk, if she had no local knowledge of the place.

Elbow Cay Light. ELBOW CAY.—There is a fixed light on this cay, one hundred and twenty-three feet above the level of the sea, lat 26° 35′ 30″ N., long. 76° 58′ 30″ W.

Whale Cay. WHALE CAY.—About twelve miles farther to the N. W. there is another opening, between Whale and Green Turtle cays, and it may be somewhat readily discovered by the remarkable high sandstone cliffs on Whale Cay, and by some equally conspicuous on Great Guana Cay, five miles to the Eastward of it. There is no other land near this spot of similar appearance. There are two channels through, one between Whale Cay and the Channel Rock, which lies a mile to the N. W., with thirteen feet water in it, and named Southeast Channel; and the other to the Westward of the Rock, named Northwest Channel, about two cables wide and three fathoms in it; but the eye must be the guide. The edges of the reef break heavily in strong N. E. gales, and the breakers on either side serve to point out the opening.

Water. There is a settlement on Green Turtle Cay, where wood and water may be obtained.

Walker Cay. WALKER CAY.—From Green Turtle Cay to Walker Cay, the Westernmost of the range, which is woody, and fifty-five feet high, the islets are skirted by a solid reef to the distance of from three to four miles, and present no safe opening whatever. Between the cays and Abaco there is a passage through which may be carried twelve feet water on to the W. part of the Little Bahama Bank, entering by the Whale Cay Channel.

Matanilla Reefs. MATANILLA REEFS.—From Walker Cay the Matanilla Reefs, which always break, run in a W. by N. direction, twenty-eight miles, and being steep to, are extremely dangerous. Their W. end terminates on the meridian of 78° 50′ W., in lat. 27° 23′ N., and from this point the edge of the Little Bahama Bank trends W. by N., sixteen miles to the N. W. end of it, in lat. 27° 24′ long. 79° 8′ W.; at seven and a half miles to the Westward of the end of the breakers there is a coral knoll two miles long N. and S., called the Middle Shoal. At its N. end there are four and a half fathoms water within a mile of the edge of soundings; on the S. end only twelve feet. The ground between it and the reef is also very foul.

Matanilla Shoal. MATANILLA SHOAL.—This dangerous coral patch lies four and a half miles to the Westward of the Middle Shoal, two miles from the Northern edge of the Little Bahama Bank, and three and a half miles from the N. W. extreme, and at five miles W. S. W. of it the bank will be struck in thirteen fathoms. The patch is not half a mile in extent, and on one small spot there are only twelve feet. All this part of the bank is extremely dangerous. The bottom being rocky and covered with dark weed, the water is not discolored, and the shoals do not break; and the rock is so flat that no dependence can be placed on anchors.

Tides. The tidal streams run on and off the Little Bahama Bank, but not strong, and the current off the edge of soundings is very uncertain for some distance to the Northward.

W. side Little Bahama B'k. WEST SIDE OF LITTLE BAHAMA BANK.—From the N. W. extreme the boundary of the bank takes a S. S. W. direction about fifteen miles, when it reaches its outer

Western limit in lat. 27° 10′ N., and long. 79° 13′ W. At this point the Southwest end of a narrow sand ridge, four miles long, with from ten feet to three and a half fathoms on it, comes within half a mile of the edge, and may be seen some distance from aloft. Thence the edge of the bank sweeps round to the S. and S. S. E. thirty miles, to the W. end of Great Bahama Island.

The whole of this part is closely skirted by narrow shallow sand ridges and detached coral patches, and is extremely dangerous. The Florida Stream strikes the edge of the bank sidewise, with its full force, and the lead gives scarcely any warning whatever. There are small openings here and there, with three and four fathoms water in them, and in a case of absolute danger a vessel might be guided by the eye into safety on the bank, but it would be mere chance if she escaped shipwreck.

MEMORY ROCK.—This little dark, barren, rugged rock, only fourteen feet high, lies N. W. by N., sixteen and a half miles from the W. end of Great Bahama Island, about midway between it and the Western limit of the bank, and three fourths of a mile from the edge of soundings, in lat. 26° 56½′ N., and long. 79° 6½′ W. At three miles N. N. W. ½ W. of it there is a most dangerous small coral patch, which generally breaks. Between the rock and patch there are from three to four fathoms water, about a mile from the edge of soundings, under the lee of a sand ridge, on which there are twelve feet. To the Southward of the rock there is no safe opening for vessels drawing over twelve feet. The edge of the Florida Stream comes generally close home to the rock. Between it and Great Bahama vessels are only influenced by the tides, which set regularly on and off the bank at the rate of from a half to a knot an hour. *Memory Rock.*

At Memory Rock it is high water, full and change at 7h. 50m., but at Walker Cay it is not high water before 8h. 50m. Springs rise about three feet. *Tides.*

SANDY CAY is very small, and covered with bushes to the height of fourteen feet above the sea. It lies N. by W. seven miles from the W. end of Great Bahama, and three miles from the edge of soundings. A narrow sand spit, nearly dry, runs off nearly this distance to the W. N. W.; and to the W. S. W. of it, on the edge of the bank, there is a very dangerous coral ledge, which shows at low water. *Sandy Cay.*

WOOD CAY, situated about three and a half miles S. of Sandy Cay, and the same distance N. N. W. of Great Bahama, is a rocky islet, woody half a mile long, and twenty-six feet high. Clear soundings extend out from it about half a mile, and there are five and a half fathoms close under the W. side. *Wood Cay.*

INDIAN CAY lies close off the N. W. point of Great Bahama, leaving between a channel for small craft drawing six feet, round to the settlements on N. side of the latter island. *Indian Cay.*

GREAT BAHAMA ISLAND is sixty-five miles long E. and W., and from five to seven miles broad. It is inhabited, thickly wooded, but generally level, and about forty or fifty feet high. The W. end is a mile broad N. and S., and anchorage will be found under it in eight or nine fathoms at about half a mile off shore, with the N. W. point bearing N. E. by E., and the S. W. point S. S. E. ½ E., but a vessel must quit the moment the wind threatens to change. *Great Bahama Island*

From the W. end of the island the Southern shore trends S. E. by E. twenty-two miles to the S. E. point. Soundings appear to extend off to a short distance, and anchorage is marked on the chart under the latter point—but this is all the information that can be obtained at present about it. Thence the coast line takes an E. N. E. direction, and toward the E. end of the island sweeps round to the Southward, forming a deep and dangerous bight with Southerly winds. This part appears to have a foul shore the whole way, without any anchorage; but it is also very imperfectly known. From the S. E. extreme of the island the edge of the Little Bahama Bank trends to the S. and round to the S. E., and connects itself to the W. side of Abaco at Rock Point. It is closely skirted by numerous small islets and dangerous ledges, without any navigable openings between them, as far as Cay Gorda, which lies N. W. by W., nine miles from Rock Point.

There is a well on Cay Gorda, and anchorage under the W. side. There is also water to be found abreast the anchorage under the S. E. point of Great Bahama. *Water.*

GREAT BAHAMA BANK.

THE BERRY ISLANDS are a group of small, narrow, wooded cays, from fifty to sixty feet high, which, from Blackwood Bush Cay, sweep round to the Eastward, forming nearly a semi-circle, twenty-three miles in diameter. The Western side is quite blocked up by shallow sand-banks, but to the Eastward the islets are skirted by a flat bank of soundings, having from ten to fourteen fathoms, to the distance of from five to eight miles to the Eastward, and is a good guide in the night. At one mile and a half E. S. E. E. from Blackwood Bush there is a small low islet called Rum Cay. Soundings run out one mile and a half between these cays, and the ground is very foul. Six and a half miles farther on, in the same direction, is South Stirrup Cay, covered with trees growing out of a swamp to the height of thirty-five feet. Thence the islets take an Easterly direction for seven miles to Whale Point, the S. end of Whale Cay. *The Berry Islands.*

FRAZER'S CAY.—About a mile to the Eastward of Whale Point there are some *Frazer's Cay.*

remarkable white sand cliffs eighty feet high. Frazer's Cay lies close to the Westward of the point, and under it there is good shelter, with Northerly winds, in three fathoms, and vessels of very light draught can get close in under Thompson Cay.

Whale Cay. WHALE CAY lies at the S. E. corner of the group, and forms an elbow to the N. E. and N. four and a half miles long; at the N. end there is a single house. The flat bank of soundings just mentioned commences at the turn of the elbow. Between Whale and Bond's Cay the opening is about one mile and a half wide, and near the centre of it are two remarkable small rocks, called the Sisters, which are connected to the latter cay by a ledge, nearly dry, forming a breakwater to a snug anchorage for small craft. The channel lies to the Southward of the Sisters, and the eye will guide the vessel through in from ten to fifteen feet.

Bond's Cay. BOND'S CAY, the next island to the Northward, is three and a half miles long, and the cut between it and Frozen Cay, the Easternmost of the Berry Islands, is about half a mile wide, but foul and impassable. The latter cay is only a mile long, and round its North end a vessel will have fifteen feet water into an anchorage on the W. side, in three fathoms, open, however, to the N. E.

Little Harbor, Holmes, and Market Fish Cays. LITTLE HARBOR, HOLMES, and MARKET FISH CAYS occupy a space of about eight miles, in a N. N. W. direction, and are only separated by small shallow cuts; in the centre of Holmes' Cay are some conspicuous white cliffs. The shore to the Northward of these cays is foul to some distance, and the Market Fish Cays should not be approached from the N. E. within two miles. Between Market Fish Cay and Haines Cay, which bears W. N. W. from it, there is an opening of three miles wide, and an anchorage in it for small craft.

Haines Cay. HAINES CAY is about three miles long, N. by W. and S. by E., and its N. end terminates in a white sandy bluff. To the Northward of the bluff there is a small rocky islet called the Hawk's Nest, under which there is good boat shelter.

Great Harbor Cay. GREAT HARBOR CAY, about sixty feet high, is nearly connected to Haines Cay, and is the largest of the Berry Islands. It is six miles long, a mile broad in the centre, and has a few settlers. Its Eastern shore forms several sandy bays, separated by low white stone cliffs. Near the centre, about three fourths of a mile off shore, there is a small islet called Petit Cay, with a boat channel within it. Shoal rocky ground extends from the N. W. end of this islet to within about one mile and a half of the N. end of Great Harbor Cay, and this part had better be given a wide berth. The soundings are so regular that, in the night-time, they scarcely give warning of approach, and great care must be taken not to come within the depth of ten fathoms.

Anderson, Bamboo, Cistern and Lignum Vitæ Cays. ANDERSON, BAMBOO, CISTERN, and LIGNUM VITÆ CAYS are situated on the W. side of Great Harbor Cay, and are only separated by small boat channels. On Anderson and Cistern there are remarkable clumps of dark trees, one hundred feet above the sea. Between the latter and Bamboo there is a small, snug inlet, called Bullock Harbor, for coasters drawing eight feet. The channel lies through Great Harbor, between Goat and Lignum Vitæ Cays, or from the Westward round little Stirrup Cay.

Great Stirrup Cay. GREAT STIRRUP CAY, the Northernmost of the Berry Islands, is woody, one mile and three fourths long E. and W., one fourth of a mile broad, and about sixty feet high. The N. side presents a bold rocky shore, with three and four fathoms water close to, and the edge of soundings is about a mile distant. About half a mile from the W. end there is a small sandy cove and some wells of good water, and landing is generally easy, except with Northerly winds. In moderate weather, with the prevailing Easterly winds, a vessel may anchor in seven fathoms, sandy bottom, with the flag-staff on the hill S. by E., about three fourths of a mile off shore. A small supply of stock and vegetables may also be obtained.

Stirrup Cay Light. STIRRUP CAY.—There is a fixed light on this cay, eighty-one feet above the level of the sea. The tower is forty-six feet high, painted in five bands of red and white alternately.

Great Harbor. GREAT HARBOR.—Great Stirrup Cay is separated from Great Harbor Cay by an opening four cables wide, and within it there is a small anchorage, with a depth of three and a half fathoms, called Great Harbor. This place, however, is completely exposed to the N. E., and, except the vessel is a handy fore-and-after, she might meet with considerable detention. Those under ten feet draught can get close up under Great Harbor Cay, or lie more snugly in Panton Cove, at the S. E. end of Great Stirrup Cay. Goat Cay, which lies about half a mile within the opening, forms a remarkable steep, rounded, woody hill, eighty feet high. Should a vessel be forced to run for the anchorage in Great Harbor, open out Goat Island on a S. W. by W. bearing, just clear of the N. end of Great Harbor Cay, which is bold and steep to, within a cable's length. This mark will lead just clear of the E. end of the bar which extends out from Stirrup Cay, and when the N. end of Great Harbor Cay bears E., anchor in three fathoms; or shoot the vessel farther in to the S. E. of the point, according to her draught.

Directions.

Slaughter Harbor. SLAUGHTER HARBOR is a small basin, between Great and Little Stirrup Cays scarcely two cables in diameter, but has a depth of fifteen to eighteen feet. The channel, however, is barred, and only navigable at high water for vessels drawing twelve feet.

and they will require the assistance of a pilot. It is quite open to the Northward, but the bar generally breaks across with this wind, and protects the anchorage.

LITTLE STIRRUP CAY, the last of the range, is about a mile in length, fifty-five feet high, and steep to; there are five fathoms on the N. side, close to the rocks. A shallow sand-spit runs off a little more than a mile from the W. end, with a channel between for small craft, leading round to Slaughter Harbor. It is high water, full and change, at Great Stirrup Cay, at 7h.; the rise at springs is four feet, and the tidal streams run directly in and out of all the above openings with great rapidity. *Little Stirrup Cay.* *Tides.*

From a position three miles S. of Abaco light, the course to Great Stirrup Cay is W. thirty-eight miles, and the distances across from the above Cay to Cay Gorda, at the entrance of the N. W. Providence Channel, is twenty-two miles N. E. ¼ E. By attending to the lead, no accident can well happen in approaching these islands from the N. and E. *Directions.*

N. W. END OF GREAT BAHAMA BANK.—From abreast the Stirrup Cays the Northern edge of the Great Bahama Bank takes a Westerly direction, with a slight bend in to the Southward for thirty-five miles to the E. end of the Gingerbread Ground. In this space it is quite free of danger, and the lead will be a safe guide. Thence it trends N. W. by W. about thirty-five miles, when it gradually rounds the Great Isaac, at the distance of about six miles. *N. W. End of Great Bahama Bank.*

THE GINGERBREAD GROUND is about the most extensive and most fatal danger on the Great Bahama Bank. It lies close to the edge of soundings, on dark bottom, not easily seen from a distance, and may be said to extend from the above position given for its E. end, to the Great Isaac, a distance of thirty miles, and it is from two to five miles broad. There are several small low rocks on it, and several cuts through, which are clearly pointed out in the chart, but strangers had better not attempt them, except forced to do so, and then they must entirely depend upon the eye. *Gingerbread Ground.*

THE LITTLE ISAACS, the Easternmost of these rocks, are three in number. The Easternmost, called East Isaac, is eleven feet high, and lies E. by S., thirteen and a half miles from the Great Isaac, eighteen miles from the E. end of the shoal ground, and about three miles from the edge of soundings; at one mile and a half to the Eastward of it there is a small rock awash at high water. The Middle Rock, named Middle Isaac, is only half a mile to the Westward of the E. rock, and twelve feet high. The other, called the Little Isaac, lies two miles farther in the same direction, is eight feet high, and three and a half miles within the edge of the bank. *Little Isaacs.*

THE BROTHERS are two very similar small black rocks, seven feet high. The Eastern islet, called East Brother, lies W. N. W. seven miles from the little Isaac; and the other, named West Brother, is a little more than a mile farther to the W. S. W. *The Brothers*

N. E. or GULL ROCK, equally small and twelve feet high, lies W. ½ N., four and a half miles from the West Brother, and N. E. by E., one mile and a half from the Great Isaac. Some rocks, with not more than twelve feet water on them, are said by the Bahama pilots to lie about one mile and a half to the Northward of the Gull Rock in line with the E. end of Great Isaac. *N. E. or Gull Rock.*

GREAT ISAAC, situated at the N. W. extreme of the Great Bahama Bank, is a barren, narrow, honeycombed rock, about three fourths of a mile long, and about twenty feet high, and being foul, yet very steep to, landing is sometimes difficult, even in moderate water. There are four and a half fathoms water between it and the N. E. Rock, and the same depth between it and the brothers, but, as before recommended, it will be better to pass outside all. The ground to the S. W. of the Great Isaac is foul to the distance of half a mile. On Great Isaac is a revolving light. Time of revolution thirty seconds. It is one hundred and fifty-eight feet above the level of the sea. The tower is of iron, painted with alternate bands of red and white. *Great Isaac.*

HEN AND CHICKENS form a small group of barren, rocky islands, lying S. W. three miles from the Great Isaac, and occupying a space of about a mile. The N. E. rock, which is the largest, is fourteen feet high; the others are only a few feet above water. A vessel may round their N. end within one fourth of a mile, to anchorage on the bank in four fathoms; but the ground to the S. W. is foul to the distance of two and a half miles, where the depth is three and a half fathoms. *Hen and Chickens.*

WEST SIDE OF GREAT BAHAMA BANK.—The Western edge of the Great Bahama Bank, after rounding the Great Isaac at the distance of from five to six miles, takes a S. S. W. direction, and comes within five miles of the Hen and Chickens; in passing this neighborhood in the night, do not come within the depth of ten fathoms. *W. side of Great Bahama Bank.*

NORTH and SOUTH BEMINI are two irregularly shaped sandy islands, covered with small wood to the height of about forty feet, and occupy a space of about six miles from N. to S. They are separated by a very narrow cut which opens out to the Eastward, and forms a secure harbor for wreckers drawing eight feet. There is here a small settlement and a resident magistrate, and vessels in distress may obtain water and supplies sufficient for the moment. At the S. end of the island the edge of soundings is only three fourths of a mile from the shore, but at the N. end it is three and a half miles distant; and anchorage will be found in eight or nine fathoms, about midway between the extremes and a mile off shore; be careful, however, not to shoot too far in, and look out *N. and S. Bemini.*

for a clear spot. A little more than a mile to the Northward of the N. end of the islands there is a remarkable small black rock, eight feet high, called North Rock.

Moselle Bank. MOSELLE BANK.—This dangerous coral ledge lies N. W. by N., one mile and a fourth from the North Rock, and S. W. ½ S., sixteen miles from the Great Isaac, and has only four feet water at its S. end. It is about a mile in length N. and S., but very narrow, and lies about a mile within the edge of soundings, with six to four fathoms close to.

Between the S. end of the Bemini Islands and Gun Cay, which lies S. six and a half miles from it, there is a range of small rocks, from ten to fifteen feet high, within three fourths of a mile of the edge of the bank. The tide sets through the openings with great velocity, and the Florida Stream comes close home to soundings.

Moselle Shoals. MOSELLE SHOALS.—N. end, a black buoy, with staff and black basket-ball, in lat. 25° 49′ 45″ N., long. 79° 17′ 15″ W. The following marks indicate its position: The N. rock of Bemini, in line with the left extreme N. E. point of the N. Bemini, with an angle of 33° to its right extreme.

Gun Cay Light. GUN CAY LIGHT.—Gun Cay is a mile in length N. N. W. and S. S. E., but very narrow. The light-house on its S. end exhibits a light which *revolves* every minute and a half at an elevation of eighty feet above high water, and is visible at twelve miles, except when it bears between S. ¾ E. and S. by W., being then intercepted by the Bemini Islands when eight miles distant. When within five miles to the Northward of the light, it should not be brought to the Southward of S. E., in order to avoid the low rocks between it and the Bemini Islands, which sweep slightly outward, and being so close to the edge of soundings, the lead will be of little use. There is temporary anchorage with Easterly winds in seven or eight fathoms water about three fourths of a mile off shore with the light-house bearing E. Wreckers find good shelter within the cay by passing round the S. end.

Cat Cays. CAT CAYS are two narrow woody islets, forty feet high, lying from one to two miles within the edge of the bank, and extending about four and a half miles S. E. by S. of Gun Cay, from which they are only separated by the small channel mentioned above. Round the S. point of the Southern cay there is a good anchorage for vessels drawing under twelve feet, called Dollar Harbor, where they will lie sheltered from all points but the S. The point is bold and steep to, and the only danger to be avoided is the Rabbit Rock, which is nearly awash, and lies W. N. W. a mile from the point. There are some small barren rocks about fourteen feet high, at three fourths of a mile to the S. W. of the point, and they must be left to the Southward in going in. The small rocks called the Factory Cays, extend about two miles to the S. E. Some wells of good water will be found on the E. side of North Cat Cay, about one fourth of a mile from its Southern end.

Water.

Brown's Cay. BROWN'S CAY is a barren black rock, thirteen feet high, lying S. S. E. ½ E., twelve and a half miles from Gun Cay light-house, and one mile and a half to the Northward of it there is a small low sandy cay. Off the S. end of Brown's Cay lies a small black rock, and between it and the cay there is a nine-foot channel on to the bank.

Beak Cay. BEAK CAY, lying one mile and a half farther to the Southward, is partially clothed with stunted bushes, about thirteen feet high. Thence to the Riding Rock, seven miles distant, the space is filled with small rocks and coral ledges, and quite impassable.

Riding Rock. RIDING ROCK is fourteen feet high and scantily covered with brushwood. At one mile and a half to the Southward of it is the South Riding Rock, thirteen feet high, which has on it a small rough beacon of stones. At half a mile to the Eastward of the South Riding Rock lies a small square islet, twelve feet high, called Castle Rock.

Orange Cays. ORANGE CAYS, bearing S. ½ E., about seventeen miles from the Riding Rocks, are the Southernmost islets on this side of the Great Bahama Bank. The ground between them and the Riding Rocks is very foul, and almost choked up with a line of small rocky heads. In some places there are three and four fathoms between them, but, except in a case of necessity, it would not be prudent to pass through. Orange Cay is a barren rock about thirteen feet high, lying about two miles within the edge of soundings. A ridge of low rocks runs off one mile and a half to the Northward of it; and at the same distance to the Southward there is a single small black rock, from which a coral ledge, with only twelve feet water on it, extends off two miles in the same direction.

S. W. side of G. B. Bank. S. W. SIDE OF GREAT BAHAMA BANK.—From the Orange Cays the S. W. side of the Great Bahama trends S. and for the space of twenty miles, to the parallel of 24° 55′, there are very few shallow patches, although there are depths of three and four fathoms, at one mile and a half from the edge. Thence the edge inclines gradually to the Eastward of S., and becomes foul, but all the dangers are clearly pointed out on the charts, which will be a safe guide.

Directions. CROSSING GREAT BAHAMA BANK.—The greater number of vessels proceeding from the ports of Northern Europe, and almost all from North America, bound to Matanzas and Havana, and the ports in the Southern states of America, in the Gulf of Mexico, run through the N. W. Providence Channel. Those drawing under twelve feet may cross the bank between the Berry Islands and the Western Cays; those of heavier draught must pass outside all. In the former case, having obtained a position five or six miles S. of the Abaco light, the course will be W. ½ N., forty miles to the edge of soundings off

Great Stirrup Cay. Having brought the light-house on that island to bear E. S. E. about three miles, and being on the edge of soundings, steer S. W. by W. thirty-two miles, and this will bring the vessel to the commencement of the Flats or Middle Ground, which extends right across the bank, and is about fifteen miles broad. The course from the end of the S. W. by W. course will be S. W. by S. seventy miles, which ought to lead about seven miles to the Eastward, and in sight of the Orange Cay, and to the edge of the bank fifteen miles S. of it. In crossing the flats, the eye must guide the vessel between the numerous clear whites and ridges and small black heads, which are easily seen, even in the night-time, if the weather is clear. Some attention, however, should be paid to the tide, on the first course. Should the vessel enter upon the bank with the first of the flood, with a commanding breeze, she had better steer half a point farther to the Westward, and the contrary on the ebb, judging at the same time according to the depth, which should gradually decrease up to the sand ridges. *Light-house.*

MACKIE BANK.—A black buoy, staff, and black basket ball, in two fathoms, low water, on the N. E. part of the Mackie Bank, in latitude 25° 39′ 57″ N.; longitude, 78° 40′ 31″ W. Also a chequered buoy (black and white), staff, and two basket balls, on the S. E. edge of the Mackie Bank, in two fathoms, low water, in latitude 35° 28′ N.; longitude, 78° 45′ 25″ W. These buoys bear from each other N. 17° E., S. 17° W. twelve and three fourths miles. They are intended to guard vessels from falling too far to the Westward, when crossing the Bahama Bank from Stirrup to Orange Cays, as also to correct their positions for the latter part of the run; they are good sound buoys, and can be seen five or six miles off. *Mackie Bank. Buoys.*

It is high water, full and change, at 8h. 0m., and the stream runs from one to half a knot an hour, to within a short distance of the N. side of the Middle Ground. On the flats there is very little set, and on the S. side of the Middle Ground the stream goes regularly round the compass from E., by the S., to W., from high to low water, and the contrary. On the parallel of 25° N., in the line of track about sixteen miles E. of Orange Cay, it is not high water before 10h. 15m., so that a vessel will carry two hours more of high water across the shallowest part of the bank: therefore, by entering upon the S. W. by S. course, at three fourths flood, a steamer of thirteen feet draught may cross the flats before the tide begins to fall. *Tides.*

Although the water is so shoal and clear, the lead should be well attended to, and the line marked to feet (when wet), as the vessel may be thrown by the tide too far to windward on the Long Banks, or on the Elbow Bank to leeward, which will be indicated by the gradual decrease of depth, as she approaches either way, should the wind be scant. If she gets to the Eastward of the track, toward what is called the Long Bank, the little heads of sponge and dark fans will become more numerous. In the winter months, should the wind haul to the Southward, a sure indication of a Northwester, instead of beating about among the shoals, it will be better to anchor and await the change that will soon follow. The course from the edge of soundings, fifteen miles S. of Orange Cay to the edge of the Cay Sal Bank, off the Dog Rocks, is S. W. fifty miles. *Caution.*

OUTER PASSAGE.—Vessels drawing over twelve feet, as noticed above, must pass through the Northwest Providence Channel, and close along the Western edge of the Great Bahama Bank, and in the winter months, more particularly, the navigation requires the utmost care and attention. There is generally but little current in the channel, except after Northerly winds, when it frequently sets to the Eastward about a knot an hour. Having rounded the Abaco light, as before directed, a W. by N. course, ninety miles, will lead to a position seventeen miles E. N. E., and in sight of the Great Isaac light, in clear weather, and within six or seven miles of the edge of the bank. *Outer Passage.*

If it be found, after running about eighty miles, that the Isaac will be made during daylight, the course may be altered to W. for that purpose, and not before, in order to keep well clear of the Gingerbread Ground, and the greatest caution and attention to soundings should be observed on approaching this most dangerous neighborhood. Having rounded the Great Isaac, shape a course along the cays, taking care in the night not to come within the depth of ten fathoms, or to bring the light to the Northward of N. E. ½ N. until the Moselle Shoal is passed, or the Gun Cay light is opened out of the Bemini Islands from aloft. After passing the North Bemini, the cays must be closely hugged, in order to avoid the Florida stream, which, as stated before, comes close home to the rocks with its full strength. A short calm, within a mile of the edge of this part of the bank, might drift a vessel so far to the Northward as to oblige her to run out round the Little Bahama Bank, and to enter again from the Eastward. Therefore, instead of attempting to beat along with a light wind, it will be more prudent to anchor under the North Bemini, and await a slant to get round the elbow.

Should a vessel be caught here in the winter, with the usual warning of a Northwester, it will be better to run back into the Northwest Providence Channel, and be guided by bearings of the Great Isaac until the wind draws round to the Northward, which it is sure to do generally in the course of twenty-four or forty-eight hours. She may also run in between the openings to the Northward of the Moselle Bank, and anchor on the Great Bahama Bank in four and a half fathoms, at two or three miles within

the Hen and Chickens; but she will be exposed to a short chopping sea, and may find some difficulty in weighing, and run the risk of losing her anchor. It is advisable for sailing vessels not to attempt to cross over to the Cay Sal Bank until they have reached the Orange Cays, as before indicated. In the summer months, when light S. E. winds prevail, a strong N. W. current frequently runs into the Florida Stream from the Santaren Channel, and vessels meeting with a calm or light airs at this period are frequently drifted through the strait, or even in sight of the Bahama Cays.

The Northwest Providence Channel is seldom navigated from W. to E., except by vessels of war bound to Nassau. In this case, after sighting the Elbow light-house on Cay Sal Bank, which should always be done if possible, endeavor to make the Gun Cay light well to the Southward, closing in to the cays as quick as possible, and haul sharp round the Great Isaac, getting on the edge of soundings at the Bemini Islands. Be extremely cautious, however, to avoid the Moselle Bank. A vessel will generally have to beat up from the Great Isaac, and, as already stated, too much caution cannot be observed in standing toward the Gingerbread Ground. Should the wind hang to the Southward of E., it will be equally necessary to guard against getting embayed in the bight between Cay Gorda and the S. point of Great Bahama Island, for with S. E. winds there is frequently here a strong indraft, and no safe anchorage.

Cay Sal Bank. CAY SAL BANK, somewhat in the shape of a pear, with the thin end to the S. E., is skirted by islets on all sides but the S. W. It is sixty miles in length S. E. to N. W., and forty miles across at its broadest part, from Cay Sal to the N. E. point of soundings.

Elbow Cay Light. ELBOW CAY LIGHT.—On the highest of the Double-Headed Shot Cays, named North Elbow, situated on the N. W. edge of Cay Sal Bank, stands a light-house fifty-eight feet high, which exhibits a fixed white light at ninety-six feet above high water, visible all round except when it bears S. W. ¾ W., being then intercepted by Water Cay when nine miles distant.

Anguila. ANGUILA, the largest of the islets on Cay Sal Bank, is about eight miles long from S. E. to N. W., three fourths of a mile broad, partially wooded, and from forty to fifty feet high. It is cut through in several points, but, with no opening fit even for a boat, it may be described as one island. It is situated at the S. E. extreme of the bank, and its N. E. side is close to the edge of soundings. Good anchorage will be found in six or seven fathoms, off the S. W. side, with the S. end bearing E. by N., and the N. extreme N. N. W. ½ W. There are some wells of good water on it, but very difficult to find.

From Anguila, the N. E. side of the bank trends nearly straight N. W. by N., forty-eight miles, and forms the W. side of the Santaren Channel, which, at the S. E. end, is twenty-eight miles wide, and thirty-eight miles at the N. W., but it is quite out of the track of general navigation. Between Anguila and the Dog Rocks are several clusters of small low rocks, with deep water between, but most of the openings are dangerous.

Dog Rocks. DOG ROCKS, the Northeasternmost islets on Cay Sal Bank, are about thirty feet high, barren and rocky, and, bending round to the N. W., occupy a narrow space about five miles long. They are separated near the centre by a narrow but deep navigable cut, and the Eastern edge of soundings is about two miles outside them. The N. E. point of the bank lies five miles to the N. N. W. of the N. W. end of these islets, therefore vessels crossing over from the Great Bahama Bank in the night, by proper attention to the lead will escape danger; and it may be observed that accidents frequently happen here by neglecting this safeguard. The opening between these islets and the nearest rocks to the S. E. is seven miles wide, and although the soundings are irregular and the bottom dark and alarming, it appears to be quite clear, and is frequently used by vessels crossing inside the cays.

Muertos or Deadmen's Cays. MUERTOS OR DEADMEN'S CAYS lie W. ½ S., nine miles from the Dog Rocks, and this opening is also quite free of danger, and may be safely used if necessary. The Muertos are a range of small detached rocks, from ten to fifteen feet high, extending fifteen miles in a W. S. W. direction to the E. end of Water Cay. They are situated about three miles within the edge of the bank, but great care must be taken in the night, as they are steep to and the soundings do not indicate the distance from them, and they are likewise not in sight of the Elbow Cay light. Several of the rocks are a considerable distance apart, but it would not be prudent to cross the ledges between them.

Water Cay. WATER CAY, the Easternmost and largest of what are called the Double-headed Shot Cays, is about two miles long and about half a mile broad. Near the centre, on the S. side, there is a natural well of excellent water, and opposite to it, on the same side of the island, a good landing place. N. N. W. ½ W., two miles from the W. end of Water Cay, there is a rock on which the steamer Marion struck.

Rock.

Double-headed Shot Cays. DOUBLE-HEADED SHOT CAYS are from twenty to forty feet high, and lie so close to each other that there is scarcely a safe boat channel between them, and consequently form a complete breakwater to a good anchorage within them. From Water Cay they trend S. W. by W. ½ W. eight miles, where they form an elbow, and thence sweep round to the S. S. W. ½ W., three and one half miles. The edge of soundings lies about three and one half miles from Water Cay; thence it gradually ap-

proaches the islets, and the South Elbow Cay lies almost on the brink of the bank, and the Florida Stream generally runs with its full strength close alongside it.

From the Double-headed Shot Cays the S. W. side of Cay Sal Bank trends to the Southward for twelve miles to Cay Sal, the only islet on this part of the bank. From the Southernmost of the Double-headed Shot or Elbow Cays foul ground extends off one mile and a half to the S. S. W.

At seven miles S. S. E. from the Southernmost of the Elbow Cays, and four and one half miles from the N. W. end of Cay Sal, there is a rocky ledge awash, one mile and one fourth in extent from N. W. to S. E., close to the edge of soundings. The opening on either side of the ledge is quite free of danger, but in running on or off the bank it will be better to pass to the Northward of it.

Cay Sal.

CAY SAL, so named from its possessing a valuable salt pond, is in the shape of a triangle, each side being about one mile and a half in length. The N. E. side is formed by a narrow ridge of sand-hills about thirty feet high; the other parts are very low and sandy, and partially clothed with brushwood. During the season for raking the salt it is inhabited. There is temporary anchorage close under the W. side, in about seven fathoms, on the edge of soundings, but it is not good. The tides set round it with great strength, and are sometimes influenced by the Florida Stream running to the S. E.

The Lavanderas.

THE LAVANDERAS is a small rocky ledge, awash, lying two miles to the Eastward of Cay Sal. Between this and the Anguila Islands there does not appear to be any danger along the Southern limits of the bank; this part, however, has not been satisfactorily examined, and there is reason to believe many rocky heads may be found near the edge.* The centre of the bank is foul in many places, and vessels beating up inside had better keep within seven or eight miles, and within sight of the Northern cays.

Directions continued.

Vessels proceeding to the Westward, having quitted the Great Bahama bank, should endeavor to strike soundings on the N. E. end of Cay Sal Bank. Should the wind be scant from the Westward, they may run in on the bank on either side of the Dog Rocks, and pass off to the Southward of the Elbow; or should it be light and tending to calm, they may anchor within, to avoid being sent to the Northward; otherwise, it will be better to run down outside, especially in the night, paying great attention to the lead.

Having passed Elbow Cay light, the course should be S. W. ½ W. until close over to the Cuba shore, to avoid the strength of the current. This course should lead direct toward the Pan of Matanzas, and within twelve miles N. W. of the *fixed* light (varied by a *red* flash every *half* minute) on Cay Piedras, but this will depend on the set of the current which is very uncertain, and sometimes strong into the Nicolas channel.

If bound to the S. W. ports of the Southern states of America, it will be advisable to run along the Cuba shore as far to the Westward as Mariel, and thence shape a N. W. course, so as to pass at a proper distance to the Westward of the Tortugas. Should the Cuba shore be left in the daytime, an occasional bearing of the highlands will enable the mariner to estimate the strength of the stream, and to regulate his course accordingly. He may depend upon finding the current right across, and probably with increased strength as he advances to the Northward.

If bound to Key West, or any of the ports in the Gulf of Mexico, after passing Orange Keys, you can shape your course for the Cay Sal Bank or the Florida Reef. This depends on the wind, and you should always endeavor to make the Florida Reef in the daytime. The distance from Orange Key to Conch Reef is seventy-three miles; the compass course W. ½ S., the current setting N. on the Bahama side of the stream; on the Florida side N., a little E., two and a half knots. This would require in a six-knot breeze (the least that a vessel should leave the Bahama Bank with, to cross Florida Stream), a thirteen hours run. *The course then would be S. W. by W. ½ W.* seventy-seven miles distance to run; with a stronger breeze, a course nearer W. will do. This passage requires a vigilant lookout. After getting on the Florida side of the stream, steer the course along the reef as shown on the charts.

In crossing the Gulf for the Florida Reef, if at night, the vessel should be headed more to the Southward than the course given, when within ten miles of the distance to be run. Every attention should be paid to the log and lookout. *Too much care cannot be taken.*

Current.

Although the general set and velocity of the current are as before mentioned, there are times when the current sets to the Southward in the Santaren Channel, and even on to the Sal Cay Bank on the N. and W. sides of it, caused by the winds.

FLORIDA REEF.

Florida Reef

Carysfort to Tortugas.

CARYSFORT TO TORTUGAS.—From Carysfort Light the course to run parallel to the reef, is S. W. by S. twenty-two miles: this brings you abreast of Conch Reef Beacon E.,

* Lieut. G. Byng, R. N., commanding H. M. schooner Pincher in 1828, states that he sounded on a rocky ledge, having only fifteen feet water on it, close to the edge of soundings, nine or ten miles W. of Anguila, which was in sight from the deck. It is also upon his authority we have stated that water may be found on Anguila.

thence to E. end of Viper Cay (long. 30° 50′) S. W. ½ W. twenty-eight miles, then W.S.W. (after running on this course eighteen miles you will be abreast of Sombrero light) forty-eight miles; this brings you up to Beacon A, on Cay Sambo; thence W. ½ S. (in this course twelve and a half miles brings you up with Sand Key light) thirty-three miles, carries you up to the W. end of the Florida Reef, whence you can shape your course to pass between the Tortugas and the reef, or around the Tortugas. The passage between the Tortugas and the Reef is safe, as there is only the Rebecca Shoal of fourteen feet, which bears from Loggerhead Key light E. ½ S., twenty miles distant. Between the shoal and the Tortugas Bank (East Key) there is a channel twelve miles in width. N. of the Rebecca Shoal, two and a half miles, there is a shoal of thirteen feet discovered by the U. S. Coast Survey, which we believe to be a continuation of the Rebecca Shoal.

Day-marks. The following day-marks along the Florida reefs, from Cape Florida to Sand Key light-houses, occupy the positions of the Coast Survey signals used in making surveys on that coast. They are each composed of an iron shaft thirty-six feet high, erected upon iron screw foundations, distinguished by a vane, upon which one of the letters of the alphabet is painted, and above it a lattice-work hoop iron cylinder or barrel.

Three colors (white, black, and red) are used in painting each signal to render them as striking to the eye of the mariner as possible, and are so combined that no two adjacent day-marks have the same colors upon like parts.

Masters of vessels may ascertain their latitude or longitude with tolerable certainty by examining closely the colors of the beacons as they are approached, and if the letter on the vane is distinguished, there can be no mistake in determining their position.

These day-marks are placed on the most projecting and dangerous points of the Florida Reef, and are in general from four to six miles from the outside (seaward) shores of the Florida Keys, and within half a mile, in every case, of the edge of the Gulf Stream.

The water where these signals stand does not exceed four feet at low tide, in any case, and just outside of them to the Eastward, in the Gulf Stream, it is of unknown depths.

These day-marks may be approached from seaward within a few hundred yards, but it would always be prudent, and particularly with very light winds, or in bad weather, to give them a good berth. In moderate weather it often happens, especially after Easterly gales, that the force and direction of the Gulf Stream set across the reefs, and then vessels are imperceptibly carried amid its dangers, although the course steered should, if made good, carry them outside of all danger. When the master of a vessel finds one of these beacons to the Eastward of him, he may be sure that he is between the reefs and the keys, and consequently surrounded by shoals and dangerous rocks.

Light-house. *Cape Florida light-house—tower white.*—This light-house, on S. point of Cay Biscayno, off the S. E point of Florida, has a fixed light, one hundred feet above the level of the sea. Lat. 25° 39′ 56″ N., long. 80° 9′ 24″ W.

Florida Reef Beacons. *Fowey Rocks beacon.*—Letter P, painted red on the vane; hoop-iron lattice-work cylinder, white; shaft and vane black. Bears from Cape Florida light-house, S. 35° 41′ 55″ E. (true), distant five and a half nautical miles. Bears from Soldier Key, S. 89° 58′ 16″ E. (true), distant three and a half nautical miles. Lat. 25° 35′ 23″ N., long. 80° 5′ 51″ W.

Triumph Reef beacon.—Letter O, painted black, on the vane; hoop-iron lattice-work cylinder, red; shaft and vane, white. Bears from Elliot's Key, No. 1. S. 82° 30′ 26″ E. (true), distant three and a half nautical miles. Bears from Soldier Key, S. 21° 4′ 14″ E. (true), distant seven and one fourth nautical miles. Lat. 25° 28′ 37″ N., long. 80° 6′ 50″ W.

Long Reef beacon.—Letter N, painted white, on the vane; hoop-iron lattice-work cylinder, black; shaft and vane, red. Bears from Elliot's Key, No. 1, S. 52° 15′ 21″ E. (true), distant three and three fourths nautical miles; from Soldier Key S. 13° 53′ 51″ E. (true), distant eight and three tenths nautical miles. Lat. 25° 26′ 45″ N., long. 60° 7′ 21″ W.

Ajax Reef beacon—Letter M, painted red, on the vane; hoop-iron lattice-work cylinder, white; shaft and vane, black. Bears from Elliot's Key, No. 2, S. 79° 35′ 43″ E. (true), distant three and nine tenths nautical miles; from Elliot's Key, No. 1, S. 26° 6′ 5″ E. (true), distant five and four tenths nautical miles. Lat. 25° 24′ 9″ N., long. 80° 7′ 59″ W.

Pacific Reef beacon.—Letter L, painted black, on the vane; hoop-iron lattice-work cylinder, red; shaft and vane, white. Bears from Old Rhodes Key, N. 76° 29′ 51″ E. (true), distant five and a half nautical miles; from Elliot's Key, No. 1, S. 15° 48′ 15″ E. (true), distant seven and one tenth nautical miles. Lat. 25° 22′ 13″ N., long. 80° 8′ 30″ W.

Turtle Reef beacon.—Letter K, painted white, on the vane: hoop-iron lattice-work cylinder, black; shaft and vane. red. Bears from Old Rhodes Key, S. 22° 20′ 47″ E. (true), distant four and four tenths nautical miles; from Cæsar's Creek bank, S. 60° 28′ 7″ W. (true), distant six and one tenth nautical miles. Lat. 25° 16′ 52″ N., long. 80° 12′ 34″ W.

Light-house. *Carysfort Reef light-house.*—An iron pile light-house, tower one hundred and twelve feet high, and keeper's quarters, dark color. On Carysfort Reef, near the edge of the Gulf Stream, and to the Eastward of Cay Largo. Revolving and flashing in thirty seconds. Lat. 25° 13′ 15″ N., long. 80° 12′ 44″ W.

The Elbow beacon (building).—Letter I, painted red, on the vane; hoop-iron lattice-work cylinder, white; shaft and vane, black. Bears from Grecian Shoals beacon N.

60° 45′ 40″ E. (true), distant two and four tenths nautical miles; from Carysfort Reef, light-house, S. 29° 29′ 35″ W. (true), distant five and four tenths nautical miles. Lat. 25° 8′ 32″ N., long. 80° 15′ 40″ W.

Grecian Shoals beacon.—Letter H. on vane, painted black; hoop-iron lattice-work cylinder, red; shaft and vane, white. Bears from Sound Point S. 45° 58′ 23″ E. (true), distant three and nine tenths nautical miles; from Basin Bank, S. 21° 24′ 32″ W. (true), distant five and three tenths nautical miles. Lat. 25° 7′ 22″ N., long. 80° 17′ 57″ W.

French Reef beacon.—Letter G on vane, painted white; hoop-iron lattice-work cylinder, black; shaft and vane, red. Bears from Lower Sound Point, S. 32° 33′ 53″ E. (true), distant five nautical miles; from Point Willie, S. 10° 30′ 7″ E. (true), distant six and two tenths nautical miles. Lat. 25° 2′ 6″ N., long. 80° 21′ 5″ W.

Pickles Reef beacon.—Letter F painted on vane, red, hoop-iron lattice-work cylinder, white; shaft and vane, black. Bears from Point Charles, S. 16° 57′ 43″ E. (true), distant five and four tenths nautical miles; from Lower Sound Point S. 6° 34′ 30″ W. (true), distant about seven nautical miles. Lat. 24° 59′ 22″ N., long. 80° 24′ 55″ W.

Conch Reef beacon.—Letter E painted on vane, black; hoop-iron lattice-work cylinder, red; shaft and vane, white. Bears from Rodrigues Bank, S. 4° 30′ W. (by compass); from Key Tavernier, S. 43° 30 E. (by compass). Lat. 24° 56′ 36″ N., long. 80° 27′ 50″ W.

Crocker's Reef beacon.—Letter D painted on vane, white; hoop-iron lattice-work cylinder, black; shaft and vane, red. Bears from Snake Creek Point, S. 39° 15′ E. (by compass), distant four to five miles. Lat. 24° 54′ 21″ N., long. 80° 31′ 26″ W.

Alligator Reef beacon.—Letter C painted on vane, red; hoop-iron lattice-work cylinder, white; shaft and vane, black. Bears from Indian Key S. 66° 30′ E. (by compass), distant about five miles. Lat. 24° 49′ 8″ N., long. 80° 38′ 8″ W.

Light-house.

Dry Bank.—The light-house on Sombrero Shoal, off Dry Bank, Florida Reef, is a fixed white light, illuminating the whole horizon, one hundred and forty-one feet above the sea, and should be seen, in clear weather, nineteen miles from a ship's deck.

Mariners are particularly cautioned not to mistake this light for the one on Carysfort Reef, which is changed from a fixed to a revolving flashing light.

Beacons.

American Shoals beacon.—Letter B on vane, black; hoop-iron lattice-work cylinder red; shaft and vane, white. Bears from Loggerhead Key, S. 22° 16′ 35″ W. (true), distant five and nine tenths nautical miles; from Eastern Sambo beacon, N. 76° 38′ 59″ E. (true), distant eight and a tenth nautical miles. Lat. 24° 31′ 24″ N., long. 81° 31′ 16″ W.

Eastern Sambo beacon.—Letter A painted on vane, white; hoop-iron lattice-work cylinder, black, shaft and vane, red. Bears from Geiger's house, S. 3° 29′ 24″ E. (true), distant about four and a half nautical miles; from South Saddle Hills, S. 13° 13′ 1″ W. (true), distant five nautical miles. Lat. 24° 29′ 32″ N., long. 81° 39′ 55″ W.

Light-house.

Sand Key light-house.—An iron pile structure, one hundred and twenty-one feet high, painted dark, surmounted by a lantern painted white. It is seven and one fourth nautical miles, in a Southwesterly direction, from the Key West light-house. Lat. 24° 27′ 9.5″ N., long. 81° 52′ 43.5″ W.

Tortugas.

TORTUGAS.—GARDEN KEY.—On this key there is a fixed light seventy feet high, in Fort Jefferson. Lat. 24° 37′ 44″ N., long. 82° 52′ 20″ W.

Garden Key.

Loggerhead Key.

LOGGERHEAD KEY.—There is a fixed light on this key; the tower is one hundred and fifty feet high of brick and of that color; the plane of the light is one hundred and fifty-two feet above the level of the sea. Loggerhead Key is the Westernmost of the Tortugas Keys. Lat. 24° 37′ 44″ N., long. 82° 55′ 10″ W.

Cay Biscayno.

CAY BISCAYNO.—Bound into Cay Biscayno from the N., you can run close in with the beach until within one or half a mile of Bear Cut;* you must then give the shore a berth of not less than one mile (be careful not to get into less than three fathoms water); your course will be S. by E., made good.

When Soldier Key† bears W. by N., steer for it, until the light-house on Cay Biscayno bears N. by W.; then steer for the light-house until Little Soldier Key‡ is on with Soldier Key; your course will be thence from N. by W. to N. by E., according to the tide, ebb or flood; but the points of the two Soldier Keys must be kept just on, or very nearly so (the little one to the E. of the large one) until the sand point of the beach (S end of Cay Biscayno) is open out to the Westward; pass the high point of mangroves (N. W. and the inner point of the same) from thirty to fifty yards; this will bring you close to the Northern sand-bar, thence off for the light-house, about N. W., keeping the sand-bars (on your starboard hand) close aboard, which at all times show very plainly. As you draw up with the point of the island, keep a little farther off

* Bear Cut is the first opening N. of Cay Biscayno light, and is distant from the same seven miles. Narrow Cut is N. of Bear Cut about three miles, and is immediately abreast of Miami River, at the entrance of which there are settlers, whose houses show very plain while passing.

† Soldier Key is a small key with high growth, bearing from Cay Biscayno light-house, S. 4° 30′ W., distant about six miles, and is from five to seven hundred yards in circumference.

‡ Little Soldier Key bears about S. from Soldier Key, and is very small, with a lower growth than the large one; it is about six hundred yards distant from the other. The tide here sets about E. S. E. ebb, and W. N. W. flood, and runs very swift on the full and change of the moon.

the sand-bars, pass the point from one hundred to two hundred yards distant, and when the light-house bears N. 30° E., anchor. Here the channel is bold up to the beach, and over to the S. bank, which forms the harbor, and in which you will have from two and a half to three fathoms water.

Directions for crossing the Reef at Cape Florida.—Get the light-house to bear W. N. W., and steer for it until you get into three fathoms water, and then keep S. W. by S. When Soldier Key bears W. by N., distant one or two miles, you will have good anchorage under Fowey's Rocks. The reef will then bear E. by N. ½ N.; depth of water, three fathoms.

Directions. *Directions for running down inside the Reef from Cape Florida to Key West.*—The course from Cape Florida to Soldier Key is S. by W.; from Soldier Key to Bolles' Bank, S. ½ E., depth of water two fathoms; from Bolles' Bank to Cæsar's Creek, S. by W., distant twenty-five miles; from Cæsar's Creek to Old Roads, S. by W.; from Old Roads to Basin Hill is S. W. by S. ½ S.: depth of water two and a half fathoms; from Basin Hill to Upper Sound Point is S. S. W.; depth of water from ten to twelve feet; from Upper Sound Point to Lower Sound Point there are fifteen feet water, soft bottom; from halfway between these two Points to Tavernier, the course is S. W. by S., with from ten to twelve feet water; from Tavernier to Snake Creek, S. W. by S., with three fathoms water; from Snake Creek to Indian Key, S. W., with fourteen feet water.

Get Matecumbe Cut just open, and then steer S. W., with from twelve to fourteen feet water, hard bottom. Get Indian Key to bear N. N. W., and steer for it until within a fourth of a mile, then the anchorage is good. Water from ten to twelve feet. From Indian Key to the E. point of Viper Key the course is S. W. ½ W.; depth of water from fifteen to eighteen feet. From the E. point of Viper Key to the E. point of Duck Key, the course is S. W. by W. ½ W. and then W. S. W. to Crane Cut, and then S. W. to Jacob's Harbor, and W. by S. to Sister Keys, with from eighteen to twenty-four feet water. From Sister Keys to Loggerhead Key is W. by S. ½ S. From Loggerhead to Saddle Hills is W. by S. From Saddle Hills to Boca Chica, W. S. W., with from four to five fathoms water. From Boca Chica to Key West, the course is W. by S. ½ S.

Turtle Harbor. TURTLE HARBOR.—Carysfort light-house bearing by compass S. ¾ W., distant four and a half miles, the beacon on Turtle Reef then bearing S. W. ½ W., there is white bottom on the reef in four and three fourths fathoms; steer W. by S. ½ S.; the soundings are regular; some of the spots, however, giving half a fathom less than the clear bottom, give the beacon on Turtle Reef a berth of half a mile; when the beacon bears S. E. ¼ E., haul up S. W. ½ S. till the beacon bears E. ¼ N., when anchor in fifteen fathoms, soft clay.

Directions. *For crossing the Reef at Tavernier.*—Get Tavernier to bear W. by N. ½ N., and steer for it. You will cross the reef in nine and ten feet water.

For crossing the Reef at Indian Key.—Get Indian Key to bear N. by E., and steer for it, and cross the reef in three and three and a half fathoms.

For crossing the Reef at Duck Key.—Get Duck Key to bear W. by S., and steer for the E. point, having from three to four fathoms.

For crossing the Reef at Knight's Key.—Get Knight's Key to bear N. N. E., and steer for it, and you will cross the reef in three and a half to four fathoms water.

For crossing the Reef at Bahia Honda.—Get Bahia Honda to bear from W. to N. W., and you will have from two and a half to three and four fathoms.

For crossing the Reef at Loggerhead Key.—Get this key to bear N. N. W., and steer for it. You will cross the reef in three and a half or four fathoms water.

Key West Light. KEY WEST LIGHT is on Whitehead's Point, S. W. point of the island. It is a fixed light, fifty feet above the level of the sea.

A beacon has been placed on the Middle Ground Sand Key Channel, harbor of Key West. This beacon, on a single shaft, is octagonal in shape, and surmounted by an octagonal box. The shaft, top of cage, and the box, are painted black. The sides of the cage are painted white. The following are the bearings from this beacon: Key West lights, N. E. ¾ E.; Sand Key lights, S. ¼ E.; N. W. Channel light, N. 2° W.

Key West. Sailing Directions. KEY WEST.—1. *Main Ship Channel (four and three fourths fathoms water).*—Bring Key West light-house to bear N. ½ W., and steer for it until Sand Key light-house bears W. by S., then steer N. ¾ W., passing just to the Eastward of entrance buoy. Continue this course through the Triangles, keeping in mid-channel between the buoys—of which there are four, two on each side—and passing them from one hundred to two hundred yards distant. After passing the two upper buoys, keep on the N. ¾ W. course for one fourth of a mile; then steer N. W. by N., passing from two hundred to three hundred yards to the Westward of Whitehead Spit buoy (one and three fourths miles from the Triangle buoys), until the N. W. angle of Fort Taylor is just on with the Lazaretto, when steer N. by E. for half a mile, and anchor abreast of Fort Taylor, if without a pilot. Four and three fourths fathoms is the least water on these lines. Vessels of very heavy draught should not go above Whitehead Spit buoy without a pilot.

At night bring Key West light-house to bear N. ½ W., or, if clear, directly under the North star, and steer for it until Sand Key light-house bears S. W. by W., when anchor in six fathoms water and wait for daylight or a pilot. A dangerous coral head, with but thirteen feet water on it, lies four hundred yards W. S. W. from the entrance buoy.

2. *West Channel* (*five fathoms water*).—With Western Dry Rocks in range with Sand Key light-house, bearing E. by N. ¼ N., bring Key West light-house to bear N. E. ½ E., and steer for it, or open E. end of Mullet Key just to the Westward of Key C, on a bearing of N. ¾ E. Run in on this range until Key West light-house bears N. E. ½ E., when steer for it. Keep this course until the Middle Ground Rocks are on with Sand Key light-house, on a bearing of S. by E. ¼ E., then steer N. E. by E. ¼ E., three and one fourth miles, towards Rocky Point, until the N. W. angle of Fort Taylor is just on with the Lazaretto, bearing N. E. by N. ½ N., then steer in on this range one and one fourth miles, until Whitehead Spit buoy bears S. E. by E. when follow directions 1. The least water on these lines is five fathoms.

3. *Channel Westward of Western Sambo* (*four and one fourth fathoms water*).—Bring Key West light-house to bear N. W., steer for it on this bearing for nearly three and three fourths miles after passing the reef (keeping Tift's observatory just open to the Northward of the light-house), until Rocky Point bears N. N. E., then steer W. by N. ¼ N. two and one fourth miles, until Whitehead Spit buoy, distant two hundred to three hundred yards to the N. and E., is on with the light-house, when follow directions 1. The least water on these lines is four and one fourth fathoms.

4. *East Channel* (*four and one half fathoms water*).—Bring Key West light-house to bear N. W. by N., steer for it on this course for a mile after passing the reef, until West Sambo bears E. ½ S., when steer W. ½ N., for one third of a mile, until Key West light-house bears N. W. by N. ½ N., then run for it on this course for one and three fourths miles (keeping the Westernmost church steeple halfway between the light-house and the middle steeple), until the E. end of Snipe Key is on with the S. end of Mullet Key, bearing W. by N. ¾ N., when steer in on this range until the light-house bears N. E. by N. ½ N., when follow directions 1. The least water on these lines is four and one half fathoms, but the N. W. by N. ½ N. course runs within sixty yards of a fourteen feet head, and two hundred yards of ten and seventeen feet heads.

5. *Channel between East and Main Ship Channel* (*four fathoms water*).—Bring Key West light-house to bear N. by W. ¾ W., and steer for it on this course for three and one fourth miles inside the reef (keeping the light-house halfway between the middle and Westernmost church steeple), until the E. end of Snipe Key is on with S. end of Mullet Key, when follow directions 4.

In crossing the outer reef, the course leads four hundred to five hundred yards to the Westward of Reef buoy No. 2, a large red can buoy. The least water on these lines is four fathoms, but the first course, running through the Triangles, passes within fifty yards of two twenty feet heads, and within two hundred yards of fourteen and sixteen feet heads.

6. *Channel between Main Ship Channel and Eastern Dry Rocks* (*three and one half fathoms water*).—Bring the Lazaretto to bear N. ¼ E., and steer for it on this course for two and three fourths miles inside the reef, until the upper Triangle buoy bears East, when steer N. by W. ¼ W. for one and three fourths miles, until the N. W. angle of Fort Taylor is just on with the Lazaretto, when follow directions 1. The least water on these lines is three and one half fathoms. Near the outer edge of the reef the first course runs half a mile Westward of the Triangle buoys.

7. *Channel between Rock Key and Eastern Dry Rocks* (*fourteen feet water*).—Bring the E. point of Woman Key on with the S. W. point of Key C, bearing N. W.; steer in on this range until Sand Key light-house bears S. W. ¾ S., and Tift's observatory N. N. E., when steer for this last, keeping the bearing on. The least water, fourteen feet, is on the first line over the reef.

8. *Rocky Key Channel* (*three and one fourth fathoms water*).—In this channel are two coral heads, with but seventeen feet water on them; one, lying outside the general outer lines of the reef, is very dangerous. Two ranges lead through this channel. First, the W. edge of West Crawfish Key, or the middle of Snipe Key, bearing N. by W. ½ W. This leads between the seventeen feet heads, one hundred and twenty-five yards from each. Second, the middle of West Crawfish Key, on N. W. Channel light-house, bearing N. by W. ¼ W. This leads one hundred and twenty-five yards West of the inner seventeen feet head. Run in on either of these ranges until Sand Key light-house bears S. by W., when follow directions 9. The least water on these lines is three and one fourth fathoms.

9. *Sand Key Channel* (*four and one half fathoms water*).—Bring East Crawfish Key to bear N. by E. ½ E., and steer for it until Middle Ground Rocks bear E. S. E., when follow directions 2. Or, bring West edge of Snipe Key to bear N. ¼ E., and steer for it until East Crawfish Key bears N. by E. ½ E., when run as above. To pass to the Southward of the Middle Ground, when half a mile inside the reef, with Sand Key light-house bearing E. ¼ N., steer N. E. by E. ¼ E., for two and one fourth miles, until Sand Key light-house, S. ½ W., and Middle Ground Rocks are on with E. end of Woman Key, bearing N. W. ½ N., then steer N. N. E. for two and three fourths miles, until West Crawfish bears N. W. by W., and rocky Point N. E. by E. ½ E., when follow directions 2. The least water on these lines is four and one half fathoms.

Twenty feet can be taken over the reef in this channel from within one fourth of a mile of Western Dry Rocks on the West, to the range of West edge of Woman Key on middle of Mule Key on the East, a width of over a mile.

Ranges, Bearings, &c. The ranges, bearings, &c., not marked on charts, for dangerous coral heads and shoals, are as follows:

1. Thirteen feet head, W. S. W. from entrance buoy. Key West light-house bearing N. and N. W.; Channel light-house just open to Westward of East Crawfish Key.

2. Ten feet head, in N. E. corner of Triangles. Westernmost Church steeple just open to the Eastward of Key West light-house, and S. end of West Crawfish Key on with N. end of Key C.

3. Fourteen feet head, on S. edge of Triangles. Middle Church steeple on with Curry's observatory, and West Crawfish Key just open to Northward of Key C.

4. Sixteen feet head, near Middle of Triangles. Easternmost Church steeple just open to Westward of Key West light-house, and S. of East Crawfish Key, on with S. end of Cotteral's Key.

5. Sixteen feet shoal, one mile W. N. W. from Western head buoy. S. E. end of Fort Taylor on Curry's observatory, on W. end of Key A, on E. end of Mullet Key.

6. Eleven feet head, one and a half miles W. by S. from Western head buoy. Wharf Crane, at Fort Taylor, on with Tift's observatory, and West Crawfish Key bearing N. W. ¾ W., halfway between Keys A and B.

7. Nineteen feet shoal, two miles W. ½ S. from Middle Ground Rocks. Churches in range, and E. end of Woman Key on E. end of Key C.

8. Twelve feet head, two and three fourths miles W. ½ S. from Middle Ground Rocks, and two and one fourth miles N. of Western Dry Rocks. E. end of West Crawfish Key on W. end of East Crawfish Key, and E. end of Woman Key on Key B.

9. Sixteen feet shoal, half a mile W. by S. from last head, and two and one fourth miles N. N. W. from Western Dry Rocks. Middle of East and West Crawfish Keys in range and W. end of Key C just open to Westward of W. end of Woman Key.

10. Nine feet head, one mile W. from last shoal, and on the shoal two and one half miles N. W. from Western Dry Rocks. E. edge of Woman Key on middle of Snipe Key and Western Dry Rocks and E. end of Boca Grande Key in line.

Northwest Channel.—To pass through this channel to the Gulf of Mexico without stopping at Key West: when Key West light-house is in range with the S. end of the fort, and the inner buoy off Whitehead's Point bears S. E. ¾ S., steer N. W. ¾ N. until Filor's observatory ranges between Northern and middle churches of Key West, bearing S. E. ¾ E. Then steer (keeping this range N. W. ¾ W.) until the S. edge of Boca Grande Key is shut in behind Cotteral's Key and the N. W. buoy is in range with Tripod beacon, bearing N. ¼ E., when steer for the buoy, passing close to it on either side. This course carries twelve feet at low water. The banks on each side of the N. W. Channel are plainly visible, and will serve as a guide. At night, without a pilot, vessels run great risk of getting on shore, and even with one it is not easy to go clear.

Light-house. A light-house has been erected in six feet water in the N. W. passage. It is a fixed light, forty feet above the level of the sea. To enter the channel by day, bring the light-house to bear S. by W. ¾ W., or in a range with the buoy on the bar and the Western end of Mullet Key; then run till the bar is crossed and buoy No. 2 is made, when haul up S. E. ¾ E. for buoy No. 1.

To enter at night, bring the light to bear S. by W. ¾ W., and run on that course till Key West light bears S. E. ¼ S., when haul up for it, and when in three fathoms haul up for the night.

Bar buoy is a black and white striped nun, in eleven feet water, Key West light bearing S. by W. ¾ W.; Cotteral's Key, S. W. by S.

Rocky Point buoy is a red nun, No. 2, in seventeen feet water, Cotteral's Key bearing S. W. ¼ S.; town of Key West, S. E. by E.

Buoy No. 1 is a black nun, on the N. W. tail of the Middle Ground, in twenty-four feet water, E. end of Crawfish Key, bearing S. ¾ W.; centre of town, S. E. ¾ E.

Channel buoy is a white and black striped nun, in twenty-seven feet water, mid-channel, Sand Key light bearing S. by W. ¼ W.; Key West light, S. E. by E. ½ E.

High water and change	8h. 11m.	Sand Key	11h. 10m.	N. W. Channel.
Spring tides rise	2.0 feet	" "	3.5 feet	" "
Neap " "	0.6 "	" "	1.9 "	" "

SOUTHERN AND EASTERN COASTS OF EAST FLORIDA.

Tortugas Islands. TORTUGAS ISLANDS.—On the Southern edge of soundings, which extend off the Western coast of the promontory or peninsula of East Florida, are eleven keys or small islands, called the Tortugas Islands, which is the Westernmost land, and which announces the proximity of the General Florida Reef, which terminates the Southern edge of soundings, and which continues to the E., doubling the above-mentioned promontory, and extends to Cape Florida.

The Tortugas (often called the Dry Tortugas) are generally looked upon to be very dangerous, and to a person unacquainted with them they undoubtedly are so, especially in the night-time; yet, when they are known, on many occasions they may be found both useful and convenient. They extend E. and W. nine miles, and N. and S. six miles and, although very low, can be seen at the distance of twelve miles, being covered with bushes; you should not come nearer them than six miles, as they have some rocky spits which extend that distance from them. To the W. there is a large bank of coral rocks, intermixed with white patches of sand, on which the soundings are irregular: but as the bottom shows itself very plainly, there is no danger. This bank is of an oblong form, and between it and the Tortugas Islands there is a clear channel of three miles wide, with soundings from thirteen to seventeen fathoms water.

The Tortugas are situated N. 14° W. (true), one hundred miles from the nearest part of Cuba, the table-land of Mariel, and fourteen leagues from the Westernmost of the Florida Keys. The S. W. key, which, though one of the smallest, is the most material to be known, is in lat. 24° 36′. A reef of coral rocks runs off it S. W. a fourth of a mile, on which the water is discolored.

If you are bound to the Eastward and meet with a strong Easterly gale, which is frequent there in the summer season, you may safely come to an anchor in five or six fathoms, about a fourth of a mile off shore, under the lee of the long sandy island to the Northward of the S. W. Key. There is a good anchorage, also, in several other places, particularly in a small but snug harbor, near Bush Key, which is entirely sheltered from the sea by a large reef of rocks, and a flat shoal within them, about half a mile broad; the bottom is soft clay and mud. This harbor is quite smooth, even in a gale of wind, and in case of necessity a vessel might easily be hove down there, as there are three fathoms water close to the bank. There is no drinkable water to be got on any of the Tortugas, except on the Northernmost island; nor is there any firewood, except a few bushes, which it were a pity to cut down, as they serve to distinguish the keys at a distance; but the Tortugas abound with a variety of sea-birds, turtle, and excellent fish. There is a channel seventeen miles in width between the Eastern Key and the W. end of the Florida Reef. Thirteen and one fourth miles from the Eastern Key, in an E. 6° S. direction, there is a shoal of twelve feet, about half a mile in extent. Bush Key light bears W. from the shoal, seventeen and one fourth miles distant. This is the only danger; with care, and seeing the light, it is preferable to going round the Tortugas; the beacon will make it perfectly safe. *Rebecca Shoal.*

Cayo Marquese is a dangerous and extensive bank of quicksand, on every part of which you have no more than four or five feet water. It is of a remarkable white color, especially all along the N. edge, and may easily be seen and avoided in the daytime.

The tide between the Tortugas and Cayo Marquese sets variably through the Northward and ebbs to the E. S. E. about three or three and a half feet, by the shore.

The proximity of the Florida Reef is shown clearly in the day-time by the whiteness of the water, so that there can be no danger in drawing in with it; but if safe by day, it is not so by night, nor in bad weather, when you should carefully avoid it, and be sure to keep the lead going, by which means you can avoid danger at the distance of two miles from the edges of the keys or reefs.

In passing the promontory of Florida it is not this reef alone which you see, but an innumerable quantity of keys and islands, raised upon a bank N. of it.

In Garden Key Channel, the light-house bearing S., there is a shoal spot with three fathoms on it, while there are six and a half and seven fathoms on each side of it.

BANKS AND COAST OF FLORIDA.—Seventeen and a half miles to the Eastward of the Easternmost Tortugas, is the W. edge of the bank called the Marquese Bank, and fifteen miles farther E., on this bank, is the key called the Marquese Key, which is the Westernmost of a group, of which the Northernmost is Boca Grande Key; this key is the largest of the group, and is near six miles E. and W. About one mile to the Eastward of this key the first bank ends, whose Eastern edge runs about N. and S. The first bank is separated from the following by a channel of two miles wide, with ten or twelve feet water, sandy bottom. This channel is called Boca Grande, but no one who is not well acquainted should attempt to take the channel, as there are some shoals in it. *Banks and Coast of Florida.*

The second bank, called the Mangrove Islands, is like the first, upon which are a number of islands, the three Southernmost having white sandy beaches. This second bank may be viewed as distinct from the third, although they are united on their Northern part by an isthmus of half a mile wide; otherwise they are separated by a channel of one mile in breadth, which has from ten feet to twelve fathoms water, low tide.

The third bank is that of Key West and the Pine Islands, the Western part is called by the former, and the Eastern by the latter name.

There is a passage through Key West from Florida Stream, into the Bay of Mexico, for vessels drawing twelve feet at low water. This passage is about six miles in extent, and vessels, by passing through it, avoid the danger and delay of going round the Dry Tortugas. Good pilots can be obtained at Key West to carry vessels through. The

Banks and Coast of Florida.

harbor is large and commodious, admitting vessels of the largest class, where they are protected from all winds within two hundred yards of the N. W. point of the island, and there are several ponds, which for nine months in the year produce excellent water.

From Key West, Eastward for twenty-four miles, there are nothing but low mangrove islands, in whose channels nothing but canoes can pass. This third bank terminates at Bahia Honda, and the islands to the Eastward are somewhat larger, and covered with pine-trees, but are low and drowned like the others, and their channels are navigable only for boats. Of the whole of these islands there is but one, which, though small, is of tolerable height; it is thirteen miles from Key West, is rough and covered with trees; and in whatever direction you see it, appears in the form of a saddle.

The next bank is called Bahia Honda, separated from the last by a channel of half a mile wide, which channel is called Bahia Honda, and in which there is anchorage in three and three and a half fathoms. This channel is easily known, as on its Western part, which is the Eastern part of the last bank of Key West and Pine Islands, there are three small islands, and on its Eastern part upon the bank of Bahia Honda, there is one called Palm Island, which is large, has a sandy beach, and is remarkable by the many high palm-trees covering it, which are the first you see coming from the Westward. Bahia Honda Bank has but few keys, and extends E. about four leagues.

The fifth bank is called Cay Vacas or Cow Keys, extending Eastward about five leagues; upon it a group called by the same name, the Easternmost of which is called Dutch Key, or Cayo Holandes; between this key and Key Bivoras is one league. This key is remarkable by its white sandy beach, and by a tolerably high hill covered with trees, which is on its Western part. In the channel to the Westward of the Cow Keys you will have two fathoms of water all the way within a mile of the keys, and will always find the deepest water nearest to the reef. The usual method of navigation between the reef and the keys, is, to proceed in the daytime, and lie at anchor in the night; and should you be obliged to anchor where there is any coral, it will be necessary to buoy up your cable to prevent it being rubbed.

From the Eastern extremity of Key Bivoras to the Westernmost part of Old Matecumbe, is three and a half miles. Old Matecumbe is four miles long N. E. and S. W., and its N. E. point is covered by some very high trees, appearing like table-land. On the N. end of Old Matecumbe is a natural well in a rock, containing excellent water.

One mile E. of Old Matecumbe lies Indian Key, to the Eastward of which there is a channel running to the Northward, with ten and twelve feet water, where, by doubling the N. E. point of Old Matecumbe, you may anchor sheltered from all winds. This channel is easily discovered by the white shoals of only two or three feet, bordering both sides of it, which serve as an excellent beacon.

Two miles N. E. of Old Matecumbe you will find Little Matecumbe, which in this same direction is four miles in length; it is covered with high trees. Off its N. E. part there is a small mangrove island, separated by a channel half a mile wide, and N. E. of the last there is a another of tolerable size, separated by another channel of the same breadth. This is also separated by a channel, like the others, from Long Island.

N. E. from Long Island lies Cay Largo, separated by a small narrow channel. Nearly E. from this channel, one mile and a half, lies Key Tavernier, to the Northward of which there is excellent anchorage for vessels drawing not over eight feet water, and it is one of the anchorages frequented by fishermen. About N. E. by N. from Key Tavernier lies Cay Melchor Rodrigues, which is an island of tolerable extension, and the land so spongy that the roots of the trees are discovered.

The coast runs from Melchor Rodrigues to Cay Largo N. N. E., by E., and N., on which last course there are various keys for some distance. The last is called Cay Biscayno, the Eastern point of which is called Cape Florida.

West Coast of Florida.

WEST COAST OF FLORIDA.

Leaving Key West by the N. W. channel, after crossing the bar, the water deepens regularly but rapidly, going to the Northward. Eastward is the bay, called by some Gallivan's Bay, which shoals up gradually, with great regularity. Secure anchorage may be found on this coast, anywhere between Cape Roman Shoal and Cape Sable, for winds from N. W. to E S. E., by standing in until in sufficient depth for anchoring. The bottom is clean, good holding ground. The coast is composed of innumerable islands, the passages among them shoal, and abounding in fish, clams, oysters, &c. The course from the N. W. bar at Key West to the point of Cape Roman Shoal is N. ¼ E. distant about seventy-two miles. On this course you will deepen rapidly to thirteen fathoms of water, after leaving the bar. Should more or less water be obtained as the deepest soundings, before striking the soundings off Cape Roman, you will be to the Eastward of the line if less, and to the Westward if more, and the course must be altered accordingly. On approaching the shoal off Cape Roman in the night, go no nearer than seven fathoms. Running in seven fathoms, you will suddenly have two or three casts of six or five fathoms, and then seven again. This is the tail of the shoal. The

bottom is hard sand. In many passages up and down this coast, I have never failed to feel my way across this point, thus getting a good departure from which to shape a course to any point. It is infallible in the darkest night. Cape Roman Shoal is said to extend S. W. about eight miles, and like most of the shoals on this coast, is *not* a continuous bar, but a succession of lumps and ridges, with holes and gullies between them, many of them dry in low tides. There is a small channel between the shoal and the cape, with eight feet at low water, but it contains several lumps, and is not to be attempted without a pilot. After passing this shoal, the coast is clean, with hard bottom. By keeping in five fathoms of water, you will proceed direct to the bar buoy at Sanibel Harbor. The approaches to this harbor from any direction may be known by a change from hard sand to sticky bottom of mingled mud and sand. In the night, you should anchor as soon as you shoal to four fathoms.

Sanibel Harbor.

The course to enter Sanibel Harbor is N. W. The shoal shows plainly. The buoy (recently placed) should be left on the port hand, and the shoal on that side followed in. After getting inside the point of Sanibel Island, anchor immediately, as close to the shore as possible, as a bank lies off in the middle of the harbor. Ten feet is the greatest safe draught to enter this harbor with. Small vessels can pass from this harbor through inside to Charlotte's Harbor, and emerge thence, or go far into the interior of the state, by the many small rivers and creeks emptying into the spacious but shallow bays formed by the islands commencing here. These bays contain fish, turtle, oysters, &c, in the greatest profusion, and the adjacent islands abound in deer and other game. From the Southward, passing Sanibel Island, approach no nearer than six fathoms. When once past it the bottom again becomes hard sand. The coast runs about N. W., and is clean. Eighteen miles N. W. of Sanibel Point is Boca Captivo. The channel here changes very frequently, and is not buoyed. At present ten feet of water may be carried in. The tide runs with great velocity. The bar runs off from the N. point half a mile, and then runs to the S. S. W., nearly parallel with the coast, one mile. Steer in for the coast one and a half miles S. of the passage, and, when near the beach, follow it right in. The water is bold, and the anchorage good inside. Northward of Boca Captivo the coast is clean and bold to Boca Grande, the main entrance to Charlotte Harbor. This entrance is formed by two shoals running off four miles, and the bar is indicated by a buoy, painted with perpendicular black and white stripes. This bar may be passed in the night, by soundings, with the same certainty as that at Cape Roman. Running in six fathoms, parallel with the coast, or N. W. ½ W., you will shoal to five fathoms, and, after running in this depth for a mile, you will again have six fathoms If you get less than five fathoms, you must haul off a little. For directions to enter Charlotte Harbor, see page 395.

Boca Captivo.

When inside, you can choose your anchorage in any depth, good holding ground and plenty of room. This would be an excellent harbor of refuge in hurricane seasons, much better than Tampa Bay, as it is more sheltered. A good channel runs up the bay to the mouth of Rease Creek, with two and one half fathoms of water, for twenty miles. Boca Casperillo, ten miles N. W. of Boca Grande, is unimportant, except for the smallest vessels. The channels are continually changing. At present there are three entrances. The main one has a depth of eight feet. Hence, N. W. the soundings are regular to Sarasota Bay, the main entrance to which is shoal, and throws out a shoal S. W. two miles, with a shifting bar. Eight feet is the average depth. This shoal may be "felt" from the outside, in the same manner as those South. New Inlet, into the N. part of Sarasota Bay, is a recently made passage, and is very narrow and shoal. It is six miles from the main entrance, and is unimportant, except to small vessels and boats.

Light.

EGMONT KEY LIGHT is a fixed light, eighty-six feet above the level of the sea. The tower is eighty-one feet high.

Egmont Key.

EGMONT KEY, at the entrance of Tampa Bay, may be approached and passed in the same manner as Cape Roman Shoal. The soundings on the N. W. will be found more abrupt than at Cape Roman. The S. W. Channel, and also the West Channel, into Tampa Bay, are well marked and of good depth. There are various small channels, not navigable by vessels of any size. From Egmont to Anclote Keys, about thirty miles, the coast is clean and the soundings regular, but from the S. point of Anclote Keys a shoal extends off West, and extends nearly sixty miles to the Northward. Inside of thirteen feet, Northward of Anclote, is St. Martin's Reef, composed of innumerable rocky patches, extending for more than thirty miles N. and S., and eight miles E. and W. Off Anclote Keys, strange to say, there is not a rock, neither any to be feared outside of thirteen feet at low water. Vessels drawing twelve feet or less can run boldly in for the middle of Anclote Keys, and anchor in two and a half or three fathoms, and be in perfect safety from any sea. The shoal runs off so gradually, that the swell from the gulf gradually expends its force as it approaches the shore; and in the heaviest gales there is no swell inside of four fathoms of water. This is the case on the whole shoal, which terminates opposite to, and about fifteen miles to the Southward of, Seahorse Reef. St. Martin's Reef is formed by the rocks inside of two fathoms of water on this shoal. These rocks are nearly all submerged, and very dangerous to

small vessels, as they give no warning. Small channels and passages abound everywhere among them, but are of no use except for very small vessels or boats. On striking this shoal, it is so regular that a N. N. W. course, with any given depth of water, will hold the same soundings for nearly fifty miles. Thus, if you meet the shoal in three fathoms of water, and steer N. N. W., you will have three fathoms for that distance. Running off the shoal on a N. N. W. course, you deepen to seven fathoms in Cedar Keys Channel; continuing, you will shoal up gradually on to Seahorse Reef. A beacon is placed about ten miles from Seahorse Island, near the end of the reef. Outside the beacon, in five fathoms of water, is a buoy. *The land is plainly visible in a clear day.* Steer for Seahorse Key as soon as you discern it. Do not approach Seahorse Reef nearer than three fathoms. The harbor of Cedar Keys is shoal, and no more than ten feet of water can be carried in. Seahorse Reef can be "felt" in the night, as can nearly every shoal on this coast. After passing it the soundings in Deadman's Bay to St. Mark's and S. W. Cape are beautifully regular and uniform, and the bottom is clean. Vessels can choose their own depth, and anchor in Deadman's Bay.

ST. MARK'S TO CAPE SABLE.

Ocilla River. OCILLA RIVER.—From St. Mark's a low marshy coast line runs E. by N. about ten miles, to Ocilla River. The entrance to this stream is about four cables in width, but it soon grows narrower. The shores at the mouth are overflowed at high water, but the banks in the interior are clothed with live oak, which is exported. In front of it a labyrinth of sand and oyster banks, which are bare at low water, extend off several miles, having a tortuous, intricate channel, navigable for vessels of five feet at high water, but so narrow that they cannot swing to their anchors. Some rocks also lie in the way, and at about three miles up from the entrance, a ledge runs right across from shore to shore, which is only passable to boats.

There is anchorage, but not safe, in three fathoms, six or seven miles from the entrance, which, however, cannot be discovered at that distance.

Those bound hither should obtain a pilot at St. Mark's.

The Coast. The coast from the Ocilla River takes a Southeasterly direction, with a slight inward curve, for about seventy miles, to a projection of land that forms the N. W. extreme of Waccasassa Bay.

It is all along low and marshy; and in this space several small streams discharge themselves into the Gulf of Mexico, and there are a few shallow bayous; but the approach to it is so obstructed by shallow flats, that vessels of even very light draught can scarcely get sight of the land. The shoals are estimated to extend out from some parts from fifteen to eighteen miles; at thirty miles there are but five and six fathoms water, and at six miles from six to seven feet.

Suwanee River. SUWANEE RIVER, the only one of the above streams of any importance, disembogues about ten miles from the N. W. point of Waccasassa Bay. The upper part is well settled, and cotton, sugar, and tobacco, are brought down by river steamers and conveyed to the Cedar Cay harbor for shipment. This stream discharges itself by two outlets; the Southernmost of which has five feet over the bar at high water, but the other is too shallow for navigation. A horseshoe reef runs across the front of both openings, sheltering Suwanee Bay, which latter is equally shoal.

The Cedar Cays. THE CEDAR CAYS, which skirt the above projection at the entrance of Waccasassa Bay, are a cluster of small sandy and mangrove islets, closely grouped together, the three outermost called North, Seahorse, and Snake, being about a mile apart on a N. W. range. All of them are fringed more or less with sand and oyster banks, dry in many places at low water, leaving intricate winding channels, into good shelter for small vessels. From Seahorse Cay, the middle and outermost of the above three, a shallow ledge of hard sand runs off S. S. W. ½ W. about ten and three fourths miles, where it terminates at a point in fourteen feet, with four and one fourth fathoms close outside of it. At the extreme end of the ledge extending from Seahorse Cay, in twelve feet water, is a black can-buoy, numbered 1; Seahorse Cay light-house bearing N. E. by N.; and the beacon on S. W. spit, S. W. ½ W. This beacon is formed by three iron screw piles, from which rises an open framework to thirty-six feet above the sea, on the top of which is a tripod surmounted by a ball eight feet in diameter, the entire height being fifty feet, and painted black. On the centre of the bar, in eleven feet water, is a can-buoy striped black and white perpendicularly; the light-house bearing N. by E. ¾ E.; the N. E. point of Seahorse Cay, N. N. E.; and the centre of Snake Cay, N. E. by E.

Buoys.

Light. Seahorse Cay is about a mile in extent E. and W., and forty-five feet high. On a small mound at the E. end, in lat. 29° 5¾′ N., long. 83° 4½′ W., is a dwelling-house, upon which is a white tower, exhibiting a fixed and flashing white light with a flash every minute, at seventy-five feet above the sea, and is visible at fifteen miles.

Directions. All the navigable channels between the cays are staked off, but they require the assistance of a pilot, who will come out on seeing the usual signal. Approaching from the

Southward, with a view of entering by the Seahorse Channel, which is the best, steer up on the meridian of 83° 5′ W., and endeavor to sight the light-house on the bearing of N. by E. in three and a half to four fathoms, which line leads up along the E. side of the Seahorse Ledge, and about two miles to the Eastward of the extremity. When the light-house is sighted on the above bearing, from a height of twelve feet, the end of the ledge will bear about W. In the night-time it will be better to anchor in the above depths after making the light, which may be safely done with offshore winds or moderate weather. Steering N. by E. for the light-house, the depths will gradually decrease to the edge of the bar, with Snake Cay bearing N. E. ½ E. Thence a N. E. ½ N. course carries up to the bar buoy and through the channel between the stakes in ten feet at low water, mean tides. When the depths increase to two and a half or three fathoms, keep the W. bank close aboard, still guided by the stakes, and anchor just to the Northward of the light-house, in thirteen to fifteen feet water, or farther in, according to draught.

Observe, however, that after strong Northerly or Easterly winds, the depth of the bar will sometimes be only seven feet. Within Seahorse Cay the channel becomes extremely tortuous and narrow; but generally ten feet can be carried up to the settlement, and alongside the wharves at Depot Cay.

In proceeding to the N. W. pass, which lies between North Cay and the banks and islets to the Northward of it, be cautious of the Seahorse Spit, and not to come into less than four and a half fathoms until to the Northward of it, with the light-house to the Eastward of N. E. by N. Having brought North Cay E. ½ N. in three fathoms water, steer for it, and when the light-house bears E. S. E., haul in N. E. for the bar, which line ought to carry thirteen feet water. When the light-house bears S. E. ½ E., or the N. end of Seahorse Cay is just shut in with the S. end of North Cay, steer E. ½ N., which leads across the bar between the stakes, and in ten feet at low water, mean tides. Within the bar the channel becomes very intricate, and from abreast Middle Cays, where it forms a sharp elbow to Depot Cay, it carries but eight feet water. In going into all the channels the stakes, with bushes on them, must be kept to starboard.

In approaching this pass from the N. W., a vessel should not come into less than three fathoms, before North Cay bears E. ½ N.

There is a boat-channel to the Southward of North Cay, and another called the Swash to the Southward of Seahorse Cay.

The water is here so clear that the bottom may be seen in five or six fathoms.

Tides.

It is high water at Depot Cay at 1h. 15m.; mean rise of spring tides two and three fourths feet; and of neaps, one foot and three fourths.

The high water next following the southing of the moon is higher than the previous and succeeding ones, when the moon is S. of the equator, and the reverse when N. This difference at the moon's greatest declination is at a mean of Cedar Cays nearly eight inches, and when greatest, amounts to four feet. When the moon is on the equator the two successive high tides are equal in height. The variations in low water are the same in kind, but not in amount. The interval between the moon's southing and the time of high and low water, undergoes similar changes, the difference in the interval of two successive high waters being sometimes as great as three hours.

The tides are regular except in storms, when they are completely reversed; Southerly winds increase, and Northerly ones decrease the height sometimes as much as three feet.

Anchorage.

There is good anchorage under the E. side of Seahorse Reef, safe in Westerly gales.

Waccasassa Bay.

WACCASASSA BAY.—From Black Point, abreast the Cedar Cays, the coast line runs Easterly for about fourteen miles, and then turns abruptly Southward, forming Waccasassa Bay. When in two and a half fathoms, with the middle of Snake Cay bearing N. N. W. ½ W., and its E. end just open with the W. end of Depot Cay, steer N. E. until Waccasassa Reef bears N. N. E. The course is then N. E. by N. ¼ N. until Waccasassa Reef bears N.; this will give good anchorage in ten feet at mean low water. Waccasassa Reef is known by its peculiarly white appearance, and being alone. The channel inside the reefs is not staked out. Vessels bound to Cedar Keys should keep in three fathoms water, to avoid the set into Waccasassa Bay and sudden shoalings.

We-thlocco-chee River.

WE-THLOCCO-CHEE RIVER empties itself about eight miles to the Southward of the above. The banks are marshy at the entrance, and in front of it are many oyster-beds, leaving a channel carrying three feet water; inside the bar, however, there is a greater depth. There are two entrances, but only the Southern one is available.

Crystal River.

CRYSTAL RIVER—which is about five miles farther to the Southward—is much wider than the We-thlocco-chee, and the banks are much firmer around the mouth. It has two entrances formed by Shell Island, which latter is the highest land found along the main shore for some distance, it being twenty-five feet above high-water mark. The Southern channel is the widest and deepest. Off the mouth are several parallel lines of oyster reefs, more or less bare, according to the tides.

Vessels of ten feet draught can anchor in safety inside the first of the oyster-reefs; the channel being pointed out by a stake, which must be left on the port hand when going in. A number of vessels are employed in getting cedar at this river, which is obtained about five miles up, and rafted down to the above anchorage. Those bound

Caution. higher, or to any of the adjacent rivers, should obtain a pilot at the Cedar Cays; for it is extremely hazardous for a stranger to approach this shore without one, or to attend to any directions he may have received.

Homosassa River. HOMOSASSA RIVER disembogues about ten miles to the Southward of the Crystal, a mile or so below the upper end of St. Martin's Reef. There are numerous branches near the mouth, forming a marshy delta, but the navigable entrance is pointed out by two conspicuous large oak-trees on a shell bank, at the Southern side, and a large rock projecting from the water, a short distance to the Northward of them.

The channel is staked off, and nine feet water can be carried up nearly to the entrance between the reefs. Those drawing five feet can ascend as far as the plantation of the late Senator Yulee. The coast from the above river trends Southerly about twenty-five miles to the Anclote River. At about five miles from the Homosassa is the Chassahowitzka; and ten miles farther on is the Wekiwahee River. From the Anclote River the shore continues Southerly about ten miles, and then bends Southwesterly about eight miles. Thence for about twenty-six miles it takes a S. E. by S. direction, curving slightly outward to Piney Point, at the entrance of Tampa Bay.

The Coast.

The whole of this part is fringed with cays; but it is quite clean and more bold than that to the Northward, having six fathoms water at the distance of about nine miles.

St. Martin's Reef appears to skirt the whole of the space between the Crystal and Anclote rivers, at about five miles from the land; but its limits are as yet undefined and uncertain. Outside it, in a depth of nine or ten feet, the coast is not visible.

Bayport. On the Wekiwahee river is the Town of Bayport. You can carry nine feet to the beacon, four miles W. of the town. Keep off shore ten miles until you see the town. When it bears E. run for it until up with the beacon, when anchor. The entrance of this river is twelve and a half miles N. N. E. from the N. end of Anclote Cays.

Anclote or Anchor Cays. ANCLOTE or ANCHOR CAYS, the Northernmost of the above cays, are two in number, and occupy a narrow space of about eight miles in length N. and S. The N. extreme lies W. by S. ½ S., about seven and a half miles from the Anclote river; and the space between them and the main is called St. Joseph's Bay, which is about five miles broad. Off the S. end of the Anclote there is good anchorage in three fathoms.

St. Joseph's Island. ST. JOSEPH'S ISLAND, which lies at only a short distance to the Southward of Anclote Cays, is about five miles long N. E. and S. W., and to the Southward of it is Clearwater Island, about six miles in extent N. and S. These cays lie not far from the main, and cover Clearwater Harbor. On the shore, abreast Clearwater Island is Fort Harrison. The cays which follow lie in a S. E. by S. direction, and are named Sand, Pine, Arenosa, and Cabbage; the S. end of the latter lying four miles Westward of Piney Point. One of them is higher than the others, and appears like a rounded hill.

From Cabbage Cay the range takes a more Southerly direction across the entrance of Tampa Bay, and the principal islets are named Mullet, Egmont, and Palm. The opening between the two former is nearly a mile and a half wide E. N. E. and W. S. W., and forms the N. pass into Tampa Bay. The two latter are nearly three miles apart N. W. by N. and S. E. by S., and form the S. W. pass. At about a mile to the Northward of Palm Cay, however, are two small low sand ridges called Passage Islands.

Palm Island nearly connects itself to the S. extreme of Tampa Bay; and abreast the N. end of the island is Manatee River.

Tampa Bay. TAMPA BAY, so called, is an extensive estuary from six to ten miles wide, extending from Egmont Island in a N. N. E. direction about twenty-two miles when it forms two arms, the Easternmost about four miles wide and six long, N. and S.; the other twelve from S. E. to N. W. and six miles broad. At the head of the former is Fort Brooke and Tampa village, and at that of the latter, the settlement of St. Helena.

The outer part of the estuary is greatly obstructed by a middle ground of hard sand, with depths from eight to twelve feet, which stretches two thirds of the way across from the Western shore. Vessels of eighteen feet draught, however, can pass round the E. and N. sides, and thence down a lane of deep water on the W. side of it, to secure anchorage in four or five fathoms, within only a short distance of Piney Point.

There are fifteen feet water at about one-fourth of a mile from the Western shore; and at high summer tides, perhaps twenty feet may be carried thus far. Those drawing ten feet may go up nearly to the head of both arms. A pilot may be had at the light-house.

In the Northern channel on the sand flat which runs out Westerly about five miles from the Southern point of Mullet Cay, is a black nun-buoy, numbered 1, in eighteen feet water; Egmont Cay light-house bearing E. by S. ¾ S., the N. W. point of Mullet Cay E. N. E., and the centre of Palm Island S. E. ¼ S.

On the end of a sand flat, extending Westerly from the N. point of Egmont Cay, is a red conical buoy, No. 2, in eighteen feet water; Egmont light-house bearing E. ¼ S., the N. W. point of Mullet Cay N. E. ¾ N., and the Southern point of Mullet Cay E. by N.

On the S. E. edge of the Mullet Cay Flats, in eighteen feet water, is a black conical buoy, No. 3, the centre of Josephine or Bird Cay, bearing N. N. W. ½ W.; Egmont light-house, W. S. W., and Piney Point, N. ¾ E.

On the extremity of a flat extending off from Stannard's Point, in seventeen feet water,

is a red conical buoy, No. 4; Egmont light bearing W. ½ N., and Piney Point, N. by E. On the Eastern edge of the Middle Ground, in eighteen feet water, is a black nun-buoy, No. 5; Mangrove Point bearing N. E. ½ E., Gadsden Point N. N. E. ½ E., and Piney Point N. W. ¼ W.

On the end of the mud flat, running off from Mangrove Point, in eighteen feet water, is a red conical buoy, No. 6; Mangrove Point bearing S. E. by S., and Piney Point, S. W. by W. ¼ W.

On a sand spit stretching out from Gadsden Point, in thirteen feet water, is a black nun-buoy, No. 7; Gadsden Point bearing N. N. W. ¾ W., and Catfish Point, N. by W.

On the Eastern end of Long-Oyster Bar, which runs out from Ballast Point, in eleven feet water, is a black conical buoy, No. 9; the W. end of Rabbit Cay in line with the flagstaff at Fort Brooke, N. ½ W.; Catfish Point, S. by W., and the N. extreme of Ballast Point W. N. W.

On the bar of the S. W. channel, in eighteen feet water, is a channel buoy, striped perpendicularly black and white; Egmont light-house bearing N. N. E. ¾ E., S. E. point of Egmont Cay, N. E. ¼ E.; and the centre of Palm Cay, S. E. by E. ¾ E.

On the sand bore, S. side of the channel, in eighteen feet water, is a red conical buoy, No. 2; Egmont Cay light bearing N. ½ W.; and the centre of Palm Cay, S. E. ½ S.

At the entrance of the Manatee River, in nine feet water, is a conical buoy, striped perpendicularly black and white; Egmont light-house bearing N. W. ½ W.; Sawyer's Bluff, E. S. E.; and the N. point of Palm Cay, W. ¼ N.

On the N. point of Egmont Island, in lat. 27° 35½′ N., long. 82° 14¾′ W., is a white tower, forty feet high, which exhibits a fixed white light of the fourth order, forty-five feet above the sea, visible at twelve miles. *Light.*

In approaching the N. channel, keep in five fathoms till Egmont light-house bears E. by S., when steer E. ½ S., crossing the bar between the red and black buoys, where will be carried not less than nineteen feet at low water. After passing No. 4 buoy, steer N. E for No. 5, which having left on the port hand, steer N. by E. ¼ E. for No. 6: leave this on the starboard hand, and steer N. E. by E. ½ E. for No. 7, which must be left to port, at the distance of about a fourth of a mile. Thence the course is N. for No. 9, which having left to port, steer for Ballast Point; and giving it a berth of about half a cable's length, steer for the flagstaff at Fort Brooke. The banks on either side of the channel and at the N. end of Egmont Island are steep to, and the edges easily seen. *Directions.*

The passage between Egmont and Passage cays, carries seventeen feet at low water, but is so tortuous as to be seldom used. To enter, bring the S. point of Egmont Cay to bear N. E., and then steer N. E. ½ E. for the bar-buoy; which, having left on either hand, N. E. by E. ¾ E. course will lead up to No. 4. Coasters can pass in close round the N. end of Palm Cay. There is anchorage to the Eastward of Egmont Cay, in four or five fathoms, but the bottom is hard. Wood and water may be easily obtained from the neighboring shores, and fish in the greatest abundance with the seine.

It is high water at Egmont Cay at 11h. 21m., and the mean rise and fall is nearly one and a half feet. *Tides.*

The coast from Tampa Bay takes a S. E. by S. direction for about forty miles to the entrance of Charlotte Harbor, or San Carlos Bay, an extensive bight, with only from eight to twelve feet water. The shore is clean and still fringed with cays, which run right across the front of Charlotte Harbor, on the same line of bearing, and terminate abreast its S. end, in lat. 26° 27′ N., long. 82° 10′ W. *The Coast*

These latter islands are named (from the Northward) Gasparilla, Lacosta, Captive and Sanibel; the first three being each about seven miles in length, and the last ten miles; leaving small openings between them.

CHARLOTTE HARBOR.—Gasparilla Pass, four and a half feet. Make tall pines on the main land bear to N. E., four and a half fathoms water; then bear toward the S. side of the pass, and run into five fathoms. *Charlotte Harbor.*

Boca Grande, twelve feet. Boca Grande opens when the N. end of Lacosta Island bears E. Make that point bear E. N. E., distant five miles, and keep so till the S. end of Gasparilla bears N. E., then steer for that point, due N. E. When inside and near Gasparilla, steer N. E. by E. to anchorage.

Captive Pass, six feet. Approach from the S., distant three fourths of a mile from the land, and cross the bar sailing due N., then bear N. E. to and through the pass, with plenty of water inside the N. end of Captive Island.

Sanibel Pass, eight and a half feet (perhaps ten feet). Approach from the S., and bring Punta Rasa to bear N. W., distant two and a half miles; sail inside the point of Sanibel Island to deep anchorage.

PUNTA RASA forms the S. point of entrance of the river Caloosahatchee, and near its Fort Dulany. The banks in the interior of Charlotte Harbor are said to produce the finest fish and oysters on this coast, and the woods abound in game and deer. *Punta Rasa.*

Anchorage in two fathoms, well sheltered from all winds, may be taken up off the S. side of Sanibel. Great attention, however, must be paid to the lead, for shoals extend from the island and the cays to the S. E. of it four miles. This part of the coast is

still but little known. The coast from abreast Sanibel trends S. S. E. forty miles to Cape Romano. At a short distance from the former is a large bight, called Oyster Bay, which is about ten miles wide at the entrance, but thickly studded with cays.

At about fifteen miles to the Southward of the above, there is another similar but smaller indentation, called Caximbas Bay. The shore is all along clean; and there are three fathoms at the distance of about two miles.

From the above bay the coast takes a S. E. by E. ½ E. direction for about thirty-five miles, and then trends Southerly for fifteen miles to White Bluff or Northwest Cape. The whole bight thus formed is called Bahia Ponce de Leon; and the Northern part where it curves slightly inward, Chatham Bend. The land is all along low and swampy, and so cut up in the interior by the sea, that it is termed the Thousand Islands.

Cape Romano. CAPE ROMANO, or Punta Larga, is a prominent projection in lat. 25° 51′ N., long. 81° 57′ W., whence the coast curves suddenly to the Eastward for about eight miles, forming Gullivan's Bay. From the cape shoal water runs off to to the Southward and Southwestward about eight miles, protecting an anchorage for coasters in Gullivan's Bay.

Cape Sable. CAPE SABLE.—From Northwest Cape the shore runs S. E by E. twelve miles to Cape Sable, the S. extreme of the Florida peninsula. The land is here more firm, and about midway forms a slightly rounded projection, called Palmer or Middle Point. At the extremity of Cape Sable is Fort Poinsett.

Between the extremity of the peninsula and the outer main range of the Florida cays the space is studded with mangrove islets rising from mud flats, barely covered even at high water, leaving narrow tortuous shallow channels almost impenetrable. They are eventually connected to the banks extending Northerly from the Marquesas and Tortugas, and to the Westward of them the water gradually deepens.

ST. MARK'S TO THE RIO GRANDE.

St. Mark's. ST. MARK'S.—The entrance to St. Mark's forms a deep shallow bay; the shoal ground runs seven miles from the land, and the bank is nearly up and down, with three fathoms along the edge of it.

Light-house. A fixed light, seventy-three feet above the sea, is on the Eastern side of the entrance to St. Mark's. If you are bound to St. Mark's and fall into the S. E. of it, work along this bank, which will bring you up to the mouth of the river; and if you wish to run into port St. Mark's Harbor, the entrance affords twelve feet water, and you will see on the N. E. bank, which is nearly dry at low water, a large stake sticking on it, and the one on the other side has three stakes on it. You will see a small house, on an island four miles from the mouth of the river, which bring to bear N. by W., leaving the light house on your starboard hand, and that course will carry you up between the two stakes; when you are between the banks halfway up, you have good anchorage. From this up to Fort St. Mark's you can have but nine feet of water. A pilot can be obtained here at any time. S. S. W. from St. Mark's light-house, fifteen miles distant, lies the S. point of James' Island, called the S. W. Cape; a bay makes in between St. Mark's entrance and this cape, into which the River Okonofrisky discharges itself; this river is shoal at its entrance, and the shore from the cape to the light should not be approached nearer than three miles, as it is shoal.

Buoy. There is a red can-buoy, No. 2, on the E. bank of the bar of St. Mark's in eight feet water, and a black can-buoy, No. 1, on the W. bank, in seven and a half feet water.

On the Middle Ground is a can-buoy, red, No. 4, in eight feet water, and on Long Bar a red nun-buoy with a mast, No. 6, in two feet water; other obstructions and dangers are marked by stakes. A shoal, having three feet water on it, lies E. by N. from the cape; and the Easternmost end bears from the light-house S.

Shoal.

The coast trends from S. W. Cape, S. W. ½ W., thirty-seven miles, to Cape St. George, which is the Southernmost point of St. George's Island; this island is twenty-four miles long, and forms, with Dog Island, the S. side of St. George's Sound. The E. end of Dog Island is S. W. ½ W., seven miles from the S. W. Cape, between which is the Eastern entrance to St. George's Sound. Dog Island is about six miles long.

Dog Island Light. DOG ISLAND LIGHT is a revolving light on the W. end of Dog Island, and is forty eight feet above the sea. It revolves in three minutes, and bears from the bar N. ½ E. distant two and a half miles. To distinguish it in the daytime from the light-houses of St. Mark's and St. George's, it has a black horizontal strip near the top.

Bring Dog Island light-house to bear W. and Southwest Cape N. E. ½ N. On finding five and a half or six fathoms water, the course hence is N., until the Easternmost end of Dog Island bears S. W. by W. ½ W. or until the water shoals off the E. point of Alligator Harbor. From here haul up W. S. W. and keep this course until well inside the reef, which can readily be discerned by colored water or breakers.

Between Southwest Cape and the reef, the channel is very deep, having not less than thirty-one feet, until well in toward the land, where soundings give four fathoms.

St. George's Sound. ST. GEORGE'S SOUND.—A new channel, discovered by Lieut. Duer, U. S. C. S., leads from the sea to St. George's Sound, close in with the N. shore of Dog Island, with twenty

feet water, by which vessels may be carried from sea to good anchorage in four fathoms, under a reef, and from there around the Easternmost point and shoal of Dog Island.

On the bar of the East Pass there are at high tides usually seventeen feet water. It will be unsafe to go beyond the four fathoms anchorage, under the reef, without a pilot.

MIDDLE ENTRANCE INTO ST. GEORGE'S SOUND.—For vessels drawing twelve feet of water, this entrance is to be taken. The middle entrance or passage into St. George's Sound is between the W. end of Dog Island and the E. end of St. George's Island, and is about three miles wide; it is rather difficult to find, for strangers, as the W. end of Dog Island and the E. end of S. George's Island are both low sand-beaches, and there is a sand-beach on the main, directly in front of the passage, so that it looks, at three or four miles distant, like one continued beach. *Middle Entrance into St George's Sound.*

After making the passage, steer for it, keeping most toward Dog Island, as the channel is altogether on Dog Island side. You will soon see a large green buoy, which lies in the best water on the bar; pass close to this buoy on either side, and stand in N. N. W. along Dog Island Reef, which can be plainly seen, until the Eastern point of St. George's Island bears S. W. or S. W. ½ W., then haul up the sound for the shipping, say about W. S. W.; continue on this course until the Eastern point of St. George's Island bears about E., two miles distant, and a black buoy on shore, well under St. George's Island, bears about S. E. ½ S., half a mile distant, when you may anchor in from two to two and a half fathoms. There is a barrel buoy a short distance outside the green buoy, a black buoy on Dog Island Reef, and a white buoy on the E. extreme of St. George's Island Reef; these buoys are not to be relied on, as they shift their position with every strong breeze; they are placed there by the pilots; the channels being perfectly plain, and the reefs visible, they would in any case be of little use. *Buoys.*

On the S. point of St. George's Island is a fixed light, seventy-seven feet above the sea. *Light.*

APALACHICOLA BAY.—To enter West Pass, St. George's Sound, with vessels drawing less than eleven feet water: with the light-house on Cape St. George bearing East, and when in four or four and a half fathoms, bring the beacon on St. Vincent's Island to bear N. E., and run directly for it until the light-house bears S. E. by E. with the beach of St. Vincent's Island close aboard, then haul up E. by N., keeping on this course until inside both points of the entrance. Here vessels may anchor in from three to three and a half fathoms with good holding ground. *Apalachicola Bay.*

The beacon is white, and can readily be seen at the distance necessary to get the bearings. It is of the form of a pyramid, and neither of the pilot's ranges (which are of entirely different shape, and stand considerably to the Westward) must be mistaken for it. The S. point of the Island of St. George is thickly wooded, and can be discerned when in ten fathoms, bearing N. E.

Should you have a foul wind, and be obliged to turn to the windward, keep the Island of St. George on board; when fairly to the Westward of the S. point, the water is good near the beach and soundings regular. The shoal off the Island of St. George extends S. ½ E. six miles. There are several channels over it; one only can be used, which is four miles from the land, having seventeen feet in it, to go through it. *Shoal.*

Bound to the Eastward.—From the bar at the West Pass, steer S. E. (by compass) until the light-house on Cape St. George bears N. by W., then haul up E., and when in five fathoms the channel has been cleared.

Bound to the Westward.—When about four miles from the land, and in five fathoms water, get the light-house to bear N. N. W., and steer E. until it bears N. by W., then steer N. W., and find four and a half fathoms. Continue on this course if bound to Apalachicola. When crossing the shoal the lead should be kept constantly going, as the set of the currents is always uncertain.

This channel might be easily buoyed out. Two large buoys only would be requisite. Discovered by Lt. J. K. Duer, U. S. N.; U. S. C. Survey, in 1858

FROM CAPE ST. BLAS, WESTWARD,

CAPE ST. BLAS LIGHT is a fixed light, ninety feet high; varied in every ninety seconds (1′ 30″), by a bright flash, visible at a distance of sixteen nautical miles. From the cape the shoal extends six miles Southerly. From Cape St. Blas a narrow peninsula or tongue of land extends N. by W., seventeen miles, forming the Bay of St. Joseph. This bay is nearly landlocked, and has a width at its mouth of about three miles, and is fourteen miles in length. The bar lies W. of the N. point of the peninsula about one mile. Within the bar the bay affords from twenty-five to thirty-three feet of water for about eight miles up, and is sheltered from all winds. The tide rises about one foot. This is the next best harbor to Pensacola on this coast, the depth on the bar at low tide being seventeen feet. The tongue of land that forms this bay is so narrow that in places it is only two cables' length wide. There are various breaches in it, in time of rains, by which the water of the bay unites with the ocean. *Cape St. Blas Light.*

To enter this bay, you must coast along the tongue of land in four or five fathoms, until past a tongue of sand, just before you come to the mouth, whence you steer N. E. and N. N. E. till within, always coasting the tongue, which is the deepest water.

N. W. by N., ten miles from St. Joseph's Bar, is the entrance to the Bay of St. Andrew's; in this distance the coast should not be approached nearer than five miles, on account of a shoal that extends the whole distance, called the Middle Ground, which may be easily discovered by the whiteness of the water. The S. E. extreme of this shoal and the above tongue form the entrance to the Bay of St. Joseph.

Bay of St. Andrew's.

BAY OF ST. ANDREW'S is covered by Crooked and St. Andrew's islands, which comprehend between them and the main, St. Andrew's Sound, which leads into the bay.

There are three entrances into this bay; the Eastern is through the opening between Crooked and St. Andrew's islands, the depth three fathoms on the bar, and the channel, which is one sixth of a mile wide, close by the latter island; the distance between the islands is above two thirds of a mile. The middle or main entrance is near the Western end of St. Andrew's Island; the depth twenty-one feet, and the channel two hundred yards wide. The Western entrance is about two miles N. W. of the latter; the depth on the bar, ten feet. This bay is very large, but as yet there can be no motive for ships to call here; but should you do it for shelter in bad weather, the bay is said to be shoal; but from the main to the Eastern entrance are three fathoms in the sound, and good shelter under St. Andrew's Island. N. W. by N. from St. Andrew's Bay, fifty miles, is the entrance to St. Rosa's Sound; in all this distance the shore is bold, and you will have four fathoms close to the land. On this coast the trees are very thick, and close to the shore, where there are also some red bluffs and white sand hummocks.

St. Rosa's Bay.

ST. ROSA'S BAY.—The E. point of this bay is known by some bright reddish-colored bluffs, which are upon it. The channel, or mouth of the bay, is very narrow, and a bar of only five or six feet obstructs its entrance. To enter, steer N. till you pass the E. extreme of the island, whence steer N. W., and anchor as soon as you have shelter. This bay is of extraordinary length, extending twenty-four miles to the Eastward, with a breadth of four to six miles. The best water in it is three fathoms, which is only found when you are E. and W., with the red cliffs at the entrance, about two miles from the bar. The other part of the bay is full of shoals and palisadoes, navigable only for boats.

From St. Rosa Bar to the Western end of St. Rosa Island the distance is forty-four miles. This long and narrow island lies about W. by S. and E. by N., parallel to the main, and covers a sound of the same name; its greatest breadth is not more than half a mile; on it there are many sand bluffs and some scattering trees. The sound affords a navigation, for vessels of less draught of water than four feet, to Pensacola.

Pensacola.

PENSACOLA.—The Bay of Pensacola affords a good harbor, having, at low water, on the bar, twenty-two and a half feet. The Eastern point of its entrance is called Point Siguenza, and is the Western point of the Island of St. Rosa, on which fortifications are erected, making it very conspicuous from the sea. St. Rosa Island extends E. by N. and W. by S., fourteen leagues, and completely fronts the whole bay of Pensacola; it is so low that the seas in gales, wash its tops, and is nowhere more than one fourth or one third of a mile wide. There are some red bluffs on the main coast which are higher than the rest of it, and one of which, and the largest of all, is on the Eastern side of Pensacola Bay; and in or near the front of the entrance are three red bluffs, adjoining each other, and called the Barancas.

The channel entering Pensacola Bay is from the S. E., and turns round a middle ground which projects nearly one mile to the S. W. of Point Siguenza; it then bends to the Eastward toward the bay. A bar, projecting about two miles to the S., and extending from the Western end of St. Rosa Island to the main opposite, has at low tide twenty-one feet on it. The bar, taken in the direction of the channel, is about a mile wide. The entrance between St. Rosa's and Foster's islands is about one mile and a fourth wide. After passing the bar, the entrance to the bay is between the Barancas and Point Siguenza. This port would be difficult to recognize were it not for the light-house and bluffs, which, consisting of three adjoining each other, cannot be easily mistaken.

The interior of the bay affords great depth of water, and good bottom for anchoring. However, considerable extent of its shores is shallow, but at some points a good depth is found near the land, viz.: at the Careening Ground, eighteen feet are to be found at about fifty yards from the shore; at Tartar's Point, where the navy-yard is, thirty feet are found within a few yards of the point, and twelve feet W. of it; at the English Careening Ground, eighteen feet can be carried close to the shore.

The bar is not the only difficulty entering Pensacola, since you meet, when within it, the Middle Ground, as previously stated; and although it is decidedly the best harbor in the Gulf of Mexico, you must observe the directions, and frequently have recourse to your plan of the port, which will give a correct idea of its configuration.

Pensacola Light.

PENSACOLA LIGHT-HOUSE is on an eminence, about forty feet high, and directly N. N. W. ¼ W. from the bar, about one mile and a fourth Northwesterly from the W. point of St. Rosa Island. The light is revolving, each revolution one minute, and is one hundred and sixty feet above the sea. S. S. E ¼ E. one eighth of a mile from the light, there is a beacon intended as a range to cross the bar.

RANGE BEACONS.—On the Western side of the entrance there are two beacons,

called the Caucus Beacons. E. N. E. from the light-house, three eighths of a mile, there are two beacons, called the Barancas Beacons. *Range Beacons.*

TO ENTER PENSACOLA.—When in ten fathoms water, bring the New Pensacola light to bear N. N. W. ¼ W., and stand in for it. Cross the bar on this range, leaving the outer channel buoy and buoy No. 2 close on the starboard hand; when up with the mid-channel buoy and the Caucus Range, run on this range until up with the Barancas Range; then stand in on the Barancas Range. When the latter crosses the bar range, haul up E. ½ N. for the anchorage off the navy-yard. The course hence to the city is N. N. E. ½ E. Twenty-two and a half feet can be carried over the bar at mean low water. *Directions.*

SWASH CHANNEL.—Vessels drawing less than fourteen feet can make a direct course from the crossing of the bar and Caucus Ranges by standing in for the front beacon of the Barancas Range on a N. by W. ½ W. course, giving the N. W. point of Santa Rosa Island a berth of one hundred and twenty yards. *Swash Channel.*

Vessels of large draught of water should not attempt to enter in the night, as there is a Middle Ground on the E. side of the main channel, one mile inside the bar, on which there is but seven feet water, and the course around it is very circuitous.

Vessels making the land should keep off four or five miles, until they make the light-house, which cannot be seen until nearly opposite, as the trees on St. Rosa Island to the E., and on the main land to the W., obscure it from the river.

Vessels coming in or going out on ebb-tide, should (preserving the necessary depth of water) keep near the Eastern edge of the channel, as the tide runs to the S. W. across the Caucus Shoal, and the flood sets directly over the Middle Ground.

Vessels drawing not more than ten feet water, can pass through a small channel between the Middle Ground and the point of St. Rosa Island.

In making Pensacola, the light-house can be seen in the daytime, about sixteen miles at sea, and before making the land about it. The chimney of the machine shop at the navy-yard can also be seen many miles at sea. The bar is well buoyed. At night bring the light to bear N. N. W. ¼ W., when you have a low range light with which to cross the bar; when inside, and the range lights near Fort McCrea are on with each other, steer for them till you bring the two small lights N. of the light-house in range, when steer for them, and so clear the Middle Ground and Santa Rosa Island.

The course from Mobile to Pensacola is E. N. E., distant about thirty-eight miles.

From Pensacola to St Joseph's the course is E. ¼ S., distant ninety-five miles.

The coast from Pensacola to St. Andrew's is very bold, and you may keep within half a mile from shore. From Pensacola Bay the coast trends W. by S. to Perdido Bay, distant eleven miles; this bar is subject to change, and affords but about four feet water, and twenty-eight miles to the Westward is the bar and entrance to Mobile Bay.

MOBILE BAY.—On Mobile Point there is a fixed light, fifty-eight feet above the ocean level. S. 5° E. from the light, five miles distant, you have three fathoms on the bar. The E. end of Dauphin Island will then bear N. N. W. ¾ W., and Sand Island (just above water) will be on the middle of Dauphin Island. On Sand Island there is a fixed light, one hundred and fifty-two feet high, *Mobile Bay. Light-house.*

Being off the bar in nine fathoms water, sticky bottom, bring Sand Island light-house to bear N. N. W. ½ W., the light-house will then be just open to the Westward of a small tuft in the top of the trees, a fourth of a mile (apparently a ship's length) from the E. end of Dauphin Island woods. This course will take twenty and three fourths feet over the bar. When over the bar, and in four and a half fathoms water, the course is N. by W. ¼ W., one mile and a third, or until Sand Island light-house bears due W., passing half-way between Sand Island and the shoal called Revenue Point, or a fourth of a mile to the Eastward of the former, whence the course is N. ¼ E., three and a fourth miles (passing Mobile Point a third of a mile distant) or until E. Umbrella Tree is just open to the Northward of W. Umbrella Tree, and a black barrel over the chimney of a small white house under Mobile Point light-house (to Northward of light-house) is on with the middle of light-house. Keep this latter range, passing between Middle Ground and the E. Bank, on a course N. W. ½ N., until the N. end of Pelican Island is shut in with E. end of Dauphin Island woods, when the course is N. by W. ¾ W., from two to four miles to the anchorage of the Lower Fleet, in from twenty-two to seventeen feet water, soft, sticky, blue mud. Vessels drawing more than twelve feet must anchor in the Lower Fleet; vessels of twelve feet draught may proceed on a straight due N. course, from the east of Sand Island to the anchorage of the Upper Fleet, crossing the Middle Ground in not less than fifteen feet, passing Great Point, three miles distant, on the starboard hand, and anchoring off Alabama city midway between the E. and W. shores of the bay, in twelve and a fourth feet water, blue mud. *Light-house. Entrance to Mobile Bay.*

Bring the seaward beacon on Sand Island (white, fixed) in range with Sand Island light-house, and steer for them passing the Bell Boat close to; when in four and a half fathoms, steer N. by W. ¼ W., and proceed as before directed. The red and white beacons on Sand Island in range, mark the Western limit of the channel; Northerly from Sand Island the red and white beacons on Mobile Point mark the Eastern limit. The *To cross the Outer Bar, at night.*

inner beacon (white) on Mobile Point, in range with Mobile Point light-house, leads through the channel to the Westward of the Middle Ground.

To proceed up to Mobile is only practicable for vessels drawing not more than eight feet water. When opposite Alabama city, steer N. N. W. ¾ W. for Stewart's Pavilion (nearly a mile W. of Choctaw light); when the Lower Stake bears due N., steer for it, passing it close aboard on your port hand. Thence to the Upper and Wreck stakes, steer N. by E., keeping them also close aboard on your port hand. From Wreck Stake, steer N. ½ W. for Turn Stake; haul close round Turn Stake, and, when it and Fowler's are in range, steer N. W. by W. ¾ W., keeping this range astern until you get near the Choctaw Point shore, at the entrance of Mobile River, then haul up to the Northward, keeping the Mobile side of the river close aboard.

Dangers outside Mobile Point.

S. E. Shoal is the continuation to the Northward and Eastward of the N. E. end of the bar; it has nine feet water on the N. E. end, and five feet on the S. W. end, or S. E. breaker head. The mark to clear the outer end is Mobile Point light-house bearing N. W., and to clear the S. E. edge, the bar Cove Tree (a large umbrella pine) N. N. E. ¼ E.

Revenue Point is the S. end of E. bank, and has five feet water on it. The marks to clear it are, the end of Fort Morgan wharf on behind the small sand hills at high water mark on Mobile Point, and Sand Island light-house just open to the Northward of sand hill on West Sand Island.

The Knoll lies two hundred and fifty yards S. E. from Revenue Point, and has four feet water on it. The marks to clear it are the same as those for Revenue Point. Breakers nearly always form upon these two shoals, visible when the water is smooth.

S. W. Spit sets off S. from Sand Island, and forms the W. side of the outer part of the channel. The mark to clear the S. W. or outer side is the largest sand hill on West Sand Island on with W. end of dark green scrub pines on beach of Dauphin Island, and for the S. point W. Umbrella Tree on with the foot of the E. slope of Fort Morgan.

E. Bank is the shoal making out Southward from Mobile Point three miles, ending in Revenue Point, opposite Sand Island; the mark for clearing it is the end of Fort Morgan wharf, shut in behind the small sand hills at high water mark.

Sand Island Bank sets out N., from N. side of Sand Island, three fourths of a mile.

W. Bank. The E. ridge is one mile and a fourth long, and lies opposite Mobile Point with from four to six feet water on it. To clear the E. edge, the bearing is Sand Island light-house S. ½ W. It is generally shown by the tide-rip, or can be seen from aloft.

Little Pelican Island and Bank lie nearly halfway between West Sand Island and Pelican Island, dividing that space into two channels. Little Pelican Island is a small knoll, making up and cutting away by gales and the tides, and lies on the N. edge of the bank. The mark to clear the N. E. edge of the bank is the W. end of Dauphin Island woods open to the Northward of the S. end of Pelican Island, and, to clear the S. W. end Sand Island light-house on with the S. beach of W. Sand Island.

Dauphin Island Spit sets off S. by E. three fourths of a mile from E. end of Dauphin Island. The mark to clear S. end is Mobile Point light-house on S. E. Umbrella Tree.

Dangers inside Mobile Point.

Middle Ground lies one mile and a half N. N. W. from Fort Morgan, and has twelve and a half feet on the N. E. end, and seventeen feet on the S. W. point. The marks are for the N. E. end W. Umbrella Tree on with the Quarters, and for the S. W. point, Fort Morgan flagstaff on with the S. edge of the wharf.

N. E. edge of W. Bank. Between this and the Middle Ground is the Ship Channel or the Lower Fleet. The marks to clear it, in the bend opposite the Middle Ground, are the N. point of Pelican Island open with the beach of Dauphin Island, and W. Umbrella Tree on with S. E. Umbrella Tree. Above this bend the marks are, to clear eighteen foot curve, Fort Morgan Wharf on with the Quarters, and, to clear the twelve-foot curve, E. Umbrella Tree on with S. E. Umbrella Tree. The Spit lies to the Northward, and forms Navy Cove. The mark to clear the S. W. end is W. Umbrella Tree just open to Westward of Mobile Point light-house. To clear the bank off Little Point Clear, the mark is E. Umbrella Tree on with Mobile Point light-house.

Cedar Point Shoal lies two miles E. by N. from S. end of Cedar Point, two and a half miles N. E. ½ N. from Grant's Pass. The marks to clear it are the W. edge of the long dark green scrub woods on the N. W. end of Little Dauphin Island on with W. end of high woods, Dauphin Island and Grant's Pass bearing S. W. Approaching from the Southward, the woods of Dauphin Island are first seen, and appear to be a bluff of woods.

A bank, with six fathoms water, lies E. by S., five and a half miles distant from Sand Island light-house, and E. N. E. ¾ E. five miles from the bar, hard bottom, light sand, and black specks. Between this and the shore there are eight and a fourth fathoms water, sticky bottom. A bank, with five and three fourths fathoms water, hard sand, lies S. W. three miles from Sand Island light-house, and W. ¼ S. three miles from the bar.

Sand and Pelican Islands are increasing in length, and Pelican Channel is getting more narrow every year. No dependence can be placed upon the soundings between Pelican and Sand Islands, as they are so constantly changing. Pelican Bay is available only for vessels drawing less than twelve feet water. The entrance from outside should not be attempted by strangers. Grant's Pass is artificial, with a depth through, in Mi

1849, of six and a half feet at mean low water; the channel is staked on both sides, at intervals of one hundred and fifty to two hundred yards, those on the N. side being marked by bushes on their tops, those on the S. side being bare.

MISSISSIPPI SOUND.—Between the main and Dauphin Island, the Eastern end of Mississippi Sound is nearly separated from Mobile Bay by numerous oyster beds, between which are three narrow passes. Huitres, the Northernmost, carries three feet at high water. Guillori, or Grant's, the middle one, has only two feet at ordinary tides; and Heron, which is the Southernmost, has nearly five feet. *Mississippi Sound.*

PETIT BOIS PASS.—The hurricane mentioned below tore away about two miles of the E. spit of Petit Bois Island, leaving an opening between it and Dauphin Island two and one fourth miles wide, and a channel through it from the sound into the gulf, carrying from twelve to eighteen feet water. In 1855, however, this channel was only thirty yards in width, with five feet water, and changed with every gale S. of E. or W. *Petit Bois Pass.*

DAUPHIN ISLAND, the Easternmost of the group, is about nine and a half miles E. and W., and at its E. end about a mile in breadth, which is thickly wooded; but its middle and Western portions are very narrow and low. In 1852, a hurricane made an opening through the middle of the island, but not deep enough to be of value to navigation. The W. end of the island appears to be increasing in extent. *Dauphin Island.*

HORN ISLAND PASS.—A shallow sand bank stretches across between Petit Bois and Horn islands, with but six feet water from Petit Bois to about midway, leaving close to Horn Island a narrow intricate cut into the sound, with seventeen feet water. *Horn Island Pass.*

Vessels approaching this pass from the Eastward should keep in not less than six fathoms, until the beacon on the E. end of Horn Island is in line with Round Island light-house N. W. ½ W. This mark leads close to the Westward of the outer shoal off Petit Bois, which has five feet, and lies with the sand hills bearing E. by N. ¼ N. Being to the Westward of this, bring the woods on the E. point of Pascagoula River to bear N. N. W. ½ W. a little open to the Eastward of Horn Island beacon, and steer on this course until the large sand hills on Petit Bois are nearly shut in with the W. wood on that island E. ¾ N., which will be close outside the bar in four fathoms. Then steer N. by W. ¼ W., until Horn Island beacon is in line with Round Island light-house N. W. ½ W.; then N. W. ¾ N., until the Northern side of the woods on Horn Island is open to the Northward of the beacon, when alter course to W. by N., and anchor in three and a fourth fathoms, sticky bottom, from a half to three fourths of a mile to the Westward of the point, with the signal staff S. by W. ½ W. *Directions.*

Vessels drawing but twelve feet may run in with the beacon in line with the woods on the W. side of Pascagoula River, N. W. by N. After passing the bar, open out the woods gradually to the E., and round the point of Horn Island as above directed. The course and distance from Mobile outer bar to the above pass are W. ¾ S. twenty-four miles.

PETIT BOIS ISLAND, the W. end of which lies E. by S. ½ S. two and three fourths miles from Horn Island, is ten miles long, about E. by N. and W. by S., and three fourths of a mile across at its broadest part, which is near the W. end. At the Southern side of the W. extremity are two clumps of wood, two miles apart, with a group of large sand hills between them, distinguishing this from Horn Island, which is almost entirely wooded. *Petit Bois Island.*

PASCAGOULA RIVER discharges itself into the sound abreast Round Island by two mouths about three miles apart; the Eastern branch has five feet water over the bar, and is navigable for small boats one hundred miles. *Pascagoula River.*

At the W. side of the entrance of the Eastern branch of the Pascagoula, N. ¾ E., three and a half miles from Round Island, is a fixed white light, fifth order, visible at ten miles. *Light.*

ROUND ISLAND.—Off the N. side of Horn Island, about midway between it and the main, is Round Island, leaving between the two islands, only a very narrow intricate pass of thirteen feet water. *Round Island.*

On the S. end of Round Island is a white tower, forty-five feet high, which shows a fixed white light, fourth order, fifty-one feet above the sea, visible at twelve miles. *Light.*

PASS.—The space between Horn and Ship islands is nearly blocked up with shallow banks, but with the W. end of Horn Island N. E. ¼ E. three miles, and the E. end of Ship Island W. by N. ½ N. four miles, there is a narrow cut lying N. and S. carrying thirteen feet water into the sound. The shoals at the entrance terminate in a point so deep that there are five fathoms close to; and there is the same depth within less than a mile of the S. side of Horn Island. *Pass.*

HORN ISLAND is about eleven and a half miles long, E. and W., but very narrow; it is wooded nearly its entire length, and on the E. extreme point is a square black beacon; and a mile to the Westward of it a signal post. The opening between it and Ship Island is six and a fourth miles wide, E. and W. *Horn Island.*

BILOXI, a considerable town on the N. shore of the sound, situated N. by E., eleven and a half miles from Ship Island. About three fourths of a mile from shore, in front of the town, is a substantial wooden pier for the convenience of steamers, with six feet water alongside it. Shoaler ground, however, lies S. W. of it; and at the end of the pier, in six feet of water, nearly a mile from the pier, is a beacon. Nearly a mile and *Biloxi.*

a fourth to the Eastward of the Biloxi light-house is the W. end of Deer Island, extending E. by S. ¾ S. four and a fourth miles. To the Northward of Deer Island is Biloxi Bay, carrying about five feet of water across its entrance.

Light. At the W. end of the town N. by W. ¾ W., rather more than three fourths of a mile from the above pier, is a white tower forty-eight feet high, which exhibits a fixed white light of the fourth order, sixty-two feet above the sea, and visible at thirteen miles.

Ship Island. SHIP ISLAND.—E. of Cat Island, at the distance of five miles, is Ship Island, which is seven miles long E. N. E. and W. S. W. The Western part is low and barren; but at about two miles from the E. end, where the island is about a mile broad, there is a grove of pine-trees. A dangerous hard bank stretches off from the N. E. end, having only twelve feet water at the extremity of a spit, with the above point W. ¾ N., distant three miles, and the Ship Island light E. S. E. two and a half miles. To the Eastward of this the depths increase to three fathoms at about half a mile, leaving a channel close to Ship Island carrying twenty and a half feet at high water, and eighteen and three fourths feet at low water, springs, and twenty and one fourth feet at high water, and nineteen at low water, mean tides. Near the beach, W. of the pine grove is a well of good water.

Light. At the W. end of the island, in lat. 30° 13′ N., long. 88° 57′ W., ten and a half miles N. W. by N. from Chandeleur light, is a white tower forty-eight feet high, which exhibits, at the height of fifty-one feet above the sea, a fixed white light of the fourth order, visible at thirteen miles.

Directions. In approaching from the S. E. the depths gradually decrease from seven fathoms abreast Chandeleur light to four fathoms at the distance of about two miles S. by E. of Ship Island light. The only obstruction in the fairway of the opening, between Ship and Cat islands, is a knoll or ledge of sixteen feet water, whence the Ship Island light bears E. by N. ¾ N., distant one mile. After rounding the W. end of Ship Island, within about a cable's length, a vessel may haul up or work in to the Eastward by the lead, and choose an anchorage most convenient to her draught. The N. side of the island is bold; and there are sixteen feet water, with the light bearing S. W. ½ S., distant about one and a half miles, and the N. E. extreme E. by N. ¾ N. The two-fathom line is about five and a half miles to the Northward of the light-house; whence the depths decrease to six feet, at from a mile to a mile and a half from the main.

If more convenient to take up a position nearer the Western passes, after passing within Ship Island, a course may be shaped round the East end of Cat Island spit into a narrow vein of deep water carrying eighteen feet, to an anchorage with the N. end of Cat Island S. W. Great care must be taken to avoid the spit, which is steep to, and not to bring Ship Island light to the Eastward of S. E. Vessels of lighter draught may proceed still farther to the Westward, observing that the two-fathom line runs about N. W. by N., three miles from the N. end of Cat Island and then curves to the Eastward.

Pass Christian. PASS CHRISTIAN.—Pass Christian carries from the Westward seven feet water, by keeping the W. beacons open to the Southward, passing to the Southward of the first beacon, and to the Northward of the second. At the Eastern beacons it is a little shoaler; six feet and three inches can be taken in, with the inner beacon open to the Eastward of the new church steeple until nearly up to that beacon, and thence to the steamboat wharf. On the Main at the entrance of Pass Christian, N. W. six and a half miles from Cat Island light, is a white tower, thirty feet high, which exhibits a fixed white light, fourth order, forty-two feet above the sea, visible at twelve miles.

Light.

Cat Island. CAT ISLAND is about five miles long, E. and W., but very narrow; and its E. end is formed by a similar narrow strip of land four and a half miles in extent N. and S.

Lights. On the W. end of Cat Island, in lat. 30° 14′ N., long. 89° 8′ 45″ W., is a white tower, thirty-four feet high, showing, at the height of thirty-nine feet above the sea, a fixed white light of the fourth order, visible at twelve miles. On Merrill shell bank, S. by E. four and a half miles from Pass Christian light, and W. ½ S. four and a half miles from Cat Island light, is a light-house on a screw pile foundation, which exhibits, at the height of forty-five feet above the sea, a fixed white light, and should be seen from a distance of eleven miles. A fog-horn and bell are used in foggy weather.

Cat Island Pass. CAT ISLAND PASS. The N. E. end of St. Michael Cay, or Isle au Pied, the Westernmost of the above islands, lies W. by N. ½ N., sixteen miles from Chandeleur light-house; and at about N. E. by E. ¼ E. three miles from the S. end of it is Cat Island. In the channel thus formed, and for a short distance within it, there are fifteen feet water; but there is no passage thence into the Western lakes or channels to the Northward of Cat Island, carrying more than eight feet.

Lake Borgne. LAKE BORGNE.—About S. W. by W. ½ W., fourteen miles from the light-house on Cat Island is the Eastern part of Grand Island, which, with the other islands to the S. W. and N. of it, at the entrance into Lake Borgne, may be said to form the Western boundary of the Mississippi Sound. The principal channel into the lake lies between St. Joseph and Grand Islands, the two Northernmost of the group, which are about one mile and three fourths apart. Lake Borgne is navigated by vessels of eight feet draught, up to Proctorville, at the S. end, and communicates with New Orleans by a railroad about

eighteen miles in length. At Proctorville is an iron light-house, which exhibits a fixed white light of the sixth order, thirty-nine feet above the sea, visible at ten miles. *Light.*

RIGOLET CHANNEL.—About ten miles to the Westward of Grand Island is the entrance to the Rigolet Bayou, which is about eight miles long, E. and W., but very narrow, and leads from Lake Borgne to Lake Ponchartrain. At about six and a half miles from the entrance into Lake Ponchartrain, the channel is commanded by Fort Pike, which stands on the S. side at the mouth of a small bayou. *Rigolet Channel*

At about one and a half miles within the entrance of Lake Ponchartrain, on the S. bank, is a white tower on the keeper's dwelling, which exhibits, at the height of thirty feet above the sea, a fixed white light of the fifth order, visible at ten miles. *Lights.*

The Pearl River disembogues from the Northward, about three miles from the entrance of the Rigolet; and on Pleasonton's Island, on the W. side of the mouth of the river is a white tower fifty feet high, which shows a fixed white light of the fourth order, sixty feet above the sea, visible at thirteen miles.

CHEF-MENTEUR CHANNEL, which is about five miles to the S. W. of the Rigolet, also carries the same depth as the latter, from one lake to the other, but is not so generally navigated. Halfway up it is defended by Fort Wood, which stands on the S. bank. *Chef-Menteur Channel.*

LAKE PONCHARTRAIN is about thirty-two miles in length E. and W., and near the middle about twenty miles in breadth; its shores, however, are not yet correctly defined. There are fifteen feet water at three miles from the S. shore, but it is only navigated by vessels drawing but eight feet, the depth in the passes leading to it. *Lake Ponchartrain.*

On the N. shore of the lake, N. W. by W. ½ W., about seven miles from the W. end of the Rigolet pass, and at the mouth of Bayou Bon Fouca, is a white tower, thirty-seven feet high, which shows a fixed white light of the fifth order, on the top of the keeper's dwelling, thirty-nine feet above the sea, visible at eleven miles. *Lights.*

On the same shore, about sixteen miles farther to the N. W., near Madisonville, E. side of the entrance to the river Tchefuncti, is a white tower, thirty-four feet high, showing a fixed light of the fifth order, thirty-eight feet above the sea, visible at eleven miles.

At the W. end of the lake, at the S. side of the entrance of Pass Manchac, in lat. 30° 17′ 45″ N., long. 90° 12′ 45″ W., is a white tower, forty-two feet high, which exhibits a fixed light of the fourth order, forty-five feet above the lake, visible at ten miles.

On the S. E. shore, S. W. by S., fifteen miles from Bon Bouca light, and about five miles from the Mississippi at New Orleans, is Ponchartrain, the most considerable town on the lake, and which communicates by railroad with the city. Near the terminus on the shore is a white tower, twenty-nine feet high, which shows a fixed and flashing light of the fifth order, with a flash every minute and a half, thirty-five feet above the lake, visible at ten miles. A little to the Westward of Ponchartrain is the Bayou St. John, which admits coasters of six feet draught. On the keeper's dwelling at the E. side of the entrance, is a white tower, twenty-eight feet high, which shows a fixed white light of the sixth order, thirty-nine feet above the lake, visible at ten miles. To enter the Bayou St. John, the light must be brought to bear S. E. ½ S. *Light.*

A short distance from the above is a canal communicating with New Orleans, and on the keeper's dwelling at the entrance, is a white tower, twenty-eight feet high, showing a fixed white light of the fifth order, thirty-three feet above the lake, visible at ten miles.

CHANDELEUR, or CANDELARIAS ISLANDS form a narrow chain of closely connected islets, covered with bushes and stunted wood, extending in a N. and S. direction, with a slight curve to the Eastward, twenty miles. They are so low and sandy that in a hurricane, or even in a strong S. E. gale, the tide quite flows over them, and consequently changes their features most materially, but less so at the N. end than at the S. extreme. After one of those storms the current has been found to run along the front of the islands to the N. W. at the rate of six and one fourth miles an hour. *Chandeleur Islands.*

At the N. end of the Chandeleur Islands, in lat. 30° 3′ 15″ N., long. 88° 51′ 45″ W., is a white tower, which exhibits at the height of fifty feet above the sea a fixed white light, of the fourth order, visible at thirteen miles. *Light.*

To the Westward of the islands there are intricate channels carrying eight to eleven feet; and at the N. extreme of the island, in Naso Sound, is the only safe and convenient anchorage for large vessels on this coast, and which is described on page 405. *Anchorage.*

The approach to these islands requires very great caution, and is attended with considerable risk in S. E. gales, if proper attention be not paid to the lead, taking care not to come into less than eight or ten fathoms until near the N. end of Chandeleur. *Caution.*

The navigation is still imperfectly known, but the ten-fathom line appears to be thirteen miles E. of the S. extreme, and about six miles from the middle of the curve, whence it decreases to seven fathoms on the parallel of the N. end at the distance of five miles. N. two miles from the light-house, there are seven fathoms, whence the depths gradually decrease in a Northerly direction to four fathoms at one mile and a half from Ship Island, and to three fathoms five miles W. from the Chandeleur light-house.

The coast of the Main to the Northward of the Chandeleurs, from St. Louis Bay to that of Mobile, a distance of about sixty-five miles, is skirted at from five to ten miles

off, by narrow, low, sandy islands, scantily wooded, leaving several openings into Mississippi Sound. The interior navigation, however, is only accessible to coasters and steamers of about eight feet draught, which traffic between Mobile and New Orleans, the towns on the shores of the sound, and lakes Borgne and Ponchartrain.

Grand Grosier Island. GRAND GROSIER ISLAND is four miles long, about N. E. by N. and S. W. by S.; the S. end lies E. N. E. five miles from Isle au Breton, and the N. end S.W. by S. eleven miles from Isle Palos, the Southernmost of the Chandeleurs; it is narrow, and connected to Palos by a ledge which breaks. S. E., sixteen miles from Grosier Island, and N. N. E., fifteen miles from Loutre Pass, the depth is ten and a half fathoms on hard bottom. E. nineteen miles from the island, and N. N. E. ¾ E., twenty-seven miles from the pass, there are only eight and a half fathoms on fine sand and black specks. Five miles farther to the N. E. by N. the depth increases to ten fathoms; and five miles more, same direction, thirty-six miles from the pass, to fourteen fathoms on blue mud and sand.

Isle au Breton Sound. ISLE AU BRETON SOUND.—From Loutre Pass the shores of the Delta form to the Northwestward a deep irregular bight, called Isle au Breton Sound, as yet, but imperfectly known. In front of it, N. W. twenty-two miles from Loutre Pass, and seven miles from the coast is Isle au Breton, four and a half miles long E. and W., with a small cay close off the N. side of the E. end. Westward of the island is Pozo Bay, with four to five fathoms water, but there are many shoals in the way with much less depth. A ledge stretches off from Breton Island S. W. about two miles, steep to; and on the W. side of the island is shelter, but the navigation is difficult to a stranger.

Anchorage.

Mississippi River. THE MISSISSIPPI RIVER.—On Deer Island, at the junction of the passes, is a fixed white light of the sixth order, visible at five miles.

Light. Vessels are seldom detained from want of pilots or tow-boats as they cruise at sea from ten to fifteen miles off the passes in fair weather, and lie in readiness just within the bars in foul weather.

Pilots.

S. W. Pass. SOUTHWEST PASS, carries generally fourteen and one fourth feet at high water, and twelve and three fourths at low water, springs; and fourteen feet at high water, and thirteen at low water, mean tides; and having but few shoals near the bar is considered more easy of access from the sea than the others. The mud is here also so soft as to do less damage to a vessel, should she happen to ground.

Light. On the W. bank of the pass, in lat. 28° 58′ 30″ N., long. 89° 21′ W., is a white tower, sixty-eight feet high, that shows a fixed white light of the third order, seventy feet above the sea; visible at fifteen miles from N. E. round S. to N. W. On the E. side of the channel, S. ¾ W. nearly two and three fourths miles from the light-house, is a spar-buoy; and on the W. side N. W. three fourths of a mile from the latter is a white buoy. Within the white buoy, about three cables' length to the N. E. is another buoy marking the W. side of the channel; and about three fourths of a mile farther up, on the same side, S. by W. one mile and a half from the light house, is a white stake or beacon.

Buoys.

Directions. To enter the Southwest Pass, cross the bar with the white stake in line with the light-house N. by E.; and from abreast the buoys steer for the point of marsh a little above the W. Observatory on the W. bank of the river, about one mile and a half beyond the light-house. This branch runs nearly straight about N. N. E., and the banks are so bold that in many parts there are seven fathoms water almost alongside them.

Caution. It is to be observed, however, that no sure directions can be given for either of the bars of the Mississippi. Mud knolls are continually formed and washed away by the action of the winds and currents, and the buoys and stakes are moved accordingly.

South Pass. SOUTH PASS lies E. N. E. about fifteen miles from the Southwest Pass, and the dangerous bight between is called East Bay. On the bar at spring tides there are nine and one fourth feet at high water, and seven and three fourths feet at low water; and at mean tides nine feet at high water and eight at low water. On the W. bank, at the S. point of Gordon Island, N. W. ¼ W. two miles from the S. bar, in lat. 28° 59′ 45″ N. long. 89° 7′ 30″ W. is a slate-colored wood tower on the keeper's dwelling, fifty-four feet high, which exhibits, sixty feet above the sea, a revolving white light of the third order, showing a bright face every minute and a half, visible thirteen miles.

Light.

S. E. or Balize Pass. SOUTHEAST or BALIZE PASS branches off in a S. E. direction about three and a half miles from the main stream of the third fork, which takes an Easterly course from the Mississippi. The entrance is about seven miles N. E. by N. of the South Pass; and the bight between forms Garden Bay. N. W. by W. four and a half miles from the bar, on the S. bank of the main fork, is a large blockhouse with a lofty signal post, called the Balize, or Beacon, which from the N. E. is visible at about nine miles in fifteen or eighteen fathoms water, and serves as a guide to the pass and anchorage.

This pass is also called the Main Ship-Channel; but vessels of fourteen and a half feet in being dragged through the soft mud often lie aground on the bar for several days. The channel at high water, springs, carries eleven and one fourth feet, and at low water nine and three fourths feet; and at mean tides eleven feet at high, and ten feet at low water.

N. E. Pass. NORTHEAST PASS, or old Ship-Channel, the other outlet of the third fork, taking an Easterly direction discharges itself N. by E. ½ E. about four and a half miles from

the Southeast Pass by two small mouths, a little more than half a mile apart N. and S. The S. channel carries at high water springs ten and one fourth feet, and at low water, eight and three fourths feet; and at mean tides ten feet at high water, and nine feet at low water. The N. channel carries at high water, springs, ten and a half feet, and nine and one fourth feet at low water; and at mean tides ten and a half feet at high water, and nine and a half at low water. On the mud bank which separates the above mouths are two stake beacons, the Southernmost having a barrel on the summit: and on the S. side of the South Channel is another stake beacon. On the N bank of the fork, W. ½ N. from the S. bar, and W. ½ S. two and a fourth miles from the N. bar, is a conspicuous white tower, formerly a light-house; its summit is seventy feet above the sea. *Mississippi River.* *Beacons.*

LOUTRE (OTTER) PASS, the Northernmost of the whole, empties itself in an E. N. E. direction from the main river, also by two narrow outlets, one about two miles to the Northward of the other. The Southernmost lies N. by W. about two and three fourths miles from the Northeast Pass; and at spring tides carries thirteen and one fourth feet at high water, and eleven and three fourths feet at low water: and at mean tides thirteen feet at high water, and twelve feet at low water. The North channel carries at high water, springs, ten and a half feet, and at low water nine and one fourth feet; and at mean tides ten and a half feet at high water, and nine and a half at low water. The South Channel is said to be deepening; and it has the advantage of the wind blowing more generally right up it, into the main stream of the Mississippi. *Loutre Pass.*

On the middle ground, at the N. side of the entrance, in lat. 29° 8′ 30″ N., long. 89° 1′ 30″ W., is a black iron tower, sixty-nine feet high, which shows a fixed white light, varied with a flash in forty-five seconds, of the third order, seventy-seven feet above the sea, visible 270° of the horizon at fifteen miles. *Light.*

On the S. side of the South Bar is a stake-beacon, and on the N. side is a keg-buoy; there is also a fairway buoy off this entrance, chequered red and white, in seven fathoms water, about half a mile to the Eastward of the bar. At about three cables' length to the Northward of the keg-buoy is the E. signal-post; and on the middle ground, about midway between the two channels, is the N. stake. At the W. end of the middle ground, on N. side of the S. Channel, a mile and a half within the bar, is another stake-beacon. *Beacons.*

The currents between the Delta and the Tortugas and the W. end of Cuba are so uncertain, fogs and haze so prevail, especially in the summer and fall of the year, the mud banks of the forks are so low, the tops of the rushes which cover them being only from ten to twelve feet above the sea, and the winds so generally blow from the Eastward, that vessels from the S. E. should strike soundings well to windward. *Directions.*

The line of one hundred fathoms lies only about ten miles S. E. of the South Pass, whence it runs E. N. E. for about fifty miles to lat. 29° N. (parallel of the pass), on the meridian of 88° W. The depths within this decrease so rapidly that the fifty-fathom line runs along only six or seven miles off, and guides to the S. E. or Balize Pass: and the forty-fathom at about the same distance farther N., and guides on the same course to the Loutre Pass. The above lines are, therefore, sure guides to the passes on about a W. S. W. course; and if the depths be less than forty fathoms, a vessel may be sure of being to the Northward of them, and may edge farther South accordingly.

The soundings on these lines are regular, but so steep that they will rapidly decrease to twenty fathoms at four or five miles, and to eight at only two miles from the passes; therefore, in the night, or hazy weather, a vessel coming into sixteen or eighteen fathoms, without seeing the lights, had better haul off or anchor. The latter may be done in safety even in fresh S. E. winds, as the river currents will sufficiently ease the strain on the cables. In the daytime the first objects seen will probably be the light tower or Balize flag, visible at nine or ten miles, or the mast of any shipping aground or waiting at anchor off the bars. When the river is low, its dirty white muddy waters will be met with at about ten miles, and when high fifteen miles off. In some places dark patches will appear in the river water, and strong ripplings which have an alarming appearance, but there is no danger, except a few shifting mud banks which lie close to the Delta.

In approaching from the Southward or Southwestward very great attention must be paid in checking the latitude, for the bank is so steep that the first cast may be thirty-five fathoms at only three or four miles from the South Pass; and it is equally abrupt, if not more so, off the Southwest Pass. Beating up from the Westward, the pilotage may be made by the lead, for on a line between the Ship Island shoal, and the S. W. extremity of the Delta, there is no greater depth than thirty fathoms.

In running from abreast the Loutre to the Southern Pass in the daytime the depths may be eight or ten fathoms, but in the night-time they should not be less than fifteen fathoms. Being off the former in fifteen fathom, a S. S. E. course will lead round the Northeast Pass in ten fathoms; and thence a S. S. W. course four and a half miles will carry to an anchorage in eight to eleven fathoms off the Southeast Pass, with the Balize tower bearing W. by N. ½ N.

The streams issuing from the forks take generally an easterly direction, but at the edge of the white water there is often a strong Southwesterly set, which is apt to drive a vessel to leeward of the passes, and cause her some delay in getting back again. To *Current.*

the Northward and Westward of the Delta the current generally runs strong to the Northward or Southward; the lead should therefore be closely attended.

Anchorage. In the event of being driven to the Northward of the Eastern mouths by a strong S. E. gale, which sometimes happens, shelter will be found in a case of necessity in Nassau or Naso Sound, at the Northern extremity of Chandeleur Islands, about fifty-five miles to the Northward of Loutre Pass. Care should be taken to skirt the Chandeleur Islands in not less than ten fathoms, which will be found at the distance of about ten miles, and out of sight of the land. The bottom will be light blue mud mixed with white shells, but off the N. end of the island, at the distance of seven or eight miles, it will change to mud, sand, and broken shells, and the course may then be altered to the Northwestward in ten, eight, and six fathoms round the N. end of the island. In thick weather there is no other guide but the lead, but if the land is visible, the spit which runs off from the N. point of Chandeleur, and breaks with E. and S. E. winds, may be rounded by the eye.

There is good shelter, with the light-house on the N. point of Chandeleur Island, from N. N. E. to E. N. E., about two miles distant, in four and a half to five and a half fathoms water. Observe, however, that when the wind lulls and hauls round to the Westward and N. W., the water will soon fall four to six feet.

Barataria Light. BARATARIA.—There is a fixed light on the W. end of Grand Terre Island, near Fort Livingston, on a brick tower, in the rear of the keeper's dwelling. The tower is sixty feet above the level of the sea, and is painted white, with a black lantern. The range for the channel is when the light is midway between the chimneys of the dwelling.

Barataria Bay. BARATARIA BAY, so called, is an extensive lake, communicating through the bayous St. Denis and Grande, with Little Lake; thence by the Bayou Perot with Lake Washa; and thence by a canal entering the Mississippi, nearly opposite Carrolton, about ten miles above New Orleans. The whole distance to this point is about one hundred and ten miles, and is navigable for steamers of light draught and coasting luggers, who are continually plying to and fro. The entrance to the bay is N. E. ½ N., fifteen miles from the Fourchon Pass, and W. N. W. thirty-five miles from the S. W. Pass of the Mississippi; it is about three and a half cables in width, and is pointed out by Fort Livingston on the E. side, and Forstall's plantation about a mile to the Eastward of it.

At the distance of about two miles from the fort, an extensive bar runs across the entrance, which has two channels, the Westernmost called Grand Pass, carrying eight and three fourths feet at high water, and seven and a fourth feet at low springs, and eight and a half feet at high water, and seven and a half feet at low water, mean tides: and the other called E. Pass, seven feet at low water. They are, however, exposed to considerable change; and the points forming the entrance are undergoing the same process, the E. side being washed away, and the opposite point growing up.

Directions. In approaching the bar, bring Fort Livingston to bear N. W. and steer for it. To enter the Grand Pass, or main channel, bring the laborers' and mechanics' quarter's situated just to the N. W. of the fort, in line, bearing N. W. by N.; when the water deepens inside the bar to eighteen feet, steer N. W. and anchor with the fort E.

To enter by the E. channel bring Forstall's house N. N. W., and steer for it until Fort Livingston bears W. by N.; then steer W. ½ N., until abreast the old officers' quarters just to the Eastward of the fort, when steer W. by S. into the main channel.

Barataria Bight BARATARIA BIGHT.—Between the Fourchon Pass and the S. W. extreme of the Delta of the Mississippi which bears about E. forty miles from it, the shore forms a bight twelve to twenty miles deep, open to the S. W. The coast is everywhere low, marshy, and covered with rushes, except Eastward of Barataria Bay, where are a few trees. On the above line the depths vary from seven to twenty fathoms, but within it they rapidly decrease, and vessels of heavy draught should not come into less than four fathoms.

Fourchon Pass. FOURCHON PASS, situated about three miles E. N. E. of Belle Pass, is the principal entrance to the main branch of La Fourche, which is obstructed by a bar carrying only about eight feet water: the depth, however, is said to be increasing.

A little to the Eastward of the pass is the entrance to Lake Champagne; and about three miles more to the N. E. is the Bayou Moreau, the Eastern outlet of La Fourche.

East Timballier Island. EAST TIMBALLIER ISLAND is about three miles long, E. and W., and separated from the main by a small opening called the Belle Passe, on the E. side of which is the Western entrance to the Bayou of La Fourche. A bar stretches off from the island to the S. E. about two miles.

Timballier Island. TIMBALLIER ISLAND, the Westernmost of the two, is about six miles in length from E. to W., but very narrow and low. The W. end lies S. E., about two and a half miles from the E. end of Caillou, and from it a shallow spit stretches off to the Westward two miles, which must be carefully avoided in approaching Caillou from the Southward and Eastward. The E. end is separated from the East Timballier by an opening half a mile in breadth, called the Grande Pass, which will admit vessels of eleven and a half feet draught at low water, over a narrow sand bar two thirds of a mile from shore.

Light. On the E. extremity of Timballier, in latitude 29° 4′ N., longitude 90° 16½′ W., is a white octagonal tower, fifty-five feet high, from which is exhibited a fixed white light of the fourth order, sixty feet above the sea, visible at thirteen miles.

Having neared the bar, bring the sandy point at the E. end of Timballier to bear N. W. by W., which line will cross the bar in the best depth, and up the channel in about twenty feet water. At the distance of about one and a half cables' length from the point, alter course to N. N. W. ½ W., and anchor in fourteen feet, with the point about S by E. ½ E., distant half a mile. There are, however, fifteen to eighteen feet water, sticky, soft bottom, with the same point S. E. three and three fourths miles distant. *Directions.*

TIMBALLIER BAY, to the Eastward of Caillou, is about ten miles in extent E. and W., and eight miles N and S.; and is sheltered to the Southward by the two Timballier islands. The interior is obstructed by several islands, but it is navigable for coasting luggers to the Bayou Chenaie and the Western branch of the Bayou la Fourche; and is a useful harbor of refuge. *Timballier Bay.*

CAILLOU or CAYO ISLAND, about one mile and a half to the E. N. E. of Vine Island, is about four miles long E. and W. To the Northward of these islands the coast forms a deep shallow bight called Terrebonne Bay. Vessels of large draught cannot come nearer than two miles of Vine Island. Water may be found at the E. end of Caillou, and also at a small bight at the N. W. extreme; and anchorage for vessels of eight feet water may be taken up close off the E. end of the island. *Caillou or Cayo Island.*

In running in, to avoid the spit which runs off from Timballier, bring the S. E. extreme of Caillou to bear N. E., and steer for it, guided by the lead. When close in, haul out a little to the Eastward, and anchor with the above point bearing about N.

VINE ISLAND, which is separated from the E. end of Isle Dernière by a shallow pass, three miles wide, is about two and a half miles long E. and W., but very narrow and low, and mostly covered with creeping plants; hence its name. *Vine Island.*

SHIP ISLAND SHOAL.—Within the three fathoms curve this shoal extends in an E. and W. direction for twenty miles, and is from one to three and a half miles in breadth. It is composed of fine gray sand, with black specks, and is about nine miles to the Southward of Isle Dernière. At the W. end there is a small spot of only five feet water that breaks with Southerly winds, S. S. W. ¾ W., eleven miles from Raccoon Point. From this spot, in an Easterly direction six and a half miles, the depths are still only from eight to twelve feet over a ledge from half to a mile in in breadth; having four to five and a fourth fathoms close along its inner or N. side, but gradually increasing depths on its S. side, to three fathoms at the distance of about one and a half to two miles. The shoal spot is steep to on the N. side, and there are three fathoms at only half a mile to the Westward of it; but to the S. W. a spit runs off in that direction five miles to a gradually increasing depth of three fathoms. *Ship Island Shoal.*

An iron screw pile structure, in the form of a truncated pyramid, colored brown, is erected on Ship Island Shoal, from which, at an elevation of one hundred and ten feet above the level of the sea, is exhibited a revolving white light, attaining its greatest brilliancy every half minute, and should be seen in clear weather from a distance of seventeen miles. Lat. 28° 55′ 06″ N., long. 90° 56′ 30″ W. *Light.*

CAILLOU BAY, to the Northward of the W. end of Isle Dernière, is about seven miles in extent N. and S., and five and a half miles E. and W., with two to four feet water. Vessels, however, drawing five feet, by rounding Raccoon Point at the distance of about two hundred yards, may anchor in nine or ten feet close off the W. end of the island. Off the S. side of the island, abreast the village, at the distance of a mile, are two fathoms; at two miles, three fathoms; and at three miles, three and a half fathoms. *Caillou Bay.*

ISLE DERNIERE is twenty-two miles in length from E. to W., and at some places more, and at others less than a mile in breadth. It is entirely level and low, with the exception of a small sand ridge, five or six feet high, which runs parallel to the beach. For some miles it is covered with thick chapparal, but the W. end is barren. *Isle Dernière.*

RACCOON SHOAL.—W. S. W. eighteen miles from Raccoon Point, in lat. 29° 1′ N., about the same distance S. by E. of Point au Fer, and N. W. by W. ½ W. eleven miles of the shoal patch of Ship Island Shoal, is a shoal that breaks. *Raccoon Shoal.*

The coast from Point au Fer trends about E. S. E. for thirty miles to abreast Isle Dernière; it is all along low and marshy, and at the distance of about two miles there are only from six to seven feet water. *Coast.*

THE ATCHAFALAYA RIVER disembogues at the N E. corner of the bay, N. by E. ½ E. about ten miles from Point au Fer. This stream flows about two hundred and fifty miles, and is navigable for steamers, at high water, to its source. In 1853, more than one hundred vessels received their cargoes at the mouth for conveyance to New Orleans by the Southwest Pass of the Mississippi. The New Orleans and Opelousas Railroad crosses the river about ten miles from the mouth. *Atchafalaya River.*

On S. W. reef, at the entrance of Atchafalaya Bay, is a screw pile structure in the form of a truncated pyramid, from which, at an elevation of forty-nine feet above the sea, is exhibited a fixed red light, seen in clear weather from a distance of twelve miles. Its approximate position is in lat. 29° 25′ N., and long. 91° 30′ W. Belle Isle bears N. E.; Point au Fer, E. S. E.; and Shell Cays, W. by S. *Light.*

Vessels bound to Atchafalaya, from the Southwest Pass of the Mississippi, steer W. ½ S. about forty-five miles, which carries into seven fathoms in sight of Timballier light- *Directions.*

house and thence run down the coast at the distance of about a mile to near Raccoon Point, the Western extremity of Isle Dernière. At the distance of three miles, however, from the latter point there are only two and a half fathoms water; and about nine miles to the Southward of it is the Ship Island Shoal, described above.

The course and distance from off Raccoon Point to Point au Fer is N. W. by W. ½ W. twenty-seven miles, and the depth all along very shallow; the track, however, may be guided by the lead, and the land approached according to the draught of the vessel. When in twelve feet water, with Point au Fer bearing E. ½ N., and the light-house on S. W. reef N. W. ½ N., steer about N. W. ¾ N., passing to the Eastward of the light-house on S. W. reef; keep this course till up with Barrel stake and buoy, leaving them on the starboard hand; then steer E. by N. ½ N. for Cut-off Channel buoy, when an E. S. E course will carry a vessel past the first and up to the second channel buoy; thence E. by S. ½ S. to the Sister stakes, passing the black iron tripod and Sister stakes on the port hand; then E. by N. till within three hundred yards of the Narrow stakes; pass between them, keeping stakes with pointers on the starboard, and those with crosses on port hand; then N. E. ½ N. for the E. iron tripod, passing it on starboard hand, when haul up N. N. E. ¾ E. for the bulkhead buoy; then N. E. ¾ E. till halfway between cross and pointer stakes, when a N. N. E. ½ E. course will carry a vessel to the mouth of the Atchafalaya River. The points of the reefs along the channel are marked by stakes with pointers on the starboard, and crosses on the port hand.

Vessels bound to Côte Blanche, after passing the barrel stake, must steer for Rabbit Island until Deer Point bears N., which point must then be steered for; and from abreast it the course will be N. by W. ½ W., to the anchorage in the Bayou Salé canal.

Atchafalaya Bay. ATCHAFALAYA BAY, between the S. E. point of Marsh Island and Point au Fer, E. ½ S, of it, is about eighteen miles wide, and ten deep. Near the middle of the N. shore is Belle Island, which is one hundred and thirty feet high, and a conspicuous object at a long distance, the adjacent lands being very low. At the outer part of the bay there are ten and eleven feet water; but the interior is obstructed by oyster banks running generally parallel to each other, leaving narrow tortuous channels between, carrying seven to eight feet water, which, although staked off, are, however, as yet only known to the pilots located at Point au Fer.

Shell Cays. SHELL CAYS.—S. E. by E., about fourteen miles from Vermilion Pass, and five miles from the shore, is a small cluster of low islets called the Shell Cays. Inside them the space is choked up with shallow oyster beds; and there are only two and a half fathoms at three miles to the Southward of them.

Light. On the outermost of the Shell Cays, in lat. 29° 20′ N., long. 91° 49′ W., is a light-tower on screw piles, eighty-one feet high, with a fixed white light of the third order seventy-one feet above the sea, visible at thirteen miles.

Vermilion Bay. VERMILION BAY is the Western of two large shallow bights (the other being called Côte Blanche Bay), which are sheltered to the Southward by Marsh or Belle Isle. This island is about twenty-two miles in length in an E. S. E. direction, and is nearly connected to the main by reefs at its E. end, leaving an opening at the W. end about three cables wide, carrying about eight feet water.

In the interior of Vermilion Bay, the depths are from five to nine feet; and the river, which discharges itself into the N. W. corner, is navigable for steamers about eighty miles. On the W. end of Marsh Island there is a revolving light, ninety feet above the sea, in lat. 29° 33′ N., long. 91° 59′ W.

Light.

Directions. This part of the shore is dangerous, and as yet but very imperfectly known except to coasters. The present charts place shallow banks as far off as forty miles S. S. W. ½ W. of the entrance of Vermilion Bay; and the general depths at about this distance are only from seven to ten fathoms, and at about twenty miles but three fathoms. The edge of soundings is upward of one hundred miles from the land, for at that distance, nearly on the meridian of the pass, are sixty-five fathoms, white sand. In standing in from the Southward, and being in two fathoms at the distance of about five miles, bring the W. point of the pass to bear N. by E., and steer for it. At about a mile from the entrance the water will begin to deepen; and, when there are five fathoms, steer for the middle of the pass, and anchor in six or eight fathoms, soft bottom, midway between the points.

Calcasieu River. The CALCASIEU is of but little commercial importance, and discharges itself over a bar of five and a half feet water, at the distance of three fourths of a mile from the shore. The entrance is only about one and a half cables' length in breadth, and the banks take a N. E. direction.

The opening is pointed out by a large house on the W. side, about half a mile inland. To cross the bar, bring this house to bear N., and on deepening the water to twelve or fourteen feet, haul over close to the W. shore, which is steep to.

Sabine River. The SABINE RIVER is said to flow about five hundred miles, and separates the states of Texas and Louisiana. It is, however, so shallow, as to be only navigable for river steamers to a short distance at high water; the commerce on its banks is therefore mostly conveyed in small vessels to Galveston for shipment.

Between Texas Point and the eastern shore the entrance is about one mile and a fourth in breadth E. N. E. and W. S. W., whence it decreases its dimensions in a N. W. direction, and opens into the lake of the same name about six miles from its entrance. About one mile and three fourths E. N. E. of Texas Point is Brant Point, and on the right bank, five and a half miles within the mouth of the river, is the little village of Sabine.

A bar runs across the mouth at the distance of about one mile and a half, which has only seven and a half feet over it at low water; the mud, however is so extremely soft, that a vessel drawing nine feet may force her way through without fear of damage.

On Brant Point, in lat. 29° 44′ N., long. 93° 50¼′ W., is a white octagonal tower, seventy-five feet high, which exhibits a fixed and flashing light, showing a bright flash every minute and a half, at the height of eighty-five feet above the sea, visible at sixteen miles. *Light.*

Bring the middle of the pass N. W., and stand in with that bearing until up with Louisiana Point, which may be passed within one hundred yards. Observe, however, that the current runs out with great velocity. Anchorage will be found in two and a half fathoms, soft bottom. *Directions.*

At the distance of about twelve miles to the Southward of the Sabine Pass is the Sabine Shoal, with as little as fifteen feet water; and six fathoms within and without it. Vessels passing outside it should not come into less than seven or eight fathoms. E. by N., ten or twelve miles from the pass, is a bank of three and a half fathoms. *Shoals.*

The coast from the Sabine runs E. by N., twenty-eight miles, to the Calcasieu River, and presents no remarkable feature whatever, being all along low, sandy, and barren; and in some places swampy. *Coast.*

From the Calcasieu the shore takes an E. by S. direction for about thirty miles to the mouth of the Mermantao, and is of precisely the same features as before. The Mermantao is obstructed by a bar of from four to five feet water; for about six miles the banks are low and swampy, but the land then begins to rise and is thickly wooded.

The coast from the latter river trends E. ¼ S., about fifteen miles to the bayous of Freshwater, Great and Little Constance, and thence E. eight miles to Tiger Point. The shore in this space is low and swampy, without trees; but at about ten miles inland from the above creeks, is a wooded ridge called Pecan Island, which extends from W. to E. about fifteen miles, and to within about ten miles N. W. of Tiger Point. From Tiger Point the shore runs about E. by N. ½ N. for twelve miles to the S. W. entrance of Vermilion Bay. About midway is a ridge of high wooded land called the Chenil (der) du Tigre.

GALVESTON ISLAND is twenty-four miles long, S. W. and N. E., one to two and a half miles in breadth, and from three to four feet high; and the only remarkable objects are three tall trees near the middle of it. *Galveston Island.*

The coast of the island is all along clean, having three fathoms water at the distance of about a mile, until within five miles of the bar, when that line of depth increases to about two miles off the N. E. end of the island. There are ten fathoms at from eight to ten miles out, with regular depths between, over blue mud mixed occasionally with gray sand.

GALVESTON BAY.—Between Fort Point and Bolivar Point N. of it, is an opening one mile and three fourths in width, leading into Galveston Bay, which is about thirty miles deep N. and S. and from six to fifteen miles in breadth. The San Jacinto discharges its waters into the N. W. corner, and is navigable for fifteen miles. *Galveston Bay.*

The entrance to the bay, at the distance of about three miles from Fort Point, is obstructed by a bar, upon which the mean depth is twelve feet at low water, and thirteen feet at high water. At low water, spring tides, the channel across carries eleven and a half feet, and at high water, thirteen and a fourth feet. At times, however, during a very dry season and heavy northers, the depth may be assumed to be a foot less, and with S. E. winds it may be increased to a similar amount. The bay itself is also nearly separated into two parts near the middle by the Red Fish Bar, a narrow ledge of only five feet water.

With the light tower on Bolivar Point, and beacon light in line, is a buoy on the outer part of the bar. About half a mile to the Northward of the outer buoy is a beacon, and about a mile within it, marking the channel on the Eastern side, is another buoy. *Buoys.*

On Bolivar Point, in lat. 29° 22′ N., long. 94° 45′ 30″ W., is a white tower, thirty-four feet high, which exhibits a fixed white light forty feet above the sea, and visible at sixteen miles. About S. E. six tenths of a mile from the light tower on Bolivar Point is a beacon light. On Pelican Shoal two fixed white lights of the sixth order are exhibited from two beacons. *Lights.*

On Half-Moon Shoal, about two miles from the Western shore of the bay, and W. by N. ½ N. five miles from Bolivar Point, is an iron pile tower, white with red corners, which exhibits a fixed white light at the height of thirty-five feet, visible at ten miles.

On Red Fish Bar is a precisely similar light to the above, the tower striped horizontally white and red, which marks the channel across; and on Chopper's bar, at the

entrance of the San Jacinto, is another channel light of the same description, in a white building.

In the city are two fixed lights of the sixth order, one forty-four feet, the other thirty feet, above the sea.

There is also a black buoy off Galveston Point, and a red buoy off the Eastern edge of Pelican Shoal.

Directions. In the absence of a correct knowledge of her position, a vessel should approach Galveston very cautiously from the Eastward. At the distance of about thirty miles in this direction, a bank of sixteen feet water that breaks is said to exist, the position of which is still uncertain; a depth of seven fathoms, however, appears to lead to the Southward of it.

When close off the bar, in from three and a half to four fathoms water, bring the light-house on Bolivar Point and beacon light in line, bearing N. W., which will lead across the bar.

When passed, open the beacon to the Westward of the light-house, and keep it so, steering in that direction, until the beacon lights on Pelican Shoals come in line. Run in with the two lights in line, until the red belfry of the market-house comes in line with a low square frame tower next W. of the Episcopal church, or until the two lights in the city are in line, which will lead through in mid-channel to the anchorage off the town. Observe, however, that some allowance should be made for the tide; if the flood is running, it will be necessary to keep a little to port; if ebb, a little to starboard.

There are other channels to the S. W. of the main passage, which may be used by vessels of light draught.

Vessels compelled to anchor outside may do so in six fathoms with perfect safety, in all seasons, although a heavy swell rolls in with S. E. winds.

Strangers must beware of the currents, which are very strong; and in the channels the water shoals on either side very suddenly.

As already stated, during a very dry season and heavy northers, the depth on the bar may be assumed to be a foot less than at ordinary periods; and S. E. winds will increase it that much.

The coast from Bolivar Point trends N. E. by E. forty miles, and then E. by N. about twelve miles to the entrance of the Sabine River. For a distance of about sixteen miles from Bolivar Point the land forms a narrow peninsula, at the E. end of which is a haulover, into the head of East Galveston Bay. The shore is all along low and sandy, with scarcely any verdure; and there are three fathoms water at the distance of about a mile.

San Luis Pass. SAN LUIS PASS, between the E. end of the peninsula forming Oyster Bay and the S.W. extreme of Galveston Island, is an opening a long half mile in width, leading into West and Oyster bays.

The extreme of the peninsula is about a fourth of a mile in breadth, and at about half a mile from the point is Follet's ferry-house. Close to the N. side of the point is San Luis Island, about a mile in extent, forming a channel which leads into Oyster Bay. A canal is in course of construction to unite Oyster Bay with Brazos, to convey the traffic of that river to San Luis Harbor, which is more available to shipping. On the middle of the E. side of the island are four houses, and at the N. end is a large warehouse. The end of Galveston Island also terminates in a low narrow point, near which is a ferry-house, and the entrance to the pass is pointed out by these buildings.

At the distance of a mile from the peninsula, a bar of sand runs across the opening, which has eight feet water at low tides, and is considered one of the best in Texas.

Buoys. A buoy points out the deepest water over the bar; and the E. side of the channel is buoyed all the way up. There is also a buoy off the S. breakers, at the S. W. end of the bar in three fathoms, Peninsula Point bearing N. by W., ¾ W. nearly a mile distant.

Directions. Having approached within a short distance of the bar, bring the S. W. corner of the hotel, which is the second from the Northward of the four houses on St. Luis Island, to bear W. by N. ¼ N., and in line with the N. E. corner of Burr's house, the next building to the Southward of the hotel. Cross the bar upon this mark, and continue on this line until Follet's ferry-house comes just open to the Northward of Peninsula Point, then haul up N. W. ½ W. and anchor in three and a fourth fathoms between the warehouse and hotel. Observe, however, that the channel is here not quite a cable's length in width, and lies close to the San Luis shore.

Velasco or Brazos River. VELASCO or BRAZOS RIVER, which disembogues about eight and a half miles from San Bernard and thirty-eight miles from Galveston light, is discovered by a long building on the N. E. point of entrance, called Michael; and some woodlands about seven or eight miles distant in the N. W. direction. The Brazos, which is the largest stream in Texas, except, perhaps, the Colorado, is estimated to flow nine hundred miles; and discharges itself over a bar of quicksand, which is constantly changing. In the rainy sea-

on from February to May, inclusive, it is navigable for steamers to Washington, about hree hundred miles from the mouth; and at all periods to Columbia, about forty miles up.

Pilots can be obtained for entering the river, and as the bar is constantly changing, o stranger should go in without one. *Pilots.*

In moderate weather good anchorage will be found outside the bar in four to six athoms, soft red clay, from one and a half to two and a half miles off shore. *Anchorage.*

When up with the bar in from three and a half to four fathoms water, bring the Quin- ana pilots range near the beach on the W. shore of entrance, about three yards open to he Southward of a two-story house with a balcony, about half the distance in, bearing W. by N. ½ N.; this course will lead across the bar in eight feet at low water. When ver the bar, and near the mouth of the river, in twelve or thirteen feet water, a N. W. y W. course in mid-channel may be taken. *Directions.*

LAVACCA BAY or INLET is about ten miles deep in a N. W. direction, and from hree to about four miles wide; it is, however, only navigable for vessels of six feet raught. The channel is also very narrow and staked off; but it requires daylight, and will be necessary to warp through a part of it. In the event of being detained by the ind or tide, commodious anchorage will be found at the entrance, between Sand and ndian points. It has been proposed to erect a harbor light on Sand Point, at the E. ide of the entrance. *Lavacca Bay or Inlet.*

The land on the W. side of the inlet is elevated from fifteen to twenty feet above the ea; and on that shore, about six and a half miles from the entrance, is the town of La- acca. The river Lavacca disembogues at the head of the inlet, and is navigable for flat teamers to Texana, about twenty miles from its mouth.

INDIANOLA, another thriving town on the W. side, is situated at the entrance of avacca Bay; and in front of it there is good and safe anchorage for vessels of about ight feet draught. This place is growing rapidly into commercial importance, and ids fair to be second only in this respect to Galveston of the ports of Texas. It is the ort of entry of an extensive traffic with Western Texas, Chihuahua, and portions of ew Mexico. *Indianola.*

At about eleven miles to the Southward of Indianola, is the village of La Salie or aluria, off which there is a similar anchorage.

At about E. ¾ S. thirteen and a half miles from Indianola, on the S. extremity of Half- oon reef, is a white tower on iron piles, which shows a fixed white light of the sixth rder at the height of forty feet, visible at six miles; a fog-horn is sounded in thick eather. *Light.*

The bank of soundings off this part of the coast still remains undefined, and in running own from the N. E. a vessel ought not to come within the depth of six fathoms, which ill lead her to the Cavallo Pass. Having brought the light-house at the E. end of atagorda to bear about N. N. W., stand in toward it, keeping the pilot's house just pen to the Eastward of the high ridge of land upon which the former stands, which ark will lead across the bar, from fifteen to eighty yards to the Westward of the bar uoy; being within this, the E. side of the channel is clearly defined by the breakers p to Pelican Island, and thence to Decrow's Point, which are steep to. The Western hore is also bold, and should be kept aboard until Decrow's Point bears about N. N. E., hen the latter should be steered for. Some sand ledges stretch off from Decrow's oint which, however, are avoided by a proper attention to the sounding. Anchor- ge will be found in four or five fathoms, about a cable's length from the custom- ouse on the extremity of the point. The navigation of the interior is only known o the pilots. *Directions.*

Cany Creek runs through a belt of woods, which extends to the water's edge, varying rom half a cable to about one fourth of a mile in width. From this creek the coast uns almost straight N. E. ¼ E. fifty-five miles to the E. end of Galveston Island, and is verywhere clean, low, and bounded by a sand beach. *Coast.*

About twelve miles from Cany Creek is an opening named St. Bernard; although arrow, it has at times from five to seven feet water. At the back of the entrance, about ight miles distant, are some remarkable woodlands. The shore for about five miles to he Westward is backed by the Cedar Lakes, which communicate with the sea at the W. nd. About eight and a half miles to the N. E. of San Bernard is the entrance to the razos River, and one mile and a half farther on is Oyster Creek; the latter is of no mportance. At one mile and a half more to the N. E. the land for nine miles forms a ery narrow peninsula which bounds the S. E. side of Oyster Bay. Abreast this part f the coast there are four and a half and five fathoms water, at one mile and a half istance, whence depths gradually increase to six and a half fathoms at about two and half miles, and from nine to ten fathoms at about eight miles, over soft red and blue ud and sand.

THE COLORADO RIVER discharges itself at about two miles to the Westward of he town of Matagorda, by two mouths, over bars of hard sand and shells, with only hree feet water. *Colorado River.*

This river is said to flow upward of four hundred miles, and when at its highest point in the winter season, it is navigable to river steamers to Austin, the capital of Texas but the traffic is as yet of small amount, owing in a measure to the obstructions at th entrance. Not far from the Western mouth is Dog Island, and about three miles fro it are the Shell Islands. A ledge of only two and a half feet water runs from one to th other, and across the entrances to the river, which so blocks up the navigation that sai ing vessels are obliged to receive and discharge their cargoes by lighters at Shell Islan about eight miles to the S. W. of Matagorda.

Through the islands between the two mouths of the river run innumerable small bay ous and channels, which are generally so choked up by fallen trees and driftwood, as t be inaccessible to boats of any kind.

With the exception of the immediate vicinity of the Colorado, the Northern shores o the bay are low and marshy, and flooded at very high tides.

Matagorda Bay. MATAGORDA BAY.—From the light-house, the E. end of the island trends North erly for about three and a half miles, to the entrance of the pass, abreast Decrows o Deckrose Point, the S. W. extreme of the Matagorda peninsula. At about one mile an a half to the Northward of the light-house is the pilot establishment.

Lights. On the S. E. part of Bayucos Island, and opposite Saluria, is a white wooden towe which exhibits a fixed white light, thirty-three feet above the sea, which can be seen i clear weather six miles. Off the Western shore, about two miles within the entrance abreast Alligator Head, is a white hexagonal tower upon seven black iron screw piles which shows a fixed white light, thirty-eight feet above the sea, visible at six miles, an leads to the upper entrance of Swash Channel.

Coast The coast formed by the peninsula of Matagorda, which separates the bay from th gulf, trends about N. E. ½ E., forty-four miles to Cany Creek, and is merely a low ridg of sand and marsh, covered on the inner side with bushes, not anywhere more than mile in breadth. Cany Creek communicates by a short canal with the head of the bay and thence for about seven miles to the Westward the peninsula is very much cut u with bayous, some of which, when the tide is high, connect the waters of the bay wit the sea.

For about six miles from the E. end, the bay is little more than one mile in breadt but it then suddenly increases to about three and a half miles to Palacios Point, a di tance of about thirty miles. Here it opens into a square basin about twelve miles i extent, with depths from eight to thirteen feet water, at the N. W. corner of which is a inlet called Lavacca Bay.

On the N. shore of the bay, about nineteen miles from Cany Creek, is the town o Matagorda.

Paso Cavallo. PASSO CAVALLO, at the E. end of Matagorda, is an opening about one mile and half in width, leading into Matagorda Bay. At the entrance of it is Pelican Islan which is low and sandy, and connected to the Eastern shore by a shallow bank th breaks, and which extends to the Southward upward of two miles from Pelican Islan and more than a mile in a S. E. direction from the light-house on Matagorda Islan leaving a channel to the Westward of it, less than one fourth of a mile wide, with a na row bar which carries eight and a half feet at high water. There are two buoys whic mark the channel, and a beacon to the S. E. of the light-house.

At the Eastern extremity of Matagorda Island, in lat. 28° 21′ N., long. 96° 24′ W is an iron tower, seventy-nine feet high striped with horizontal bands, white, black, an red; from which is exhibited, at the height of ninety-six feet above the sea, a white lig of the third order, that revolves every minute and a half, visible at sixteen miles.

Light.

Anchorage. If necessary to wait for a pilot, anchorage will be found in seven fathoms, with th light-house bearing W. N. W.

Aransas Pass. ARANSAS PASS, leading into an extensive bay or lagoon of that name, is forme between the N. E. end of Mustang and San José Island, and is about a fourth of a mil wide. The entrance of the pass is obstructed, at the distance of about a mile, by a ba of loose quicksand, which breaks, leaving a very narrow channel carrying five feet wa ter, with twenty-four and twenty-nine feet inside. The extremity of San José Island very low, but it rises into sand hills of some height. At about two and a half miles fro the point is the post village of Aransas, with a large wooden frame building, which visible from the sea, and a guide to the opening.

On a low island to the N. W. of the S. W. end of San José, in lat. 27° 53′ 30″ N., lon 97° 1′ 20″ W., is an octagonal frame fifty-five feet high, colored brown, which shows fixed white light of the fourth order, sixty feet above the mean level of the sea, visib at thirteen miles.

Light.

Directions. As stated before, the position of the Aransas Pass is pointed out by the large woode building, the masts of the shipping, and the high sand hills. In clear weather som lofty oak woods may also be seen at the back of the opening.

The current runs out with great velocity, the bar shifts with every gale, and it woul appear that stakes or poles are placed on the shore to direct vessels accordingly.

oceeding to the town, after passing the point, haul up to the Northward toward the point, leaving a long flat to the Westward. The anchorage outside is by no means fe.

The coast from the S. W. end of San José trends with a slight inward sweep about E. ¼ N., for forty-two miles, to the Paso Cavallo. It is low and composed of sand-ills from five to thirty feet high, being more elevated at the E. end than any other part the coast for sixty miles E. or W. of it, and partially clothed with bushes and grass. t the distance of about fourteen miles from the S. W. end of the island is a small shal-w cut called the Santo Pass, which separates San José from Matagorda Island. Be-ind the S. W. part of Matagorda Island is Antonio Bay, which is about fourteen miles ng, but very shallow. At the inner end of the bay is the entrance to Guadalupe River, hich is said to have a course nearly equal to that of Nueces, but by no means so uch water; and is only navigable for boats as far as Victoria, and twenty-five miles om the mouth. Inside the N. E. part of Matagorda is Espiritu Santo Bay, with six to ine feet of water, communicating with Antonio Bay.

CORPUS CHRISTI BAY, which forms the N. end of Madre lagoon, is about thirty iles in extent N. and S., and fifteen miles E. and W. On the bar at the entrance there e generally six feet water, and ten to twenty feet throughout the bay. *Corpus Christi Bay*

The River Nueces empties itself into the W. side of the bay, and is said to have a avigable course of about two hundred and fifty miles.

Upon a bluff at the S. side of the entrance of the river is the town of Corpus Christi.

BRAZOS SANTIAGO, about nine miles N. of the Rio Grande, is an opening about a ile wide; and the main drain of the Lagoon del Madre. It is obstructed by a bar of uicksand, which in the winter months has a depth of nine feet, and in the summer even feet. This variation appears to be due to the prevalence of northers at the ormer period; these winds banking up, as it were, the waters of the lagoon, which ushing out with increased violence over the bar, carries seaward the loose material of hich it is composed. *Brazos Santiago*

Being deeper and more easily accessible than either over the bar of Rio Grande r the Boca Chica, it may be considered as the main entrance to the former by the rm branching off from Matamoras; it also leads to the harbor of Isabel just within he lagoon.

On Isabel Point, the N. extreme of Brazos Island, which forms the S. side of the en-rance, is a white tower, twenty feet high, which exhibits a fixed light of the fifth order, orty-three feet above the mean level of the sea, visible at seven and one half miles. pposite to it, about a mile distant, on the S. end of Padre Island, in latitude 26° 6′ N., ongitude 97° 12′ W., is a square black frame of open wood-work, which has at the eight of thirty-five feet above the sea, a fixed white light of the fifth order, visible at en miles. *Lights.*

From Brazos Santiago to Paso Cavallo, at the entrance of Matagorda Bay, a dis-ance of one hundred and fifty miles, there is no distinguishing feature whatever along he coast. Vessels bound down the coast in the winter months should endeavor to make he land of Padre Island from ten to twelve miles N. of the Brazos, to which the light ower at Isabel is the only guide. The character of the bottom in this space is so little nown that the soundings are of no assistance whatever. In the event of being blown ff by the northers, which succeed each other at intervals from four to six days, and low with a violence rarely known in higher latitudes, navigators must rely entirely upon he sextant for their position. At this season a vessel has been known to be twenty-nine ays off the bar before she could get in. *Directions.*

Should the land be made to the Northward of the bar, the Madre lagoon at the back f Padre Island, will be seen from the mast-head, and the main land to the Westward ill be scarcely visible. If to the Southward, this will not be the case, and in running p the large houses on an eminence at the Boca Chica will be a guide. Here also the ater is of a muddy green color; and off the entrance of the openings it has the same ppearance as when approaching the Mississippi.

Between the months of March and September it would be better to make the land o the Southward, as the current, at this period, runs to the Northward two to three nots an hour.

From reliable information it appears that about twelve miles S. of the Rio Grande del Norte, the shore takes a S. W. direction for almost twenty-five miles or as far down as he entrance of the river San Fernando: and this curve gives a shelter, subject of course o the heavy rollers from the gulf, but safe from the break of the sea. Some to whom his fact is known, have in great stress of weather found shelter here; and a vessel, after riding out a norther, though in a crippled condition, succeeded in landing her passengers during its height.

The following signals are communicated from a staff at the entrance of the Brazos Santiago: *Signals.*

A white flag denotes that the bar is dangerous.

A red flag demands the vessel's draught of water, which is replied to by hoisting a flag the number of times agreeing to the number of feet she draws.

A blue flag indicates that a pilot is coming out; or that the vessel draws too much water, and will have to lighten.

A white flag above a red one directs a vessel to anchor in four or five fathoms, when a lighter will be sent to her immediately.

A white flag above a blue one directs a vessel to haul off for the night; it being too late to enter, and that she will be attended to in the morning.

A vessel appearing off the harbor in distress will be promptly assisted on her making the usual signal for that purpose: the ensign union downward.

Coast. The coast from the bar of Corpus Christi to the Brazos Santiago runs about S. by E. ninety miles, forming the E. side of Padre Island, which is from two to three miles in breadth; it is everywhere low, and presents no remarkable feature whatever. At the back of it is the Madre lagoon, which is only navigable for flat-bottomed boats; and these are frequently left dry for some time after northers.

Soundings appear to extend out at least twenty-five miles, where there are eighteen to twenty-five fathoms on sand and shells; but all this part is still imperfectly known.

From the opening into Corpus Christi Bay the coast takes a N. E. by N. direction about twenty-three miles, forming the S. E. side of Mustang Island. For about twenty miles it is composed of barren sand hills, the remaining three or four miles of the N. E. end of the island being low. Near the latter extreme, on the W. side of the island, is the post-village of Mustang, with its custom-house.

The Boca Chica. THE BOCA CHICA, which is N. N. W. about four miles from the Rio Grande, is the Southern outlet of the Laguna del Madre, and has a bar of four feet water; the entrance is pointed out by a large building on an eminence near it.

The Rio Grande. THE RIO GRANDE DEL NORTE (the Southern boundary of the United States) empties itself over a bar of shifting quicksand, which has an average depth of only four feet. The least depth in the channel at low water spring tides is three and three fourths feet, and at high water five feet. The highest tides occur when the moon has its greatest declination.

GULF OF MEXICO—CAPE CATOCHE TO THE RIO GRANDE DEL NORTE.

The shores of the Gulf of Mexico, from Cape Catoche to the Rio Grande del Norte, a distance of upward of one thousand one hundred miles, are so devoid of shelter that only one harbor presents itself capable of receiving vessels of eighteen and a half feet draught. The sea boundaries of the provinces about to be described are those of Yucatan, Tabasco, Vera Cruz, and Tamaulipas, which form the Southern boundary of the Gulf.

Yucatan. YUCATAN, the shores of which form the Southeastern boundary of the Gulf, extends from the Rio Hondo, on the E., to the Usumacinta or Rio Palizada, which empties itself into the S. W. end of the Laguna de Terminos on the W. The Northern portion of this peninsula, from the base of the table lands of Guatemala on the parallel of about 19° N. lat., is an arid, scantily-wooded, sandy plain, elevated only a few feet above the sea, and so dry that the inhabitants have to depend on rainwater caught in tanks and reservoirs.

Water. Water may, however, be obtained by digging wells on the shore, but it is not considered wholesome. At Yalahau and Silan, on the N. E. coast, are some most remarkable springs, which will be pointed out further on.

Winds and Seasons. The wet and dry seasons are distinctly marked, as elsewhere on this sea, but the N. shore being so far removed from the influence of the high lands of the isthmus, the rains are here somewhat less violent, and do not commence before June, and droughts occur.

In the dry season, off the N. E. end of the peninsula, there is a continued heavy deposition of dew, both day and night, producing a disagreeable feeling of chill. Sometimes it is so dense as to resemble fog, and prevent a boat being seen beyond half a mile, and on these occasions the temperature of the surface water will be ten degrees below that of the air.

At this period the sea breeze sets gradually in from the N. E. at about ten A. M., and at twelve it is blowing fresh. Between four P. M. and sunset it draws round to the Eastward, and at midnight the land wind is blowing moderately from the S. E. These changes frequently extend to a distance of forty miles from the land. In the month of June, however, within eight or nine miles of the coast, the land wind will rush off in a sudden heavy squall in the afternoon, but it seldom lasts long. Calms are scarcely ever seen in these months.

Off the N. W. end and W. side of the peninsula, from about ten A. M. to two P. M., the interval of the change from the land to the sea breeze, the wind falls gradually to

nearly a calm, and as gradually springs up again from the N., and at about three P. M. is established at N. E. At midnight the breeze slackens, and shortly after the land wind comes off from the Eastward. At about four it is fresh from the E. S. E., and so continues until about ten A. M., when it gradually subsides as above. It may be observed, however, that as the Western shore is approached, the sea breeze sets in to the Westward of N., and the land wind settles at S. E.

It is remarkable that the barometer will fall nearly a tenth of an inch as the sea breeze sets in, and rise to its usual level with the land wind, although sometimes the latter blows the strongest.

Off Campeché the land wind will sometimes blow fresh, and in heavy squalls from S. E. to S. W. until eleven A. M.; it then gradually lulls, and drawing round to the Westward meets the sea breeze coming in from the N. W. at about one P. M. In the middle of April these changes may be interrupted for twenty-four hours by a strong Westerly wind and heavy rain.

Off the N. shore northers may be met with as late as the middle of April, but they seldom occur after March, and their force is then considerably diminished. On these occasions, two days previously, the barometer will begin to fall, and sink two tenths below its former level as the change approaches; the wind falls light from the E. S. E., the atmosphere becomes dense and exceedingly moist, the scud low and flying, and the upper clouds run rapidly to the N. W. A few hours before the change heavy masses of dark clouds appear to the Westward, and the wind rushes down from that quarter with the strength of a treble-reefed topsail breeze, accompanied with rain, thunder, and lightning. Immediately after the first squall the barometer will rise rapidly even to three tenths of an inch above its previous level, although the wind may not fall and draw round to the usual direction for a couple of days.

This change is often followed by a dense fog for two or three hours after noon, when objects are scarcely visible a mile off.

Tides and Currents.

As a general remark, on the shore of Yucatan and at the outlying islands and banks, it is high water at about noon, and low water at eleven P. M., and the rise is from one to two feet. It frequenty happens, however, that the level of the sea remains stationary for some days, probably dependent upon the strength of the wind and current; during northers it remains at its lowest point.

Between Contoy and the Corsario Banks the ebb runs so strong to the Eastward as to overcome the general current by a knot an hour. In the month of June it will reach out as far as forty-five miles to the Northwestward of Cape Catoche, and to near the Eastern edge of the bank, which will greatly assist a vessel working to windward.

To the Westward of the Yalahau Lagoon there is no tidal wave; but at Campeché the flood runs strong to the Northward to the distance of six or seven miles from the shore, and the ebb feebly to the S. W.

It may be useful to repeat that from Cape Catoche to Sisal, and to the distance of about forty miles from the coast, the set is Westerly from a half to a knot an hour. Outside this line it takes a Northwesterly direction, and becomes more feeble as it approaches the edge of the bank, where it is almost entirely lost.

Off the W. side of the peninsula, there is seldom any stream whatever outside the tidal limits.

Catoche Shoals.

CATOCHE SHOALS.—From Cape Catoche the shore of Jolvos Island, trends Westerly with a slight bend fifteen miles to Francisca Point, and then S. W. five miles to Palmas Point, the W. end of the island. From the Bocas de Jonjon to the latter point, a distance of twenty-three miles, the shore is skirted by many sand and coral ridges, some of which, being covered with red and green kelpweed, give their tinge to the water, and point them out. They extend out eight miles abreast Cape Catoche, and have from three to four fathoms water, with four and three fourths between, and six fathoms outside them. From Francisca Point they run off to the Northward ten miles, with only two and a half fathoms, and terminate N. N. W., five miles from that point, in as little as nine feet water.

These are probably the Corsario Shoals of the old charts, and the rock said to have been seen in 1789; also that reported by the Grecian off the N. end of Contoy, as that part has been thoroughly explored. In passing this part of the coast, a vessel should not come within the depth of ten fathoms, which lies only from one to two miles outside the shoals.

Yalahau Lagoon.

YALAHAU LAGOON.—Between Jolvos Island and the main is the Yalahau Lagoon, which is seventeen miles in length E. and W., and about four in breadth. At the W. end on the main, S. by W., about two miles and three fourths from the W. end of Jolvos, there is a scattered village, which contains about two hundred inhabitants; at the E. end of it there are the remains of a small fort.

Water.

Near the above ruins, and not far from the beach, there is a remarkable spring of excellent water, which issues with great force at all periods. Two or three small rivulets also empty themselves into the Eastern part of the lagoon, which together throw up an

extensive bar across the opening between the W. end of Jolvos and the main, called the Bocas de Conil, on which there are not more than three or four feet water.

Anchorage. There is very good anchorage outside the bar in four fathoms, with Francisca Point, which forms the N. W. extreme of Jolvos, E. by S., and the village S. S. E. ½ E., about eight miles distant, which, however, will be scarcely visible from the deck of a frigate. Some trouble should be taken to bring up on this latter line, as it guides a boat over the deepest part of the bar.

Caution. In approaching the above anchorage from the Eastward, very great caution must be observed, and more than ordinary attention paid to the lead, for there is nothing whatever remarkable on the shore to guide a stranger. The most safe way is to make the land well to the Westward and sight the Monte de Cuyo, and beat up, standing in to four fathoms until the white buildings in the village are sighted from the mast-head.

Coast. The coast from Yalahau trends Westerly sixteen miles to the Monte de Cuyo. At about two miles from Yalahau village there is a large grove of trees, ninety feet high; and four miles further to the Westward there is another still more elevated and conspicuous. Thence to the Monte lofty trees disappear, and the low sandy shore is scantily clothed with brushwood.

On the W. side of the last grove a small stream enters the sea, and on the W. side of the entrance is the rancho of Chipepte; but the huts are not seen more than three or four miles off. From the Monte de Cuyo, the coast trends W. by N. fifteen miles, where are seen two or three huts, and thence W. another fifteen miles to Rio Lagartos. It is all along low, sandy, and clothed with dwarf palmetto-trees, and presents no remarkable object whatever, until eight or nine miles Eastward of the Lagartos. Here it becomes more wooded; and five miles further to the Westward will be seen through a grove of cocoa-nut trees the vigia and village of Lagartos. Between the mount and the huts the soundings are regular to a depth of four fathoms; but from the huts to the Lagartos the depths are very irregular, and it is not advisable to come within the five-fathom line.

Monte de Cuyo. MONTE DE CUYO (Lovers' Hill) is a small but remarkable conical hill, about forty feet high, covered with brushwood; it stands close to the beach, and is supposed to be an ancient tumulus. Abreast it there is a landing place and a few huts, whence is shipped the produce of the interior, and more conveniently than off Yalahau.

Anchorage. Anchorage will be found abreast the above huts in four fathoms, about two miles from the shore.

Rio Lagartos or Miorsinic. RIO LAGARTOS OR MIORSINIC.—From abreast the vigia of Lagartos the shore bends slightly to the S. of W. to the entrance of the river, which is difficult to discover as it opens to the Eastward. Although called a river, this place is a lagoon, navigable for canoes, about ten miles in length E. and W., and from two to two and a half miles in breadth. The village is situated on the narrow ridge of land that bounds the N. side of the basin. On the S. shore are some cultivated salt ponds, the produce of which is conveyed in large bongos to Sisal; the bar, however, is so shallow that they are obliged to load outside.

Vigias. VIGIAS.—The vigia or lookout place at the village, as well as those we shall have occasion to notice hereafter, is an open square frame, built of large timber to the height of forty or fifty feet above the sea. Some are strengthened by two cross frames which form open doors, communicating by a ladder at one of the sides; and they are the most, if not the only remarkable objects on this shore.

Coast. The coast from the Lagartos Lagoon to Yalkubu Point, twenty-two miles distant, trends W. by S. The land in this space becomes more firm, and is more elevated than any other part of this shore. About six miles to the Eastward of Yalkubu Point the tops of the trees are one hundred and seventy feet above the sea. At the point there is a rancho of two or three huts; but they are difficult to discover among the trees.

From the rancho the shore bends to the S. W. for about thirteen miles to Arenas Point, forming a foul bight, which should not be approached within the depth of five fathoms, and even then with very great attention to the lead. On the E. side of Arenas Point is the entrance of a large swamp; and from the point the shore trends W. by S. six miles to the village of Silan, which, although surrounded with trees, is discovered by its vigia.

Water. There is here another of those remarkable springs which rises in the sea, a short distance from the shore, and is conveyed to the surface through a large trunk of a tree, hollowed out and placed over it. It is, of course, a little brackish, but, nevertheless, made use of in seasons of drought.

Anchorage. There is very good anchorage about four and a half miles from the shore, in four fathoms with the village of Silan E. by S., and the vigia of Sta. Clara S. W. ½ S.

The coast from Silan to the rancho of Kopte, distant fifty-five miles, runs W. by S. ½ S., and presents an unvaried feature of low sandy shore, slightly wooded, with here and there a copse about thirty feet high, and is all along backed by swampy ground. There are, however, several vigias and ranches in this space, whence scanty supplies of stock and vegetables may be procured.

About seven miles to the Westward of Silan is Sta. Clara, and is known by a single hut and a vigia, the latter, rising above the neighboring trees, is somewhat conspicuous; and about four miles farther on is Sinanché, distinguished by a solitary hut on the beach. *Sta. Clara.*

At eight miles to the Westward of Sinanché is Telchaac, which is discovered by ten or twelve huts on a low barren sand ridge. There is a good road between this place and Merida, the capital of the province. To the Westward of Telchaac, nine and a half miles, is a vigia and a rancho of five huts, in a grove of cocoa-nut trees, named Ixil.

At five and a half miles farther on, is a rancho of ten huts, also surrounded by cocoa-nut trees, near the beach, called Huai Mitun: and about seven miles more to the Westward is the village of Tuxulu or Chixulub, near which are four cocoa-nut trees, with a remarkable grove of large trees at the back, eighty feet high. About two miles farther on is the rancho of Yax-actun, which contains the only large wooden building on this part of the coast, and points it out at once. To the Westward of this the coast becomes more wooded, and two and three fourths miles from Yax-actun, is a rancho of two huts, named Chelem. About two miles from there is San Andres, which has only one hut on the top of a sand bank; and a little beyond it is a remarkable clump of trees.

Continuing to the Westward, at three and a half miles is the village of Chuburnà, readily discovered by the vigia near it, which has a small round-topped hut within the lower part of the frame.

At two and a half miles from the vigia of Chuburnà is the rancho of Cheventun, of six huts, and one mile and a half farther on is that of Kopte, which has a single cocoa-nut tree near it. In this neighborhood the groves of trees become more lofty, and reach a height of about eighty feet above the sea. When abreast of Kopte, the town and fort at Sisal may be seen, which is ten and a half miles distant. From Silan to Sisal the soundings are regular, and the shore may be approached in safety by attention to the lead, observing that the depths will decrease very rapidly within the five-fathom line, which runs along at the distance of about five to seven miles from the coast.

From a height of twelve feet, the tops of the trees may generally be seen at ten miles.

SISAL is the principal, indeed, the only place of trade on the N. coast, and is the port of entry of Mérida, the capital, which is thirty-three miles S. of it. It is situated on the beach, and contains about seven hundred and fifty inhabitants. In front of it a strong substantial wooden pier, twenty-five feet wide, runs out into the sea two hundred and fifty feet, which enables boats to land with ease and unload, until the full strength of the sea breeze sets in. At the inner end of the pier, on the W. side, the landing is protected by a small semi-circular water battery of three guns, which is commanded by a square fort at the back of it, generally called the castle. The entrance to the latter is on the S. side, about halfway up the wall, and on the N. parapet are two guns. *Sisal.*

The walls of the castle are thirty feet high, and within them is a tower, from which is exhibited a fixed light, about sixty feet above the level of the sea, in lat. 21° 10′ N., long. 90° 3′ W., visible at ten miles. *Light.*

There is a public well near the inner end of the wharf, but the water is only used for cattle and washing; rainwater, caught in tanks, supplies the inhabitants, and there is seldom any to spare. Poultry is abundant, but the beef is very inferior and scarcely eatable. Vegetables are very scarce. Firewood may be purchased, and it will be better to have it brought on board in the native bongos. *Supplies.*

The most convenient anchorage lies with the castle bearing S. E. by S., choosing the depth according to the draught of the vessel, observing that the soundings are regular to three fathoms about one mile and a fourth from the shore. *Anchorage.*

The arming of the lead will show a bottom of sand and clay, but it is only a thin layer over a flat rock. The holding ground is, therefore, very bad, and it is necessary to cockbill the anchor and ease it down with a long stopper, otherwise the flukes will most certainly be broken. This warning applies to all the anchorages on the N. coast except at Contoy. *Caution.*

Observe, also, that after the sea breeze has set in, which occurs about noon, communication with the shore is extremely difficult and inconvenient.

SISAL SHOAL is a coral bank, three fourths of a mile long, N. and S., and half a mile broad, which lies N. W. ¾ N., twelve and a half miles from Sisal Fort. Former navigators give a cross bearing from the shoal to the hill of No te Perderas, but the remarkable clump of trees which formed this object has been destroyed by insects. At the S. end of the shoal there is a small spot of only nine feet water, with four fathoms close around it, and six fathoms one and a half cables' length to the S. and W. For about three fourths of a mile to the Eastward of it there are small patches of four and a half fathoms water with six and seven fathoms between. At about three cables' length *Sisal Shoal.*

to the Northward of it there is another patch of two and a half fathoms, with three and four fathoms between the two.

If pursuing an inshore route, with Sisal in sight, a depth of less than six fathoms will avoid this shoal. There are six, seven, and eight fathoms E. and W. of it for six miles on either side, and nine and ten fathoms at a fourth of a mile to the Northward of it, and the soundings give no warning in this direction.

The discolored water over the shoal may be seen from aloft in favorable weather.

Madagascar Reef. MADAGASCAR REEF, so called from her majesty's frigate of that name having grounded on it in 1837, lies N. W. by W. ½ W., nine and a half miles from the Sisal Shoal, and N. W. ¼ W. twenty-one and a half miles from Sisal Fort, and the centre is in lat. 21° 26½′ N., long. 90° 19′ W. This most dangerous ledge of coral is one and a fourth miles in length E. and W., but only one hundred feet in breadth, which will account for its having remained so long unknown in a part so generally traversed from E. to W. On the E. end of it there are twelve feet water, and on the W. end only nine feet, with seventeen and eighteen feet between. Off the N., E., and W. sides there are twelve fathoms close along side. Off the S. side, and between it and the Sisal Shoal, there are regular depths of ten and eleven fathoms on sand and coral. Being covered with sea-weed of the same color as the water and not breaking, it is not discovered by the eye; a vessel should, therefore, never attempt to pass between it and the Sisal Shoal, without the latter has been first seen; and in approaching it from the E., N., or W., she should not come into less than fifteen fathoms:

Snake Rock. SNAKE ROCK.—On searching for the above shoal, in her majesty's brig Snake, a single cast of four fathoms was said to have been obtained in the position noted on the chart, eight miles to the Westward of it, but it could not be found again, although a very close examination was made for several miles round by Captain Barnet, when surveying the Madagascar.*

Coast. The coast, from Sisal to Piedras Point, four miles distant, trends W. by S. ½ S. whence it runs S. W. sixteen miles to Palmas or Desconocida Point, which forms the N. W. extreme of the Yucatan Peninsula. From this point it curves to the S. S. W. for ten miles to Celestun, and then S. sixty-two miles to Campeché.

Between Sisal and Celestun the features are precisely of the same character as before, being composed of low sand-banks, scantily clothed with bushes and dwarf palmettos, with here and there a copse from fifty to eighty feet high. It is all along bounded by a white sandy beach, and is so even that it is difficult to trace out either Piedras or Palma Point. As stated before, the remarkable clump of trees about six miles to the Westward of Sisal, named No te Perderas, no longer exists.

The soundings in this space, within the depth of five fathoms, are irregular and suspicious. With the castle at Sisal bearing E. S. E., distant six and a half miles there is a small patch of coral of only twenty feet on the five fathom line, which should be avoided by not coming into less than six fathoms until it is passed.

W. ½ S. sixteen and a half miles from Celestun there is also a sand ledge, with four and a half fathoms over it and six fathoms around. From the entrance of the Salinas to the Southward of Celestun the shore is low and swampy, and skirted by mangroves, for a distance of twenty-five miles, when it becomes more firm and the trees more lofty.

After passing the litttle rocky islet, thirty feet high, off Piedras Point, twenty-three miles from Campeché small settlements will be met with. At about seven and a half miles from Campeché the mangroves form a distinct point, whence the shore curves to the Eastward, and forms a slight bay, the S. part of which is bounded by the first elevated land seen on this side of the peninsula, and which is from one hundred and eighty to two hundred feet above the sea. Any further minute description of the Western coast would be quite useless to general navigation, for the shallowness of the water prevents vessels of even light draught from sighting the land to the Northward of Campeché.

Celestun. CELESTUN is a small village of about twenty huts, standing in a grove of cocoa-nut trees near the beach. At about five and a half miles to the Southward of it is an opening leading to extensive cultivated salt ponds, which, with those at Lagartos, yield sufficient to supply not only Yucatan, but Mexico with that article. Near the landing at the village of Celestun there is a well of good water, which, however, affords but a scanty supply in the dry season. Firewood may be procured in small quantities on the beach, a short distance to the Southward of the village.

Campeché. CAMPECHE is the second city in importance of the province of Yucatan, and, with its extensive suburbs, contains a little upward of fifteen thousand inhabitants. It

* To show the dangerous character of the Madagascar Reef, it may be stated that the Snake, accompanied by a buoy boat, was sent to examine it, and recover the guns which had been left upon it by the Madagascar, but although near to it, having lost all her anchors in the attempt, she was obliged to leave without accomplishing her object. The shoal was afterwards found by Captain Barnet, by means of a line of beacons carried out from Sisal.

stands on the shore, enclosed at the back by a small amphitheatre of hills; and at the distance of one mile and a fourth to the N. E. is overlooked by Fort San José, and at one mile and three fourths to the S. W. by Fort San Miguel.

It is walled in and entered by four gates, and the main road along the shore from Lerma is guarded by Fort San Luis, which is directly beneath Fort San Miguel. From the sea gate a large substantial wharf runs out about one hundred and fifty feet, but the water at the extremity is still so shallow that heavily-laden boats cannot lie alongside with unusually low tides, and vessels drawing more than ten feet water cannot come abreast the town.

There are a few springs in the town, but the water is not good, and the inhabitants depend upon that which is collected in tanks during the rainy season. Vessels requiring a supply will find a well conveniently situated at the Soler cattle farm on the high road, about a mile to the Eastward of Lerma. *Supplies.*

The market is held between day-dawn and eight A. M., and is well furnished with stock and vegetables.

In approaching Campeché from the North, after rounding Palmas Point, the lead will guide, and by keeping in five or four and three fourths fathoms, the ridge of hills at the back of the town will be sighted at the distance of about fourteen miles on an E. S. E. bearing. The city lying so low is not seen at more than nine or ten miles, and not even at this distance without the sun shines on the cupolas of the churches. *Directions.*

Should the land be made from a greater depth, the first remarkable object seen will be the vigia (not, however, without the aid of a glass), which stands on the highest part of the ridge, three hundred and twenty feet above the sea, S. W. three miles from the city, and one mile and a half to the N. E. of Lerma. Having brought the vigia to bear E., it should be steered for, and anchorage taken up as most convenient to the draught of the vessel, with the cathedral E. N. E., which will enable the boats to sail to and fro with the sea breeze.

In fine weather a vessel drawing thirteen feet may go to within four and a fourth miles of the town, by bringing the Eastern cathedral to bear E. ½ N., and Lerma church, S. S. E. ½ E.

The coast from Campeché to Morros Point trends S. W. nine miles, and runs along the base of the ridge of hills, which at the latter point forms a bold wooded headland of some extent, four hundred and twenty-three feet above the sea. On the summit of it there is a little hillock, which is a remarkable object from the Southward, but not so from a Westerly direction. About five and a half miles to the Southward of Morros Point, is the Morro de Paypoton, which is pointed out by a small village on the shore with a large church in it, similar in appearance to that at Lerma. *Coast.*

LERMA.—At about four miles from Campeché, on the shore, is the village of Lerma, which contains some three or four hundred inhabitants, chiefly fishermen. It is readily distinguished at a considerable distance by the large white church which stands in the centre of it, especially when the sun shines on it from the Westward. Landing may be effected here at almost all times, with a little care; the best spot is just to the Southward of an old dilapidated fort a short distance from the church, but it is necessary to anchor the boat and back her on to the beach, as there is generally a heavy surf with the sea-breeze. *Lerma.*

There are some wells in the above village, but the supply is very small in the dry season. The best water will be found at the cattle farm before mentioned, a mile to the Eastward of the church. *Water.*

To the Southward of Lerma the shore becomes more bold, and may be approached with more confidence by proper attention to the lead. A vessel of eighteen feet draught may take up good anchorage, about three miles from Morros headland, with the Morro de Paypoton or Seiba in line with a remarkable hill on the distant land E. by S. ¾ S., and the cathedral of Campeché just open of Lerma. *Anchorage.*

YUCATAN BANK.—The N. and W. sides of the Yucatan peninsula are skirted by a bank, which gradually increasing in depth from the coast reaches its N. E. extreme in lat. 23° 28′ N., long. 87° 12′ W., N. by W. ½ W. one hundred and seventeen miles from Contoy; the eastern edge abreast that island being about eighteen miles distant. *Yucatan Bank.*

From the N. E. extreme the edge runs W. one hundred miles, but a slight projection reaches its Northern extremity in lat. 23° 50′ N. on the meridian of 88° W. From the end of the W. line it trends with only a very slight inward curve S. W. by W. two hundred and twenty miles to the N. W. extreme, in lat. 22° 5′ N., long. 92° 17′ W., W. N. W. one hundred and twenty-seven miles from that end of the peninsula. From this point the Western edge takes a Southerly direction for about seventy miles, and then runs S. S. W. to the parallel, and within eighty miles of Campeché; beyond this point we have no accurate knowledge of its limits.

It has hitherto been stated that the depths as well as the quality of the bottom are so very irregular that it is not possible to ascertain the situation of a vessel by the lead with any degree of certainty. A single glance at the present chart, however, will show

quite the contrary, and that the lead alone, properly attended to, will insure safe navigation.

Off the N. coast from the Bocas de Conil to Palmas Point, the five-fathom line is from five to seven miles distant; the ten-fathom from twelve to eighteen miles; the twenty-fathom from thirty-two to thirty-eight miles; and the thirty-fathom from sixty to eighty miles.

Off the W. coast, from Palmas Point to Campeché, the five-fathom line is from eight to eighteen miles off; the ten-fathom twenty to thirty-five miles; the twenty-fathom is sixty miles W. N. W. of Palmas Point, and then runs along at about the same distance; and the thirty-fathom runs along at only a few miles from the edge of soundings.

It is very remarkable that the outer dangers lie on the outer edge of the thirty-fathom line, and that beyond them the depth suddenly increased to forty fathoms and upwards.

Northern Shelves. NORTHERN SHELVES.—On the Northeastern part, however, as far to the Westward as the Alacran Bank, a space of one hundred and fifty miles, the depths gradually increase outward from the thirty to the fifty-fathom line, which is only a very short distance from the N. and E. edges. The only variation occurs at the N. extreme of the bank, between the meridians of 38° 40′ and 89° W. long., where there are two coral patches, with very irregular depths over discolored water, with as little as eleven fathoms, which may serve as good points of departure. The bottom elsewhere is chiefly sand, shells, and coral, but the first two are probably only a very thin covering to the coral, for the holding ground is not good.

A remarkable feature at this part is the sudden change of color in the water, as pointed out on the chart; but we cannot affirm that these spots are stationary.

Fishing. We would also invite the attention of the mariner to the fishing grounds pointed out, which would amply repay a couple of hours' delay by an abundant supply of the finest rock fish and red snappers; wherever the bottom is coral and shells, or seaweed, success is almost certain.

Alacran. ALACRAN, the Northeasternmost danger on the Yucatan Bank, lies N. ½ E., seventy-three miles from the Sisal Fort; and Perez Island, which is a mile from the S. end of the reef, is in lat. 22° 23′ 30″ N., long. 89° 42′ 15″ W.

Its general form is that of a half moon, convex to the N. E., its straight face trending N. W. by N. fourteen miles, and at its greatest breadth it is about eight miles in extent. The weather, or N. E. side is composed of a compact mass of coral, dry in many places, over which, on all parts, the sea breaks with terrific violence. The lee-side, similar to all reefs of this character in these seas, is composed of detached coral heads with some dry sand bores and deep water between, which are easily seen.

At the S. E. extreme of the reef there are three small sandy cays about five feet high, clothed with grass and brushwood. Pajaros and Chica lie only a fourth of a mile apart, and the former is four cables' length from the extremity of the reef. Perez, the other, lies nearly a mile and a fourth to the Westward of Chica, and is a narrow ridge of sand about half a mile long, N. E. and S. W. There are generally some fishermen's huts on the N. E. end of Perez, the tops of which are eleven or twelve feet above the sea.

Between Perez and the other cays there is an excellent reef harbor for small vessels and steamers, into which four fathoms may be carried, but the pilotage must be conducted entirely by the eye.

N. W., three miles from Perez, there is a small cay, also pointed out by a hut; and the same distance to the Southward of the N. W. end of the reef, there is another islet, ten feet high.

The bank is everywhere so steep to that there is no safe anchorage for a large vessel, not even on the lee-side, and the only clean landing place is on the inner side of Perez Cay.

Caution. The approach to this shoal, when working to windward, requires more than ordinary attention, as the soundings near it do not give sufficient warning. As already stated, the N. end lies on the edge of the thirty-fathom line, but there are forty fathoms only two miles distant. This end should, therefore, be carefully avoided during the night, more especially as a patch of four fathoms is said to lie four miles from the reef, which, however, was not found during the survey by her majesty's ships.

In standing toward it from the Eastward on the parallel of its centre, for a distance of thirty miles, the depths will be thirty to thirty-three fathoms, on fine gray sand, close up to the breakers. From the S. E. round Southerly to S. W., at eighteen miles the depths will be twenty-seven to twenty-nine fathoms close up to it. In beating up inside it, a vessel will have an excellent guide in the twenty-fathom line, which lies thirty-two miles S. of it, from which she may take a safe departure. In running down inside, should the latitude be uncertain, it will be better to keep in not more than twenty-five fathoms, which will be found seventeen miles off.

CAY ARENAS.—This islet and the rocks and shoals about it occupy a space of two miles E. and W., and a mile and one fourth N. and S. The Eastern extremity is composed of a detached solid barrier reef, convex to the N. E., a little more than a mile long N. W. and S. E., and half a mile across in its widest part. At the S. E. end of it is a heap of broken coral, thrown up to the height of about seven feet above the sea. The N. W. end lies N. E. by N., about half a mile from Arenas Cay, and the opening between carries eight to twelve fathoms. *Cay Arenas.*

About two cables' length from the S. E. end is a narrow detached ledge, nearly dry, about three and a half cables long, N. and S., and three cables to the Westward of it lies another with two and a half to three and one fourth fathoms water, the W. end of which lies N. N. W. ½ W., a large half mile from Cay Arenas; in this opening the depths are also eight to twelve fathoms.

Arenas Cay lies on the S. E. end of a detached coral reef, also convex to the N. E., about three fourths of a mile in extent. It is a cable and a half long, N. and S., and about a cable in breadth, covered with grass; at its S. E. end a wall of bleached blocks of coral has been thrown up by the waves to the height of eighteen feet above the sea, visible at eight or nine miles. In the months of April and May the cay is covered with birds and seals. There is a good landing-place on the beach on its N. W. side, in lat. 22° 7′ 10″ N., long. 91° 24′ 54″ W.

To the Eastward of Arenas, to the distance of thirty miles, and just to the Southward of the thirty-fathom line, is a remarkable narrow ledge of coral, with general depths from twenty-two to twenty-six fathoms, and twenty-seven to thirty-five fathoms close to the Southward of it. E. N. E., nineteen miles from the Arenas, there is upon it a patch of only sixteen fathoms.

A snug anchorage for small vessels will be found within the forks of the reef off the N. W. side of Arenas Cay, and there is good shelter in from seven to ten fathoms between the cay and the E. reef, but the holding ground is not good. The entrances to the latter are so clearly pointed out on the plan as to require no explanation. *Anchorage.*

These shoals lie within twelve miles of the edge of soundings, and are so steep to that the lead will give no warning in the night. In the daytime they may be freely approached, as the cay is visible at eight or nine miles. The nearest edge of the twenty-fathom line is thirty-six miles S. E. of it. *Caution.*

BAJO NUEVO is the Northwesternmost and smallest of these outlying reefs, and lies eighteen miles from the extremity of the bank, in lat. 21° 50′ N., long. 92° 5′ W. It is about three cables in diameter, and near the centre is a small heap of sand, large blocks of bleached coral, and small beads of red coral, four feet above the sea, and about one hundred and twenty feet in extent. In 1838, a portion of the coral stones was piled up to the height of twelve feet, and a stout spar with a cask on the top placed upon it, twenty-five feet above the sea. The early Spanish navigators state that there was on the reef only a small head of sand, which showed itself at low water; and they placed it eight and a half miles farther to the Eastward. The reef breaks all around; but after a long interval of fine weather, landing may be effected on the cay through a cut on the S. side. From the N. side a coral ledge runs off in that direction nearly half a mile, with depths from three to ten fathoms at the end, elsewhere it is steep to. *Bajo Nuevo.*

ENGLISH BANKS.—E. S. E., five miles from Bajo Nuevo Cay is the W. end of two banks of coral and sand, only separated by a very narrow vein of twenty-one fathoms water, the E. end of which is thirteen miles from the cay. The E. bank is about six miles long N. and S., and three and a half in breadth, with depths from eleven to nineteen fathoms. The W. bank is five miles in length E. and W., and three miles in breadth, with generally the same depths; but at the N. end, with the Nuevo Cay bearing W. by N. eight and a half miles, there are only five fathoms, upon which the discolored water is easily seen. *English Banks.*

The English Banks are safe warnings in approaching the Bajo Nuevo from the Eastward, but from other quarters the reef is very dangerous. The twenty-fathom line is thirty-five miles E. S. E. of the banks, and there are twenty-six to twenty-eight fathoms over white sand close up to them. *Caution.*

The TRIANGLES are two coral reefs, separated by a clear space six miles wide, with depths from twenty to twenty-eight fathoms over coral and gray sand. *The Triangles.*

The Western reef is only about three and a half cables in length, and upon its S. W. end is a cay about a cable in extent, composed of sand and white coral stones, which form a wall on the E. side, eleven feet above the sea, steep to. In 1838, a similar beacon to that on the Bajo Nuevo was raised upon it, the cask of which is thirty feet above the sea, and in lat. 20° 58′ N., long. 92° 19′ 30″ W., eight miles from the edge of soundings, and S. ½ W. fifty-four miles from Bajo Nuevo.

A very narrow coral ledge extends out to the N. E. two and three fourths miles from the above reef, with depths from six to nine fathoms; and a mile and one fourth farther out, another ledge extends in the same direction one mile and a half, with seven fathoms, which is so narrow, that in standing across it there is barely time for a second cast of the lead.

The Eastern reef is nearly dry, and extends N. E. and S. W. three miles, and is nearly half a mile in breadth. It will be observed that the shape of this reef is a remarkable exception to all others in these seas, for instead of being convex to the N. E., it runs straight in that direction.

Very near the middle, however, there is a cut two cables wide, with depths of from seven to ten fathoms, so that it may be described as two reefs.

At the S. W. end of the N. E. portion, on the edge of the cut, is a cay of coral stones a cable in length, half a cable broad, and seventeen feet high, with a heap of the stones upon it, twenty-four feet above the sea.

There is tolerable landing at a sandy point on the N. W. side of the cay, with the land and sea breezes. At a fourth of a mile N. E. of the above, there is a small, low sandy islet.

On the S. W. portion there are three or four dry rocks, and at the extreme end a sand bore three feet above the sea. A narrow coral ledge extends out from both extremities on the line of the reef, which stretches to the N. E. a mile, carrying nine to fourteen fathoms, and to the S. W. three fourths of a mile, with from five to eight fathoms.

Caution. The soundings to the N., S., and E. of these dangers for a considerable distance are so regular as to give no warning; but from the S. W., at the distance of about eight miles, they will suddenly decrease from upward of forty to twenty-seven fathoms on mud. To the Westward there are thirty to forty fathoms within a mile of the N. W. cay. There is very little or no current in this neighborhood.

Obispo Shoals. OBISPO SHOALS.—These two most dangerous ledges of coral and sand lie on the very edge of soundings, and occupy a straight line, five miles in extent, N. by E. and S. by W, and half a mile broad, leaving a space midway between them, one mile and a half wide, with twenty-eight fathoms water. The general depths on both are from four to ten fathoms; but on the middle of the Northern ledge there is a patch of eighteen feet water; and three miles from it, at the N. end of the Southern ledge, there is a still more dangerous spot of sixteen feet water.

The Northern spot lies in lat. 20° 29′ N., long. 92° 14′ W., S. ¾ E. twenty-six miles from the beacon on the East Triangle, and N. W. ¼ W. twenty-one miles from the sand-hill at the Arcas. Neither of them breaks, but the discolored water over them may be seen at the distance of half a mile.

Caution. As usual, with all these dangers, the soundings give no immediate warning from the Eastward, and twenty-seven and twenty-nine fathoms will be carried right up to them. From the Westward they are still more dangerous, for there are eighty fathoms two miles off, and upward of thirty-five fathoms half a mile from the S. end.

Arcas Cays. ARCAS CAYS, the Southernmost on the bank, are a group of three islets, which, with their reefs, occupy a space two and a fourth miles in length N. W. and S. E., and one mile and a half in breadth.

Middle Cay, the Northern and largest one, is about half a mile long, N. and S., and two cables in breadth, and is composed of sand, which rises at the S. end to a hill, scantily clothed with grass and bushes, twenty-one feet high: but it cannot be seen more than five or six miles. It lies on the S. E. end of a reef convex to the N. E., which skirting the E. side at a very short distance, curves round to the Northwestward for a mile, and always shows itself. The space to leeward of the reef is foul, but a boat may pick her way easily to a landing on the W. side of the cay.

East Cay is two cables long and one broad, and the broken coral of which it is composed is heaped up to the height of ten feet. It lies upon a detached reef, half a mile long, E. and W., three cables to the S. E. of Middle Cay, and between them the depths are six to ten fathoms.

There are ten fathoms a mile to the Southward of the cay, when the depth rapidly increases to upward of twenty fathoms in that direction.

West Cay lies on the E. end of a detached reef, half a mile long E. and W., three fourths of a mile to the Westward of Middle Cay, and is merely a small heap of broken coral about six feet high. The reef on the W. side forms a fork which gives shelter to a landing place that lies in lat. 20° 12½′ N., long. 91° 59′ 38″ W., W. ½ N. eighty-three miles from Campeché, and S. E. by E. twenty miles from the shoal on the S. Obispo.

Anchorage. With the usual land and sea breezes there is anchorage on the W. side between the ends of the N. and W reefs, in six or seven fathoms, with the East Cay just open to the S. of Middle Cay, and West Cay S. E. by S. The holding ground, however, is bad, and there is no safe shelter for large vessels in northers, as stated by some navigators.

Caution. The Arcas lies about eight miles from the edge of soundings, and eighteen from the twenty-fathom line; but Eastward of them for seven or eight miles the depths vary too little to afford warning in the night. A vessel approaching them from the Westward should be extremely careful not to get into less than thirty fathoms.

Cabezo or Cabeza de Piedra. CABEZO or CABEZA DE PIEDRA is described as lying S. W. thirteen and a half miles from the Arcas, with only one fathom water; but the neighborhood for some distance was closely searched by her majesty's surveying vessel, Thunder, without suc-

cess: and the water on the whole of the Western edge is so extremely clear that it is not probable that she could have missed it.

PLACER NUEVO or NEW BANK is a flat ledge of sand and coral seven miles in length E. S. E. and W. N. W., and three and a half miles in breadth, upon which the depths only vary from nine to eleven fathoms. To the Eastward of it the soundings increase to twenty fathoms at the distance of about three and a half miles, but elsewhere there are from twenty-three to twenty-seven fathoms close to. The centre lies in lat. 20° 32′ N., long. 91° 53″ W., and from it the Arcas bears S. by W. twenty-one miles; the South Obispo W. S. W. twenty-one miles, and the East Triangle N. W. ¼ W. twenty miles. *Placer Nuevo or New Bank.*

PEAR BANK.—So named from its shape, is eight miles long N. W. and S. E., two miles broad at its S. end, and four miles at its N. end. The S. end is only four miles to the Northward of the W. end of the New Bank; and the soundings between are twenty-three and twenty-two fathoms on coral and sand. The general depths on the Pear Bank are thirteen to nineteen fathoms, but they are irregular, and the N. end is bounded by a narrow ledge of only nine to ten fathoms, with twenty-seven fathoms close alongside; this marks the difference between it and New Bank, which it is extremely important to notice, when making use of them for a departure. *Pear Bank.*

From the N. W. extreme of the Pear Bank, in ten fathoms, the East Triangle bears N. W. by W., distant seventeen miles, and the North Obispo, S. W. ½ S. twenty miles, and the depths between it and them are twenty-seven to thirty fathoms. The depths to the Eastward of the bank gradually decrease from twenty-three to twenty fathoms at the distance of twenty miles.

The above banks are most useful guides to the inside navigation, but, as said before, great care must be taken not to mistake one for the other, for the shallowest parts are ten miles apart. *Caution.*

Vessels entering the Gulf of Mexico either from the Florida channel or Carribean sea, and bound to the Southern parts of it, should endeavor by all means to strike the Eastern edge of the Yucatan Bank, between the parallels of lat. 22° and 22° 30′ N. *General Directions.*

To do this no opportunity must be lost, night or day, to check the latitude, in order to detect the point where the N. current is first encountered. In general it will be on about the meridian of 85° 40′ W. fifty to sixty miles from the bank; the velocity will be from two to three knots, and the course will have to be altered to the Southward accordingly.

A knowledge of the exact point where the bank is entered upon is a matter of much importance, especially in the rainy season, when the atmosphere is very adverse to astronomical observations, in order to check the longitude, which cannot be so easily done afterward, on account of the regularity of depth from E. to W. The lead, therefore, must be early used and closely plied.

The edge of soundings generally discovers itself by ripplings, and at only a short distance within it the water becomes discolored; and the temperature of the surface water will fall a degree if entering well to the Southward.

In the season of northers, if bound to Vera Cruz, it will be better to pursue the outer track; that is, to pass between the Sisal Shoals and the outer cays, and this is done in safety by keeping within the depths of seventeen and twenty fathoms. Being abreast the Madagascar Reef in long. 90° 25′ W., a W. S. W. course should be taken, so as to obtain a good departure from the twenty fathom line in about lat. 20° 25′ N., long. 91° 20′ W., whence a W. by S. course will lead about midway between the West Triangle and Nuevo Cay. A good opportunity will again occur of taking a fresh departure from the thirty-fathom line.

Should a vessel be overtaken by a norther before she has cleared the bank, her position may be readily checked by the twenty or ten-fathom line, for great pains have been taken to define these lines on the chart with this view. It will be seen that the distance from the twenty-fathom to the Madagascar Reef is fourteen miles, to the Alacran thirty-two miles, and to the Arenas thirty-four miles. The space between the twenty and ten-fathom line is generally from eighteen to twenty miles in width, and the latter is from twelve to fifteen miles from the coast.

If proceeding to Campeché, after passing to the Westward of the Madagascar, a vessel should haul gradually round to the Southward into about five fathoms, and then follow the directions at page 419.

In the rainy season between May and September, when calms prevail, and observations are interrupted for several days together, it will be better to take the inshore route, in order to have the advantage of the regular land and sea breezes, which prevail at this period. In this case, after passing the Corsario shoals off Cape Catoche, the depths of eight to ten fathoms should be maintained to Chuburná, which place ought to be sighted, and thence they should be five to six fathoms, to avoid the Sisal shoals. To the Westward of this the track will be again between the five and ten-fathom line, until

to the Southward of the Arcas, when the bank may be left as most convenient for the port where bound.

A vessel bound Easterly from the S. W. part of the gulf, will make her passage more rapidly by passing over the Yucatan bank within the shoals, where she will have the advantage of the daily change in the breezes, than in navigating to the Northward of it.

With the above view, it will be most prudent to enter on the bank to the Southward of the Arcas, and by no means to pass to the Northward of lat. 20° N. in the night, before reaching the depth of twenty fathoms. As has been already stated, all the outer dangers lie on the edge of the thirty-fathom line, which should be most carefully remembered.

Some good authorities (including the Derrotero) state that, when the latitude is uncertain, if the bank is entered upon to the Northward of the Arcas, it will be discovered by the bottom being sandy, whereas to the Southward of them it is clay; and that if it changes from clay to gravel and sand or rock, in more than twenty-five fathoms, it is an infallible sign that you are near some shoal; it would, however, be extremely hazardous to depend altogether upon this remark. Both to the Northward and Southward of the Arcas, for a distance of twelve or fourteen miles, the bottom is generally mud or clay, and fine gray and brown sand mixed with black specks; indeed gray mud resembling clay will be found close up to the Obispos and Triangles.

The safest guide is the twenty-fathom line and the estimated distance from it, bearing in mind also, that after northers there is a strong current to the Southward along the Western side of the peninsula; at times, as much as eighteen miles in twenty-four hours.

All that we need further add is, that the passage between the Sisal shoals and the coast should be taken in daylight, and by taking advantage of the diurnal breezes, guided by the five, ten and twenty-fathom lines, the voyage will be rapidly made, and, by strict attention to the soundings, without much risk.

We have already cautioned the mariner not to stand into less than five fathoms off the N. shore, and to the Eastward of the Monte de Cuyo not into less than ten fathoms, to avoid the Cape Catoche Banks.

Should a vessel be overtaken by a norther off the W. side of the peninsula, the water is so smooth that she will find it less hazardous to anchor in the depth most convenient to her draught, and await the change.

It is necessary, however, to bear in mind that the ground is not good to the Northward of lat. 21° N., and that it will be prudent to ease the anchor down by a long stopper.

Coast. The coast from the Morro de Paypoton trends S. fifteen miles to the bluff off Cacam-also, three or four miles beyond which is the village of Champoton, and the same distance farther on is Joquel. Thence the shore runs about S. W. for seventy miles to the W. end of Carmen Island.

Off some parts it appears foul and dangerous, and so flat, that there are only ten fathoms at a distance of twenty miles; but our information only extends to what is presented on the chart. At the distance of about fifty miles from Morros Point the land appears to become very low and swampy, and composed of narrow islands, leaving three openings into the lake of Terminos, called Puerto Escondido, Puerto Real (which is navigable for canoes), and Laguna entrance, which latter admits vessels of thirteen feet draught to a harbor at the W. end of Carmen.

Terminos Lagoon. TERMINOS LAGOON is about fifty miles in length Northeast and Southwest, and thirty miles in breadth. The shores of the main are all swampy, but the interior is termed the great logwood district, which is drained by numerous streams emptying themselves into the lake, the principal of which is the Palizada. The mountains of the isthmus, which are about sixty miles distant, are said to be only seen from off the coast two or three days previously to a norther.

The Palizada. The PALIZADA empties itself about twenty-one miles S. of the village of Carmen. This river separates the provinces of Yucatan and Tabasco, and is navigable for large canoes of fifteen tons burden. At about thirty-three miles from the mouth, on the left bank, is the town of Palizada, which contains about three thousand five hundred inhabitants. At about fifty miles up it forms a junction with the Usumacinta, which is ascended by light canoes to a distance of one hundred and fifty miles.

Carmen Island. CARMEN ISLAND is about twenty-two miles in length E. S. E. and S. S. W., but its breadth is uncertain; and it is so low, that the tops of the trees, with which it is scantily clothed, are generally but twenty to thirty feet above the sea.

The N. side is bounded by a white sandy beach, which helps to distinguish the island from the main, where the shore to the Westward, about Xicalango Point, is composed of dark mud backed by dense woods from fifty to sixty feet high, and of more regular height.

The W. end of the island terminates at a distinct point about two miles to the Northward of Sagatal Point on the main. At the extremity is Fort San Felipe, in which there is a vigia forty-five feet high, the frame painted white, and on the summit is a flagstaff and yard. On the N. shore, one mile and three fourths to the Eastward of the fort, is a small Indian village of huts called Palmar: and near it a somewhat remarkable clump of trees fifty feet high, and a grove of cypress-trees.

At about three fourths of a mile to the S. E. of San Felipe Fort is the town of Carmen or Terminos, which is the port of entry for the lake rivers.

From Sagatal Point the shore trends to the Northwestward for about nine and a half miles to Xicalango Point, which forms the Western point of entrance to the channel leading into the harbor. From Vigia Point at Carmen, a sand spit runs off to the N. W. three and a half miles, which breaks in several places with the sea-breeze, and one mile and a half from the point at a ridge called the Banco Seco it dries a foot. The extremity of the spit, which lies two and a half miles from the main, is called Punta del Restinga, and may be considered as the E. point of entrance to the channel.

From Punta del Restinga Point an extensive flat of soft mud runs across to the main and outward three and a half miles, leaving a channel about one mile and a fourth in width, carrying from thirteen to fourteen feet water close up to the Restinga Spit. Inside this flat the depths increase to sixteen and eighteen feet, and even seven fathoms in a lane of deep water abreast the town. Outside, the depths gradually deepen to three fathoms at the distance of about five miles N. N. E. of the vigia.

About three fourths of a mile to the Westward of the Banco Seco, a shallow spit, called Cascajal, runs to the Southward steep to, and terminates with the vigia bearing E. ¾ N. and Sagatal Point S. E. by S., which contracts the channel to a breadth of about three fourths of a mile. To the Eastward of this the harbor opens out into a secure basin about one mile and a half in extent.

Supplies. Spring water is readily obtained from a pump at the N. end of the town, as long as the vessel is in port, by the payment of three dollars. Firewood is sold at a dollar a cord; but it may be cut at Sagatal Point close to the beach free of expense, and in any quantity. Beef and vegetables are in abundance, and at exceedingly moderate charges.

Light. From Sagatal Point the coast trends W. by N., two and a half miles to a small Indian village, east of which there is a tower, ninety-eight feet high, containing a revolving flashing white light of thirty seconds interval.

Anchorage. Vessels drawing more than thirteen feet will find good anchorage with the vigia N. N. W., in the depth most convenient; the holding ground is excellent, being mud, but not safe in northers.

Directions. The land should be made well to windward, as there is generally a Westerly current of about half a knot an hour, and in order to be in readiness for the sea breeze, which sets in from the N. E. about noon. In the night a vessel ought not to come into less than ten fathoms. From a height of fourteen feet the land will be sighted at about nine or ten miles in seven fathoms water, and in standing on to the S. W. the depth should not be decreased to less than four fathoms until the vigia bears S. W. about seven miles and the Carmen shore is about three miles distant. The town is hidden by the trees from the N. E., but the masts of the vessels may be seen above them, and soon after, the vigia and light-house. The land of Carmen makes in irregular clumps of trees, which appear like hillocks, but to the Westward of the lagoon it is of uniform height, which is a good guide when coming from the Northwest. Steering on toward the entrance, do not bring the Western extreme of the main land to the Westward of S. W. by ½ W. to avoid the Restinga Spit. The depths will gradually decrease to fourteen feet with the light-house at Indian village S. ¾ E., which line leads over the flat in mid-channel.

When Sagatal Point bears S. E. ¼ S., steer for it, and when the church with a steeple in the centre of the town is in line with the market-house, bearing E., haul into the anchorage off the town. Should the sea-breeze be scant, when standing to the Southward, do not bring the same church to the Northward of N. E. ¼ N. to avoid the harbor shoal; and in reaching to the Northward inside the Cascajal Spit, do not bring it to the Southward of E. by S. ½ S. With a norther the flat breaks, but is passable for a vessel drawing eleven feet. The greatest depth on the flat is about noon.

It will, however, be better to take a pilot, for although the Western edges of the Restinga and Cascajal spits are stationary and steep to, and the former breaks, there may be a foot more or less water on a different line. The water is so muddy that the edges of the banks do not show themselves, and the lead gives no warning to them. The depth on the W. side gradually decreases to the main. The best time to leave is at daylight, when the land wind will generally carry a vessel out to a good and safe offing.

Coast. The coast from Xicalango Point to the River San Pedro runs about W. ½ S., thirty miles, whence it trends to the S. W. for ten miles to the river Tabasco, and is all along low, without any remarkable feature, but is distinguished from the land of Carmen by dense woods of more regular height. The heights of San Gabriel, mentioned by the Derrotero, are from forty to sixty miles inland, and consequently very seldom visible.

A few miles E. of the San Pedro is a vigia on the E. side of the entrance of a small stream about a cable in width. The soundings between Xicalango Point and the river San Pedro are irregular, especially near Xicalango Point, and vessels are warned not to come into less than ten fathoms, although the bottom is so soft, as to give to this part the name of Lodazar (mud bank), and vessels touching on it do not receive much injury; while the bottom to the Eastward of the point is hard, which is a good guide. Between the San Pedro and the Tabasco rivers the depths are more regular, there are five fathom at two miles' distance, and the bottom is blue mud.

San Pedro River. THE RIVER SAN PEDRO forms the coast boundary between Yucatan and Tabasco, and joins the Usumacinta at about forty-two miles from its mouth. The entrance is from a third to half a mile wide, and is pointed out by a vigia and some huts on the W. side. The bar is passable to canoes and bongos of three or four feet draught.

Buey Islands. BUEY ISLANDS.—Off the W. side of the entrance of the Tabasco is Buey (Ox) Island, on the Southern end of which is a flat clump of trees, higher than those in the neighborhood, which has the appearance off a bluff, and on the E. end of the island is a vigia.

At three fourths of a mile to the Northward of Buey is Little Buey Island, which is very low and sandy, and has upon it a hut and vigia; their existence, however, must not be depended upon, for they are frequently washed away in northers. Between these islands and to the Westward of them there is only sufficient water for canoes: to the Eastward of them is the main entrance to the river Tabasco, which is from three fourths to a mile in width.

Tabasco or Grijalva River. The TABASCO or GRIJALVA is the principal river of the province of that name, and is navigable for vessels of eight feet draught to San Juan de Bautista, the capital, about seventy-two miles from the entrance, and for bongos and canoes to a considerable distance farther into the interior.

On the E. point, at the entrance of Tabasco, which is composed of white sand, is a hut, and about a mile within it, on the right bank of the river, is a small fort of twelve guns, with a vigia inside it, which has a signal post on the summit. Close to the fort is the pilot establishment, which consists of a few huts and canoes, with accommodation for a single boat's crew.

At about a mile above the fort is a thickly-wooded island about one and a half miles long, and from its N. end a spit of mud stretches off for about a mile. On the E. side of it is the main channel, which is rather less than half a mile in width; on the W. side there is only a passage for canoes.

Frontera. THE FRONTERA.—At a short distance higher up, on the right bank, is a straggling village called the Frontera, which comes in sight from off the entrance on a S. E. by S. bearing. This is the port of entry of the province, and the residence of the agents of the principal merchants and logwood cutters in the interior. Vessels bound up any of the branches are obliged to remain here until their papers have been examined at the capital.

Directions. From a wide offing the entrance of the river is found by bringing the centre peak of the San Gabriel Mountains when seen to bear S. S. E. ½ E. The channel across the bar is so changeable that a pilot is always necessary, and if obliged to await one, anchorage may be taken up in six fathoms, with a hut on the E. point of entrance S. S. E.

In a case of necessity, however, the bar may be crossed with the above hut in line with the island above the fort, bearing S. S. E. ½ E., or a large clump of trees to the Westward of the island and opposite Frontera S. S. E.

Should daylight fail before reaching the bar, it will be better not to run to leeward of the San Pedro, as it will be difficult to get back to windward. Should it be calm during the night, which is generally the case, it will be more advantageous to anchor; but if there is a working breeze, it will be better to stand off and on into six fathoms, and off to twelve fathoms.

In the season of northers, from September to March, there are generally eleven feet water on the bar, and sometimes more, but the depth is very uncertain, for if a freshet takes place, and continues any length of time, it decreases considerably by the accumulation of the sandy deposit.

When the rivers are at their highest level, the bar is at the shoalest; and when they are at their lowest point, the channel being contracted, is scoured out and becomes deeper. At the close of the rainy season, in December, there are at times only seven feet water, but the first norther will increase the depth to ten and a half feet; and again, a freshet may soon after reduce it to seven or eight feet. In the rainy season vessels have been detained inside the bar two months, waiting for sufficient water to cross it. The direction of the channel will also change with these fluctuations, and the discolored river water sometimes reaches a distance of thirty miles from the coast.

Coast. The coast from the bar of Tabasco to the river Tupilco runs about W. by S. ½ S. forty-three miles, and is low, and fringed with mangroves and palm trees. The shore is all along clean, with regular depths of four or five fathoms at a mile distant. To as far

as Chiltepec the bottom is blue mud; off that opening and Las dos Bocas it is mud and putrid shells, and to the Westward of this coarse olive-colored sand. From the river Tupilco the coast trends S. W. by S., about sixteen miles, and then W. by S. ½ S. for about the same distance to the bar of Sta. Aña lagoon. This bight presents the same features as before, fringed with mangroves and dwarf palmettos, and is equally bold; but the bottom is coarse sand and gravel with shells. From the bar of Sta. Aña the coast trends W. by S. twenty-five miles to that of Goazacoalcos. At about twelve miles from the bar of Sta Aña the river Tonala disembogues, which separates the provinces of Tabasco and Vera Cruz. Not far from the shore is a remarkable high tree, resembling a tower or landmark, which, brought to bear S. S. E., leads to the entrance.

CHILTEPEC AND DOS BOCAS (*Two Mouths*).—At about twenty-six miles from Tabasco is the bar of Chiltepec, which has seven to eight feet water; and six miles farther to the Westward are those of Dos Bocas, which have a depth of only four feet. As stated before, these are outlets of the Gonzalez River, a branch of the Misculapa. *Chiltepec and Dos Bocas.*

THE RIVER GOAZACOALCOS.—The entrance of the River Goazacoalcos is between two hills which can be seen about twelve miles; the W. point is composed of low sand-cliffs. *River Goazacoalcos.*

The vigia or lookout place is on the hill on the W. side, about half a mile from the beach, and at the foot of it a house, and somewhat more to the E. a guard-house and battery; the latter has a flagstaff at the E. end. At about twenty-four miles from the entrance is the town of Minatitlan.

The bar is a little more than two cables in extent E. and W., but only one hundred and eight feet in breadth, and lies half a mile from the shore, being composed of hard sand and clay, if it does not shift, and there are generally twelve feet over it at high water. In heavy northers it breaks right across.

Within the bar, off the East bank, a little above a branch on the opposite side, called Terra Nueva de los Colazedos, is a shallow ledge of rocks.

A pilot resides near the entrance of the river, who can be obtained by making the usual signal. *Pilot.*

The land should be well made to the Eastward, on account of the current, which sets strong to the N. W.; also, in case of a norther, to have more sea-room. *Directions.*

The entrance is readily distinguished by the vigia, which, being brought to bear S. ¾ W., leads over the deepest part of the bar into seven, thirteen, and fifteen fathoms of water. When within the bar haul up to the Eastward of S., and steer in midway between the two points that form the entrance to the river.

After passing over the bar, when within the points, the wind will baffle and fall light, and as the stream runs out strong, even in the dry season, it may be necessary to anchor and warp up to a berth within the fort bearing W. or W. by N.

The coast from the bar of Goazacoalcos trends Westerly thirteen miles to that of the river Barilla, and forms the N. side of the island of that name. Thence its direction turns abruptly to N. N. W. ½ W., and at the distance of ten miles forms San Juan Point, close off which lies a small islet, and seventeen miles farther on is Zapotilan Point. From this point the shore trends W. ¾ S. for about three miles to the entrance of the Sontecomapa lagoon. *Coast*

SONTECOMAPA LAGOON.—The entrance to this lagoon may be known by a remarkable large umbrella-shaped tree on a bluff a little Westward of it, and near to it a lookout hut, and to the Eastward of the entrance is a high sand-hill. In the rainy season the bar is said to have six feet water. In general it breaks heavy, and in crossing it the rocks on the W. side must be kept close aboard, giving the sandy point which forms the E. side a wide berth. *Sontecomapa Lagoon.*

Just within the bar, on the Western shore, a small stream of most excellent water runs down over the rocks, so conveniently situated that a boat may lie within twenty yards of it. *Water.*

With the umbrella-tree W., or W. ¾ N., Morrillos Point, N. W. ½ W., and the Eastern extreme of the land, E. ½ S., there is anchorage in six or seven fathoms, whence the entrance of the lagoon will bear S. W. by S. A heavy, uneasy swell, however, rolls into the bight, and it is not safe till after the season of northers. *Anchorage.*

MORRILLOS POINT.—At a short distance from the entrance to Sontecomapa lagoon the coast turns to the N. N. W. for eight miles to Morrillos (Little Bluffs) Point. This point is formed a bold, rounded bluff or bluffs, and at a short distance S. S. E. ¾ E. of it is a vigia. *Morrillos Point.*

About seven miles to the N. W. of the Morrillos Bluffs is Roca Partida, or Cleft Rock, a remarkable projection, composed of perpendicular cliffs, close off which is a rocky islet. From Roca Partida to the entrance of Alvarado the coast trends westerly thirty-seven miles. At about seventeen miles to the Westward of Roca Partida is the vigia of Tuxtla, and eight miles further on is that of Barrancas, which is twelve miles from Alvarado. The whole shore is quite clean, and there are thirty to forty fathoms four or *Coast.*

five miles distant, whence the depths gradually decrease inward over a soft muddy bottom. The coast of Alvarado trends N. W. by W. twelve miles, and then about N. ½ E. nine miles to Salado Chico or Collot Point, which may be termed the S. E. extreme of the bay of Anton Lizardo. The sand-hills terminate at a low rocky point about five miles to the Westward of Alvarado. The land in the vicinity of Collot Point is of moderate elevation, and visible from the anchorage of Sacrificios, about ten miles distant. A short distance to the Southward of it is the river Salado Chico, and at a mile to the Westward of the point is the small village of Anton Lizardo.

The whole of the above space is clean, but in the season of northers extremely dangerous to vessels of heavy draught, as it offers no shelter whatever.

Water. On the W. side of Roca Partida is a small cove and landing place in moderate weather, near which is a rivulet of excellent water.

Volcano of Tuxtla. VOLCANO OF TUXTLA.—The shore between La Barrilla and Roca Partida forms the base of the Sierras of San Martin, the highest summit of which is the volcano of Tuxtla. This peak rises fifteen miles S. by E. ½ E. from Roca Partida, and S. W. by W. about twelve miles from Zapotilan Point, and is distinctly seen from Vera Cruz, seventy-five miles distant. When in an active state, the flames by night and the column of smoke by day afford an excellent landmark.

Alvarado. ALVARADO is an extensive lagoon, which runs along close at the back of the shore for a distance of about thirty-five miles. Numerous small streams discharge their waters into it, and throw up a bar at the entrance, which has generally from nine to ten feet of water over it. The town is situated on the Western shore, about one and a half miles from the entrance, and is a place of considerable commerce, and vessels can lie close off it.

The entrance is so narrow that it is not easily discovered, until on a bearing between S. by W. and S. by E., when the masts of the vessels of the town may be seen. The coast is composed of sand-hills, varying from fifty to two hundred feet in height, scantily clothed with wood, and the E. point of the entrance is pointed out by a remarkable sand bluff, considerably higher than any other in the neighborhood, about one mile to the Eastward of the bar. The discolored river water runs out to a long distance. In the rainy season the current runs out so strong over the bar that it requires a good breeze and full sail to stem it.

Pilot. A vessel will require the assistance of a pilot to cross the bar, who will be at hand on seeing the usual signal.

Anchorage. Anchorage may be taken up in ten or twelve fathoms about two and a half miles outside the bar, but it is not safe in the winter season.

Anton Lizardo. ANTON LIZARDO.—From Collot Point the shore curves to the Westward and round to the Northward to Mocambo Point, forming a sandy bay about eight miles in width in a N. W. by W. direction, and two and a half miles deep.

From Collot Point a cluster of dangerous detached reefs stretch off to the N. E. eleven and one fourth miles, and about eight miles from N. W. to S. E., which break in fresh breezes, and protect an anchorage between them and the main, safe even in northers, and more sheltered than that at Sacrificios.

The outermost of the above reefs, called Anegada de Afuera and Anegadillo, occupy a space of five miles E. by S. and W. by N., and about half a mile in breadth. The N.W. end of the Anegada de Afuera lies E., fifteen miles from the light-house at Vera Cruz, and E. ¾ S. ten and a half miles from the Anegada de Adentro or Inner Shoal. They dry at low water and are steep to, with depths from twenty-six to twenty-eight fathoms close outside them.

At about three miles to the Southward of the above is the Cabeza reef, three and a half miles long N. W. and S. E. and from a half to one and one fourth miles in breadth, the S. E. end of which lies E. ¾ N, eight miles from Collot Point. The channels Eastward and Westward of it carry from sixteen to twenty-four fathoms on sand and grass.

About three and a half miles to the Westward of the Cabeza are the Rizo and Medio reefs, which are one and a fourth miles apart. A mile farther in the same direction is the Chopas, and half a mile beyond it the Blanquilla Sand-bank, where there is sometimes a pole in the centre of the sand.

The Blanquilla is the Westernmost reef, and lies N. N. W. ½ W. one and a half miles from the village of Anton Lizardo. The Medio and Chopas have a small islet at their S. E. extremities; the one at the latter is called Salmedina, and is clothed with tall reeds, which are greener and higher than those on Cay Verde.

There are veins of deep water between the reefs of this last group, but the channels are too contracted to navigate, except between the S. sides of the reefs and the main, which

Anchorage. forms the anchorage in from seven to eleven fathoms on sand, mud, and clay, with Blanquilla W. by N., and the village from S. by W. to S. W., and the nearer the Chopas Reef the better the holding-ground.

From the circumstance of the wind on this part of the coast never blowing more than a fresh breeze from any other quarter but the N. and N. N. W., the anchorage, although exposed to the full force of the wind, is so protected by the reefs, which dry at low water, and break heavily in northers, as to be as secure as most harbors. In coming up from the Southward, however, very great care must be taken in approaching the outer shoals which lie near the line of thirty fathoms water. *Directions.*

In approaching the land in the winter season there is frequently a haze, which hides it until close to the shoals; it is, therefore, much safer to make the land to the Northward, where it is clean and bold, and run into the anchorage by the Western channel. With Cay Verde off Vera Cruz, bearing N. W. by N. a S. E. by S. course will lead up to Blanquilla Bank, which is readily seen. As it is approached the houses and lime-kiln, at Anto Lizardo, will become visible, when bring them to bear S. E., and steer for them. When Salmedina Cay bears E. ½ N. steer for it, taking care not to bring the cay to the Eastward of the above bearing until the village of Anton Lizardo bears S. by E., to avoid the ledge extending to the S. E. from Blanquilla, and observe that the shoals on the S. side of the channel abreast Blanquilla extend from the shore three fourths of a mile, and are so steep that the depth decreases suddenly from sixteen to eight and two fathoms water. The Western edge of the Blanquilla is pointed out by the light green water over the white sand, and it can be rounded at the distance of two cables' length.

At about two and a half miles to the Southward of Mocambo Point, is Medellin Creek, where there is a small stream of good water, but extremely difficult to get at, on account of the heavy surf. *Water.*

VERA CRUZ.—Mocambo Point is low, sandy, and rounding, but a little within it is a saddle-shaped hill of moderate height, and on the N. side of the point is a fort which commands the anchorage off Sacrificios. Thence the coast, which is low and composed of sand-hills from twenty-five to thirty feet high, trends, with two slight inflexions, N. W. ½ W. about eight miles to Gorda Point. The locality is pointed out from a wide offing by the mountain peaks of Orizaba and Cofre de Perote. The former bears W. by S. ¾ S., sixty two miles distant from the castle, and its snow-capped peak, which is about eighteen thousand feet above the the sea, is visible, under favorable circumstances, at one hundred and fifty miles. The Perote lies on a W. ½ N. bearing, sixty miles from the same spot, and reaches an elevation of about fourteen thousand feet. To the Southward the volcano of Tuxtla is a good guide. *Vera Cruz.*

Midway on the shore between Mocambo and Gorda points is the city of Vera Cruz, which occupies a space of three fourths of a mile, and is the capital of the province and chief commercial port in this part of the Gulf of Mexico. It is strongly fortified, and, besides the defence of its walls, it is further protected by the castle of San Juan de Ulloa, placed upon a small, rocky island at the S. extreme of the Gallega Flat, half a mile from the shore, abreast of the N. end of the city. The channel between the S. end of the flat and the shallow ledge which skirts the main is called the harbor, and is about three fourths of a mile in extent N. W. and S. E., and from two to three cables in breadth, with depths from three to five fathoms on oozy bottom. The flat is so steep that vessels of war, drawing not more than eighteen and a half feet water, moor alongside the castle to rings placed in the walls for that purpose. Other vessels anchor and moor in tiers close up under the flat, or proceed to the anchorage off Sacrificios; but the former position is not considered safe in northers.

There is no certainty of supplies of any kind, except water, and that is not good; and during the winter months the sea breaks on the shore with so much violence, that intercourse is sometimes interrupted for three or four days. *Supplies.*

On the W. angle of the castle of San Juan de Ulloa is a white tower sixty feet high, from which is exhibited a revolving white light, attaining its greatest brilliancy every forty-five seconds, eighty feet above the sea, visible at fifteen miles in clear weather. *Light.*

ANEGADA DE ADENTRO REEF.—The front of the shore for the space of five miles is skirted by detached reefs, which stretch off to a point five miles to the Eastward of the city, leaving channels between navigable for the largest vessels. They are generally termed the Inner Shoals, those off Anton Lizardo being called the Outer Shoals of Vera Cruz. They all break in moderate breezes, but if there be light winds and no sea, and the tide has covered the rocks, the edges, having only about three feet water, are easily seen from aloft, and are so steep that they may be passed by the eye within a cable's length, or less. *Anegada de Adentro Reef.*

Anegada de Adentro, the outermost reef of the Inner Shoal, is one mile and one fourth long N. W. and S. E., and about three cables in breadth. Its S. E. end lies E. by N. ½ N., four and three fourths miles from San Juan de Ulloa light-house, and W. ¾ N. ten and one half miles from the N. W. end of the Anegada de Afuera Reef; and there are fifteen to twenty-two fathoms within a cable's length of it.

Isla Verde Reef. ISLA VERDE REEF, which lies S. W. one mile and one fourth from the Anegada de Afuera, is three fourths of a mile in extent, N. W. and S. E., and about half a mile broad, and at the S. E. end is a small cay, which has the appearance of a white cliff. The channel between the above reefs carries sixteen to twenty fathoms over sand and shells.

A mile farther to the S. W. is the Pájaros Reef, a mile long N. W. and S. E., and about three cables in breadth, and between it and Isla Verde the depths are twelve to sixteen fathoms over oozy bottom.

Sacrificios Reef. SACRIFICIOS REEF, which is only three cables to the Southward of Pájaros, and about three fourths of a mile from Mocambo Point, is half a mile in extent N. W. and S. E., and on the S. end of it is a barren sandy islet about a cable and a half in circumference, which has sometimes a hut upon it.

The channel between it and Pájaros is scarcely two cables wide, but carries from five to ten fathoms. The channel to the Westward of the islet, or between it and the main, is four cables in breadth, and carries five to ten fathoms in mid-channel.

Anchorages. There is anchorage, with excellent holding ground, under the lee of all these reefs, but the most protected is that off the W. side of Sacrificios, which is considered safe for a few vessels even in northers. The E. sides of the reef are easily rounded by the eye, and the closer a vessel anchors to them the better, only leaving room to swing to the land wind, should she not moor.

Blanquilla Reef. BLANQUILLA REEF.—At one mile and a half to the Westward of the Anegada is the Blanquilla Reef, which is about half a mile in diameter, and upon the S. end of it is a small sandy cay. The channel to the Eastward of it carries seventeen to twenty fathoms on sand and mud.

Gallega Flat. GALLEGA FLAT.—About three fourths of a mile to the Westward of Blanquilla Reef is the E. extreme of the Flat of Gallega, and the channel between carries ten to sixteen fathoms water. The Gallega Flat extends in a Southerly direction nearly two miles, and is about three fourths of a mile in breadth. It is separated, however, by narrow cuts, into three parts, the Northern portion being called Galleguilla, and the N. end of it Gallega Point, which bears N. ½ E., one mile and three fourths from the light-house, and E. ½ S, about three and one fourth miles from Gorda Point.

The Western extreme of the Southern part of the Gallega Flat is called Soldado Point, and forms the N. W. point of entrance to the harbor. At the inner part of it is a detached shoal of sixteen and a half feet water, called the Outer Laxa, which is marked by a buoy.

Buoys. A little to the Southward of the outer buoy, almost in mid-channel, and near to the salient angle of San Pedro Bastion, lies another small head of twenty-two feet water which is also buoyed.

Lavandera. LAVANDERA.—S. E. three fourths of a mile from the light-house, and E. N. E. nearly the same distance from Fort Santiago, at the S. E. angle of the city walls, is a small shoal of only three feet water called the Lavandera, which only breaks in heavy breezes.

At about two cables to the Southward of it is the Hornos Reef, and between them is a channel for coasters.

Between the Lavandera and Gallega Flat, the E. channel leading into the harbor is about four cables in width, and carries from four to five fathoms.

Directions. Vessels bound to Vera Cruz from the Eastward, after quitting the Yucatan Bank, by either of the passages, should endeavor by all means to approach the land on the parallel of lat. 19° 30′ N., that of the Cofre de Perote, to avoid the outer reefs.

In the winter season due allowance must be made for a Southerly current, which increases its strength previous to and after northers; and in the summer for a Northerly set, caused by the swollen streams emptying themselves from the Southward. Some authorities, however, state that previous to the norther the current sets to the Northward; no opportunity should, therefore, be lost of checking the latitude by meridian altitudes of stars N. and S., which may be generally accomplished most satisfactorily near twilight.

In the season of northers the light at San Juan de Ulloa ought not to be sighted without the certainty of procuring a sheltered anchorage before night, for these winds are so treacherous, and become so suddenly violent, as to leave no time for obtaining a safe offing.

To attempt to run into the harbor in a norther is extremely perilous, for it blows more powerfully within than without the shoals. No confidence can be placed in anchors and no assistance can be given from the shore in case of accident. In these winds the entrance between Points Caleta and Soldado breaks right across

Should a vessel be caught off the port in a norther, short tacks should be made under as much sail as can be carried, so as to be in a position to run in the moment the wind abates, in order to escape another. Great care must be taken not to drift to leeward of the port.

Pilots may be obtained, but they are of little service, except to guide to a clear berth, and they will seldom come outside the reefs. The harbor is not adapted for vessels drawing over eighteen and a half feet water. Those above that draught should, therefore, proceed to Sacrificios.

N. W. CHANNEL.—Having sighted the land on the above parallel of latitude 19° 30′ N., it should be skirted at the distance of eight or ten miles, taking care not to come into less than eight or ten fathoms off Brava and Gorda points. The castle being in sight, when at the distance of three or four miles, bring the larger of two domed steeples, with a cross on the top, which is also the Westernmost in the city, to bear S. ¾ E. It will then appear with two steeples on the W. side of it, one a spire, the Easternmost flat-topped. At the same time will also be seen, behind the latter, a small hill, which is composed of bare sand, at the N. W. end, but clothed with grass at the opposite extreme. *N. W. Channel.*

Steering in S. ¾ E. upon the above line, will lead close along the W. side of the Gallega Flat, in regular depths, decreasing from ten to four fathoms on the bar between Caleta and Soldado Points. When the S. W. side of the square building, that the lookout house stands on in the castle, is in line with the N. E. side of the light-house, bearing E. S. E., or when Sacrificios Island is just open of the castle S. E. by E. ¼ E., steer for the latter, taking care not to open the light-house to the N. E. of the lookout house until close to the castle: when steer round it to the Southward, and anchor close off the S. side in five and a half to four and a half fathoms. As the ground is not good holding in the season of northers, it will be better to moor with the port anchor to the N. W., and the starboard anchor to the N. E., with a stream astern to prevent swinging to the land-wind. At other periods moor with the port anchor to the N. W., and the starboard anchor to the S. E. Vessels-of-war lay the port anchor to the N. W. in five fathoms, and make fast the starboard bower cable to the rings in the castle walls, with a cable over the stern to the S. S. W. Most of these rings, however, are said to be broken, and the remainder so decayed as not to be trustworthy.

S. E. CHANNELS.—In the event of being to leeward, a vessel may be navigated through the S. E. channels without much difficulty, except that between Pájaros and Sacrificios, which, being only two cables wide, incurs too much risk for a stranger. However, having to run through this opening, in a case of necessity, keep Gorda Point a little open to the Northward of the N. E. angle of the fortification under the castle of San Juan de Ulloa, bearing N. W. by W. ¼ W., which mark carries also to the Eastward of the Lavandera. When an isolated stone building on the main, which serves as a slaughter-house, comes in line with the outer angle of the city walls, on which stand a large barrack, the Lavandera will have been passed, and a course may be shaped for the harbor. *S. E. Channels.*

No time should be lost in mooring; and it may be necessary to warp or kedge up to drop the starboard bower on the edge of the Gallega Flat. In doing this, great care must be taken not to foul or cant the port bower in the wrong direction; for, should it come home at the first rush of a norther, there would be little hope of bringing up in time to save the vessel from shipwreck. *Caution.*

BLANQUILLA CHANNEL.—Should the wind be scant and to the Eastward of N. E.—which is very probable if late in the day—it will be better for a heavy sailing vessel to enter by the channel between the Galleguilla and Blanquilla. *Blanquilla Channel.*

This is safely accomplished by running in with the light-house, S. W. ¾ S., which will lead up to the N. W. extremity of the Blanquilla. The edge of this bank will be seen from aloft, and being abreast it, haul up to the Southward, rounding the Gallega Flat at the distance of about two cables' length and anchor as before.

Land and sea breezes regularly alternate, even in the intervals between northers, which alone overpower them. The former comes off soon after sunset, and the latter sets in at about nine A. M. *Winds.*

The coast from Gorda Point trends about N. W. ¾ W. a distance of seven miles to the river Antigua, whence, with some sinuosities, it runs N. N. W. ¼ W. seven and a half miles to the point and river Chacalacas, thus forming Antigua Bay. Midway between the two rivers a shoal about one mile and three fourths in length extends off to the distance of half a mile. From Chacalacas River the shore runs to the Northward with a slight curve for about three miles to Zempoala Point. About one mile and a half inland, and nearly on the parallel of this point is the vigia of Zempoala. *Coast.*

From Zempoala Point the shore curves to the Westward, forming a bay to Bernal Point, which bears from Zempoala N. N. W. ½ W., distant twelve and a half miles. Nearly midway, and about four miles inland, is the Zempoala Peak, twenty-two hundred and thirty feet above the level of the sea. To the S. E. of Bernal Point, at the distance of about half a mile, is Bernal Chico Islet, which, as well as the coast, is clean, and the channel between carries five to five and a half fathoms water without risk. The shore from Bernal Point trends N. ¾ W. for three and a half miles to that of Mariandrea, which is somewhat more prominent, and formed by hills which about two and three

fourths miles inland are twenty-one hundred feet above the sea, and gradually slope to a low point. Thence the shore takes a N. N. W. ½ W. direction seven miles to Dalgada Point, which is N. W. by N. forty-one miles from Vera Cruz light-house.

From Dalgada Point the shore trends N. W. ½ N. ten miles to Piedras Point, which takes its name from the rocks that encompass it; whence it continues on the same line of direction for seventy miles to the river Tuspam. All this part of the coast from Gorda Point is of very moderate height, thickly clothed with brushwood and small trees, and at almost all places bounded by a sandy beach. With the exception of the reefs named, the shore is everywhere clean and bold; there are from four and a half to six and a half fathoms at one to two miles' distance, and soundings extend off from twenty-five to thirty miles. The coast from the river Tuspam to the bar of Tanguijo runs N. N. W. ¼ W. eighteen miles; the shore presents the same features as before; but between are several banks and islets at a distance from the coast, forming breakwaters to excellent anchorages sheltered from northers. From the bar of Tanguijo the shore continues on the same line of direction about ten miles, and then about N. ¾ E. for fifteen miles to Cape Roxo, in lat. 21° 25′ N.

Juan Angel Reefs. JUAN ANGEL REEFS.—From three fourths of a mile to the Southward of Zempoala Point, a reef stretches to the Northward for two and three fourths miles, and it extends from a half to a mile from the land. There are two shoal patches within a third of a mile of each other, a little to the Northward of the Juan Angel Reef, and on the meridian of Zempoala Point. The entrance to the Juan Angel River bears from the Northernmost patch about S. W. by W. ¼ W. one mile.

Anchorage will be found off the S. side of Bernal Chico Islet, sheltered from the Westward as far round as N. There are four and a half fathoms at half a mile from the beach.

River Tuspam. THE RIVER TUSPAM is capable of admitting coasters drawing five to six feet water up to the town, which is situated on the N. or left bank about five miles above the bar, and which is said to contain about one thousand inhabitants. The river within the bar deepens considerably, and is about a third of a mile wide, and communicates by canoes with Tampico, through the Tamiagua and Tampico lagoons. Its chief trade, however, is with Campeché.

Monte San Juan. MONTE SAN JUAN.—At about twenty miles inland there rises a remarkable irregular ridge of high land, about eight miles in extent, from N. to S., called Monte San Juan, which bears N. W. by W. ¾ W. from the entrance of the river Tuspam; W. ¼ N. from the bar of Tanguijo; and S. W. ½ W. from Cape Roxo.

uspam nk. TUSPAM BANK, the Southernmost of the banks, between the river Tuspam and the bar of Tanguijo, lies N. E. ½ E. about eleven miles from the river of that name, and has on it several small islets. There is good anchorage on the Southwest end in from seven to nine fathoms on course sand, at about two cables' length from the edge of the bank.

jo de medio. BAJO DE ENMEDIO or MIDDLE SHOAL, lies about N. W. by W. twelve miles from the Tuspam Bank, and E. ¾ N. eight miles from the river Tanguijo; it is much smaller than the Tuspam Bank; but it affords anchorage on the S. W. end in five and a half, seven, or nine fathoms.

Tanguijo Shoal. TANGUIJO SHOAL lies about three and a half miles farther to the Northward, and presents on its S. W. end still better shelter than either of the other banks just mentioned.

The channels formed between these shoals are clean, with good depths, and between them and the coast there are no dangers but what are visible.

Cay Lobos. CAY LOBOS lies S. E. ¼ E. about eight and a half miles from Cape Roxo, and from it the S. extreme of Monte San Juan bears S. W. by W. ½ W., and the N. extreme W. by S. ¾ S. This cay is merely a bank of sand about three fourths of a mile in diameter, heaped up a few feet on a coral reef and covered with bushes and trees, which grow to the height of about thirty feet above the sea. A terrific surf breaks upon all parts, and the beach being fringed with coral, renders landing very difficult at almost all times.

From the W. side of the cay the reef extends about a cable's length; to the Northward it stretches off about two miles, and to the Eastward about three fourths of a mile, and terminates here with the S. end of the cay bearing W. S. W. Good water may be obtained on this cay by digging wells in the sand to the depth of four or six feet.

Anchorage well sheltered from northers will be found in seven or eight fathoms on sandy bottom, with the cay bearing N. or N. by E. about three cables distant. With the cay bearing N. by W. the ground is sandy with stones, but to the Eastward the ground is very foul.

Directions. The edge of the Eastern reef, which trends about S. S. E. and N. N. W., shows so distinctly that its S. end may be rounded by the eye. There are seven fathoms at about a cable's length from it, and it will be better not to go within that depth, as a rocky ledge runs off in a S. S. E. direction from the cay.

In the event of being driven from the anchorage with a Southerly wind, a vessel may

run through to the Westward of the cay and the banks to the Northward of it, but it requires great care, and the coast must be kept aboard, for the soundings are no guide to the banks in the night.

BLANQUILLA.—At about a mile to the N. W. of the N. extreme of the Lobos Reef is a small middle bank of sand, in Spanish Medio about a cable's length in diameter, which breaks, and has seven fathoms water close to it. *Blanquilla.*

At about a mile to the N. W. of the Medio Bank, N. W. by N. four miles from Lobos, and E. by S. ¼ S. four miles from Cape Roxo, is another bank of similar character, called Blanquilla, which is about half a mile in diameter, and is also steep to, and breaks heavily.* From it Monte San Juan bears S. W. by W.

CAPE ROXO is formed by low sand hills, which from about a half to three fourths of a mile to the Northward of the cape, appear covered with trees and bushes, and extending along the coast to the Southward. A reef appears to stretch from the cape to a short distance, and there are twenty-four fathoms on fine sand at about two and a half miles to the N. E. of it. *Cape Roxo.*

The coast from Cape Roxo runs almost straight N. W. ¾ N., fifty-two miles to the entrance of the river Tampico, and from the bar of Tanguijo to the latter spot it forms only a very narrow ridge of land separating the Tamiagua Lagoon from the sea. It is everywhere clean and steep to, but the surf is so heavy that landing is attended with considerable risk. *Coast.*

From about four miles to the Northward of the cape to Zerez Point, the low sand-hills which bound the shore are only clothed with bushes to within about two thirds of their summits, which are left bare. From the latter point the land rises and reaches at its highest part an elevation of about three hundred and fifty feet; but it falls again as it approaches the bar of Tampico, where it is lower than at any other part of the coast. This ridge of land is distinguished from the Southern sand-hills by being densely wooded, excepting at two small spots; and at about five miles to the Southward of the bar is a very remarkable large and lofty umbrella-tree, that may be seen very soon after sighting the land, which makes in clumps like islands.

TAMPICO RIVER is navigable for vessels of nine and a half feet draught to Panuco, a considerable town on the right bank about eighty miles from the mouth, but only forty by land; and for large canoes to San Juan, about eighty-seven miles higher up. *Tampico River.*

On the left bank, about five miles from the entrance, is Tampico or Tamaulipas, the capital of the province, which, lying in a hollow, is hid from the sea, until at a very short distance of the coast.

The entrance of the river, generally known as the bar of Tampico, is about three cables wide, across which runs a most dangerous bar of shifting sand, leaving a channel about a cable in width, carrying from fourteen to as little as eight feet water in the rainy season. It breaks heavily at all times, and is subject to almost daily variation in depth and direction; it is, therefore, in general, only accessible to vessels drawing about nine and a half feet, and they require a pilot.

The entrance is pointed out by a vigia on either side, which, when first sighted, appear like ship's masts, and it is to be observed that there are no others on this part of the coast. On the Northern one is a tower with a light, and which is in lat. 16° 45′ N., long. 97° 47′ W. Near it are three houses or huts, and near the S. vigia are two huts, one of which, however, is only visible from the Southward until in a position a mile to the Northward of the bar. *Light.*

Temporary anchorage may be taken up off Tampico bar, with the Northern vigia S. W. or S. W. by W. distant about three miles, in eight or seven fathoms soft mud. The holding ground is excellent, but in the winter season a vessel that cannot cross the bar must quit the moment the weather indicates the approach of a norther. *Anchorage.*

The surest guide to the bar is, of course, a correct knowledge of the latitude, and no pains should be spared night or day to obtain it; for, as explained already, the currents on this coast are strong and variable according to the seasons, although running always N. or S. *Directions.*

To insure certainty it may be necessary to caution the mariner, that in fair dry weather the heated sands cause the unusual amount of refraction, which will of course vitiate his observations; but a mean of meridian altitudes taken N. and S. of the zenith will give a very close approximation to the truth. It also gives an appearance of greater elevation to the land, and consequently causes it to be estimated at a much nearer distance than is actually the case.

The edge of soundings on the parallel of the river is about twelve or fifteen miles dis-

* The Derrotero states, that this bank has several small islets on it and that it lies N. a little easterly, six miles from Lobos.

Directions. tant, whence the depths gradually decrease to nine fathoms, at about three miles from the shore, and the bottom all the way in is soft blue mud without any sand. To the Northward of the bar the depths are seven and eight fathoms at about three miles from the beach, over a sandy bottom mixed with mud; but to the Southward of it the shore is so bold that there are twenty-two to twenty-four fathoms over a fine sandy bottom, at about the same distance. The only exception is off Zerez Point, where for a small space the sand is mixed with mud.

In the rainy season when the current is generally running strong to the Northward, it will be better to sight the land in the neighborhood of the wooden ridge at Zerez Point, where Monte San Juan will verify the position should the weather be favorable; which, however, is extremely uncertain.

In the winter months, when the current will run to the Southward after northers at the rate of two knots, it will be more advantageous to approach well to the Northward, where the high land of Mecate may serve as a guide, failing a knowledge of the exact latitude.

The entrance of the river is discovered by the vigias which, as stated before, at the distance of five or six miles appear like ship's masts; and on nearing them the following signals are exhibited from the Northernmost to denote the state of the bar.

Two balls, horizontal at the yard-arm, signify that the bar is bad or not passable.

Signals. One ball at the N. yard-arm denotes that the bar is good or passable, and that the channel is toward the N. side.

One ball at the S. arm denotes that the bar is good or passable, and that the channel lies on the S. side.

One ball in the middle of the yard denotes that the bar is good or passable, and that the channel is in the middle.

Two balls, vertical, ask if the vessel is in want of provisions.

Two balls, vertical, at the S. yard-arm, ask if she wants water.

The signals are answered in the affirmative by the vessel hoisting her ensign at the fore.

In the event of being driven from the anchorage by the appearance of a norther, instead of beating about, wear and tear will be saved by seeking shelter under Cay Lobos, which is sixty miles distant.

Coast. The coast from the Bar of Tampico trends about N. N. W. ¼ W. nineteen miles to that of the river Ciega, and for several miles is composed of low sand hills, partially covered with bushes. About ten miles to the Northward of Tampico bar, the land rises a little into a long ridge clothed with trees, which has a hollow in the middle, and to the Northward of this it again becomes low and sandy. Captain J. Mackeller, of the British navy, remarks, that at the distance of six or seven miles this ridge has the appearance of a flat-boat, bottom upward.

At about five miles farther on in the same direction, and ten or twelve miles inland, is a remarkable round flat-topped hill called Mecate, which at a long distance makes like an island.

The bar of Ciega has only three feet water; and is found by bringing the hill of Mecate to bear W. The Ciega drains an extensive shallow lagoon, which communicates with that of Altamira, and thence with the Panuco near Tamaulipas.

From the above bar the shore takes a N. by W. ½ W. direction for seven miles to an opening called Trinidad, which has no more than two feet at low water. Off this space the bottom is rocky. From the bar of Trinidad to that of Tordo, the coast runs about N. ¾ W. eleven miles. The Tordo opening has only two and two thirds feet at low water; and within it are several shallow lagoons. The bottom in this space is clear with the exception of some pointed rocks here and there, but none of them lying more than two miles from the shore.

All this part of the coast is composed of low hillocks of sand, which at about six miles to the Southward of the Tordo Bar, reach a higher elevation than elsewhere, and are called the hills of Chapopote or Commandante. N. W. of these are three double hills, called Martinez, which, when brought in line E. and W. lead over the Tordo Bar. Farther inland again is the Sierra, or ridge of Tamaolimpa, which takes a N. W. direction. These hills terminate mostly in conical peaks, which distinguishes them from the Mecate Hill which has a round summit.

The coast from Tordo Bar to the River Marina, or Santander, runs N. by W. ¼ W. fifty-four miles; and is all along very low and sandy, with clean bottom to within nine miles of the bar of Marina, where there are several detached rocks extending two miles from the beach. At about eighteen miles from Tordo Bar, in the rainy season, the accumulated waters of the Morales Lagoon clear out an opening called Ostional, and near to it is a watering place. The lagoon runs close along the back of the shore as far as the Santander, and abounds with fish. This part of the coast prevents a low sandy beach and nowhere is good drinking water to be found, except at some distance inland. From the Bar of Santander the shore trends N. by E. ¼ E. about thirty miles, and then N.

E. forty-five miles to the Bocas Cerradas. This part is everywhere low and sandy; the highlands of the interior terminate at about twenty-four miles to the Northward of the Santander, and thence all the land is very low, the water in the lagoons in many parts bounding the horizon.

THE BAR OF SANTANDER, or Soto de la Marina, has six and a half feet water, but is extremely dangerous, except after very fine weather; the hills called Palma and Corrizo are a guide for it, the channel lying midway between them. *Bar of Santander.*

This opening drains a great lake just within it, which, although full of shoals, has a channel carrying ten to thirteen feet to the entrance of the Soto de la Marina, which has a depth of four or five fathoms. At about twenty-five miles up this river is the town of Soto de la Marina, which is thirty miles from the colony of New Santander, where all necessary provisions can be procured.

There is anchorage in seven fathoms at about two miles from the bar of Santander, or in ten fathoms at the distance of four miles; but it is by no means safe in northers, for the sea breaks as over a reef, even in the latter position. *Anchorage.*

THE BOCAS CERRADAS are four almost closed mouths within the space of three miles, and are visible ten miles off. After heavy gales they communicate with the Mare Lagoon, which lies close behind the shore, and extends from the Santander to the river San Fernando or Tigre, which is the principal drain of the interior lagoons, discharging itself over a bar of nearly three feet at low water, about twenty-three miles N. by E. ¼ E. from the Northern Ciega. The features of the shore in this space resemble those previously described. *Bocas Cerradas.*

From the communication it has with the lagoons, the water in the river San Fernando is brackish, and after heavy rains it is fresh. On the S. coast of the bay formed by it, there is also a pool where good water can be obtained in a case of urgent need. *Water.*

The coast from the San Fernando takes a N. N. E. ¼ E. direction for eleven miles, then N. ¼ E. eighteen miles, and afterward N. by W. ¼ W. about eight miles to the entrance of the Rio Grande del Norte, and it is all along of the same character as before. The only remarkable object is an opening at the last turn of the shore eight miles to the Southward of the Bravo, which communicates with an extensive lagoon that runs along at the back of the coast. A bar runs across it and extends out about three miles, and the discolored fresh water from the lake reaches off to a considerable distance beyond it, a circumstance not met with off any other bar on this coast. *Coast.*

All the coast which has been described to the Northward of Tampico, is moderately clean with depths from three to four fathoms at three miles distance. The quality of the bottom is generally of sand, coarse or fine, and in some places mud; on the bars of the river there is always very fine sand, which on some is mixed with soft mud. *General Remarks.*

The greater part of the lagoons have not more than three to four feet water at their greatest depth, and some parts of them are quite dry, except in the rainy season.

From August to April, so heavy a swell rolls in upon the shore, and the E. S. E. wind blows with such violence for two or three days previously to a norther, as to render it quite impossible for a vessel to ride at her anchors in safety. In the other months, from April to August, the navigation is easy and secure, and assisted by the Northerly and N. E. current. The E. winds which blow from April to June send in much sea; but anchorage may be taken up in seven or eight fathoms in sight of the coast, still it will be more prudent to remain under sail.

The land breezes are frequent in the summer, from midnight until nine or ten A. M., when they yield to the sea breeze; but this change only takes place so far as lat. 26½° N., where the mountain range terminates; all the other parts to the Northward are very flat, low, and swampy, on which but little rain falls, which is the chief agent in producing the land winds; and they are frequently not regular.

WEST INDIES.—CUBA.

CAPE SAN ANTONIO.—From Hollandes Point the coast trends W. ¼ N., six miles, then W. N. W. ¼ W., two and one fourth miles to Cape Falso; and thence N. W. by N., one mile and a half to Cape San Antonio, which is very low and sandy. *Cape San Antonio.*

The W. end of Cuba is from sixty to seventy feet high, thickly wooded, and steep to, until within about two miles of Cape Falso, where the bank commences which sweeps round the W. end of the island, at the distance of about half a mile, and joins the Colorados reef to the Northward of the cape. The extreme end of the island bends round gradually for about four miles, that it is difficult to make out any projecting point;

and Cape San Antonio can only be recognized by some huts and a flagstaff, and the light-house on the sandy spit; the light-house is colored white with black top, and has the word Roncali painted on it.

Light. The light-house on Cape San Antonio is one hundred and seventeen feet high, and exhibits at one hundred and eight feet above high water, a fixed white light, catoptric, and of the second order, which flashes every thirty seconds, and is visible at fourteen miles.

Anchorage. Temporary anchorage in about nine fathoms will be found under the W. end of Cuba, with the S. extreme of the land bearing S. E., and the N. extreme N. N. E. It must be approached, however, under easy sail, and care must be taken not to shoot too far in, as the bottom is very foul and shoals suddenly.

Tides. It is high water, full and change, at the W. end of Cuba at 9h. 30m., and the rise and fall is generally about eighteen inches. The flood sets to the Northward, the ebb to the Southward at the rate of about half a knot; but there is frequently no stream at all, and a strong current to the S. E.

Current. The current on the S. side of Cuba is variable, and generally very strong. Its usual course is to the Westward, and between the Grand Cayman and Cape San Antonio it sets to the N. W. It is, however, frequently found setting in an opposite direction, and appears to be greatly influenced by the force of the prevailing trade wind. An Easterly stream is generally felt after a prevalence of light winds, and more particularly during and for a short time after a N. wind in the winter season. Sometimes, however, on such occasions, it will only extend to about twenty miles off shore. Some observations tend to show that an Easterly set is more frequently found during the increase of the moon; and this is the opinion of the Cayman fishermen, who are constantly passing to and fro from their island to the Jardines, Jamaica, and the Musquito shore.

Caution. Hence, with so much uncertainty, the greatest attention is necessary in navigating along this side of the island, especially in the neighborhood of the Isle of Pines and the Jardines, which are so imperfectly known, and where the stream is also frequently found to set strong toward the cays and reefs, and the lead is of but little use. In running between Jamaica and the Grand Cayman, and thence between Cape Catoche and Cape San Antonio, the reckoning cannot be too frequently checked. In beating up from Cape San Antonio, a vessel may obtain some assistance from the land wind from Cuba, but in the winter season it does not extend far from the shore, and is very uncertain.

Antonio Knoll. ANTONIO KNOLL is a circular coral bank, about two and a half miles in diameter, with a general depth of fourteen and sixteen fathoms, with the exception of one spot on which only eleven fathoms were found. It lies N. N. W. ½ W., about ten miles from Cape San Antonio, and four miles from the edge of the Colorados Bank, and discolored water may be seen over it in clear weather.

N. Coast of Cuba. NORTH COAST OF CUBA.—From Cajon Point, the Northern extremity of the land of Cape San Antonio, the shore trends to the E. N. E. for thirty-five miles to the entrance of Guadiana Bay, and thence N. N. W. ½ W. ten miles to Avalo Point; it then curves gradually round to the N. E. for eighty-five miles to Bahia Honda.

On the meridian of 84° the land on the N. side of Cuba becomes lofty, and forms a conspicuous mass of hills called the Cockscomb Mountains, in which there is a remarkable notch that may be used as a good point of departure. To the Eastward of this is the Saddle Hill, or Pan de Guajaibon, about twenty-five hundred feet high, which may be readily recognized by the form of its summit; it rises about twelve miles to the Westward of Bahia Honda, and is also a good guide when beating up.

Colorados Reef. COLORADOS REEF.—This great extent of shore is skirted the whole way by a dangerous broken reef, called the Colorados, leaving a shallow bank within, navigable for small coasters drawing ten or eleven feet, which find an entrance near Cape San Antonio, and through some intricate channels near the E. end. The outer limits of this great barrier are still but imperfectly defined on the present charts; it should, therefore, be approached with the utmost caution, for the lead will give scarcely any warning and the shoals seldom break. The land at the S. W. part of this shore is so low as to be out of sight from the edge of the reef, and the current in the immediate vicinity is strong and extremely variable.

From Cape San Antonio the edge of the reef takes about a N. direction for ten miles, then N. N. E. ½ E. thirty-three miles, when it comes within eight miles of the W. end of Buena Vista Cay, the first islet met with coming from the S. W., and which may be seen twelve miles. Thence it takes a N. E. direction for about fifty miles, when it trends more Easterly until it almost joins the shore, a short distance to the Westward of Bahia Honda. The edge is said to come close home to the N. side of Buena Vista; but these remarks are intended merely as a general description of its limits, and by no means to direct a vessel along its edge.

Albatross Bank. ALBATROSS BANK, so named from H. M. brig of that name having sounded on it in 1844, has nine fathoms on it, with the Saddle Hill bearing E. ¼ S., and the hills of Buena Vista S. Its position is in about lat. 22° 50′ N., long. 84° 15′ W. This position, however, is considered doubtful as well as the soundings.

BAHIA HONDA.—Bahia Honda is a small, well sheltered harbor of sufficient depth for vessels of the largest draught. Its entrance, however, is so narrow and intricate, that a pilot is necessary in the absence of good local knowledge. The shore on either side of it is low and sandy. On the E. side of the entrance there is a small hill, the Cerro del Morrillo, on which there is a watch-house and a battery of four guns. The channel is about two miles in length N. and S., and opens out into a landlocked basin, one mile and a half in diameter, but the interior is only fit for coasters. From the base of the Morrillo a coral ledge runs off three fourths of a mile to the N. W.; and from Pescadores Point, on the opposite side, a similar ledge runs off to the N. E. and N. three cables' length, and the channel here between the edges is not more than a cable and a half wide. On the W. side of the entrance there is a fixed light. *Bahia Honda.* *Light.*

From the Morrillo the shore trends S. W. about half a mile to Real Point, and the distance across to Cayman Point on the Western shore is about three cables' length. The former may be approached within about three fourths of a cable's length, the latter within half a cable. From Real Point the Eastern shore trends S. nearly three fourths of a mile to Carenero Point, and one third of a mile to the Southward of this is a low mangrove island, called Cay Largo, or Fisherman Island, the W. end of which, named Difuntos Point, is seen from the entrance. This point is foul to the N. W. for two cables' length, and the channel is here again only about two cables broad. Within this is the interior basin.

Water can only be obtained in small quantities at Bahia Honda.

To enter Bahia Honda a good offing should be maintained, until the entrance bears S. ¼ E. As it is approached on this course, Difuntos Point will open out between the sandy points; at the same time a remarkable square-topped hill will be seen in this direction, at the back of a large sugar estate. The E. end of this hill in one with Difuntos Point will lead through the entrance of the harbor in five fathoms; be careful then to keep the weather side aboard as close as possible. When abreast Carenero Point a vessel may anchor in six fathoms, or she can steer on to the S. W., and anchor just within Difuntos and Mangles points, in the same depth. The former berth will be the most convenient for leaving with the land wind. *Directions.*

PORT CABAÑAS.—From Bahia Honda the coast trends fifteen miles to the Eastward to the entrance of Port Cabañas. The shore between is foul, and should not be approached within two miles. To the Southward of the port there is a ridge of mountains, fourteen hundred feet high toward the Western part, whence it slopes gradually down to the Eastward into an extensive plain between it and the table land of Mariel. A rather remarkable peak, at the E. end of the ridge, bears S. E. ½ E. from the entrance of the harbor, and near the centre of the heights there is a conspicuous large gap. The Saddle Hill bears S. W. by W. ½ W. from the entrance, and is also a guide from the offing. *Port Cabañas.*

On the E. side of the harbor the land forms two low ridges or hummocks, and at their W. end there is a large sugar estate, standing on the point at the entrance, and one of the buildings is dome-shaped. The entrance from shore to shore is a mile and a fourth wide, and when bearing S. a martello tower, with a few small buildings near it, will be seen about two miles within. The tower stands on the extreme end of a narrow neck of land which divides the harbor into two large basins or arms. The S. E. arm is only fit for coasters; the S. W. arm will admit vessels drawing fifteen feet. From the weather shore a coral ledge extends off upward of three fourths of a mile to the Westward, leaving a channel about three cables wide.

Wood may readily be obtained at Port Cabañas, by permission of the commandant of the fort, but water is scarce. Fish are in abundance. *Supplies.*

When steering for Port Cabañas, having opened out the tower, bring it to bear S. by E. ¼ E., when it will be in one with the remarkable gap on the heights above. This mark will lead through the channel, but there will not be found so great a depth as the chart denotes. With the gap open a little to the Eastward of the tower a vessel will carry in twenty-two feet water; and with it open to the Westward, double the breadth of the tower, she will have twenty feet. Having passed the inner point on the W. side of the channel, haul up and anchor close under the weather shore, at the entrance of the S. E. arm; or keep away and come to in the S. W. arm, under the lee of the tower. In doing this, however, be careful to avoid a small patch on which there are only seven and a half feet water; it lies nearly half a mile N. by W. from the tower, and may be seen from aloft. *Directions.*

In leaving the harbor, it will be desirable to weigh with the early land wind, to insure its carrying the vessel well out before it fails, as there is generally a very heavy swell in the offing, and frequently a strong S. W. eddy, which might throw her on the reef skirting the shore.

PUERTO DEL MARIEL is about twelve miles to windward of Cabanas, and twenty-two miles to leeward of Havana. The shore in its vicinity becomes a little more elevated, and a short distance inland, to the Eastward of the port, there is a remarkable long *Puerto del Mariel.*

flat ridge of table land, of moderate height, with a notch or step at its E. end, called the Table of Mariel, which cannot be mistaken; and a short distance to the Westward of it, will be seen a remarkable cliff, facing to the Westward, in the harbor. The entrance lies N. W. ½ W. from the W. end of the table, and on its Eastern side there is a martello tower and some huts, and when the former bears S. by E., a church and several buildings will open out in the interior.

The port is nearly three miles long from N. to S., but its entrance is only fifty yards wide, with a depth of four fathoms. The eye will be the best guide in entering, and when within the narrowest part, keep the weather shore aboard until abreast of Gorda Point, on which there is a small fort, when the vessel may anchor in five or six fathoms in safety.

To the Westward of the entrance the shore is skirted by a reef to the distance of half a mile: be careful, therefore, to avoid being becalmed off the port, as the reef is steep to, and frequently a strong eddy sets to the S. W.

Managua Paps. MANAGUA PAPS.—The shore to the Eastward of the Table of Mariel becomes rather low and flat until within a mile or two of Havana, when it rises into a few small fortified hills; and nine miles S. of the Morro heights there is a very remarkable isolated hill, seven hundred and thirty-two feet high, with two round hammocks, called the Tetas de Managua or Managua Paps. This hill is not only an excellent guide for Havana, when coming from the Northward, but useful also as a point of departure. The shore is steep to.

Havana. HAVANA.—Havana is the chief seat of government of the Island of Cuba, and its finest harbor. The land to the Eastward of it, until near the Iron Hills, is about two hundred feet high, and the shore bold and steep to. The entrance may be readily recognized by the Morro Castle, and the extensive line of fortifications on the cliffs, which overlook the city to the Eastward, at the height of about one hundred and fifty feet.

The entrance to the harbor lies N. W. by W. and S. E. by E., and the channel for three fourths of a mile is little more than a cable wide; it then opens out into an irregular shaped basin, two and a fourth miles in extent from N. E. to S. W., and from a half to a mile in breadth, capable of receiving a fleet of the largest vessels. The Morro Point, the N. point of the entrance, and the opposite point of La Punta, are steep to; a vessel of the largest draught may almost brush the sides of the former. A small bank of soundings extends N. W. by N. about half a mile from the Morro Point, and a warping buoy is moored on it.

The Northern shore of the channel is also steep to, but on the opposite side, from La Punta to about midway in, a shallow sand-bank extends off, and at its extreme point there is a red buoy, in fifteen feet water, on the shoal of San Elmo. The Southern shore within this is very bold, and vessels of the largest draught lie alongside the wharves of the city. About one third the way up, nearly in mid-channel, and without the San Elmo buoy, there is also a large square red buoy over a wreck.

From the town of Regla situated on the E. side of the harbor, a bank, named Bajo de Regla, dry in some places at low water, extends off half a mile to the N. W., and on its extreme end there is another red buoy. To the Northward of the shoal is the quarantine ground: to the Southward, the anchorage for ships-of-war. In the latter part, about midway between Regla Shoal and the city, is the Bajo de Luz, with only twelve feet on it. A white buoy has been placed on this shoal, with the Castle of Altares just in sight to the S. E. of the city, and the new sheers in a line with the church of Santa Clara. The buoy on the wreck has also been shifted closer to the N. shore. In the inner part of the harbor, midway between Cay Cruz and the city, are the two shoals of Galindo; on that nearest the cay there are only nine feet water, on the other twenty-four feet; but vessels never proceed so far up as this, except they require important repairs at the arsenal, which is situated in the S. W. corner of the port. Ships generally refit alongside the careening wharf, where there are means for heaving down.

Light-house. A light-house, seventy-nine feet high, stands on the Morro Castle, at the E. side of the entrance of Havana Harbor, and exhibits a brilliant flash light every half minute, and a faint light in the interval. The light, which is catoptric and of the first order, is elevated one hundred and forty-six feet above high water, and is visible in clear weather at eighteen miles.

Pilot. A pilot will be found waiting close off the Morro, by making the usual signal; but except to a stranger, one will scarcely be necessary.

Water. Vessels-of-war water very conveniently in Havana Harbor from government tanks, which are allowed to be sent for on making the necessary application.

Directions. Vessels bound to Havana from the Westward, having rounded Cape San Antonio, with the usual trade wind at E., should not steer higher than N. for fifteen miles, when they may haul to the wind, and the chart must be their guide along the Colorados. Here, however, the current generally sets to the S. W. on the edge of the bank. It will

therefore, be better to stand to the Northward, as far at least as the parallel of 240°, before tacking.

Nothing is more uncertain than the point where the great Florida stream is first to be met with; sometimes it will be found fifty miles to the S. W. of the Tortugas Islands; and at others it will not be felt until close up to the W. end of Tortugas Bank, or thirty or forty miles S. of those islands; the vessel's position by chronometer should therefore be ascertained as frequently as possible. Under any circumstances it will be better to avoid the Cuba shore until the vessel is well to the Eastward, when it may be necessary to sight the highlands in order to check the reckoning. In approaching the Cuba shore, the Easterly stream will seldom be met with until nearly on the meridian of Havana, or on the line between it and the Tortugas. It generally runs at the rate of from two to three knots close off the mouth of the harbor, and thence right across the Florida Strait.

It frequently happens that having arrived at a position S. of the Tortugas without feeling the influence of the stream, it is perhaps entered soon after the reckoning has been checked in the evening, and in making the land on the following morning the vessel will be found far to windward of the port. The features of the land to the Eastward, however, differ so considerably from those to the Westward, that there will be no difficulty in making out the position. As before observed, in page 438, the land to the Eastward of the Morro is about two hundred feet high and rather flat, but about fifteen miles to windward it rises into a remarkable ridge of very irregular hills of moderate height, about three miles in length from E. to W., and a short distance from the shore, called the Jaruco or Iron Hills.

At about thirteen miles to the Eastward of the Jaruco, and seven miles S. of Guanos Point, is the Pan de Matanzas, a large massive mountain, rising to the height of twelve hundred and seventy-seven feet, and cannot be mistaken. When seen from the N. W., its summit forms three hummocks, the centre one being much the highest, rising from behind a flat rocky ridge of land of moderate elevation. From the N. E. it appears as a prominent rounded mountain standing out by itself, and becomes a valuable point of departure. Should the vessel be found in a position thus far to windward, or less, it will be better to stand in, and run down within about two miles of the shore to cheat the current; taking care, however, to avoid the Jaruco Bank, which lies about a mile and a half from the shore, midway between Havana and Guanos Point, off the Iron Hill, and on which there are only eleven feet water. The discolored water on this bank, which is of some extent, may be seen from aloft in clear weather, and soundings appear to extend for a short distance all along the shore.

Vessels bound to Havana from the N. and E. will navigate either by way of the Providence Northwest Channel, across or along the Western edge of the Great Bahama Bank, round the Elbow of the Double-headed Shot-Cays, and thence across toward Guanos Point, out of the strength of the stream; or through the Old Bahama Channel, described in page 443.

Entering the harbor of Havana, time will be saved by waiting until the sea-breeze has set well in, which may be seen from the direction the flags are blowing on the inner heights. In the winter months, from October to June, a vessel will generally fetch all the way up to the anchorage; but in the summer, as the wind prevails to the Southward of E., she may have to warp in. In the former case, if coming from the Eastward, after passing the old fort, run down within about half a mile of the shore or more, and having brought the light-house to bear about S. S. E. (not before, in order to avoid any sweep), haul up under all plain sail, so as to shoot as far in as possible, and with both anchors clear for running.

Having passed the Morro Point close aboard, hug the Northeastern shore as near as the wind in general allows. The helm must be quickly and cleverly attended, to take advantage of the strong gusts and flaws; and the weather head braces and spanker brails should be in hand, ready to assist it. The wreck buoy may be passed close to on either side, but in general the vessel will be thrown to leeward of it. Having passed the valley between the Morro and the Cavana heights, the wind will become exceedingly variable; but with sharp attention to the steerage, the vessel will be able to shoot to windward of the San Elmo buoy, and through the narrows into the harbor. When off the E. end of the heights the breeze will be more steady, and the sail may then be reduced to enable her to take up a convenient berth among the numerous shipping. Should she come to against her helm, and be obliged to anchor in the narrows, be careful to give a good scope of cable, and shorten sail quickly to avoid dragging, as the wind rushes off the shore with great violence.

If the sea breeze hangs to the Southward of E., the vessel will have to be warped in, and most probably to be kedged up the outer part of the channel. In this case, when coming from the Eastward and having passed the Morro close aboard, stretch over to La Punta shore, and having tacked under it, shoot in as far as possible, and anchor under the Northern shore, and wait until the breeze slackens in the afternoon to warp up.

There will be no difficulty in quitting the harbor, as the regular land wind is seldom interrupted except by northers, which sometimes throw a heavy swell into the harbor's mouth. There is no regular ebb and flow in Havana Harbor, but with the land wind a slight stream usually runs out. The rise and fall is seldom more than a few inches.

Tides.

Port Santa Cruz Light.

At PORT SANTA CRUZ, N. side of Cuba, latitude 23° 9′, longitude 81° 59′, there is a fixed light.

Port Matanzas. Light.

PORT MATANZAS.—From Havana the shore trends E. thirty-seven miles to Guanos Point, which is low, and on which there is a revolving light, ninety-two feet above the level of the sea. Time of revolution, one minute. Thence a low sandy shore sweeps round to the S. E. for eight miles to Sabanilla Point, which forms the N. W. point of the entrance to Port Matanzas.

The entrance to this port or inlet, which is four miles deep and open to the E. N. E., lies between Sabanilla and Maya points, which bear E. by N. and W. by S. from each other, distant two miles apart. From Maya Point, which is very low and has some huts on its extremity, a rocky ledge runs off a mile to the Northward, and there is a narrow bank of soundings under its W. side, on which temporary anchorage will be found. Southward of the point, in the S. E. corner of the port, is the little river Canima.

The Western shore of the port is bold and steep to, and a vessel will have no soundings until she is close up to the shoals which shelter the anchorage. La Laja, the outermost of these, lies S. one mile and a half from Sabanilla Point, and on the N. end of it there is a pole-beacon with a small white flag—not easily seen—in twelve feet water, with nine fathoms a ship's length outside it. Thence the shoal extends across nearly to the S. shore, leaving only a narrow channel for coasters between it and the fort on the beach. Baja Nuevo shoal lies N. W. nearly a fourth of a mile from La Laja, and on its shallowest part there is another similar pole-beacon and flag. Between this bank and the Northern shore the channel is two cables wide, and the soundings which are from six to eight fathoms in the middle of it, gradually decrease on either side. There is also a small black buoy on a bank lying W. by S. about half a mile from the Baja Nuevo.

The town is situated on the Western shore on a tongue of land which separates the rivers Yumuris and San Juan or Matanzas, and communicates by stone bridges with extensive suburbs on the opposite banks. A shallow flat runs off in front of it, which prevents vessels from coming within half a mile of the wharves.

Water.

The best water for use will be found about three miles up the river Matanzas.

Directions.

Vessels bound to Port Matanzas will find the Pan of Matanzas, which overlooks it from the W., an excellent guide. In entering it will be better to keep the Western shore aboard within about half a mile, and when the Castle of San Severino, a conspicuous object on the Northern shore of the port, opens out, the beacons will be seen. Steer midway between the beacons, and anchor as most convenient within them. The best berth for a temporary anchorage will be in five or six fathoms, about one fourth of a mile off shore, with the above castle N. W. ½ N. the pole of the Bajo Nuevo N. E. ¾ E., and that of La Laja E. by S. If more convenient, the vessel may proceed farther to the Westward, according to her draught.

It frequently happens, however, that the flags blow off, or the beacons break adrift. In this event, after sighting the castle as before, bring the large church in the N. part of the town in line with the summit of the Pan of Matanzas W. by S. ½ S., which will lead about half a cable's length from the N. end of La Laja. At the same time will be seen, on the side of the rising ground N. of the town, two houses about one fourth of a mile from each other, with white fronts and roofs, and these in line, and in one with the highest part of the rising ground bearing W. ¾ S., will lead about eighty yards to the Southward of the Bajo Nuevo, in four and a half to five fathoms.

Another mark is the S. side or notch in the Pan in one with a large white house, the Westernmost in sight, on a hill at the back of the town W. by S. ½ S.; this will lead between the above shoals, and when the castle bears from N. W. ½ W. to N. W. ½ N. anchor as before directed.

The port being exposed to the E. N. E., a heavy roll is sent in with strong winds. The land wind in northers is frequently interrupted, and a vessel may be detained for a few days, as it is difficult and hazardous to beat out against the stream and sea.

Tides.

It is high water in Port Matanzas, full and change, at about 8 A. M. and 5 P. M., and the rise and fall two and a half feet. The stream runs in with the sea breeze and out with the land wind.

Coast.

The coast from Maya Point trends E. N. E. twenty-five miles to Ycacos Point, and is very low, woody, and sandy, but free of danger. At about twelve miles, however, to the Eastward of Matanzas, and six miles inland, there is a small ridge of remarkable irregular hills of considerable elevation, though not near so lofty as the Pan, with three distinct peaks called the Camarioca Paps. The centre peak bears S. 36° 30′ W. (true), from the light-house on Cay Piedras.

From Ycacos Point as far to the Eastward as Maternillos Point, a space of nearly two hundred and fifty miles, the coast is bordered with low mangrove cays and reefs to the distance in some places of twenty miles from the main land. The greater

part to the Westward of Paredon Point, is but imperfectly represented on the present charts, and being studded with dangers, steep to, should be most cautiously approached.

MONO, PIEDRAS, and MONILLO CAYS, the Westernmost of the above islets, are about a mile within the edge of the bank. The latter lies N. by E. ¼ E. three miles from the huts on Ycacos Point, and is merely a very small black rock, scarcely above the sea. Cay Piedras, lying about a mile N. E. of it, is about one hundred yards in extent, composed of rock and sand, and partially covered with low bushes. Close off the N. side are two small, dry rocks: the N. W. side is steep to, the S. W. and S. sides are foul to the distance of one fourth of a mile, and a ledge runs off a cable's length from the S. E. end. *Mono, Piedras, and Monillo Cays.*

The channel between Piedras and Monillo is said to be free of danger. The soundings decrease as it is approached, and in the middle depth is five fathoms, and one fourth of a mile E. N. E. of Monillo three fathoms. About a mile to the S. E. of it there is a shoal with only two and a half fathoms on it, with four and a half and five fathoms around. To sail through this channel a vessel should be able to lay up E. S. E.

Cay Mono, which lies N. E. ½ E., one mile and a half from Piedras, is a rocky islet, and not so large as Piedras. In the channel, about midway between these two, there is a small coral shoal of three fathoms, which should be carefully approached, as the water over it is not discolored and it breaks in heavy weather. There is deep water on either side of it to within one and a half cables' length of the cays. Between the shoal and Piedras the depth gradually increases to nine fathoms about midway, and midway between it and Mono the depth is five and a fourth fathoms: when on the shallowest part, the Pan of Matanzas will be seen between the two dry rocks off the N. side of Piedras W. S. W., and Mono will bear N. E. by N. From Mono a shallow ledge runs off to the N. E. a full fourth of a mile, and a mile from the cay in the same direction there is a dangerous small shoal of two fathoms.

There is excellent anchorage within the cays, in six fathoms, sandy bottom, with Cay Piedras W., and Cay Mono from N. by E. to N. N. W.; or in four fathoms with Piedras N. W. by W. to N. W. by N. a mile distant. *Anchorage.*

It is high water, full and change, at Cay Piedras, at 8h., and the rise and fall is two and a half feet. *Tides.*

CARDENAS BAY is about nine miles long from N. E. to S. W., and from six to ten miles wide. The N. side is bounded by a very narrow strip of low, sandy, wooded land, which terminates to the Eastward of Ycacos Point; the entrance to this bay is so blocked up by small keys and shoals that it is only navigable for vessels of not above ten feet draught; some good authorities, however, say fourteen feet. Small steamers and droghers navigate within the keys as far to the Eastward as the river Sagua la Grande. *Cardenas Bay.*

There is a fixed white light, varied by a red flash once in every half minute, on Cayo Piedras, at the entrance of Cardenas Bay, sixty-eight feet above the level of the sea. *Light.*

There is a light on the W. end of Cay de Ana, distant five miles from Cardenas, the only light which can be seen outside the bay. It is a fixed light, and can be seen in ordinary weather seven miles.

The light is fifty-four feet above the level of the sea, and is on a mast from the top of a dwelling-house, which is painted white.

In approaching Cardenas the most easy way is by the passage between Mono and Piedras. Vessels of more than sixteen feet draught must beware of a small shoal-spot lying nearly midway between the two cays, but by keeping Mono on board, it is safely passed. When past Mono, steer S. by E. for a small cay named Chalapa. When the W. end of Cay Mangla bears S. W. by W., and is on with the Westernmost peak of Camarisca, steer S. ¼ W., heading midway between Chalapa and Cay de Ana, until the S. shore of Cay Mangla is on with the peak, when steer for Cay de Ana. When the peak is fairly open half way between Mangla and Cay de Ana, steer S. W. by W. ½ W., when the cut between Cay Mangla and the Point N. of it is just open, edge off gradually to S. S. W. for the town, carrying not less than thirteen feet water. *Directions.*

The pilots board when from two to three miles inside of Mono. Should no pilot come out, or if too hazy to see the peak of Camarisca, it is advisable to anchor in three fathoms, with soft bottom, Chalapa bearing S. E. by S. There is also good anchorage in four fathoms hard.

Piedras light is good, visible fourteen miles. The light on Cay de Ana is lighted only on steamer nights.

Vessels bound to the ports on the N. side of Cuba, to the Eastward of Cardenas Bay, should approach them from the Eastward, passing through one of the N. E. Bahama channels or to the Eastward of them, and along the N. side of Hayti.

CABEZAS CAY, lying W. N. W. from Cay Cádiz, has a dangerous ledge running off from it to the Westward, and as it lies on the edge of soundings it should be approached with great caution. From this cay the edge of soundings takes a W. ½ N. direction for *Cabezas Cay.*

seventeen miles to the N. end of Cayo Cruz del Padre, which is the Northernmost cay of the whole range. Thence the bank sweeps round to the S. W. to Mono Cay, W. ¾ S. eight miles distant.

Light. CAYO CRUZ DEL PADRE LIGHT is a fixed white light, placed at an elevation of forty-nine feet above the mean level of the sea, and should be seen in clear weather from a distance of ten miles. The illuminating apparatus is dioptric or by lenses of the fourth order.

The tower is forty-six feet high, slightly conical, and painted white. It stands at the distance of about six and three fourths cables N. E. from the Cayo Cruz del Padre, near the S. E. extreme of the reefs surrounding that cay; in lat. 23° 17′ 7″ N., long. 80° 54′ 12″ W. of Greenwich.

There are some wells on Cayo Cruz del Padre, and water will also be found on Cays Galindo and Sagua la Grande.

Water. CAY BAHIA DE CADIZ lies about nine miles to the Westward of Médano Island, and on its N. E. part there is a fishing establishment and flagstaff.

Cay Bahia de Cadiz. Light. CAY BAHIA DE CADIZ LIGHT.—The light is a fixed white light, varied by a bright flash every minute. It is elevated one hundred and seventy-five feet above the mean level of the sea, and should be seen in clear weather from a distance of twenty-four miles. The illuminating apparatus is dioptric or by lenses of the first order.

The tower is of iron, one hundred and fifty-nine feet high, slightly conical, and painted white. It stands near the N. E. end of the cay, with the keeper's dwelling and storehouse on either side, in lat. 23° 12′ 24″ N., long. 80° 29′ 18″ W. of Greenwich.

Anchorage. Affords good anchorage. To run for it bring the flagstaff to bear S. S. E. to S. E., run in and anchor about one mile from the cay, with its S. point bearing E., in four fathoms. It will be observed that you carry deep water nearly to the anchorage; with the N. point of the cay bearing E. and distant one mile, the soundings are seven and a half fathoms, after which the water shoals rapidly to five and four fathoms, long. 80° 31′ W., lat. 23° 13′ N.

Supplies. There is good fishing and wooding at Cay Cádiz, but no water.

Tides. High water, full and change, at Cay Cádiz, 6h. 20m.; the rise and fall is three feet.

Remarkable Mountains. REMARKABLE MOUNTAINS.—About twenty-one miles to the Southward of Médano is the Sierra Morena, a remarkable mountain with several pointed peaks; the two nearest, the N. W. extreme of the ridge, bear S. from the Nicolao Reef. A short distance to the Westward of Morena, there is another remarkable range of lofty hills forming three peaks, the centre one being the highest, called Tetas de la Bella or La Bella Paps, which bears S. of Cay Cádiz, and is a good guide for it. Still farther to the Westward is the Sierras del Limonar, which may also be seen from without the shoals; and between it and the peaks of Camarioca is the hill of Santa Clara equally conspicuous.

Alcatrazes Shoals. ALCATRAZES SHOALS lie two miles to the Westward of the Nicolao Reef, and seldom break. This part of the bank is extremely dangerous, and not well known. From Médano, Cay Sal bears N. by W. twenty-eight miles.

Médano Island. MEDANO ISLAND, lying N. W. by W. sixteen miles from the latter channel, is a small low, sandy cay, twenty-five yards long and ten yards broad, from which a reef sweeps round from N. E. to N. W. at the distance of about two and a half cables' length, called the Nicolao or Nicholas Reef.

Sagua de ta Grande. SAGUA DE LA GRANDE.—Between Cayo de la Cruz and Cayo Mariposa, in lat. 22° 59′ 40″ N., long. 79° 58′ 27″ W., is Boca de Marillanes, the best entrance into the harbor of Sagua de la Grande.

In making this port there is a remarkable range of lofty hills lying to the S. W. of the cay, known as the Loma of Sagua. With these hills bearing to Eastward of S. they appear as separate mountains, but when to Northward of S. they present the appearance of one range. Cristo Cay also affords a good landmark, it having a white beach; there are also four or five pilot huts and a flagstaff on its N. E. point, on the top of which there is a barrel, with the staves painted black and white, and a blue flag with a white P, in the centre.

Buoys. There are two buoys on the banks, outside the harbor, both of which are to be left on the port hand going in. Fifteen feet only can be carried into the anchorage. Run for the N. E. point of Cayo del Cristo, which may be known from its white beach and large pilot and fisherman's house on the point, until it bears W. distant one and a fourth miles, and the S. E. end of Cayo de la Cruz S. by W. ¼ W.: then steer S. E. until the S. E. point of Cayo de la Cruz is on with the large white storehouse at the mouth of Sagua River, and bearing S. W. by S., when stand in. This range clears the shoal ground called Cabezo de Marillanes, and crosses the bar in the best water, say from nineteen to twenty-one feet.

When abreast of the pilot-house on the S. E. point of Cayo de la Cruz, steer S. W. by S. ¾ S., watching carefully the shoal ripples on either hand. When abreast of two small islands called Cayo Palemitas, luff up from them to the Eastward, and anchor in from seventeen to eighteen feet water, good holding ground.

Cabezo de Marillanes has but seven feet upon it, and bears E. by S. ¼ S. from the huts in Cayo del Cristo, distance of two and one eighth miles.

Cabaza de Canete has but four feet water upon it, and bears S. E. by E. ½ E. from the huts on Cayo del Cristo, and N. E. by N. from the pilot-house on Cayo de la Cruz.

Slightly to the Eastward of the range between the S. E. point of Cayo de la Cruz and Cayo Palomitas, are several shoal spots with eight feet only upon them. S. ¼ W. from the pilot-house on Cayo de la Cruz, half a mile distant, is a spit that projects from Cayo Mariposa. *Dangers.*

These shoals, at the mouth of the entrance, are very well defined by the tide ripples, and with care can be avoided.

The rise and fall of tide is about two feet. *Tide.*

A light will be erected on the N. E. point of Cayo del Cristo.

ALMEDINAS REEF, which always breaks, lies N. W. ten miles from the W. end of Cay Francés, and close to the edge of soundings, about three miles from Cay Fragoso, and N. of Mount Guajabana on the main shore. From the Julias Cays, the edge trends more Westerly, and ten miles from them is the Boca de Marillanes, the Eastern channel to the river Sagua de la Grande.

CAY FRANCES.—The port of San Juan de los Remedios is at Point Caybarien. Nine feet only can be carried at the point, which is connected by railroad with San Juan. Vessels drawing over nine feet anchor under the lee of Cay Francés, which affords good shelter and excellent holding ground. *Cay Francés*

Cay Francés may be known by the flagstaff and a few houses on the N. W. point; there are also scattered trees of large size on the point, which make an excellent landmark.

In running in bring the flagstaff to bear from S. to S. E., give the point a berth of one mile, gradually hauling up around the bank; anchor with the white cliff bearing E. in two and a half to four fathoms. The soundings are very irregular.

The channel to Point Caybarien is staked out.

Ten miles N. W. by W. from Cay Francés there is a dangerous shoal, on which the sea breaks in moderate weather.

There are some good wells at the S. end of Cay Lobos, and water will be found on the N. side of Cay Coco, about twenty miles to the Westward of Paredon Grande. *Water.*

From abreast Cay Francés the edge of the bank takes about a N. W. by W. direction forty miles, when it comes within a mile of Julias Cays.

NAVIGATION OF THE OLD BAHAMA CHANNEL.—This channel is seldom navigated from to leeward except by small coasters that can find anchorage during the night on either side, or steamers that can run through while there is daylight. Vessels coming from to windward, after passing through either of the N. E. Bahama channels, or along the N. side of Puerto Rico and Hayti, generally keep the Cuba shore aboard, where the remarkable highlands already noticed enable them to check their reckoning, and keep a proper offing according to the season. The current here usually runs to the Westward, but not strong. If requisite a pilot can be obtained at Majana Bay. Great care should be taken to avoid the Bahama side. *Old Bahama Channel.*

Some few old experienced navigators, however, who have a thorough knowledge of the Bahama cays and banks, instead of taking this channel, prefer running through the Crooked Island passage, thence round the S. end of Ragged Island, or Cay St. Domingo, and across the bank inside all the shoals, on the parallel of 22° 42′ N., quitting it either to the Northward or Southward of Cay Guinchos. Vessels of eighteen feet draught may do this, for they can carry from four to five fathoms all the way, and anchor in safety whenever it is requisite; but we must again remark that it requires a thorough acquaintance with the locality, and of the mode of navigating by the eye.

The Old Bahama Channel may be said to extend from Cay Verde to the N. point of Cay Paredon Grande on the S., and from the Diamond Point to Cay Guinchos (or Ginger) on the N. side. This will make it about fifty miles in length. At the E. end, between Diamond Point and Cay Confites, which bears W. of it, it is eighteen miles wide. In the narrowest part, between the W. end of the Lavanderas Reef and Confites, S. W. of it, the distance is only ten miles. It then opens out slightly and very gradually, and at the W. end it is about fourteen miles across. Its line of direction turns gradually round from N. N. W. to W. N. W., rendering it at present impossible to navigate with safety in the night-time or in thick weather.

THE N. SIDE OF OLD BAHAMA CHANNEL is equally dangerous as the S. side just described, perhaps more so, as the dangers at the S. E. end are out of sight of any object, and on the very edge of soundings. *N. Side.*

The following is an extract of a letter from Admiral Chas. Wilkes, U. S. N., dated Dec. 2, 1862:

"The Old Bahama Channel is the best lighted channel in the world, and is becoming the first highway for steamers, and is advantageously used by sailing vessels.

"The Bahama Banks have long been considered in the light of a bugbear to the navigator. In my view of them I consider them one of the best routes, as well as safe in all weathers, with smooth water and good anchorage."

N. Coast of Cuba to Cay Francés.

N. COAST OF CUBA TO CAY FRANCES.—From Maysi Point, or Cape Maize, the E. end of Cuba, the shore trends to the N. W., and about a mile from it is the entrance to the river Maysi; another mile beyond the river is Azules Point, where the land begins to rise. The reef which skirts Maysi Point terminates here at about a cable's length from the shore; and there is a shall channel through it in front of the river Maysi. From Azules Point the shore takes a W. N. W. direction for five miles to Fraile Point; it then trends more Westerly six miles to the river Yumari, and two miles farther to leeward is the harbor of Mata. All this part of the shore is clean and steep to, and may be coasted within half a mile.

Puerto de Mata.

PUERTO DE MATA is a small basin about half a mile in diameter, and only fit for coasters. There are only fifteen feet water in a space of about two cables' length in the centre of the port, and being open to the N. and N. E. it is scarcely safe in the winter months. The entrance is about two cables wide, with a depth of from four to six fathoms, and a vessel in entering should steer in mid-channel.

Firewood is abundant in Port Mata, and good water may be obtained from a small rivulet on its Eastern shore.

From Port Mata a rocky shore trends N. W. by W. six miles to Majana Point, and between them is the entrance to the river Boma. At the point the coast bends slightly round to the Southward and Westward, forming a sandy bay about two miles in extent, called the Playa de Miel, which terminates at the entrance of Baracoa.

Majana Bay.

MAJANA BAY.—There is temporary anchorage under Majana Point in from ten to thirty fathoms water, but be careful not to shoot in so far as to bring the point to the Westward of North, as it shoals suddenly to four fathoms or less.

Pilots.

Vessels bound through the Old Bahama Channel generally wait in Majana Bay for a pilot, who will come from Baracoa on making the usual signal.

Puerto de Baracoa.

PUERTO DE BARACOA.—The entrance to this port may be readily found from a remarkable flat-topped mountain called Yunque de Baracoa (the Anvil) which rises above the neighboring heights, about five miles W. S. W. of the entrance, and may be seen about forty miles off. As the entrance is approached, a small fort will be observed, and soon after the town, which stands a little below it, on the Eastern side of the port; a small fort will also be seen at the entrance. The port or bay is about half a mile wide from N. W. to S. E., but scarcely a fourth of a mile deep. It has sufficient water in it for vessels of the largest draught, but being exposed to the prevailing winds, which throw in a heavy sea, it is seldom visited except by coasters, and these anchor close up under the town. The port can only be left with the land wind, and, consequently, in the season of the northers, a vessel will be liable to some days' detention.

Supplies.

Baracoa is a good place for obtaining supplies of fresh meat and vegetables, and there is a small stream of water at the bottom of the port, but it is not good.

Puerto de Maravi.

PUERTO DE MARAVI.—From Baracoa the shore trends to the Northward three miles to Canas Point, and then more Westerly for two miles to the entrance of Port Maravi. The coast is here quite clear, but as there is generally a heavy swell it will be better to keep a wide offing. Maravi is merely a small inlet two cables deep and one cable wide, with depth of eight fathoms in the centre, and with no danger whatever in the entrance. It is, however, exposed to the N. E., and consequently not a safe anchorage, except under very favorable circumstances.

Puerto de Navas.

PUERTO DE NAVAS.—The shore from Maravi takes a N. N. W. direction for six miles to Port Navas, which is also a small inlet open to the Northward, but sheltered as far as N. E. It is about three cables deep and a cable wide, with a depth of nine and ten fathoms, and there is no difficulty in entering.

Puerto de Cayaguaneque.

PUERTO DE CAYAGUANEQUÉ.—The entrance to this inlet, which lies about two miles to the N. W. of Port Navas, is only forty yards wide, and being open to the N. E. it is only safe for coasters.

Puerto de Taco.

PUERTO DE TACO, situated three and a half miles to the Westward of the latter port, is a small deep basin, but its channel is so exceedingly intricate that it is only fit for handy coasters, drawing not more than ten feet water.

Puerto de Jaragua.

PUERTO DE JARAGUA.—From Taco a sandy shore trends W. N. W. two and a half miles to Jaragua Point. It here becomes foul to the distance of two miles, and should be carefully avoided. There is, however, a small deep channel through the reef about seventy yards wide, which shows itself distinctly by the breakers on either side, and lies two cables' length to the N. E. of three small cays. In a case of great necessity a vessel may venture to run through, by bringing the largest of these cays (which is the Southernmost) to bear S. W., and anchor off the S. end of the middle islet in six fathoms, sandy bottow. Vessels drawing not more than fourteen feet may run farther in, and bring up about a cable's length to the Westward of the centre of the largest cay in a depth of nineteen feet.

Puerto de Cayo Moa.

PUERTO DE CAYO MOA.—The shore from Jaragua takes a N. W. direction for seven miles to Guarico or Mangle Point, and then W. N. W. nine miles to Port Cayo Moa. All this part of the coast is foul and dangerous, and should not be approached

within two miles. About twelve miles inland the Sierras de Moa rise to a considerable height, and are a good guide to a vessel when off this part of the island.

The E. end of Cayo Moa is in longitude 74° 53′ W. The Eastern or weather reef at the entrance of this port is distinctly marked, even in fine weather, by broken water, and the rocks are rather above water than awash; but at the lee or Western side of entrance there is nothing to mark the danger for at least six cables from the Eastern reef. The general body of the shoal extending from Cayo Moa is coral, covered with dark weed, which, even with nine feet of water over it, looks deep; but the S. E. end of it is white sand, and the bottom can be seen from the paddle-box of a steamer. The width of the opening or entrance between these reefs is only four hundred yards, or two cables' length, from the three-fathom edge on one side to the three-fathom edge on the other.

The River Moa, in the S. part of the harbor is said to be the largest in Cuba; it is shoal and only thirty yards wide at the entrance, but deepens inside. Half a mile up it the mangrove swamp terminates, and well-wooded rising land begins. Pilots are not to be obtained.

Directions. In entering this port, keep the Eastern Reef about half a cable distant, or nearer, if necessary, as it may be safely approached to within thirty yards, at which distance there will be from seven to nine fathoms depth, and the dangers are visible. The course in will be S. by W. ½ W. until the S. E. point of Cayo Moa bears W. ½ N., then steer W. ½ S. for the anchorage in eight or nine fathoms. Be careful to avoid a two-fathom patch, which is nearly midway between the cay on the N., and the main land on the S. with the Eastern extreme of the cay bearing N. N. E.

Tides. It is high water full and change, about 7h., and the rise and fall three feet. The flood stream at the Eastern end of Cayo Moa reef sets to the S. W. one mile an hour, and the ebb to the Northward.

Current. From Cape Maysi to the Westward round Lucrecia Point, a strong indraught was felt by the Hydra, and from Puerto de Nuevitas to Cayo Verde, the current was found setting strong to the S. S. W. directly on the reef.

Puerto de Yaguaneque. PUERTO DE YAGUANEQUE.—From the Moa cays the shore trends eleven miles to the Westward to Port Yaguaneque and the reef between extends out to the distance of from two to three miles. About seven miles to leeward of the Moa cays, near the edge of the reef, is Cay Burro, and three miles farther on, and about a fourth of a mile from the shore is Cay Arena or Sand Cay. The entrance into Yaguaneque is through a small opening in the reef two thirds of a mile to the N. W. of the latter cay: but is so narrow and intricate, and the interior being merely a shallow lagoon, it is only fit for small coasters.

Puerto de Cananova. PUERTO DE CANANOVA, one mile and a half to the Westward of Yaguaneque, is a small narrow inlet of similar character, and is entered through an intricate opening in the reef N. of it, which is here only half a mile from the shore.

Puerto de Cebollas. PUERTO DE CEBOLLAS, three miles farther to the Westward, is equally difficult of access, and only fit for coasters. The shore is low and sandy, and the reef about half a mile distant.

Puerto de Tanamo. PUERTO DE TANAMO.—From Cebollas the low sandy shore trends ten miles to the Westward to Port Tanamo, and is again foul to the distance of from one to two miles. Midway between is the river Sagua. This port is of considerable extent, and studded with small islets, between which are channels deep enough for the largest vessels. The cut through the reef and the channel into the port are, however, both very narrow, but the dangers are easily seen, and the eye will be the best guide.

Puertos Cabonico and Livisa. PUERTOS CABONICO AND LIVISA.—From Tanamo, a low sandy shore, still bordered by a reef to the distance of about two miles, trends Westerly for ten miles to the entrance of Cabonico and Livisa. These ports are entered through a narrow, deep channel, about a cable wide. About half a mile within the entrance, a narrow neck of land divides the interior into two channels; the Easternmost leading into Cabonico, the other into Livisa. Both are very tortuous and intricate, but have sufficient water for vessels of the largest draught. Most of the dangers are seen, and the eye will guide in mid-channel.

Puerto de Nipe. PUERTO DE NIPE.—The shore from Cabonico trends W. N. W. five miles to the entrance to Port Nipe. In this space the reef extends off about a mile from the shore until close to Nipe, where it is only one fourth of a mile. The land in this neighborhood is remarkable. About thirteen miles inland the Sierras del Cristal rise to a great height. To the N. W. of the port there is also a lofty ridge of mountains rising from the shore at Mulas Point to the Pan de Sama, a flat-topped peak which cannot well be mistaken, and may be seen twenty miles. The two ranges are separated by an extensive valley, which also serves as a good guide.

Port Nipe is about eight miles in extent from E. to W., and about three to seven miles in breadth. It is quite secure against all winds, and will admit vessels of the largest draught without difficulty. The entrance is from one fourth to three fourths of a mile

wide, and all that is necessary in entering is to steer in mid-channel. After passing the inner points of the entrance keep the Northern shore aboard until within Mangle Point, from which a shoal extends to the N. N. E. three fourths of a mile, when anchor as most convenient, in six or seven fathoms. A vessel will have to wait for the land wind to take her out, which as before stated, in the winter season is frequently overpowered by northers for some days.

Puerto de Banes. PUERTO DE BANES.—From Nipe a bold and steep coast trends to the N. and N. W. for eleven miles to Port Banes, which is also well sheltered, and of sufficient depth for large vessels. Its entrance, however, lies at the bottom of a bay or funnel, two miles wide in the outer part, completely exposed to the usual trade wind; and the channel is so narrow, and the turnings so sharp, that it is very difficult to navigate. In leaving this port, the mariner must also make certain that the land wind will take his vessel to a good offing before it fails, as she will come out on a dangerous lee-shore, and be exposed to a heavy sea and lee current.

Point Lucrecia. POINT LUCRECIA.—From the N. point of the above bay the shore runs in a N. by E. direction ten miles to Mulas Point, and is foul all the way to within the distance of a mile. From Mulas Point it trends N. W. five miles to Manglito Point, and then N. W. by W. six miles to Lucrecia Point, a headland which is two hundred feet high a mile inland. The coast here takes a somewhat sudden turn, and trends to the W. S. W. for three and a half miles to Port Sama. All this part of the shore is clean and steep to, and about midway is the small river Seco, at the bottom of a sandy bay. Temporary anchorage will be found off Port Sama.

Light. On Manglito Point there is a revolving light, one hundred and twelve feet above the level of the sea. Off Manglito Point is a coral reef extending nearly one fourth of a mile from the shore, sounded in sixty fathoms, rock at half a mile off shore.

Puerto de Sama. PUERTO DE SAMA is a small inlet about one mile and a half long, N. and S., from one to two cables wide, and only fit for vessels drawing not more than twelve feet water. The entrance may be readily found by the Pan de Sama, which rises S. of it. To the Westward of the port there is also a flat-topped ridge of mountains running N. W. and S. E., and terminating at its W. end in a bold scarped rock of a whitish appearance.

Puerto de Naranjo. PUERTO DE NARANJO.—Between Sama and Port Naranjo, five miles to the Westward, the shore is composed of sand, and named Guardo-laboca. To the Southward of it there is a detached sugarloaf hill, and to the S. W. the Meseta de Naranjo, a small wooded mountain with a flat summit. Naranjo lies between these two objects, and about three miles to the windward of it there is a remarkable *red* cliff, and on the E. side of the entrance there is also another of the same appearance, high and scarped. The shore between it and Sama is foul to the distance of about half a mile. The entrance to the port is only a cable wide, but it opens out into an irregular shaped basin, containing several inlets deep enough for vessels of all classes, sheltered from all winds, and they can sail in or out of it with the usual sea breeze.

Wood and Water. There is good wooding and watering in Port Naranjo. The latter is at a stream on the Southern shore, at the head of the Carenage, abreast a small mound named the Table of Naranjo, but there will be some difficulty in finding the opening in the bushes leading to it.

Directions. In running down for Port Naranjo it is necessary to keep a good offing until the entrance bears S. by E., when a vessel may haul in. Give the weather point a berth of a cable's length, and after clearing the ledge, which runs off one cable and a half in length to the Northward of the lee-point, the eye will guide in mid-channel.

If intending to make only a short stay, it will be more convenient to anchor close off the first sandy beach on the Eastern shore, in ten or eleven fathoms, with the weather point bearing N. N. W.; otherwise proceed farther up into what the fishermen call the Carenage or Western Bight. The best berth here will be in about ten fathoms, with the centre of the Table of Naranjo W. S. W., and the N. point of the Carenage in one with the red cliff at the entrance, N. The table from this quarter has a conical appearance.

Tides. The rise and fall at Port Naranjo is about four feet, but nothing is known of the period of high water.

Puerto de Vita. PUERTO DE VITA.—From Naranjo the shore trends W. N. W., two and a half miles to Pesquero-Nuevo Point, and then W. S. W. three miles to Port Vita. This part of the coast is low and sandy; the first portion is foul to a short distance, the latter is clean and steep to. Vita is a small, narrow, irregular shaped inlet, which may be used and easily navigated by vessels drawing not more than eighteen feet.

At three miles to the Westward of Vita is Port Bariay, and a mile farther to leeward Port Jururu.

Puerto de Bariay. PUERTO DE BARIAY is open to the Northward, and therefore not safe in the winter months, but there is good temporary anchorage close under the weather shore off the second sandy beach from the entrance.

PUERTO DE JURURU is more extensive than that of Bariay, and the interior completely sheltered, with a depth in it of four fathoms, but the entrance is so narrow and tortuous that it is only fit for small fore-and-aft rigged vessels of light draught. *Puerto de Jururu.*

PUERTO DE GIBARA lies five miles to the Westward of Jururu, and is merely a small bay, about a mile in extent, with a depth just within the entrance points of twenty feet. It is quite open to the Northward, and only fit for small coasters, which find shelter close under the weather shore, as far round as N. by W. The town stands on the Western shore, and may be seen nine miles off. To the Southward of it are three remarkable hills; the Easternmost, from the shape of its summit, is called the Saddle of Gibara; the middle one somewhat resembles a sugar-boiler; and to the Westward of the other are some hills of regular height. *Puerto de Gibara.*

Although the bay is only adapted for small vessels, it is the port of Holguin or Holgeia, a large town about fifteen miles in the interior, in a cultivated part of the country. The river Gibara flows into the bay, and is navigable for boats some distance up.

From the W. point of the bay the coast runs Northerly for two miles to Brava Point, and is bold and rocky. It then bends round to the N. W. for eleven miles, so that Gibara lies at the bottom of a deep bight. For ten miles from Brava Point the shore is rocky, sloping, and clean, to Mangle Point, but it then becomes sandy and steep to, as far as Herradura Bay. Thence it takes a more Westerly direction six miles to Port Padre. This part is low and foul to some distance, and the shore is skirted by remarkable palm-trees.

PUERTO DEL PADRE is a secure basin, carrying a depth over the greater part of it of four fathoms; the channel into it, however, is very narrow and somewhat tortuous, but the dangers are all visible. Close to the Westward of the port are two small hummocks, which are good guides for it. The entrance lies at the bottom of a bay or funnel, which is about a mile deep, and at the outer part, between Jarro Point on the E. and Guinchos Point on the W., two miles wide. Close off the latter there is a small cay, and this side is steep to. All, therefore, that is required in entering is to give the reef which skirts the coast a berth until Jarro Point bears S. E., when haul in, keeping the Western shore aboard. The interior of the port is almost separated into two parts; the Easternmost will be found the most convenient for leaving, and the channel into it is between the two cays at the inner end of the entrance channel. *Puerto del Padre.*

PUERTO DE MALAGUETA.—The shore from Port Padre continues its Westerly direction for five miles, and is skirted by a reef to some distance. There is here a small opening leading into the bay or port of Malagueta, an extensive, unnavigable lagoon. The land around is low and swampy. Thence the coast takes a N. N. W. direction five miles to Cobarrubias Point, and then W. N. W. ten miles to Port Manati. *Puerto de Malagueta.*

PUERTO DE MANATI carries a depth of from four and a half to five and a half fathoms, but it is merely a narrow creek leading into a shallow lagoon, and only fit for coasters. On its Western side there is a remarkable sugarloaf mount called El Manueco, and a little beyond it another, not quite as lofty, named Fardo or Table of Manati, which may be seen fifteen or twenty miles, and are good guides from the offing. It must be borne in mind, however, that when nearly in a line they somewhat resemble the Saddle of Gibara, and if mistaken for it might lead to accidents. *Puerto de Manati.*

PUERTO DE NUEVAS GRANDES.—From Manati Point the coast trends N. N. W. three miles to Braba Point, and then W. N. W. five miles to the entrance of Nuevas Grandes ò del Bayamo, a small tortuous creek, in some parts only half a cable wide, and only navigable for droghers of twelve feet draught. All this part of the shore is foul, and the reef extends off two thirds of a mile from the entrance of the creek. Thence the coast runs N. N. W. for eleven miles to Puerto de las Nuevitas del Principe, and is skirted by a reef all the way, and should not be approached within two miles. *Puerto de Nuevas Grandes.*

NUEVITAS.—A fixed light is now shown on Barloventa or Pilot's Point, E. side of the entrance. The light is forty-nine feet above the level of the sea, and should be seen in clear weather nine miles. It is shown from the top of a mast painted white, on the keeper's dwelling, which is quadrangular and painted yellow. *Nuevitas Light.*

PUERTO DE LAS NUEVITAS is the port of Principe, a large commercial town about twenty-five miles in the interior, and which communicates with it by a single line of railway. The harbor is completely sheltered, and capable of admitting vessels of the largest draught, but the channel into the interior is so narrow, and its turning so sharp, that a pilot is absolutely necessary; in his absence it must be navigated by the eye. The entrance points are low and about half a mile apart; on the Eastern point are some huts, the residences of the pilots, and near them a flagstaff. *Puerto de las Nuevitas.*

Near the S. shore of the harbor are three small hills, and in the middle of the harbor three small islets, somewhat higher than the surrounding land, and good guides from the offing. Should a vessel merely wish to communicate with the town, it will be found more convenient to anchor off the fort, which is about a mile and one fourth within the entrance. In this case, all that is to be done is to steer in mid-channel, taking care, as the entrance is approached, to avoid a dry shoal near the W. end of the Eastern reef, bearing N. E. by E. one mile from the flagstaff on the point. The tide runs strong at the entrance, but they are scarcely sensible in the harbor.

There is a small stream of good water near the town of Nuevitas, on the Western shore of the harbor, but it is difficult to get at, as the mouth is nearly dry.

Maternillo Light. MATERNILLO LIGHT.—This part of the coast is also pointed out by the light-house on Maternillo Point, which bears N. N. W. four miles from the entrance to Port Nuevitas. The coast between is very low, but free of danger. The light-house is one hundred and sixty-three feet high, has the word "Colon" painted on it, and exhibits, at one hundred and seventy-six feet above high water, a bright light, catoptric, and of the first order, which revolves every minute, and is visible at a distance of fifteen miles.

La Sabinal. LA SABINAL.—From Maternillo Point the shore trends W. N. W. twenty miles to the Boca de Caravelas. This part of the coast is called La Sabinal, and is very low, with a sandy shore, backed by numerous lagoons and swamps, and skirted by a broken reef to the distance of from a mile to a mile and a half, with soundings about one third of a mile outside it. On the shore there are four fishing stations, named Cruces, Las Palmas, Punta Piedra, and Enseñada-Honda, before which small vessels, drawing seven or eight feet, find anchoring ground under shelter of the reefs. The only remarkable object on the coast is a large clump of mangrove trees about ten miles from Maternillo Point, called the Alto de Juan Danue.

Boca de Caravela. BOCA DE CARAVELA has six feet water over its bar, and the same depth may be carried through an intricate channel between the mangrove cays, to the fishing village of Guanaja, about twenty-two miles to the Westward. At the entrance of the opening the tide runs three knots.

Guajaba Island. GUAJABA ISLAND.—From the entrance of the Caravela the N. E. side of the island of Guajaba trends N. W. by W. ten miles. For the first four miles it is a low mangrove shore, skirted by small cays; the remainder is a sandy beach. On this island are two small hills: the S. E. hill is about a mile in extent N. W. to S. E., and ninety feet high; the other is a smaller round lump, and a little less elevated. When first seen from the Eastward they have the appearance of four small hummocks, and serve as guides to this part of the coast.

Boca de Guajaba. BOCA DE GUAJABA, which separates this island from Cay Romano, has a depth of five feet at its entrance at low water, and there is a boat channel of three feet up to Guanaja. About seven miles to the N. N. W. of the opening there is a remarkable hill on the Eastern end of Cay Romano, two hundred and thirty feet high, which cannot be mistaken. Under it will be seen two fishing stations near the beach.

Cay Verde. CAY VERDE.—About five miles to the Northward of the above hill is a small, low islet, of a circular form, and a cable in diameter, covered with bushes to the height of ten feet above high water, called Cay Verde. From the Caravelas opening to this islet the broken reef still skirts the shore to about the same distance, inside which boats or small vessels not drawing more than seven feet find good shelter. N. by E. from the River Guajaba there is an opening through which ten feet water may be carried, and half a mile S. W. of Cay Verde there is shelter for vessels of this draught against northers. The best channel to take is that round the N. end of the reef about a mile and a half from the cay; but it requires good local knowledge of the place to enable a vessel to thread her way safely through the shoals.

Bay Confites. CAY CONFITES.—This low cay is half a mile in length, N. and S., a cable wide, and lies close on the edge of soundings at four miles N. by W. of Cay Verde, four and a half miles E. by N. from the S. E. end of Cay Cruz, twelve miles S. by W. ¼ W. from Cay Lobos, and nineteen miles W. of the Diamond Point, at the entrance of the Old Bahama Channel. On its S. end there is a pile of stones, and near the N. end a solitary tree, which is the first object seen when coming from the S. E. Off the N. end a dry reef extends to the distance of a mile, leaving a small channel of twelve feet water between it and the end of the cay. A dry reef extends also a mile from the S. end.

Anchorage. Between this latter dry reef and the reef running off to the Northward of Cay Verde there is a clear channel carrying a depth of five fathoms, and leading into anchorage under Cay Confites in from two to four fathoms on white sand. The best sheltered berth will be with the cay bearing N. E. about a mile off, or nearer, according to the vessel's draught. Observe, however, that with the wind to the Southward of E., a heavy roll sets in round the S. end of the cay. This is the only anchorage on this side of the Bahama Channel between Nuevitas and Paredon Grande, where a vessel drawing more than twelve feet can ride out a norther in safety.

Cay Cruz. CAY CRUZ is eleven miles long in a N. W. ½ N. and S. E. ½ S. direction, very low and flat, with a sandy shore, and at its N. E. point there is a remarkable clump of trees, thirty feet high. The cay is divided in the centre by a small cut, and abreast it on Cay Romano there is a remarkable hummock one hundred feet high, called the Aito de Asi. Between these two cays there is only a foot water at low tides, and the bottom is like pipe clay. Within Romano it is olive mud covered with weed.

Tributarios de Minerva. TRIBUTARIOS DE MINERVA is a small dry reef, lying a third of a mile from the edge of soundings, N. two miles from the N. end of Cay Cruz, and E. three and a half miles from the N. end of Cayman. The edge of the bank between Cay Confites and this reef

runs N. W. ½ W. in a straight line for fourteen and a half miles, and may be seen from aloft, the white sandy bottom showing itself distinctly just within the line of soundings, which is very steep to. This part is extremely dangerous and should be approached very cautiously, as there is no safe anchorage whatever.

CAY PAREDON GRANDE.—On the N. part of this cay there is a fixed light, varied by flashes every minute, one hundred and fifty-nine feet above the level of the sea. *Cay Paredon Grande.*

From the Tributarios the edge of the bank takes a W. N. W. ½ N. direction seventeen miles, when it comes within two miles of the N. end of Cay Paredon Grande, which is rocky and woody, and about forty feet high. The space between Cayman and Paredon cays is filled with numerous small low islets, sand-banks and reefs, and is very dangerous.

PAREDON DEL MEDIO is a small rocky islet, twenty-five feet high, lying two and one third miles to the Westward of the N. point of Paredon Grande. Guinchos (or Ginger) Cay, on the edge of the Bahama Bank, bears from the latter point N. ¼ E. sixteen miles. *Paredon del Medio.*

Between Paredon del Medio and Cay Confites there is no anchorage for vessels, it being throughout full of shoals, not sufficiently large to afford shelter under them. This bank should not be entered without some specific purpose.

There is no good water to be obtained on any of these cays. In some places, by digging in the sand, it may be found, but generally brackish. *Water.*

The streams of tide set right on and off the bank at the rate of about half a knot an hour, but in the openings between the cays they run from two to three knots. It is high water, full and change, at 7h. 30m., and the rise at springs is three feet, at neaps two feet. Between the cays and the main the rise and fall is not more than a foot, and the stream is scarcely perceptible. *Tides.*

From the N. point of Paredon Grande the edge of the bank takes about a W. by N. direction for forty-eight miles, and reaches the meridian of seventy-nine degrees within a short distance of the W. end of the Cay Santa Maria. The whole of this part is very imperfectly represented on the present charts, but it is equally dangerous, and affords no anchorage whatever to any but small coasters that are well acquainted with it. Thence it trends to the W. S. W. for thirteen miles, when it comes within three miles of the W. end of Isla or Cay Francés.

MAYSI POINT TO CAPE SAN ANTONIO.

MAYSI POINT (more generally known as Cape Maize), the extreme E. end of Cuba, is a long, low, flat point, with a sandy beach, and is foul to the distance of about a mile. Between one and two miles to the Westward of the point, the land commences to rise, and when seen from the Northward forms three steps, the upper one of which gradually ascends to the summit of this end of the Cobre (Copper) Mountains. This is a good guide to strangers coming from that quarter, bound to the Southward, who are apt to mistake the termination of the slopes for the point, and, by keeping away too soon, fall to leeward of it. *Maysi Point.*

In approaching this end of the island from the N. E., several conspicuous peaks of the Cobre Mountains present themselves. The most remarkable is the Cerro del Yunque, or the anvil, about twenty-seven miles to the Westward of the point, and a short distance to the S. W. of Baracoa, for which it is a good guide. Great care should be taken in rounding Maysi Point in the night, for there appear to be no soundings to serve as a guide, and the current is often strong to the Westward, especially in the winter months.

CAPE MAYSI LIGHT is a fixed white light, at an elevation of one hundred and twenty-eight feet above the mean level of the sea, and should be seen in clear weather from a distance of seventeen miles. *Cape Maysi Light.*

The tower is round, having an octagonal base, with the keeper's dwelling adjoining. It is in lat. 20° 15′ 10″ N., long. 74° 10′ 23″ W.

SOUTH COAST OF CUBA.—From Maysi Point the Northern shore of Cuba takes a Westerly direction, but to the Southward of the point it trends S. W. by S. twelve miles to Guanos Point, a bold, rocky headland, which rises abruptly from the shore to a considerable height, and forms the Eastern foot of the Cobre or Copper Mountains; hence it takes a W. by S. direction for thirty-two miles to Baitiqueri, and is clean and steep to. *South Coast of Cuba.*

A small bay lies on the N. E. side of Guanos Point, and affords shelter with the wind from W., round Northerly, to N. E. The best berth is off a small sandy cove, at the base of a deep ravine. The bank, however, is very steep, and the holding ground bad. *Anchorage.*

Excellent water may be obtained, at all periods, from a small but rapid stream issuing about a mile from the point which forms the bay. There are the beds of two other *Water.*

rivulets, which are generally dry in the winter months, and the three ravines are a good guide to the anchorage. The land is high and thickly wooded, and firewood is readily obtained.

Ocoa Bay. OCOA BAY lies a short distance to the Westward of Guanos Point, and its Eastern side is formed by a lofty bluff, generally called Cape Bueno. There is good anchorage here, in seventeen or eighteen fathoms, with the cape bearing about S. E., distant two miles; or with the cape E. S. E. one mile and a half, when the table land of St. Nicholas (Hayti) will be seen in one with the extremity of the point.

Water. About two miles to the Westward of the anchorage in Ocoa Bay there is a considerable stream of excellent water.

Anchorage. Soundings appear to extend to a short distance all along this part of the shore, and anchorage may be taken under the lee of the projecting point. A convenient position will be found under Puerto Point, seventeen miles to the Westward of Guanos Point, about midway between it and Baitiqueri. The point is a high, light-colored cliff, and on the shore of the bay are some remarkable lofty palm trees.

Puerto de Baitiqueri. PUERTO DE BAITIQUERI is a small inlet, capable of admitting vessels drawing not more than sixteen feet water. The entrance from shore to shore is about a cable's length across, but both sides are skirted by a shallow coral ledge, dry in places, leaving a channel only fifty yards wide, with a depth in it of from seventeen to twenty feet. The eye, with the assistance of the plan, will sufficiently guide the mariner in entering this port, and it will be observed that the ledge stretches off farthest from the weather shore. The entrance being so narrow it is not easily recognized, but about four or five miles to the eastward of it there is a long sandy beach, and near it a remarkable round hummock and a solitary hut. The shores of the interior of the port are low, and skirted by mangroves. In the N. W. corner there is a landing-place and road leading to a small settlement, about three miles distant, but it is difficult to find out.

Water. In the S. W. corner of Port Baitiqueri there is a small rivulet, where good water may be obtained in the rainy season.

A vessel may run down this part of the coast within half a mile, having occasional soundings of from fifteen to nineteen fathoms.

Mal-ano Point. MAL-ANO POINT.—From Baitiqueri a rocky shore takes a S. W. direction for four miles to Tortugilla Point, and thence it trends Westerly to the River Yaters, which empties itself into a sandy bay of some extent. It then turns again to the S. W. for four miles, as far as Mal-ano Point. All this part of the coast is bold and steep to.

Mal-ano Point stretches out prominently from the shore, and being readily recognized from the E. or W., when near the shore, it serves as a good guide to Port Escondido.

Puerto Escondido. PUERTO ESCONDIDO, or Hidden Harbor, lies about three miles to the Westward of Mal-ano Point, and, as its name implies, is very difficult to discover until quite close to it; but a little to the Eastward of the entrance there are two small hummocks, which are a good guide from the Southward. The entrance lies between two rocky points about a cable's length apart, and is three cables long in a N. W. and S. E. direction; but both sides are fringed with a coral ledge, leaving a narrow channel in the centre, in which there are from four to six fathoms water. The interior opens out into a small basin of most irregular form, the projecting mangrove points forming inlets of deep water close home to the swampy shores. Many small shoals lie in the way, but they are easily seen. We cannot venture to give sailing directions. The safest way will be to place a boat on the edge of the weather reef, and the eye, with the assistance of the plan, will guide it without much difficulty or risk. There is no fresh water to be found, nor is there any settlement near the shore, and consequently no pilots.

Puerto de Guantanamo. PUERTO DE GUANTANAMO, or Cumberland Harbor, situated ten miles to the Westward of Escondido, and seventy-two miles from Maysi Point, is capable of admitting vessels of large draught without difficulty and in safety. The shore between it and Escondido forms small sandy coves, steep to. This port, which is altogether eleven miles in length from N. to S., may be said to form two harbors; the inner part called the Bay of Joa, has, however, a depth of only from twelve to fifteen feet, and the channel leading into it, although deep, is extremely narrow. In the centre of the port the shores are deeply indented, forming small, secure creeks, very convenient for vessels of light draught.

The entrance is nearly one mile and a half wide, and may be readily made out, as its Eastern side is a straight, rocky shore, one mile and a half in length from N. to S. Just within the N. end there is a low spit of dry sand, called Fisherman Point, on which there is generally one or two huts. The only danger on this side is a narrow, rocky ledge, one cable and a half long in a N. by W. and S. by E. direction, lying about a fourth of a mile from the shore. The N. end of this ledge bears S. W. by W. ¾ W., and the S. end S. W. by W., from Fisherman Point, and N. by W. from a point within the E. head. On the shoalest part there are seventeen feet water, three fathoms within, and five fathoms on the outer edge.

The leeward point of the entrance may be approached within a cable's length. About half a mile to the Northward of it is the entrance of the Guantanamo or Augusta River, in which the depths are from nine to fifteen feet for a considerable distance within. Thence a low, sandy shore bends round to the N. E., forming the N. side of the port, and near the centre of it is a remarkable light *brown* cliff. From the mouth of the river a shallow flat extends off nearly one third of the way across toward Fisherman Point, and skirts the Northern shore to the distance of about one fourth of a mile.

Water. Water may be obtained from the Guantanamo River, but the boats will have to proceed up as high as the Barcadero, about eleven or twelve miles from the mouth. It is also to be had from a small stream on the N. W. shore of the inner harbor, the mouth of which will be found by observing the following directions: Pass between Hicacal Point (see plan, Lagoon Point of some charts) and Hospital Cay, and round the N. W. point of Medio Cay. Thence steer about N. N. E. until a *red* and *white* cliff, about twenty yards long, opens to the N. W., and three or four hundred yards to the Eastward of it is the entrance of the river. Near it are some stakes, and over it is a remarkable lofty tree. The stream, although not more than sixteen or eighteen feet wide, has depth enough for launches, but they must be careful to get out before low water, as there are only two feet on the bar at that period. The best place for watering will be found a little way up on the starboard hand, where there is a cleared space on the shore.

Directions. In standing in toward Port Guantanamo from the Southward, on about long. 75° 0′ W., a remarkable conical peaked mountain will be seen to the N. N. W., at about fifteen miles to the Westward of the harbor. As the vessel approaches the land, this mountain will assume a saddle shape, and a small hill standing alone, with two small caps or hummocks near it, will soon be seen to the Westward. To the Westward of the latter, is a round, green but barren hilly bluff, which forms the E. side of the entrance; the leeward point of the entrance is low and woody. The shore is bold and steep to, and soundings will not be obtained until the vessel is within the points.

Having opened out the entrance, bring the brown cliff on the Northern shore on a N. by W. ½ W. bearing, and steer for it. When Fisherman Point comes open, steer N. N. E., and when it bears E. by S. haul up N. E. or N. E. by E., and anchor in six or seven fathoms, with the point bearing S. by E. or S. S. E. as near to it as it is convenient. The Eastern side of the harbor is quite clear, and has a bold shore, and a vessel may go far enough to be landlocked. It will be better, however, to wait until the sea breeze has set well in before the harbor is entered. Should there be a turning wind, do not come within the depth of six fathoms, and when standing to the Eastward do not bring the brown cliff to the Westward of N. W. by N. to avoid the Fisherman edge.

Berracos Point. BERRACOS POINT.—From Guantanamo the coast takes a Westerly direction for about twenty-six miles, to Berracos Point, which forms a remarkable round hill. Thence it trends N. W. five miles, forming the bay or bight of Cabo Baxa (Low Cape), and then resumes its westerly direction to the river Juragua, the entrance to which is about ten miles from Berracos Point. To leeward of the bight of Cabo Baxa there are three shallow sandy bays, separated by high scarped hills, called Los Altares, or the Altars, from the eastern one having a remarkable flattened summit, which are backed by the lofty mountains of the Sierra Maestra.

From the river Juragua the coast runs W. by N. twelve miles to the entrance of Santiago de Cuba harbor; about midway is the entrance to the river Sardinero. All this part is bold and steep to, and may be freely navigated within the distance of a mile, until off the harbor, when at that distance there are four fathoms rocky bottom, with the Castle of Santiago bearing from N. ¼ E. to N. W., and there is the same depth within two cables' length of the shore.

Anchorage. Anchorage will be found in eighteen fathoms water, off a small valley at seven or eight miles to the Eastward of Santiago de Cuba, on the edge of the bank about one mile and a half from the shore.

Santiago de Cuba. SANTIAGO DE CUBA.—The locality of this fine port is pointed out from a distance by a remarkable valley, which separates the Eastern from the Western branch of the Sierra Mountains. The latter branch takes its rise a few miles to the Westward of the port, and at the distance of ten miles it attains an elevation of upward of three thousand feet high, and its wooded heights bound the shore as far as Cape de Cruz. The lofty peak of Turquino, between eight and nine thousand feet high, rising at forty-five miles to leeward of Santiago, becomes here a remarkable object, and under favorable circumstances may be seen sixty miles off.

As the port is approached, the entrance may be known by the Morro Castle, a fortification of considerable extent, situated on the Western extremity of a flat ridge of moderate height, nine miles in length from E. to W. A short distance to the Northward of the Morro, but on much lower ground on the shore, is the castle of Estella, which,

however, will not come in sight until the W. end of the Morro is brought to the Eastward of N. Between it and the Morro there is a small inlet with a fort at the head, protecting the landing.

The port of Santiago is capable of admitting vessels of the largest draught, and is secure in all winds. Its entrance, which lies N. and S., is about a cable wide, and although its course becomes tortuous and winding as the vessel advances toward the inner basin, she will generally sail up when the usual sea breeze has set well in. Should the wind be to the Northward she will have to warp in, and five buoys painted red are conveniently placed for that purpose.

Light-house. A light-house, twenty feet high, built of iron and colored white, stands at a hundred yards to the Eastward of the Morro Castle, and exhibits a white light, which revolves every minute. The light is elevated two hundred and twenty-six feet above the level of the sea, and may be seen in clear weather at a distance of twenty-four miles.

Directions. When bound for Santiago de Cuba from the Eastward give the shore a berth of a mile to avoid the foul ground off the Morro, until the castle of Estella comes open. When the latter bears N. E. by N., haul in upon this course, being careful not to bring it to the Eastward of that bearing, and pass the Morro point close aboard to avoid the ledge running off from the Western point of the entrance. Keep the Eastern shore aboard until the Estella is passed, then steer in mid-channel between the shore and Smith Cay, on the S. end of which there is a small village where the pilots reside. When off the N. end of the cay, a red beacon buoy will be seen lying in eight feet water on the W. end of a flat ledge, running off from the inner point of what may be termed the outer channel; and a little within it there is a pile beacon. To clear the spit keep the N. angle of the Estella just open of the E. side of Smith Cay, until the city comes open, when haul up for the inner channel.

Having rounded the spit, another red beacon will be seen, which must be kept to port. Thence haul over to the Eastern shore, which is steep to, and pass to the Eastward of Cay Ratones, on which there is a magazine. Having passed this cay, steer about N. by E. in order to avoid two small shoals, on the outer end of which there is a beacon in fourteen feet water about two cables' length from the S. shore; on the inner shoal there is a dry rock. Thence haul up for the city, and anchor as most convenient according to the vessel's draught, as the depth decreases gradually toward the upper part of the harbor. A vessel will have a good berth in three fathoms at about half a mile from the city, with Cay Ratones S. S. W. ½ W. and the flagstaff on the battery E. S. E. In leaving, it will be advisable to drop down to the entrance with the sea breeze on the previous evening, to be in readiness for the land wind on the following morning. Strangers should take a pilot.

Coast. The coast from Santiago to Cape de Cruz takes a Westerly direction, with scarcely any indentation for about ninety miles. The shore is bold, lofty, and thickly wooded. The peak of Turquino rises a short distance inland, and about thirty-six miles to the Westward of it, and fifteen to the Eastward of Cape de Cruz, there is another remarkable mountain, called the Ojo del Toro, five thousand feet high, which, when seen from the W. S. W., forms two or three hummocks. Thence the range decreases in height and falls by steps to the cape, which is low and woody, and near the extremity of the sandy point there are some huts and a flagstaff.

About four and a half miles to the Eastward of the cape the shore is composed of remarkable cliffs about eighty feet high, having horizontal strata resembling fortifications; near the cape they are copper-colored, and the strata becomes perpendicular.

El Portillo. EL PORTILLO, situated about twenty-four miles to the Eastward of Cape de Cruz, is the only opening of importance on this part of the shore, where vessels of the heaviest draught will find good temporary anchorage, and a watering-place. The harbor may be recognized by three perpendicular white cliffs, which form the Western side of the entrance, and the low swampy land on the E. side. Both points are foul to a short distance, but the reefs break heavily and are steep to. The interior is obstructed by sand banks, which are pointed out by stakes. There are seven fathoms water in the centre of the channel, and with the Eastern point bearing E. S. E. a fourth of a mile, vessel will have good anchorage in five and a half or six fathoms.

Anchorage. Soundings appear to extend to a short distance all along this part of the coast, and in moderate weather a vessel may anchor in six or seven fathoms water off the sandy beach at the foot of Turquino. To the Westward of Portillo, the depths are twelve to six fathoms from two to four miles off shore. The soundings are irregular, varying suddenly from six to four and a half fathoms; but the bottom is easily seen, and there is no difficulty in picking out a sandy spot.

Cape de Cruz. CAPE DE CRUZ may be safely approached from the Southward to within one mile and a half. A reef, which is awash for about a mile, extends in a Westerly direction from the cape, and good shelter from Easterly winds will be found in from three to four fathoms to the Northward of it. A stake marks the extremity of the reef, and the depth is five fathoms close to. At half a mile to the Westward of the stake is a shoal patch of three fathoms.

Pilots for Manzanillo live on Cape de Cruz. *Pilots.*

The bank of soundings is quite clear of danger between Cape de Cruz and the Eastern head of the Doce Leguas cape, and a vessel may stand into seven fathoms on any part of it, save only from about eight miles N. N. W. from the cape as far as the Nameless Cay, which marks the Southern extremity of the great Bank of Buena Esperanza: within these limits it is not safe for a vessel of any size to go within the depth of ten fathoms, the ground being intersected with numerous rocky ridges, some of which are nearly awash. *Caution.*

In running down from the Eastward, do not shut the land in with Inglis Point, bearing E. by N., until Colorados Point (the second point to the Northward of the cape and of a dark green color) comes open of Casena Point N. E. ½ E., to avoid the reef. Casena Point, the first point to the Northward of the cape, is sandy, and this is the only sand seen about this part of the coast.

MANZANILLO.—From Cape de Cruz the coast takes a N. E. direction for forty-five miles to Manzanillo, the port of Bayama, a large commercial town about eighteen miles in the interior. *Manzanillo.*

The main reef, which skirts this part of Cuba as far to the Westward as Trinidad de Cuba, commences about fifteen miles to the N. E. of the cape, and through it there are two cuts leading to Manzanillo. The Easternmost, called the Balandras or Sloop Channel, lies between the shore and the low mangrove cays adjacent. The least water here is three fathoms, and within the reef it increases to seven and eight, which depth will be carried up to the anchorage off Manzanillo. The Western opening, called the Ship Channel, is only known to pilots. About twelve miles to the Northward of Manzanillo is the entrance of the River Cauto, which takes its rise in the Sierra del Cobre, and is the largest stream in the island, and navigable sixty miles for boats; but the bar is only passable at high water.

Point Colorados lies N. E. about six miles from Cape de Cruz. Three fourths of a mile N. W. of it there is a shoal, which extends about three miles in the same direction. The point should be passed within half a mile, where the depth is three fathoms, and soon after eight and ten fathoms. Point Balona lies N. E. by E. six miles from Point Colorados, and shoal ground runs off from it to the N. W. one mile and a half. At three miles N. W. of the point is the Balona Shoal, which extends two and a half miles in the same direction, and about two miles farther on commences the great bank which fronts the main. Between the Balona Shoal and it is the main channel to Manzanillo. N. E. three miles off Point Balona is a small low islet, called Mona Cay, which lies so close to the shore that it is difficult to make out in passing. Shoal water runs out from it a mile, and two miles N. W. of the Cay is the Mona Shoal. In the channel between the depth is six fathoms. Abreast the cay is the Lime River, where there is good water, and the first met with on this side Cape de Cruz. N. by E., seven miles from Mona, are two small islets, called Swago Cays, and W. by N. of them are two shoals, N. four miles from these cays there is a small group of islets trending four miles E. by N. and W. by S., called the Sloop Channel Cays. From these cays the passage is clear to Manzanillo. *Shoal.*

From the Balandras Channel the main reef takes a Westerly direction ten miles to a small cay lying N. by W. seventeen miles from Cape de Cruz. Thence it trends in a Northerly direction for eighteen miles, and then bends to the W. N. W. fifteen miles to the Cuatro Reales Channel, which is the Eastern passage to Santa Cruz. The entrance bears N. W. by N. forty-two miles from Cape de Cruz, and about fourteen miles from the main land to the Northward.

SANTA CRUZ is only fit for vessels of light draught. When bound hither, it is recommended, after rounding the reef off Cape de Cruz, to steer N. by W., which course will lead up to some small cays, eleven in number, lying in an E. and W. direction; the two Westernmost are the largest of the group, and six miles apart, and the channel lies between them. The Easternmost is called Cyvas Cay, and is distinguished by some round-topped trees on its centre. Close to windward of this cay is a low sandy cay, unlike any other in this neighborhood, and therefore a good guide; near it is the cay on which the pilot resides, who is relieved monthly. The least water in this channel, three fathoms, will be found about two miles to the Westward of the Eastern cay mentioned above. The channel up to Santa Cruz is narrow and intricate, but the water is so clear that the shoals are visible, and steep to. *Santa Cruz.*

In navigating outside these cays, regular depths will be obtained of from twenty to eight fathoms. From abreast Cape de Cruz the edge of soundings takes a Northerly direction, and comes within a mile of Cyvas Cay; but thence it rapidly approaches the cays, and about twenty miles farther to the Westward it comes within a short distance of the E. end of the Doce Leguas group. On the edge the bottom is generally rocky, but within the depth of ten fathoms anchorage will be found on sandy bottom. *Directions.*

It is high water, full and change, at Santa Cruz, at twelve o'clock, and the rise and fall is four feet; but the tides are greatly influenced by the strength of the wind. *Tides.*

Labertino de Doce Leguas. LABERTINO DE DOCE LEGUAS, or Twelve League Cays, are a range of low, bushy cays, with sandy beaches, extending in a W. N. W. direction seventy miles. They are very bold and steep to; the lead is, therefore, no guide, and in the night they should be given a wide berth. The Easternmost islet, which lies N. W. fifty-six miles from Cape de Cruz, and Cay Breton, the Westernmost, are fifteen miles from the main land, but in the centre they are forty miles from the nearest shore. The space within, called the White Ground, from its clear white sandy bottom, is studded with small islets, with deep water between them.

There are several channels leading into this basin, for vessels of about fourteen and a half feet draught, but a pilot is necessary, and one may be obtained at Cape de Cruz, or from the Cayman turtling vessels, which are generally to be met with in the neighborhood. The principal openings are, East Channel, at the extreme East end of the range; Caballones Channel, forty miles to leeward of this; and Boca Grande, twenty-two miles farther to the Westward; and being wide, they can be easily recognized.

Tides. The tides set directly on and off the bank with great strength.

Caballones Channel. CABALLONES CHANNEL is the first practicable entrance from the Eastward through the Doce Leguas Cays for anything larger than a boat. It may be easily recognized by its width, about two miles, none of the breaks in the line of cays to the Eastward of it being more than half a mile wide; also, by a remarkable cocoa-nut tree, standing about a mile to the Westward of it; the cocoa-nut is very rare in these cays, the prevailing tree being the stunted palm.

There are only two and a fourth fathoms water in this channel, and a depth not less than this extends over the outer or S. W. part of the opening; but the channel is contracted within by two spits extending from its Western and one from its Eastern side, between which it is not more than two cables wide, and must be navigated by the eye, there being no good leading marks. After passing this narrow, the water will deepen rapidly to ten and twelve fathoms. Black Mangrove Point, the inner Western point of the channel, and Pilot Point, the outer Eastern point, lie nearly N. and S. of each other.

This channel is one of the best fishing grounds upon the S. coast of Cuba. A considerable supply of fish may be caught in an hour or two, either by towing or bottom fishing, or by seine. The beach on the Western side is much frequented by turtle.

Pilots. Some fishermen, who are always ready to act as pilots to slavers or others requiring them, live about half a mile to the Eastward of Pilot Point.

Anchorage. The best anchorage for small craft is in two and a half fathoms, about a mile N. of Pilot Point, secure from all winds except those between S., round Westerly, to W. N. W., which are very rare. Should the wind come from this quarter, a vessel can always run through the channel, and anchor under the lee of the cays.

Cay Breton. CAY BRETON.—In approaching Cay Breton from the Eastward, be careful to avoid the reef which trends off shore until the N. W. point of the cay bears N. E., distant three and a half miles, where it suddenly terminates. This is the most dangerous part of the coast, and is seldom without a wreck upon it, for although the reef is awash, there is often but little break to show it, and the apparent termination of the cays induces strangers to haul close round, which, at night, is certain destruction.

A vessel may haul round the extremity of the reef, and find good anchorage and shelter from all Easterly and Northerly winds; but in standing into a less depth than four fathoms, keep a sharp lookout for rocky heads.

The reef begins again at about three and a half miles to the N. W. of Cay Breton, and in the interval there is a passage into the interior of the bank with two and a half fathoms in it: but it is crooked, narrow, and rocky, and known only to a few of the Cayman fishermen, who navigate it by the eye.

There is a powerful indraught toward this passage on the flood, which frequently takes command of vessels passing the reef end too closely, where they are liable to be becalmed, and obliged to anchor in an exposed position.

Cay Zarza de Fuera. CAY ZARZA DE FUERA.—The reef, from about three and a half miles to the N. W. of Cay Breton, trends N. W. by N. about eighteen miles, without any cays upon it, except an occasional dry patch of sand, and finally terminates in Cay Zarza de Fuera, to which a berth of at least two miles should be given in passing.

When this cay bears E., if wishing to enter upon the bank, the vessel may be hauled up N. E., the edge of the bank being quite clear for twelve miles, or within two miles of Cay Machos de Fuera. After striking soundings, the water will shoal almost immediately to five fathoms, and then deepen to ten and twelve fathoms, with occasional patches of five fathoms as the vessel advances along the channel between the main land and cays Zarza de Fuera and the Medanos de Manati, which latter mark the N. extreme of shoals extending from near the Boca Grande. The Medanos are in about lat. 21° 27′ N., long. 79° 16′ W.

There is fair shelter and excellent holding ground along this part of the main land, and no danger as long as the beach is in sight.

If bound for Trinidad, after passing Cay Zarza de Fuera, instead of entering upon the

banks of soundings, steer to the N. W., and after sighting Cay Machos de Fuera, steer W. N. W. for Cay Blanco.

When the peak called Pan de Azucar, or Sugarloaf, is shut in behind the Loma de Banao Cay Machos de Fuera will bear N., a knowledge of which will save strangers much perplexity when they cannot recognize the land in the vicinity of Trinidad.

The channel between Cay Zarza de Fuera and the main is quite clear, and a vessel may anchor near the edge of the bank. The low swampy shore, within the line of the Doce Leguas, abounds in mahogany and other woods, which are shipped chiefly in vessels not drawing over fourteen and a half feet water, that are able to get to Santa Cruz and the River Jatibonico, the entrance to which is situated thirty miles to the Northward of the Boca Grande.

Boca Grande. THE BOCA GRANDE is the best channel to take when bound to the River Jatibonico, and, as stated above, it is the Westernmost navigable opening through the Doce Leguas. Having entered between the cays, steer N. N. E. ½ E., which will lead to windward of Cay Rabihorcado and on the E. side of Cay Burgao, four miles farther on. Cay Rabihorcado lies seven miles to the Northward of the W. end of Cay Grande, which forms the Eastern side of the Boca Grande. The depth will be from ten to thirteen fathoms, and the vessel will pass to the Westward of several coral patches, which may be easily seen from aloft, and are steep to. From Cay Burgao a N. ½ W. course will lead up to the mouth of the river. When the sea is moderately smooth, the Boca Grande is a safe entrance for vessels up to fifteen feet draught, but those of that draught should keep rather to the Westward of mid-channel.

A vessel may enter by the Caballones Channel instead of the Boca Grande, but the navigation is more intricate, although the entrance is wider. In this case, having entered and obtained soundings on the bank within, a N. course will lead up between Bergantin and Manuel Gomez cays. The former lies six miles to the Northward of the E. end of Caballones, which forms the Western side of the channel. Thence steer N. by W. eighteen miles, which will bring the vessel to the N. E. end of the Bajo de la Yagua, and then a N. W. course eighteen miles will lead to the entrance of the river. These directions, however, require the assistance of a pilot.

E. Channel. THE EAST CHANNEL may also be entered, but the navigation is far more difficult, and it would be useless to give any directions for that purpose; the shoals, however, are easily seen in clear weather, and the eye will be the best guide. The anchorage can be chosen by the lead, as the soundings generally decrease toward the shore; at the distance of two miles, the depth is from four and a half to five fathoms.

Water. Good water may be obtained about three miles up the River Jatibonico; and at Manati Point, twelve miles farther to the Westward, there are some wells, but the water is not so good.

Tides and Winds. The tides are very strong and variable, and a vessel must anchor during the night, which she may do anywhere in safety. They run in and out of the Boca Grande at the rate of from one to two and a half knots. Near the main land, in the early part of the morning the wind is more Northerly than at any other part of the day, and it draws round gradually with the sun; the land wind comes off soon after sunset.

The Coast. The coast between the River Jatibonico and Pasabanao Point, six miles to the Westward, forms a bay in which there are two and a half and three fathoms water. From this point the coast trends W. N. W. six miles to Manati Point, and nearly midway between there is a small creek called Caobas, in which there are six feet water. Thence to Tolete Point, six miles to the W. by N., the shore forms a bight, near the centre of which is the Estero Nuevo (new creek).

At eight miles S. of Manati Point is the N. end of an extensive bank, called the Medanos de Manati, and in the channel between, the soundings are from six to eight fathoms, the depths generally decreasing as the shore is approached. Between Tolete Point and Zarza Point, four and a half miles to the W. N. W., the shore forms a little deeper bight, and in the middle of it there is another small shallow creek, named San Marcos.

River Zarza. THE RIVER ZARZA, which disembogues close on the E. side of Zarza Point, is navigable for canoes for some distance, and communicates with the town of Sancti Espiritu, twenty-six miles inland. The water, however, is not fit for use until the river is ascended twenty-four miles from the mouth.

Two small cays lie about a fourth of a mile to the Southward of Zarza Point, and a reef extends off from them to the Eastward about a mile. Within the cays there is good shelter for small vessels in three fathoms, over a clay bottom. At three miles to the W. N. W. of Zarza Point is Caney Point, the shore between forming a small bay, in which there are from three to five fathoms, over clay and grass.

Cay Blanco de Zarza. CAY BLANCO DE ZARZA, lying a mile and three fourths to the Southward of Caney Point, is foul to the S. W. for half a mile, to the S. E. three fourths of a mile, and to the N. E. nearly a mile, leaving a passage between it and the shore half a mile wide, with a depth of four fathoms. It lies about eight miles to the Northward of Cay Zarza de Fuera, and between them the depth is from six to ten fathoms; but near the edge

of the bank there is a bar of four fathoms, within which a vessel will find good anchorage.

On the W. side of Caney Point is the Embarcadero de Mangle. Six miles farther to leeward is Ciego Point. In the bay between them there are from three to five fathoms; near the centre is the river Tallabacoa, which has very little water in the dry season. A ledge runs off half a mile from Ciego Point, and the same distance to the Westward of it is the river Iguanojo.

Water. There is a brook of good water a little to the Westward of the river Tallabacoa. It will also be found fresh and fit for drinking about three miles above the mouth of the Iguanojo.

Jierra Cays. JIERRA CAYS.—From the river Iguanojo the shore takes a W. N. W. direction four miles and then turns abruptly to the Southward for two miles to Agabama Point. From the latter a narrow ledge extends off six miles to the S. E., leaving between it and the Iguanojo, on the opposite shore, a deep bight called St. Pedros, in which there are from three and a half to six fathoms, clay bottom.

From Agabama Point a cluster of small cays, called the Jierra, run out on the ledge to the distance of half a mile; and two and three fourths miles to the S. S. E. of these, and two and a half miles from the edge of the ledge, is Cay Machos de Fuera, having a reef extending from one to two miles to the Eastward of it. All this part of the coast is very low and swampy.

Sierras de Sancti Espiritu. SIERRAS DE SANCTI ESPIRITU.—At ten miles in the interior the mountains called the Sierras de Sancti Espiritu rise into irregular hills of considerable elevation, and two of the peaks are very remarkable, and serve as good guides after passing to the Westward of Cay Breton. The Northeasternmost peak, called the Pan de Azucar, is sixteen miles from the shore, and when in one with Cay Zarza de Fuera, bears N. ½ E., and may be readily known by its flattened summit. The Loma de Banao rises into a distinct peak about four miles to the S. W. of the Azucar, and twenty miles to the Westward of it is the Potrerillo Peak, which bears N. N. W. four miles from the city of Trinidad, and is a good guide for it, as it may be seen at a distance of sixty miles.

Trinidad. TRINIDAD is situated on the left band of the river Guaurabo, which disembogues about three miles to the Westward of the city, and is navigable for canoes to within a mile of it; the greater part of the commerce, however, is shipped at Ports Casilda and Masio, a short distance to the Southward. The city stands on the slope of a remarkable saddle-hill, and a conspicuous church in the upper part of it is seven hundred feet above the sea. When seen from the W. and S. W., this hill has the appearance of a gunner's quoin detached from the main.

Ports of Trinidad. PORTS OF TRINIDAD.—From Agabama Point to Maria Aguilar Point, ten miles W. N. W. of it, and three and a half miles S. S. E. of the river Guaurabo, the shore is deeply indented, forming four small inlets. Jobabo Bay, the Easternmost, is only fit for coasters; Caballones Bay, the next, has a depth of from three to four fathoms; Port Masio, the most Northern, has a greater depth than the others; and Port Casilda, the Westernmost, has three and a half fathoms. The shore is skirted by numerous cays, reefs, and banks, to the distance of from two to three miles, and the channels, although deep, are so intricate, that a pilot is absolutely necessary. The weathermost channel lies between Cay Machos de Fuera and a small narrow ledge about half a mile to the Westward of it, and has a depth of three fathoms, but it is by no means to be recommended, as the sand-banks are not stationary. At two and a half miles to the Westward of Cay Machos is Cay Puga or Purga, almost level with the sea, which sometimes breaks over it; a reef extends from it to within a mile of Cay Blanco.

Cay Blanco. CAY BLANCO is a small, low, woody islet about twenty feet high, with a lagoon in the centre, lying N. W. two and a half miles from Cay Puga. The S. end is sandy, and on the N. end are some huts and flagstaff near the residence of the pilots. From the cay the Eastern peak of the saddle-hill bears N. N. W. ½ W., and the Eastern brow of the Banao Mountains N. E. ½ E. The best channel lies between Cays Blanco and Puga. Should a vessel have to wait for a pilot, which is very probable, there is anchorage in nine and one fourth fathoms, with the city of Trinidad N. W. by N. and Cay Blanco N. E. one mile distant; but be careful to look for a clear sandy spot. Soundings appear to extend some distance outside the reefs, and five fathoms will be found close up to Cay Blanco. There is no safe opening to the Westward of it, except for coasters drawing under thirteen feet.

Puerto Masio. PUERTO MASIO will be found the most convenient harbor, as a vessel can get in and out easily with the prevailing winds; but neither of these places is adapted for vessels drawing over fourteen and a half feet water. Those of heavier draught may anchor within the Blanco channel in from three to four fathoms, with that cay W. by S., and Puga S. by E. In case of necessity, however, the following directions might be useful, as most of the shoals may be seen from aloft in clear weather.

Directions. To proceed to Port Masio, a vessel should enter by the channel, a mile wide, between Bay Blanco and the Puga Reef. In this case pass the E. end of the cay at the distance of

about two cables' length, and then steer N. E. or N. E. by N. until the cay bears W., when, if necessary to await a pilot, it will be prudent to anchor in about three or four fathoms water; if not, proceed as follows: Having entered the channel, and brought Cay Blanco to bear W. ¾ S., steer N. W. ½ W., and it will lead between the ledge which runs off from the cay three fourths of a mile to the N. E. and a bank to the Eastward, parts of which are nearly awash.

When Jobabo Point (which is sandy) bears N. ¾ W., steer N. N. W. for the W. point of the harbor, keeping over toward the Guard-house Point, which separates Jobabo from Caballones, until it is passed, when the eye must be the guide for mid-channel, the edges of the shoals on either side being clearly visible. A berth may be chosen as most convenient to the vessel's draught, only taking care to avoid a mud-bank extending from the wharf on the Western shore to nearly the centre of the harbor, the outer end of which bears N. from the W. point of the entrance. If more convenient, instead of proceeding thus far, the vessel may haul into Caballones Bay without any difficulty.

PUERTO CASILDA may, with great care and attention to the following directions, be entered without a pilot by a vessel drawing not more than twelve feet, but it will be prudent to have a boat sounding ahead. Merchant vessels are obliged to take a pilot at Cay Blanco. *Puerto Casilda.*

After passing the spit off Cay Blanco, steer N. N. W., when the extremity of a reef, marked by a stake with a bunch of palm leaves upon it, will be seen immediately to the Westward. Give this stake a berth of a cable and steer N. W. by N., when another stake will be seen at three fourths of a mile farther on, which round closely, leaving it to the Westward. Thence steer N. W. ¼ N., and the water will deepen to six and seven fathoms, with occasional patches of two and a half fathoms; the next stake on this course leave to the Eastward, but shave it closely.

A course may now be shaped for the S. end of the city of Trinidad, which stands conspicuously on the slope of a hill, till the vessels in the port fairly open out, when steer for them. When about a mile and a half from a little cay, called Rat Island, lying in the middle of the entrance to the port, the vessel will come upon the Middle Shoal marked by three stakes, all of which leave close on the port hand, and steer for Rat Island, a fourth of a mile to the S. E. of which a vessel may anchor in two and a half fathoms, soft mud; or if wishing to enter the inner harbor, she can do so by leaving Rat Island on the right.

THE MULATOS CHANNEL is shorter and more convenient than the above, but not more than eleven feet water will be carried through. To enter it from Cay Blanco, coast along the reef to the Northwestward, neglecting several breaks which will be seen in the line of reef, until the vigia, or lookout house, a conspicuous white building upon the hill immediately above the city of Trinidad, bears N. ½ W., when the termination of the reef, marked by a stake, will be seen. *Mulatos Channel.*

Haul round this stake and steer N. E., which will lead along a line of stakes on the starboard hand; at from one to two cables from these stakes there will not be a less depth than eleven feet. A projecting cay, named Guayro, will now be upon the starboard bow, and when it bears E. by N. steer N., which will lead close to the Middle Shoal; leaving the three stakes on this shoal on the port hand, proceed as before.

RIVER GUAURABO.—If wishing to communicate with Trinidad, the above difficult navigation may be avoided by proceeding to the little bay formed at the mouth of the river Guaurabo, the entrance to which bears W. three miles from the city. The bay affords excellent shelter from S., round Easterly to N. W.; a S. W. gale, however, would be fatal. *River Guaurabo.*

To this end, instead of entering the Mulatos Channel, run on the same course, and after rounding Maria Aguilar Point, the shore may be passed close to until the city bears S., when the bay will open out.

Give Ciriales Point, the S. point of this bay, a berth of a cable and a half, and steer in S. N. E. for the mouth of the river, and the moment the point bears S., anchor in eight fathoms. The vessel in this position will be in the best position the bay affords, for though it is apparently roomy, there is not space for more than one vessel, the greatest part of its area being covered with rocks, having not more than six feet water over them; it will be prudent to moor, if intending to make any stay.

This anchorage will be found very convenient for communicating with Trinidad, by pulling three miles up the river in the vessel's boat to where a bridge crosses it, when there will be a walk of three fourths of a mile to the city. The Spanish authorities have always been jealous of any communication in this direction on account of smuggling; and some years ago they partially filled up the mouth of the river, which was then navigable for small vessels as far as the bridge.

PAZ BANK, or flat of Paz, is pear-shaped, ten miles long, in a W. N. W. and E. S. E. direction, and three and a half miles wide at its broad end, which is to the Eastward; this part is sandy, and in moderate weather a vessel may anchor on it. The general depth on the bank is from fourteen to sixteen fathoms, and toward the N. W. end it is rocky. The centre of the E. end lies S. fifteen miles from Cay Machos de Fuera, and S. W. by W. fourteen miles from Cay Zarza de Fuera. *Paz Bank.*

From the river Guaurabo the coast trends W. ¾ N. eight miles to the river Hondo, and thence W. N. W. ¼ N. nine miles to the bold projecting headland of San Juan Point. All this part of the coast is rocky and steep to, except about midway between the Hondo and San Juan Point, between the little creeks Yaguanabo and San Juan, where the ground is foul to the distance of about half a mile.

Rivers Yaguanabo and San Juan. RIVERS YAGUANABO AND SAN JUAN.—Coasters of about six feet draught can pass the bars of these streams, which become fresh about three miles up. The coast is considerably elevated, and to the N. E. of the San Juan it is mountainous. A mile to the Northward of San Juan Point is the entrance to the river Guaigimico. Thence the shore takes a N. W. by N. direction fifteen miles to Colorados Point, which forms the E. point of the entrance to the Bay of Xagua. All this part of the shore is bold and steep to, and there is no danger whatever within a cable's length. Several small streams disembogue in this space, but they are not navigable, and the land becomes flat and less elevated.

Puerto de Xagua, Jagua, or Cienfuegos. PUERTO DE XAGUA, JAGUA, OR CIENFUEGOS, is quite secure in all winds, with a depth sufficient for vessels of the heaviest draught; but its channel is so narrow and tortuous, and the tides are so strong, that it is very difficult to navigate. The entrance is a mile wide; but a mile and a half within, between Pasacaballo and Sta. Angelica points, it is only a cable's length across, and it here takes a sharp turn from N. W. to N. N. E., carrying the same width for three fourths of a mile to Milpa Point at the inner end of the channel.

Light. A light-house, forty-five feet high, with the words Villa Nueva painted on it, stands on Colorados Point, the E. point of the entrance to Port Xagua, and exhibits, at eighty-two feet above high water, a *flashing* light, catoptric and of the third order, visible at ten miles.

Buoys. The following are the positions of four buoys laid down in February, 1858, from the entrance of Port Xagua to Milpa Point:—White buoy in eighteen fathoms water, stony bottom, marks the channel at four cables' length from the Western, and one cable's length from the Eastern shore, Diablo Point bearing S. E. ½ E., Vigia Point S. W., and the fort N. W. ¼ N.; white buoy in twenty-three fathoms, stony bottom, one cable's length from either shore, and half a mile from the first buoy, Diablo Point bearing S. E., Vigia Point S. S. E., and the Fort N. W.; red buoy in eighteen fathoms, stony bottom, one cable's length from the shore, and three cables' length from the second buoy, Pasacaballo Point bearing E. N. E., Milpa Point N. N. E., and the fort N. E.; and a red buoy in twenty-five fathoms, muddy bottom, one mile from the shore, and two miles from the third buoy, Cay Carenas, bearing N., Milpa Point N. N. E., and Caleton de las Damas Point E.

Vessels can tack between the buoys, as there is plenty of water and no danger.

Pilot. A pilot is in attendance at all times near the outer buoy at the entrance to Port Xagua.

Directions. In running for Port Xagua from the Southward as it is approached it will be necessary to give the shore a berth of a mile, to avoid some foul ground to the Eastward of the light-house. Having entered between the points, the weather-shore may be skirted within fifty yards as far as Pasacaballo Point, when it will be better to keep the lee or Western shore aboard.

After passing within Milpa Point steer for the S. E. part of Cay Carenas, to avoid a shoal lying about a fourth of a mile to the Northward of the point. When the N. end of Cay Alcatraz bears E. the vessel will be within it, and may haul up for the interior of the harbor, and anchor as most convenient in six or eight fathoms, in what may be called the outer basin; or she may pass to leeward of Cay Carenas into the inner basin; but this channel, although deep, is narrow and intricate, and requires a pilot. The town stands on the Eastern shore, and is the third in importance on this side of Cuba.

Tides. Water. It is high water, full and change, in Port Xagua, at 4h. 57m., and the rise and fall is two feet. The streams run at the rate of three knots. Water is plentiful and easily obtained.

Xagua Bank. XAGUA BANK., or Flat of Xagua, is of coral formation, five miles long from E. to W., and four miles broad, and at its N. E. end there is a shoal patch of only thirteen feet water. The centre of the bank lies S. ½ W. twenty-six miles from Xagua light-house, W. thirty-seven miles from Cay Blanco, and E. ½ S., twenty-three miles from the E. point of the Jardinillos Bank. The Northern edge of the bank is steep to, shoaling suddenly from no bottom with thirty fathoms line to twelve fathoms, and then to six fathoms, which depth is near the shoal patch, making it at all times dangerous when approaching it from the Northward; whereas, when nearing it from the Southward, discolored water will not only be seen, but the soundings will decrease gradually from seventeen to nine fathoms, which is the least depth a vessel should stand into. The bottom is hard and not good holding ground. From the shoal patch the peak of Cabeza St. Juan bears N. E. ½ N.

COCHINOS BAY.—From Sabanilla Point—the Western point of the entrance to Port Xagua—the shore trends W. twenty-one miles to Caleta Buena Point (good cove) and is low and composed chiefly of white rocky cliffs. Thence it bends round to the N. W. and N. for eighteen miles, forming a deep bight, named Cochinos Bay. *Cochinos Bay.*

Padre Point, the S. W. extreme of this deep bight, lies W. twelve miles from Caleta Buena, and thirteen miles from the head of the bay, which is four miles wide. The Eastern shore is low and rocky; there are fifteen fathoms at about a mile from the land, and the depth within that diminishes rapidly. The Western shore is sandy, and the soundings extend to only a short distance on rocky bottom. There is a landing place at the head of the bay, but the ground being foul it offers no safe anchorage.

PIEDRAS REEF.—From Padre Point a coral reef extends to the S. E. seven miles, where it terminates at Cape Piedros, which is small and low. The reef is steep to, and has several narrow cuts leading on to the bank, through which three and four fathoms may be carried. The best channel is just to the Northward of the cay, but as nothing would be gained, it will be better to pass outside the cay, whence the edge of the bank takes a W. ¾ N. direction for thirteen miles to the Lavanderas (Washerwoman) Shoal) which is two miles in length and lies S. a mile from the E. end of Cay Blanco. The shore to the Westward of Padre Point becomes very low and swampy, and is skirted by mangrove cays. Cay Blanco, the largest of these, is ten miles long in an E. S. E. and W. N. W. direction, and its W. end is fifteen miles from Padre Point. *Piedras Reef.*

CAY PIEDRAS.—There is a fixed light on this cay suspended from a mast. *Light.*

CAZONES BAY.—The shore from abreast of the W. end of Cay Blanco falls back again to the Northward and forms a large bight seven miles deep named Cazones Bay. The W. side is formed by low mangrove cays terminating at Cay Diego Perez five miles W. of Cay Blanco. There is no good anchorage in this bight. *Cazones Bay.*

GULF OF CAZONES is a dangerous locality for sailing vessels to be in, as they will be liable to calms and cross-currents. The reef also, which bounds the Southern side of the gulf like a wall, has only one or two sand patches on it above water, and though nearly always awash has often no break; generally no soundings will be obtained at two or three cables from the reef. *Gulf of Cazones.*

E. CHANNEL TO BATABANO.—About a mile and a half to the Eastward of the S. end of Cay Diego Perez is the N. end of the reef, which, after sweeping round to the S. E., connects itself to the Jardines Bank. In the channel between, which leads on to the bank and up to Batabano, there are only fourteen feet water. There is also a small opening four miles S. E. of the cay, but it has only twelve feet in it, and the former is, therefore, used by vessels bound to the above port. *E. Channel to Batabanó.*

At two miles S. W. by W. of Cay Diego Perez is Cay Flamenco; and thence a range of low cays takes a N. W. by W. direction for twelve and a half miles, and becomes nearly connected to the shore at Cristoval Point. From this point the coast trends W. N. W., twenty miles to the little Bay of Matahambre. This part is also bordered with mangrove cays and sand-banks to the distance of from five to seven miles. Droghers drawing ten feet may navigate within them by the eye. N. W. three and a half miles from the small cay at the entrance of Matahambre, the low, swampy land ceases at Gorda Point.

ROA BAY.—From Gorda Point the shore takes a N. N. E. and N. E. direction for a short distance and then trends to the Eastward for two miles, when it bends round to the N. and N. W., forming the Ensenado de la Broa, or Bay of Broa, between Gorda Point and Mayabeque Point, N. of it, is fourteen miles wide, and carries a depth of from three to four fathoms. About a mile to the N. W. of Mayabeque Point is the river Mayabeque, in which there is good water. *Roa Bay.*

CHANNELS TO BATABANO.—If bound to Batabanó through the Gulf of Cazones, steer up the gulf so as to make Cay Diego Perez on the port bow. Skirt the reef until the S. part of this cay bears E. by S., when the vessel may haul round the dry point of the reef, and by steering for the S. part of the cay and keeping a sharp look out she will not have less than ten feet water. Give the end of Diego Perez a berth of about three fourths of a mile, and the water will deepen to two and three fathoms, but with an irregular bottom and rocks in all directions. When abreast of Diego Perez shape a course to pass three cables from Cay Flamenco; a greater distance off is unsafe. *Channels to Batabanó.*

After passing Cay Flamenco, steer to pass midway between Cay Rabihorcado on the port bow, and Cay Bonito and the rest of the range of cays on the starboard. A depth of three and four fathoms will be carried on this course, but when abreast of Rabihorcado the water will rapidly shoal to nine feet over a white sandy bottom and occasional patches of rock, which are easily distinguished. The latter depth will be carried without variation for about twelve miles, on an E. or E. ½ N. course, when it will gradually deepen to two and a half and three fathoms, with the same white bottom and patches of rocks.

GORDAS CHANNEL.—In a vessel of not more than eight feet draught, the route to Batabanó through this channel may be advantageously taken in preference to going round the rocky spit which projects seven or eight miles to the Southward from Cay Monterey. *Gordas Channel.*

To enter this channel, when the S. end of Cay Ambar bears N. W. distant three fourths of a mile, steer N. N. E., keeping Ambar about half a mile on the port hand, and by taking the precaution of having a boat sounding ahead, the vessel will not come into a less depth than nine feet, soft mud. The water will soon deepen to two and two and a half fathoms, and a course can be shaped for Batabanó. Give Cay Cruz a berth of three miles in passing it, as the soundings are not known in its neighborhood.

There are no dangers between Gorda Point and Batabanó but regular soundings of two and a half and three fathoms; the distance, however, nineteen miles, appears to be over represented on the charts, and at night not more than twelve miles should be allowed as the run between.

Toward Batabanó the soundings will decrease slowly and regularly. The anchorage is open to the Southward, and may be recognized by a pier projecting about two cables from the mangrove shore. At a cable's length from the pier-head, on which a fixed light is shown at night, the depth is ten feet.

A dirty little village stands among the mangroves on the shore, but at three miles inland is the town of Batabanó, which is daily rising in importance through being on the principal route between Trinidad and the Southern coast of the island, and Havana and the Northern coast. The railway brings passengers from Havana to Batabanó in two hours, whence steamers run E. and W. several times during the week.

Light. BATABANO.—There is a fixed light on the Railroad Company's wharf at this place.

Hacha Channel. HACHA CHANNEL.—If bound to Batabanó from the Westward of the Isle of Pines, from a position two miles to the Westward of Cayos de Dios, in two and a half fathoms, steer N. E. by N., carrying four and a half fathoms, until the Guanima Cays are sighted, which, with all the cays in their locality, are so exceedingly low as often to cause great perplexity.

When these cays are made out, the water will shoal to two and a half and three fathoms, when steer E. N. E. until within two or three miles of the range which runs E. and W. Run along this range at that distance, carrying two and a half and three fathoms, until Cay Culebra, upon the starboard bow, bears S. W. by S., when the Hacha channel will open out bearing N. E. by N. Steer directly for the entrance, and in running through take care to avoid the mud bank on its Eastern side; navigate it with a boat ahead, keeping nearer the Western shore than the Eastern, and nine feet will be carried over soft mud. When clear of the channel, a course can be shaped for Batabanó. About five miles to the windward of Cayamas Point is the entrance to the river Cagio, where good fresh water can be procured; and four miles to leeward of the point is the river Guanima.

Water.

Majana Bay and Sabana-la-mar. MAJANA BAY AND SABANA-LA-MAR.—From the Guanima river the shore takes a Westerly direction for four miles, when it bends round eight miles to the Southward to Salinas Point, forming the Bay of Majana. At eleven miles S. W. ½ W. from Salinas Point is the small creek of Sabana-la-mar, which affords shelter to droghers, and nine miles farther on is the river Bucunagua. Thence the shore trends more to the Southward for seven miles to Carraguao Point. All this part of of the coast is low and swampy, and many small streams and coves present themselves.

Pine Channel. PINE CHANNEL.—Fronting this part of the coast is the Northern edge of the bank which extends off to the N. W. from the Isle of Pines, leaving a channel varying in breadth from six to twelve miles, with a depth of from two and a half to six fathoms. The N. W. part of this bank terminates in a narrow spit at Cays de Dios, which lie S. ½ W. fifteen miles from Carraguao Point, and E. S. E. sixteen miles from Fisga Point.

Rivers Coloma, Galafre, and Cuyaguatege. RIVERS COLOMA, GALAFRE, AND CUYAGUATEGE.—From Fisga Point the shore trends W. N. W. six miles to the entrance of the river Coloma; this part is shoal to the distance of five miles. Thence the coast runs to the Southward, and then bends round to the Westward to the river Galafre; it then trends to the S. S. W. for seven miles to the river Cuyaguatege. These rivers are navigable for coasters, and the latter to some distance. The coast here becomes considerably elevated, and about ten miles to the N. W. of the latter river it rises into a lofty range of mountains, and at the W. end of the range there is a remarkable peak, which, when first sighted from the Southward, has the appearance of an island.

From the Cuyaguatege the coast takes a Southerly direction for five miles to Piedras Point, and is skirted by a low mangrove cays, within which is a large inlet named Laguna de Cortes, or Pirate Lagoon, carrying a depth of from twelve to fifteen feet. Piedras Point is foul to the distance of one mile and a half. The coast thence to Cape Francés, eight miles to the Southward, forms two sandy bays, but there is no anchorage in either.

San Felipe Cays. SAN FELIPE CAYS, which lie ten miles to the Southward of Fisga Point, are a range of low mangrove islands occupying a space of fifteen miles from E. to W., and six miles from N. to S. From the N. W. end a narrow sand and mud bank, dry in places, with cuts of six feet water, runs off eleven miles to the W. N. W. and a bar on which there are from fifteen to eighteen feet, extends from it to the S. W., and almost

connects it to Piedras Point. The cays are bold to on their S. side, and the edge of soundings lies nearly on a line from the cays to Piedras Point.

Anchorage. The bank between San Felipe Cays and Piedras Point is very steep to, and to anchor here a vessel should be prepared to bring up the moment soundings are obtained. A good berth will be found with the remarkable peak described above bearing N. W. and Cape Francés S. W. ½ S., in five or five and a half fathoms. Be careful, however, not to bring the cape to the Southward of this bearing, as the water shoals on the bar very suddenly to fifteen feet. The bottom in some places has a dark appearance, but it is grass and weed over sand. Between the cays and the main there are from three and a half to four fathoms water, but all that part of the shore just described is only navigable for handy vessels drawing from twelve to fourteen feet. In the channel between the San Felipe and Dios cays the depth is said to be about fifteen feet.

Water. There is a well of good water near the sandy beach at the S. end of the Easternmost of the San Felipe Cays, and good fishing and turtling everywhere about them.

Tides. The rise and fall at the San Felipe Cays is about two and a half feet, but uncertain; it appears generally to be high water in the morning and low water in the evening, and the flood runs strong to the N. E.

Indian Cays. INDIAN CAYS are low and woody, and about seven and a half miles long in a N. N. W. to S. S. E. direction, and from one to one and a half miles broad; between them there are ten and twelve feet water. The edge of soundings lies close to the Westward of the Northern Cay, which bears S. E. ½ E. ten miles from the San Felipe Cays; the S. end of the group bears N. ½ E. ten miles from Francés Point, and W. by S. six miles from Indian Point on the W. side of the Isle of Pines.

Jardines or Jardinillos. JARDINES OR JARDINILLOS BANK.—The navigation of the S. coast of Cuba, between Xagua and the Isle of Pines, is obstructed by numerous reefs, cays and islands called the Jardines or Jardinillos, rendering it inaccessible to vessels drawing over twelve feet water. The outer part of this extensive bank is from thirty to forty miles from the main land, and, being little known, is extremely dangerous. The East Cay bears S. W. ½ W. thirty-five miles from Xagua light-house, and S. eighteen miles from Cay Piedras at the S. W. extremity of Cochinos Bay. East Rock, the most Easterly danger on this bank, is a small detached portion of the Great or Eastern Guano Cay, lying off its N. E. end, and connected with it by a reef about a cable long. Great Guano Cay is intersected in several places by channels a few yards wide, but is usually represented as one cay, there being no other within several miles of it. The surface guano has mostly been removed; a stratum of excellent quality, about two feet thick, seems to cover the entire island, but being overlaid by a similar stratum of coral rock, it has to be mined for with considerable labor.

Between the N. end of the bank and the cays which lie off the main is the Eastern Channel leading in to Batanabó, in which there are fourteen feet water. A rocky bank, with from seven to twelve fathoms on it, extends seven miles to the S. E. from the E. cay, and S. S. W. two and a half miles from the cay there is as little as five fathoms on the edge of it. Thence a range of small, low, barren rocky islets extends in a W. by S. direction for twelve miles, and lie almost on the edge of soundings. Between these and Cay Largo are several reefs and ledges, similarly situated.

Cay Largo. CAY LARGO is about twelve miles in length, from N. E. by E. to S. W. by W., and its S. W. point lies W. by S. twenty-eight miles from East Cay. It is about fifty feet high, thickly wooded with a large tree about the centre, and has a sandy shore. About five miles S. by W. from the N. E. point, and six miles E. by N. ½ N. from the S. W. point, there is a *dangerous breaker* just within the edge of the bank. A narrow, dry reef, steep to, runs off to the W. S. W. fifteen miles from the S. W. point, and on it are two small, rocky cays called the Ballenatos, one one and a half, the other four and a half miles from the point; these two cays show white when the sun shines, and have no shrub or grass on them. The W. end of the reef bears S. E. seven or eight miles from Cay Rosario, and between the reef and the cays to the Northward there is clear anchorage in seven or ten fathoms.

Cay Rosario. CAY ROSARIO, when first seen from the Southward, has the appearance of three small islands, the largest being in the centre. As it is approached some sand cliffs will be observed, which distinguish it from those in the immediate neighborhood; Cay Largo to the E. and Cantiles to the W., having wooded shores.

Rosario Channel. ROSARIO CHANNEL.—Between the W. end of Cay Rosario and Cay Cantiles there is a channel leading toward Batanabó, but at its inner end, to the Westward of the Passage Cays, there are only ten feet water. The opening in the reef leading into this channel lies S. of the W. end of Rosario, and is a third of a mile wide. It is steep at the sides, and in the middle the depth is three fathoms. At half a mile from the N. point there is a rock which shows above water.

Shingle Cay. SHINGLE CAY.—From the Rosario Channel the cays take a Westerly direction for thirty miles to the E. end of the Isle of Pines, but this part of the bank should be approached with very great caution, for even its limits are uncertain.

A reef extends in a S. W. ½ W. direction, sixteen miles from Rosario Channel, and terminates at a small spot of *dry shingle* in lat. 21° 29′ N., long. 82° 12′ W., at about eighteen miles from the E. end of the Isle of Pines. There are soundings about a mile outside the shingle, in from five to fourteen fathoms.

Caution. In leaving the anchorage off Rosario do not steer to the Westward of S. W. by S. until an offing is gained of five or six miles, especially if the weather be cloudy, and observe that the cays to the Westward of Rosario are lower than Cay Largo. From the Rosario spit the edge of soundings trends to the N. W., and about six miles from it there is another shallow spot which extends off from the cays.

Water. It is said that good water may be found by digging wells on any of these cays. The fishermen resort to Cay Rosario for this purpose, and for the cabbage palm, which grows in great abundance on these islets.

Tides. The rise and fall of tide in Rosario Channel is about two or three feet, but the periods are uncertain, and chiefly dependent on the strength of the wind.

Isle of Pines. ISLE OF PINES.—The main body of this channel forms nearly a square, each side thirty miles in length, but from its S. W. end a narrow tongue of land extends fifteen miles to the N. W. The Southern half is very low and swampy, and nearly disconnected from the Northern part near the centre by overflown marshy ground, impassable in the rainy season. The Northern part is lofty, and in some places mountainous, and several streams descend from the heights and through lagoons, navigable for small vessels drawing eight or nine feet, and boats for a considerable distance; the population is principally located on this shore. The island is thickly wooded, and produces pine trees fit for masts or spars of large dimensions. In making it from the Southward, three remarkable mountains are first seen; the Dolphin Head, or Mount José, the Westernmost and loftiest, appears from this position a distinct peak, but from the Westward it forms three peaks, and may be seen forty-five miles off.

Francés Point is the Western end of the cays into which the extremity of the peninsula at the S. W. end of the Isle of Pines is now divided and broken, considerable change having been made in its form by the hurricane of 1846. A dangerous patch, with only six feet water over it, lies N. N. E. about three fourths of a mile from the point.

A vessel of light draught may safely haul into the Bight of Pines, or Ensenada de la Siguanea, when one mile to the Northward of Francés Point; but the best water, three and three fourths and four fathoms, will be found about a third nearer to the Indian Cays than to the point. The depths are six and seven fathoms in the middle of the bight, gradually shoaling toward the shore. There are no dangers, and the holding ground is excellent.

Indian River. INDIAN RIVER.—The entrance to this river lies on the E. side of the Bight of Pines, in about lat. 21° 42½′ N., lon. 83° 1′ 20″ W. Good anchorage, exposed only to the W. S. W., will be found in three fathoms at three fourths of a mile S. S. E. of the entrance.

A mud bar is formed across the entrance to this river, making it difficult for even light boats to get in, except at high water; but, having crossed the bar, they will carry from one to three fathoms for four miles up. At the distance of about two and a half miles within the entrance, the mangrove swamps merge into the pine country, and a little higher up strong and serviceable spars may be cut of any size under a frigate's topmast, so as to fall into the river. When green they generally sink, but they quickly dry and become much lighter. Pigeons, raccoons, and crocodiles, are found in abundance, and great numbers of hogs run wild through the woods.

S. and W. Coasts. S. AND W. COASTS.—From the S. E. point of the Isle of Pines the shore trends S. W. ½ W. seven miles, and is formed by small beaches of sand separated by low rocks. It then becomes a continued sandy beach for thirty miles to the S. W. by W., called the Playa Larga, which is skirted by a reef to the distance of from half to three fourths of a mile, and soundings extend about one third of a mile beyond it. Off the E. end of this beach there is a small opening in the reef with sufficient depth for coasters, which find good shelter within. The S. end of the island is two miles to the Westward of the beach, and thence the shore trends W. ½ N. eight and a half miles to Cape Pépé or Cocadrilo, on which there is to be placed a revolving light, then N. W. ½ W. five miles, and lastly N. W. by N. three and three fourths miles to Pedernales Point; it here bends round into a bay in which are two sandy beaches, and terminates three miles N. N. W. of the latter point at the small cays off Francés Point. All this part of the coast is composed of a low white cliff, called Soboruco Rock, or bleached, honeycombed coral and indurated sand. It is steep to, and no soundings will be obtained within a fourth of a mile of the reef, which closely skirts it. Pedernales Point, however, is foul to the distance of one third of a mile.

There is anchorage in the bay with the sandy beaches mentioned above in four, five, or six fathoms, good holding ground; the best berth will be found with Pedernales Point S. ½ E., the N. W. extreme of the bay N. W. ½ N., and the E. end of the longest

each N. E. about three fourths of a mile, in five or six fathoms; the bottom is foul in some parts, but the water is so clear that there will be no difficulty in picking out a sandy spot.

About a cable's length from the E. end of the longest beach there are some wells of good water; but the ground being rocky, the casks will have to be filled in the boat or on the beach, and then rafted. There is good fishing in the bay, and wild cattle frequent the wells at noon and in the evening. *Water.*

BIGHT OF PINES.—From the cay off Francés Point foul ground extends off three fourths of a mile to the edge of soundings. The shore from the point turns abruptly to the S. E. for seventeen miles, and is skirted by low mangrove cays; it then bends round to the N. E. and N. for twenty miles to Indian or Buenavista Point, forming the Bight of Pines, or Ensenada de la Siguanea, in which there is excellent anchorage for vessels of light draught. A bar, however, about a mile in breadth, runs right across from Francés Point to the S. end of the Indian Cays, and has only sixteen and a half feet water on it. The depth decreases within the bar to five and six fathoms, and then gradually decreases toward the shore. *Bight of Pines.*

The edge of soundings lies about one mile and a half outside this bar, and is so steep that the first cast near the cays may be three fathoms; with Francés Point E. S. E. ½ S. three miles, the depth will be three and a half fathoms on the edge. With the point S. E. and the Dolphin Head E. ¾ N., a vessel may anchor on the edge in five fathoms; the depth here gradually decreases to the bar, and she may work in by the lead and come to in any part of the bight. The deepest part of the bar, sixteen and a half feet at low water, will be found with the Dolphin Head E. by N. The deepest water is toward Francés Point; only fifteen feet will be found two miles from the Indian Cays.

There is a watering place in the Bight of Pines, a little to the Southward of the Water Hills, the first elevated land from the bottom of the bight; but the casks will have to be rolled about a hundred and fifty yards to the wells. *Water.*

The rise and fall of tide in the Bight of Pines is about six inches, but after a strong norther it is only three inches, or less. *Tides.*

NORTH COAST.—From Indian Point the Northern shore of the Isle of Pines takes a N. N. E. direction ten miles to Barcos Point, the N. W. extreme of the island, which is low, and forms the N. side of a shallow bay, called Arnold or Barcos Bight. Thence the coast trends E. seventeen miles to a remarkable headland called the Devil's Mount. *North Coast.*

RIVER CASAS.—At twelve miles to the Eastward of Barcos Point is the entrance to the river Casas or Nuevas, which is navigable for boats to some distance. It is fed by numerous rivulets; and about four miles up the river the water becomes fit for use. On its left bank the Sierra de Casas rises to a considerable elevation, and on the high lands are some small settlements where cattle and pigs may be procured, but vegetables are scarce. *River Casas.*

Between the Casas and the Devil's Mount there is also a ridge of hills of moderate height, called Mount Cavallo, and the coast is here more firm and freed of swamps. From the Devil's Mount the shore trends E. S. E. ten miles to the river Santa Fé.

RIVER SANTA FE.—This stream is navigable for small vessels of light draught for some miles, and for boats to the village on the right bank. About three miles up, a branch turns off to the S. W. called the Mal Pais, which is also deep enough for small craft, and for boats to a considerable distance. This arm terminates in an extensive lagoon. *River Santa Fé.*

EAST COAST.—From the mouth of the Santa Fé the Eastern shores of the Isle of Pines bends round to the S. E. and S., forming the E. side of the island, which is low and swampy. To the Eastward of the river the shore is skirted by low mangrove cays, which curve round to the N. W. in front of the N. side of the island, and terminates N. N. E. sixteen miles from Barcos Point. Between them and the N. shore of the island there is a depth of three and three and a half fathoms, which may be carried up to the Devil's Mount; but thence to the Eastward it gradually becomes shoaler, and off the mouth of the Santa Fé there are only nine feet. The holding-ground is excellent; but on account of the bar between the Indian Cays and Francés Point, which is the way in, it is inaccessible to vessels drawing over sixteen feet. *East Coast.*

It is high water, full and change, on the N. side of the Isle of Pines at 6h., and the rise and fall is three feet. *Tides.*

LAGUNA DE CORTES.—Between Cayos San Felipe and this large inlet, known as Pirate Lagoon, the bank of soundings is steep to and its outline somewhat irregular; the edge of the bank is clear of danger, and the soundings are regular inside. When within two miles of the coast, the lagoon may easily be recognized from the mast-head, but nothing but mangroves will be seen from the deck. As the coast is neared the water will deepen in places to seven or eight fathoms, though there is generally not more than four fathoms at one mile and a half from the shore. *Laguna de Cortes.*

There are now but two entrances to this lagoon, the rest being sanded up; the Southern entrance is the best, having six feet water, but both are narrow and tortuous. They

are separated by a small cay, which lies on the parallel of 22° N., in long. 83° 57′ W., and this parallel almost bisects the lagoon, leaving the Southern portion somewhat the larger; inside the depths are two and three fathoms. Abreast the entrance, upon the main land, is a landing place communicating with an extensive settlement. Much lance-wood is exported here, and slaves not unfrequently landed; several wrecks of slavers are lying upon the cays outside.

Anchoring with the cay which divides the entrance to Pirate Lagoon, bearing W. and distant one mile and a half, a vessel will have good holding ground and be sheltered from the S. W. by Piedras Point; but this point must be carefully avoided in weighing with a northerly wind, as there are not more than three feet upon some of the rocks, and the water shoals suddenly.

In the space to the Northward of Cayos San Felipe there is generally as much water as marked on the chart, and excellent holding ground everywhere. In coming from the Southward, between Cayos San Felipe and Cayos de Dios, give the extremity of the former a berth of two miles, or the depth will be less than two fathoms. The passage between San Felipe and Indian Cays appears to be very shoal.

From Cape Francés the coast line of Cuba takes a W. S. W. direction thirty-six miles to Cape Corrientes; the land is low, thickly wooded, and the shore is chiefly formed of white indurated sand cliffs from ten to twenty feet high, steep to. About four and a half miles to the Eastward of the latter cape, soundings may be obtained at about half a mile from the shore.

Cape Corrientes. CAPE CORRIENTES is a very low sandy point, with the ruins of a stone wall a short distance within it, at the edge of the low trees which cover the land in the interior. There are a few small dry rocks about fifty yards from the point, and a shallow rocky spit runs off a fourth of a mile to the S. W. of them. At two thirds of a mile off shore the depth is five fathoms. This point has been mistaken by strangers for Cape St. Antonio, from the land of Cuba appearing to terminate here, on account of the deep bight of Corrientes, which is formed to the Northward of it; but the light-house on the latter will now clearly point out the distinction; besides, as Corrientes is approached, should the weather be clear, the distant high lands of Buena Vista or Rosario may be seen, bearing N. of it.

Anchorage. There is good temporary anchorage in nine fathoms water with Cape Corrientes bearing E. by N., distant about one mile and a half.

Ensenada de Corrientes. ENSENADA DE CORRIENTES.—At three miles to the Northward of Cape Corrientes there is a remarkable rocky headland called Cayman Bluff. Thence the shore bends in a little to the Eastward of N. for eight miles, and then turns abruptly to the W. S. W. At ten miles to the Westward of the bottom of the bight is a remarkable piece of scarped land, forming a cliff at a short distance from the beach, called Balcones; thence the shore trends S. W. ten miles to Holandés Point. For three miles on either side of this point the shore is bounded by a rocky cliff about thirty-five feet high, and at the extremity of this point there is a remarkable red spot on it. From the E. end of the cliff a reef extends off shore about one and a half cables' length as far as this spot, and the depths are from fourteen to twenty fathoms half a mile outside it. The shore all round the Corrientes Bight is very low and woody, and so steep as to offer no anchorage.

Currents. The current along this part of the S. coast of Cuba generally sets to the leeward nearly a mile an hour; but not unfrequently it is found running to windward with equal or greater velocity.

The great bight between the Jardines Bank and the Doce Leguas Cays is generally free from current, and by standing close to the main land in the evening, the shore being bold to, a vessel may get to windward at the rate of forty miles in the twenty-four hours.

Winds. The winds along this coast, when the trade is not blowing steadily, have a remarkable rotary motion, following the course of the sun. Thus, in the evening, the wind comes off the land about N.; by daylight it will be N. E.; at eight A. M., E. N. E.; at noon, E. S. E.; at two P. M., S.: and four P. M., S. W., in which quarter it generally dies away into a calm until the land wind comes off again. By a knowledge of this a vessel may creep fast to windward during the calm months of May, June, and August, and frequently at other seasons the trade is found to be unsteady, especially in the night.

The great difficulty, when bound to windward, is in getting round Cay Breton, and thence to the Caballones Channel, where the current always sets to leeward a mile or a mile and a half an hour. Thence keep close in shore into the bight between the Eastern end of the Doce Leguas and the great Bank of Buena Esperanza, called the Bight of Bayano, and there will be little trouble in getting up to Cape de Cruz. To the Eastward of this cape it is almost hopeless to attempt beating up inshore; but from the cape a vessel may generally fetch across to Falmouth or St. Ann's, on the N. coast of Jamaica.

WINDWARD PASSAGES—PART OF THE BAHAMA ISLANDS AND BANKS.

The Bahama Islands are all within the influence of the trade-winds. Their lowness, of course, exempts them from the regular land wind, but in the summer season a light breeze frequently comes from the Florida shore in the night, and reaches the Western side of the Little Bahama Bank, but no farther. At this period the wind generally prevails to the Southward of E., and the more so as their Northwest extreme is approached; the weather is then very variable, and squalls rush down with great violence, accompanied with heavy rains and an oppressive atmosphere. They are within the zone of hurricanes, and a year seldom passes without their being visited by a heavy gale at least, from the S. E., which inflicts serious damage both on shore and at sea. *Winds.*

In the winter months, from about November to the middle of March, the trade-wind is frequently interrupted by N. W. and N. winds. In December and January this may be expected almost weekly. Previously to this change the wind will draw round to the S. and S. W. About twenty-four hours after, or less, dark masses of clouds will be seen rising from the Westward, and in a short time the wind will rush down suddenly from that quarter with the force of a double or triple-reefed top-sail breeze. It will soon veer round to the N. W. and N. with clear weather, and remain between these points two or three days. It will then haul gradually to the N. E., perhaps with increased force, accompanied by heavy squalls, and wear itself out at E. in the course of a few days. The barometer is scarcely any guide; a small fall may be detected as the wind draws to the S., and it will rise rapidly with the N. wind. The mariner may be sure of the action of the wind, and that it will not back at this period, and this will enable him to seek shelter if necessary with every confidence in the change that will follow. On the Southern edge of the group this change may be more sudden, on account of the partial interference of the winds from the high lands of Hayti and Cuba on the regular trade; but it seldom takes place without a previous indication of dark masses of clouds to the Westward.

A feeble stream, seldom exceeding half a knot, generally sets to the Westward on the S. side of the Bahama Islands, and to the N. W. on the N. E. side; but it is liable to change, and that suddenly, especially in the N. W. Providence Channel, and on the N. E. side of the Little Bahama Bank. Here it will sometimes be found running strong to windward. Some observations tend to show that this is more frequently the case after northers, or on the increase of the moon. The opinions of the wreckers and Cayman fishermen appear to agree on these points; but there is no certainty in the matter, and, consequently, more than ordinary attention is required, when navigating among them. *Current.*

It is high water, full and change, nearly everywere among the Bahama group, at 7h. 40m.; and the rise at springs is four feet; at neaps, three feet; the only exception will be seen on the W. side of Andros Island. The tidal stream runs directly on and off all the banks, at the rate of from one to two knots, except in the narrow channel between the cays on the Great and Little banks; here its velocity is greatly increased, and in some places it is scarcely possible to contend against it. *Tides.*

BANK BLINK.—This is a phenomenon described by some navigators as a bright reflected light hanging over the clear white sand-banks, and serving to point them out from a long distance. From lengthened experience, however, we warn the navigator most strongly not to trust to so fallacious a guide. It will be far better for him to depend upon the eye from aloft, the lead, and the reckoning, especially the latitude, which should be unremittingly checked. The navigation being generally from to windward, we shall commence the description from that quarter. *Bank Blink*

NAVIDAD BANK.—This is an oval-shaped flat bank of coral and sand, twenty-two miles long, in a N. and S. direction, and, in the centre, eleven miles broad with a general depth of sixteen and seventeen fathoms; the least water is fourteen fathoms. The S. end lies N. N. E. thirty-two miles from Cape Cabron, the nearest part of Hayti. The water is not sufficiently discolored to render this bank visible from any distance. *Navidad Bank.*

Between the Navidad and the Silver Bank there are three small detached knolls, carrying ten, twelve, and seventeen fathoms water. The Severn Shoal still holds a place on some charts, but the neighborhood has been so closely searched that its existence is extremely doubtful.

SILVER BANK lies thirty-six miles to the N. W. of the Navidad, and the same distance to the Northward of Cape Viejo Francés. Its Eastern side is twenty-seven miles long in a N. E. by N. and S. W. by S. direction, but bends in to the W. S. W. near the middle, and at the bottom of the bight, near the edge, there is a dangerous shoal; its S. E. and N. E. points appear to have no danger, but regular soundings from twelve to fifteen fathoms. *Silver Bank.*

The N. side of the bank runs nearly straight N. W. by W. ½ W. for thirty-eight miles; but about eight miles from the N. E. point it becomes exceedingly dangerous all the way to the N. W. point; and near the middle of this side rocky heads, which are awash, extend five miles inward from the edge. The W. side also runs nearly straight N. and

S. thirty-seven miles, on the meridian of 70° W., and seven miles from the S. W. point there is a foul patch close to the edge of soundings; but to the Northward of this, to within about seven miles of the N. W. point, the bank appears to be free of danger for some distance inward. From the S. W. point the S. side trends E. by S., twenty-four miles, and for about the first eight miles of this distance the edge is very dangerous, but to the Eastward of this it appears to be clear; it will be better, however, not to venture on any part of it, for the chart shows that it has not been closely examined. As the water on the bank is not discolored, except over the shoals, where it has a white appearance, the lead must be well attended when approaching it from any quarter.

Mouchoir Bank. MOUCHOIR BANK, or MOUCHOIR CARRE (square handkerchief), lies twenty-eight miles to the Westward of the N. W. point of Silver Bank, and is thirty-one miles in length, from E. to W., but irregular in breadth. The Southern edge takes nearly this direction, and appears to be free of danger, with a depth on it of from nine to fourteen fathoms. The Eastern side trends Northerly twenty miles, and terminates in a long point, or narrow spit; about one mile and a half within the extreme end of the spit there is a small breaker. The outline of the N. side is irregular, and extremely dangerous to within about nine miles of the W. end: here there is a doubtful patch of six fathoms. The N. W. extreme of the bank lies E. S. E. sixteen miles from the S. E. point of the Turk Islands bank.

Turk Islands. TURK ISLANDS are the Easternmost of the Bahama group, and situated on a narrow bank, extending about thirty-five miles from N. N. E. to S. S. W. Near the centre, however, a tongue of soundings extends out to the Eastward seven and a half miles from East Cay, with a regular depth on it of from eight to ten fathoms. The nine islets of the group are composed of sand and sandstone, partially clothed with stunted bushes and a peculiar species of cactus, somewhat in the form of a Turkish cap; hence probably, their name. There are no wells; and the inhabitants who reside on Grand Turk Island and Salt Cay depend upon rain water, caught in tanks. The Caicos Islands furnish them with ground provisions; Hayti, with cattle; and other supplies are generally obtained from America; so that strangers must not depend upon finding resources here.

Grand Turk Island. GRAND TURK ISLAND is five and one fourth miles long, in a N. and S. direction, and about a mile broad. It is very low, except on the E. side, which is formed by a narrow ridge of sand-hills, about seventy feet high. A dangerous reef extends N. E. two and a half miles from the N. point, and a narrow ledge of the bank, on which there are from nine to six fathoms, runs off in the same direction, six miles beyond the pitch of the breakers. The reef skirts the Eastern shore at the distance of about one mile and a half, and connects itself to the small islets lying to the S. E. as far as East Cay. This little islet, which lies about five miles to the S. S. E. of Grand Turk, is ninety-six feet high, and the loftiest of the group. The reef is broken here and there, but there is no safe passage through for strangers. The N. and N. W. points of Grand Turk are also foul, to the distance of half a mile; and from the latter point a narrow ridge of soundings runs off a mile outside it. The town, which is the seat of government, is situated on the Western shore, and in front of an extensive cultivated salt pond.

Anchorage. The anchorage for vessels resorting to Grand Turk Island for the salt, is off the centre and S. end of the town, but so close to the shore, that it will be better for strangers to take a pilot. The shore is foul all along this side of the island, and soundings do not extend out half a mile.

The great difficulty in using this anchorage is in shooting in, which requires great judgment; the best way will be to keep the top-sails at the mast-head ready to throw all back. This, however, must depend upon the strength of the wind, for care must be taken not to bring up too short, or the vessel will drag off, or hook her anchor to a rock and probably lose it. Vessels must also be prepared to weigh, or slip, the moment the wind threatens a change; those merely wishing to communicate had, therefore, better remain under sail.

Light-house. The iron circular light-house on Grand Turk, in lat. 21° 31′ N., and long. 71° 7′ 40″ W., stands S. W. ½ W., two cables' length from the N. point of the island, and exhibits at one hundred and eight feet above high water, a brilliant flash of light every half minute. The building, painted white, is sixty feet high, and the lights may be seen at a distance of fifteen miles.

Hawk's Nest. HAWK'S NEST is the name given to the anchorage under the S. side of Grand Turk Island, and in the event of a vessel being compelled to quit the roadstead off the town, she will find this a safe roadstead until the wind draws round again to the Eastward. Beacons are placed on Penniston and East cays, and Toney Rock, as guides for this anchorage, but a stranger would run considerable risk in making use of them, without the assistance of a pilot, and vessels drawing over seventeen feet should not attempt it at all.

A reef, which runs S. W. three and a half miles from the S. point of Grand Turk, protects the anchorage from the W. and N. W., and about half a mile from the point there

s a small intricate opening in it called the small cut, for small vessels of ten feet raught; and a mile from the point is a larger one, called the Great Cut, in which the epth is eighteen feet, with the beacons on Penniston Cay and Toney Rock in one, and earing S. E.

If intending to anchor in the Hawk's Nest, the best way will be to pass round the S. W. end of the above S. W. reef as there will then be room to beat up. In this case hould the wind be well to the Northward a vessel may haul round the reef, with the eacon on East Cay just touching the E. end of Cotton Cay, and this mark will lead beween it and the S. W. bank, about half a mile to the S. W., on which there is only welve feet water close to the edge of the bank. Or she may pass to the Southward of he S. W. bank, with Toney Rock beacon in one with the S. W. end of Cotton Cay. *Directions.*

In steering in on this line a cast of four and a half fathoms will be obtained on the dge of soundings, and then six and seven fathoms to within about half a mile of Cotton ay. To the Northward of the latter cay there is as little as three and a half fathoms ight across, but to the Eastward of this there are four and five fathoms to the anchorge above the Dunbar Shoals. The whole space is, however, studded with numerous mall rocky heads distinctly seen, and in beating up the eye must be the guide. The ost convenient temporary anchorage will be found between the Dunbar shoals and a mall dry sand bore on the S. W. reef.

SALT CAY lies S. S. W. six miles from Grand Turk Island, on the extreme Western dge of the bank. It is almost triangular in form, the N. side trending one mile and ree fourths E. and W., the W. side two and a fourth miles N. and S., and the E. de three and a fourth miles N. E. and S. W. The N. W. end forms a bold bluff, which ses abruptly from the sea to the height of sixty feet, and on the summit there is a mall lookout house. The town is situated on the W. side, toward the N. W. end of e cay, between the beach and a valuable salt pond. There is anchorage before it of recisely the same character as that at Grand Turk, and the same precaution must be bserved. *Salt Cay.*

The space between Salt Cay and Cotton Cay is full of dangers, and should not be navgated except in a case of sheer necessity, when the eye must be the guide.

SAND CAY, the Southernmost of the group, lies S. by W., six and a half miles from alt Cay, and is one mile and a half long, N. and S., and about two cables' broad, and bout forty feet high. It is, however, nearly divided at the centre by a small neck of w bushy land, so that at a certain distance, in an E. or W. direction, it has the apearance of being two islets. At three fourths of a mile S. S. E. of the cay, there are wo small black rocks lying close together, about two feet above the sea; they are eep to, and have five or six fathoms water between them and the point, and eight fathms at three fourths of a mile S. E of them. *Sand Cay.*

This cay is clear on all sides but the N. Here a coral reef runs off in that direction early two miles, and the sea breaks heavily over it, except after very fine weather. here are several small black rocks from ten to sixteen feet high, on the reef, the orthernmost of which lies about half a mile from the N. end. The edge of the bank uns almost on a straight line between the reef and the S. end of Salt Cay, and the ank is here quite clear, with regular soundings right across the Eastward of from nine eleven fathoms, white sands and fans.

In running down from to windward be careful not to enter upon soundings—which xtend four miles to the Eastward of both cays—until the S. end of Salt Cay bears W. W., for the ground to the Northward of this line is very foul. Soundings extend e mile and a half to the Westward from Sand Cay, and anchorage will be found here seven fathoms, about a mile off, with the gap bearing E. N. E. A vessel can weigh ith any wind, and run off the bank on a S. course, clear of all danger. There are still e remains of some remarkable solid masonry on the cay, similar to those which may e seen at Cape Isabélica on the Haytien shore.

ENDYMION ROCK.—The Southern tongue of the bank extends S. W. by S. eight iles from Sand Cay, and on the spit is the Endymion Rock, lying S. W. ½ S. five and half miles from the S. end of the cay, and within a cable's length of the Western edge the bank. The rock is composed of a small cluster of rocky heads within the comss of a fourth of a mile, and on one, which breaks in heavy weather, there are only ur feet water; should it not break it becomes exceedingly dangerous, as the water er it is so dark that it cannot be distinguished from any distance. The bank between and the cay is quite clear, with regular soundings of from seven to nine fathoms; ere are fifteen fathoms about one mile and a half to the Eastward of the rock, and om seven to sixteen fathoms between it and the S. W. point of the spit, about two and half miles to the S. by W. ½ W. of it. The Swimmer Rock, which lies on the S. E. oint of the Caicos bank bears from the Endymion W. by S. twelve miles. *Endymion Rock.*

TURK PASSAGE.—Since the establishment of the light on the N. point of Grand urk Island, Turk Passage has become the one most generally navigated by vessels ound from the Northward to the Southwestern ports of the West Indies; but the Mona *Directions.*

passage is the safest for this purpose. The navigator intending to take the former route, and having to cross the Florida stream without a chronometer on board, will do well to endeavor to reach the parallel of the light-house, or lat. 21° 40′ N., at least a degree to the Eastward of it.

Having arrived at this position without sighting land, he will be assured of his vessel being to windward of the islets, and may bear up accordingly; great care, however, must be taken to watch every opportunity of checking the latitude during the night. This should be more particularly attended to here, as the current sometimes sets strong to the N. W., and should the vessel pass out of sight of the light to the Northward a serious accident might occur.

After making the light on Grand Turk Island, great caution must be observed in rounding the N. end of that island. Being in a position about three miles to Westward of it, a S. S. W. course for twenty-six miles will lead nearly four miles to the Westward of the Endymion Rock, and eight miles to the Eastward of the Swimmer. The current, even if there be any outside, is generally very feeble in Turk Passage, and the tides are not felt. Should the voyage be made in the winter months, and the wind veer to the Southward of S. E., the usual indicator of a coming change to the N. W., it will be better to remain to the Northward of the islets, where the light will be a guide, instead of beating about in the passage until the wind has veered round to that quarter. Should the vessel have entered the passage, and the wind become light from the Southward, which frequently happens in the summer or hurricane months, it will be better to anchor for the night in either of the clear spaces already pointed out between the cays.

This passage is by no means to be recommended to vessels bound Northerly or Northeasterly, and it may as well be stated here, that, except they have a steady favorable wind, and are quite sure of their reckoning, it will be far more prudent to make a free wind of that which generally prevails, and run through the Crooked Island passage. This will relieve them of imminent risk and anxiety, and in all probability cause little or any delay. If bound from Cape Hayti, they may venture to take the Caicos passage, provided the wind be not to the Northward of E. N. E., but it should be done in daylight.

Caicos Bank. CAICOS BANK.—This is a large shallow sand-bank, extending fifty-eight miles from E. to W., and about the same distance from N. to S. Its outline is, however, very irregular, and on all sides, particularly at the Southern portion, it is extremely dangerous, and there is nowhere to be found secure anchorage for large vessels. The N. and a large portion of the E. sides are bounded by a range of narrow islands, which are thinly inhabited, wooded, and formerly produced cotton, but at present they are only used for the raising of stock and the cultivation of ground provisions, which are supplied to the Turk Islands and to Nassau. The inhabitants are principally fishermen and wreckers.

Philip's Reef. PHILIP'S REEF.—From Cape Comete, the N. E. extreme point of the Caicos group, a bank of soundings extends out to the Eastward for five miles; it then trends to the W. and reaches the shore about three miles to the Southward of the cape off Good Hill. On the Northern edge of this bank is Philip's Reef, a dangerous coral patch about half a mile long, which always breaks. It bears E. N. E. ¾ E. three and three fourths miles from Cape Comete, and N. W. ½ W. nineteen miles from Grand Turk light and light-house. Soundings do not extend more than half a mile to the Northward of the reef; to the Eastward they run off two miles, and the depths are from ten to twenty fathoms, and to the Southward from seven to ten fathoms; so that vessels approaching from these latter quarters should pay great attention to the lead. In a case of necessity a vessel may pass between the reef and the cape, where the depths are six and seven fathoms.

Grand Caicos Island. GRAND CAICOS ISLAND.—From Cape Comete the Northern shore of East Caicos Island forms a deep bight and trends to the Westward for about eight miles to the E. end of Grand Caicos, where it again bends in to the Westward and runs to the N. W. about the same distance to Haulover Point, the N. extreme of Grand Caicos; near this point there is a large square house, and a small settlement on the side of the hill. This part of the shore is skirted by a reef to the distance of from one to two miles, leaving shelter inside for boats.

To the Northward of Haulover Point the reef extends off to the Eastward at least three miles, and under it there is temporary anchorage for small vessels in case of necessity. The anchorage is open to the Eastward and a heavy swell generally rolls in, but there is always a strong outset, which would enable a handy vessel to beat out in moderate weather. From Haulover Point the shore trends slightly round to the Westward about ten miles to Juniper Hole, the opening between Grand and North Caicos. There is shelter here for boats between two conspicuous bluff points.

Caution. No stranger, however, should approach this part of the shore. There is a strong draught into the bights, which is felt at the distance of five or six miles, and would prove fatal in the event of a calm, as there are no soundings outside the reefs.

NORTH CAICOS ISLAND.—The N. side of this island is skirted by a reef at half mile from the beach, and at the N. E. point a dangerous ledge extends off to the distance of two miles. Outside both the ledge and the reef there is a bank of soundings about a mile wide, with ten and twelve fathoms on it. This part is easily recognized as the shore rises into a succession of hillocks about one hundred feet high, and on three of the Easternmost will be seen the ruins of large houses. Near the W. end are three small islets within the reef, called the Mary Cays. The coast here takes a S. W. direction for fifteen miles into a deep and dangerous bight, skirted by a reef more than half mile from the shore. *North Caicos Island.*

Between the North Caicos and Providenciales, or N. W. Caicos, there is a continous range of small cays and on one of them, called Fort Cay, a low sandy islet covered with brushwood, about seven miles S. W. of the Mary Cays, there are some wells of indifferent water, and the remains of a small fort and magazine. The reef under it forms a small well-sheltered harbor, carrying a depth of two and a half and three fathoms. *Water.*

PROVIDENCIALES.—The N. W. end of this island bears W. S. W. eighteen miles from the Mary Cays, and terminates near its extremity in a peaked hill of moderate height, upon which there is a pile of stones erected as a beacon. From the peak the land falls to the N. N. W. into a low sharp point, off which a dangerous reef extends to the Eastward for a mile, with soundings outside it. On the W. side of the point a bank extends off to the distance of half a mile, upon which there is anchorage in what is called Malcolm Road. *Providenciales.*

The W. side of Providenciales trends to the Southward, forming two bays, each about four miles wide. The S. extreme terminates in a bold bluff about five miles E. N. E. of the N. end of West Caicos. From the S. end of the N. bay, or Malcolm Road, a dangerous reef extends off to the S. W. by W. seven miles, and near the end there is a small dry sand-bore lying N. about three miles from the N. W. point of West Caicos. A reef also stretches off from the latter to within a mile and a half of the spit of the former. Between them there is a vein of deep water running in to the Eastward for three miles, with upward of two fathoms all the way up to the S. bluff of Providenciales. A vessel may anchor under the sand bore in six fathoms, sheltered by the W. reef as far round as N. N. W. It is, however, not so good an anchorage as that under the S. end of West Caicos.

Vessels coming from the Northward are apt to mistake the Providenciales for the West Caicos, and consequently, hauling in too soon to the Southward, get wrecked in the night on the West Reef. With the aid of the chart, however, and proper attention to the latitude, this ought not to happen, for the West Caicos could not be made upon any bearing to the Westward of S. without the vessel being close to the W. side of Providenciales, or near the West Reef. There is also ten miles difference of latitude between the N. W. ends of Providenciales and West Caicos. The spit of the West Reef bears S. W. ten miles from the N. W. point of the former, and extreme care should be taken in rounding it in the night. *Caution.*

WEST CAICOS ISLAND is six miles long in a N. N. E. and S. S. W. direction, and about a mile and a half broad, and is nearly of a uniform height of about fifty feet. Near the S. E. point, however, there is a small hill sixty-five feet high, and another sixty feet near the N. end. The W. side is steep to, the soundings only reaching a cable's length from the shore, and in many places even less. The island is uninhabited, and destitute of water. *West Caicos Island.*

There is good anchorage under the S. side of West Caicos, in five and six fathoms water, sandy bottom, sheltered as far round as W., and plenty of room to weigh with any wind. The best berth is in five fathoms, with the S. E. hill bearing N. by W., just within the edge of soundings. Vessels caught in the Caicos passage with a norther will find this a very convenient anchorage to await the change. *Anchorage.*

EAST OR COCKBURN HARBOR.—From Cape Comete the Eastern shore of the keys on the E. side of Caicos bank takes a Southerly direction thirteen miles, when it takes a sudden bend to the Westward for two miles, and forms the S. end of South Caicos. Long Cay, which is about three miles in length N. E. and S. W., but very narrow, lies to the Westward of the S. end, and is separated from it by an opening half a mile wide, called East or Cockburn Harbor, the entrance to which bears W. ½ S. twenty-two miles from the light-house on Grand Turk. *East or Cockburn Harbor.*

This anchorage is about half a mile in extent, with a depth of three and a half fathoms, decreasing inward to two fathoms, but completely exposed to the S. E. There is a small rocky islet, named Cove Cay, nearly in the middle of the outer part of the opening, and the channel lies close to the Westward of it; a pilot, however, is necessary, and one may be obtained at Grand Turk. Soundings here do not extend more than two cables' length from the shore. A reef runs off a short distance from the S. end of Long Cay, and there is snug anchorage in three and a half or four fathoms off the W. side, between it and a reef about a mile to the Westward, with the S. end of the Long Cay reef bearing E. S. E.

Ambergris Cay. AMBERGRIS CAY, lying S. by W. ½ W. ten miles from Long Cay, is three miles long from N. to S., and about two thirds of a mile broad. A hill in the middle of this cay rises to the height of one hundred feet, and there are some remarkable white cliffs, on its S. W. side; the edge of the bank lies two and a half miles from its Eastern shore. About two and a half miles to the Northward of this islet are the Fish Cays.

Little Ambergris Cay. LITTLE AMBERGRIS CAY lies a short distance to the Westward of Ambergris Cay. It is about four miles long in an E. and W. direction, but very narrow, and so low as not to be easily distinguished from the edge of soundings.

Swimmer Rock. SWIMMER ROCK.—This dangerous rocky patch is about half a mile in extent, with less than two fathoms on it. The white cliffs on Ambergris Cay bear from it N. N. W. ¼ W. thirteen miles, and may be seen from the deck of a sloop-of-war in clear weather. The rock is steep to on the E. side, but the S. E. point of the Caicos Bank terminates about two miles S. by E. of it, in which direction there are from eight to ten fathoms water. The edge of the bank along the E. and S. sides being covered with dark weed is not easily discovered at any distance. From the S. E. point the edge trends to the W. N. W. for about eight miles, and then bends round to the S. W. for about the same distance to the extreme S. point of the Caicos Bank.

The Whale Breaker. THE WHALE BREAKER lies in the bight of the Caicos Bank, five miles to the Westward of the Swimmer, on the edge of soundings, and is a dangerous small rocky patch even with the surface of the sea. In heavy weather it breaks spouting up the water to a considerable height—hence its name. There are several other dangerous spots on this side of the bank; the Southernmost, called the South Rock, has only ten feet water on it, and lies S. eight miles from Shot Cay, one of the seal Cays.

W. Sand Spit. W. SAND SPIT.—From the S. end of the Caicos Bank the edge takes a N. W. direction about twenty miles, when it bends out more to the Westward to the W. Sand Spit, the N. end of which dries at low water. This is called Sand Cay in the old charts, and it lies S. E. by E. twenty-four miles from the S. end of W. Caicos. For the first seventeen miles from the S. end the edge of the bank is quite clear, and comes within eight miles of the White Cays, the Westernmost of the Seal Cays; but thence to the W. Caicos it is very dangerous. All this side is of a light green color, forming a strong contrast with the deep blue tinge of the ocean water. The color is frequently reflected very strongly on the edge of the clouds, on what is called the Bank Blink (noticed in page 465) which may be seen many miles.

French Cay. FRENCH CAY.—To the Northward of the West Sand Spit the Caicos Bank is clear for about five miles. It is here that the small coasters and wreckers cross the bank to the Eastward, coming off to the Southward of Long Cay. Thence the edge trends W. N. W. about four miles to French Cay, which is a small bushy islet, about one third of a mile in diameter, frequented by great numbers of aquatic birds, and from April to July great quantities of eggs are collected by the fishermen. A vessel may anchor under its lee in six fathoms, on the edge of soundings. From this cay to the W. Caicos there is scarcely a clear space, and the bank all along is very steep to.

Mariguana Island. MARIGUANA ISLAND is twenty-five miles long E. and W., six miles broad at the W. end, about four miles at the End, but in the centre it is not two miles across. It is generally low, about thirty feet above the sea, and thickly wooded; near the centre however, there is a hill one hundred feet, and toward the E. end several small hummocks from forty to sixty feet high. Abraham Hill, at the back of Start Point, is about eighty feet, and a long flat ridge behind the S. E. point ninety feet high. There is good water to be found on the island; wood is in abundance. In 1860, there were twenty settlers located in Betsy Bay, at the W. end of the island.

The N. side of Mariguana trends about W. N. W., and is indented with a few small exposed bays, and skirted by a reef along its whole length, which terminates about a mile and a half to the Northward of the N. W. point; at a mile and a fourth N. E. by E. of this point, on the edge of the reef, there is a cluster of high rocks. Under the lee of the spit there is good shelter for small craft, by passing in close round the N. W. point.

The W. side of Mariguana runs nearly straight S. S. W. six and a half miles, and is so bold that soundings do not reach more than a cable's length from the shore.

From the S. W. point the Southern coast of Mariguana takes an Easterly direction for about four miles, and then bends round to the S. E. to Start Point, which is situated S. of Abraham Hill; to the N. W. of the point soundings extend out for half a mile with a clear sandy bottom. To the Eastward of Start Point the shore trends to the N. E. and E., forming a deep bight called Abraham Bay, which terminates at a point five miles E. by N. ½ N. of the Start. A dangerous reef sweeps round to the Eastward between the points, at the distance of about two miles from the head of the bight and is steep to. About a mile to the Eastward of the Start there is a small opening through which coasters may carry by the eye twelve feet into a good harbor within the reef. From the E. point of the bay the coast takes an E. N. E direction for about four miles to the foot of the centre hill, at the narrowest part of the island, and then trends round

o the S. E. for about nine miles to the S. E. point. Off the latter portion soundings un out about a third of a mile.

E. REEF.—The E. end of Mariguana trends N. E. and S. W. four miles, and a dan- *E. Reef.*
erous reef commences at the S. E. point, and extends to the Eastward about eight and half miles and is two miles broad. At the S. E. extreme of this reef are several dry ocks just above water, and at the N. E. elbow there is a small low cay of rock and sand few feet high. On the S. side of the reef, about four miles to the Eastward of the S. . point of the island, and nearly S. of a small cay which lies close off the N. E. point, here is a little opening, through which small craft find their way into snug anchorage nder the above cay. The extreme E. end of the reef is four and a half miles from his cay, which appears as part of the main land, except on a N. N. E. and S. S. W. earing. The reef is steep to on the S. side, but soundings will be obtained within half mile of the E. and N. sides. The dry rocks at the S. E. end bear N. W. thirty miles rom the N. W. end of Providenciales, and N. by W. forty-two miles from the S. W. nd of W. Caicos.

LITTLE INAGUA ISLAND is somewhat quadrangular in form, eight miles in its *Little Inagua*
xtreme length, from E. to W., and about five miles broad. In the centre of the N. W. *Island.*
ide there is a flat hill sixty feet high, which is the only rising ground on the Northern art of the island, and on the S. side there are several hills of about the same height. The S. W. point bears N. N. W. ½ W. five miles from the N. E. point of Great Inagua nd the E. point W. S. W. ½ W. twenty-four miles from the S. W. end of W. Caicos. A dangerous reef, steep to, runs off three fourths of a mile from the E. point, and there re generally heavy breakers on it.

The N. E. and N. W. sides of the island—each about six miles long—present a bold, ocky shore, with soundings on a clear bottom to the distance of about one third of a ile. The S. W. side appears also to be free from danger. The S. E. side is about ight miles long, and the reef which skirts the E. point terminates near the middle of his shore. To the Eastward of the S. E. point there is a small bay, and in front of it nug anchorage for small craft protected by the reef. There are no inhabitants, but here is said to be wild hogs on the island, and consequently water.

GREAT INAGUA ISLAND is about thirty-five miles long in its extreme length, be- *Great Inagua*
ween the N. E. and S. W. points, but its outline is very irregular; its extreme breadth, *Island.*
hich is near the centre, is eighteen miles from N. to S. The Eastern side of the sland trends nearly N. N. E. twenty-five miles from the S.E. point, but the Northern ortion of it for about ten miles is only a narrow strip of land, about four miles broad.

About nine miles to the Northward of the S. E. point, East hill, which is the loftiest pot on the island, rises one hundred and thirty-two feet above the sea. There are sev- ral other small elevations on the S. side from eighty to one hundred feet high, and the and between being generally low—about thirty feet high—these hills, from a certain istance to the Southward, have the appearance of separate small islands. The Eastern ide of the island is skirted by a reef the whole way, from a cable's length to half a ile from the beach, with soundings outside it to the distance of about half a mile. To- ard the N. E. point there are some sandy hills rather higher than the rest of the oast, off which the reef extends nearly a mile, falling in to the N. E. point in a curve.

STATIRA SHOAL.—From the S. E. point of Great Inagua a spit of bank, from two *Statira Shoal.*
o five miles broad, runs off S. by E. ½ E. six miles, and on it is a dangerous small rocky atch, named Statira Shoal, about half a mile long, with as little as six feet on it and reaks in heavy weather. It lies S. three miles from the S. E. point, S. E. one mile and hree fourths from the Sail Rock—a small black islet twenty to thirty feet high, bear- ng S. S. W. one mile and a half from the point—and E. ½ S. nine and a half miles from Lantern Head, a remarkable prominent bluff eighty-two feet high.

The position of this shoal is only a third of a mile from the Eastern edge of the bank, ut the soundings are from six to eight fathoms for two and a half miles to the South- ard, and the same depth for a mile and a half to the Westward of it, so that the lead will give sufficient warning from these quarters. There are five fathoms between it and he Sail Rock, and the same depth between the latter and the main. In approaching he shoal from the Eastward in moderate weather, when it does not break, great care must be taken, as the water on the bank is of a dark color, and very difficult to distin- guish from that of the ocean.

S. COAST.—From the S. E. point the Southern shore of Great Inagua trends W. a *S. Coast.*
ittle Southerly, twenty-eight miles to the S. W. point. On either side of Lantern Head he land bends inward, forming bays. The shore is skirted by a reef for about two miles, terminating about five miles to the Westward of the Head; but the shore is still oul to the distance of about a mile all the way to the S. W. point. To the Eastward of he Head, S. by E. ¾ E. from Lagoon Hill, there is an opening through the reef capa- ble of admitting small coasters to a snug anchorage within. The interior, hower, is o completely studded with small coral heads, that the eye alone must be depended on as a guide. The bay on the W. side of the Head is only safe with the prevailing

trade wind, which is here more regular than at the islands to the N. W. From abreast Salt Pond Hill, which is situated about four miles to the Eastward of the S. W. point of the island, the land bends in to the Westward and round to the S. S. W., forming a bay, and is very low and foul.

Molasses Road. MOLASSES ROAD.—At two miles E. ½ N. from the S. W. point of Great Inagua, and S. W. by S. from Salt Pond Hill, there is a rocky ledge about half a mile in extent, E. and W., called Molasses Reef, which is steep to and breaks with Easterly winds. There is a clear spot to the Eastward of the reef, named Molasses Road, where vessels driven from the anchorage on the W. side of the island may ride out N. W. and N. winds in safety. The ground, however, is flat and rocky, and they must weigh the moment the wind draws round to the usual quarter.

The best berth will be in eight or nine fathoms, just within the edge of soundings, and about a mile to the Eastward of the reef, with Salt Pond Hill N. ¾ E., and the S. W. point just open to the Southward of the reef W. ½ S. Great care, however, must be taken in approaching, for with the wind off shore the reef does not show itself, and the discolored water is not easily seen at even a short distance; care must also be taken not to shoot too far in, and be prepared to anchor the moment soundings are struck.

West Coast. WEST COAST.—From the S. W. point of Great Inagua the low sandy shore sweeps round to the N. W. for about two miles, and is foul to the distance of from one to two cables' length; it then takes a Northerly direction six miles, to Middle Point; this part is tolerably clear of danger.

Mathew Road. MATHEW ROAD.—At three miles to the Northward of the S. W. point of Great Inagua is Mathew Town, a new settlement scattered along the shore in front of extensive cultivated salt ponds. On a little rocky bluff at the N. end of the town is Fort Henrietta, and half a mile to the Northward of it Mortimer Hill rises to the height of forty feet. The only safe anchorage with the usual trade wind is off the settlement, about three cables' length from the shore, at which distance there are four and a half and five fathoms, almost on the edge of soundings.

The most convenient berth for a vessel of war is with the fort bearing E. by N. Stand in under easy sail, and be prepared to anchor the moment the vessel is within the edge of white water, which may be seen from aloft. As already stated a vessel must quit the moment the weather threatens a change, and run round into Molasses Road under Salt Pond Hill, as soon as the wind hauls to the Northward of W. The usual warning has been given in page 465, and the barometer will previously fall to about 29.80. Vessels visiting the island for salt may, if more convenient, anchor off the mouth of the Salt Pond Canal, about one mile and a half to the Southward of the town; but they will not ride here so smoothly, on account of the heavy swell which rolls in round the S. W. end of the island.

Water. Water is only to be obtained from a well in Man-of-War Bay, except the inhabitants have any disposable from their tanks; but this is seldom the case.

Tides. It is high water, full and change, in Mathew Road, at 8h., and the rise is three and a half feet at springs, and two and a half feet at neaps. The flood sets to the Southward along the W. side of the island, at the rate of about half a knot, and meets the flood coming from the Eastward of the S. W. point.

Man-of-War Bay. MAN-OF-WAR BAY.—Between Middle Point and Northwest Point, which bears N. by E. ½ E., six miles, the Western shore of Great Inagua falls back to the Eastward, and forms Man-of-War Bay. Soundings extend about one third of a mile from the shore all round the bay, affording anchorage on the edge, and shelter from all but Westerly winds. With N. and N. W. winds, the best berth will be in the Northern part of the bay, with the outer point W. N. W.; and with S. and S. W. winds off the sandy beach in the S. E part. There is no anchorage off the S. shore. In anchoring the precautions must be observed just pointed out, when coming to in Mathew road, and care taken to pick out a clear sandy spot.

Water. The well just noticed above is situated a cable's length inland from the N. end of the Southeasternmost sandy beach.

The water, however, is generally brackish, except after heavy rains, when there is always an abundant supply; the path to it is rocky and uneven, and not at all adapted for rolling casks.

Alfred Sound. ALFRED SOUND.—The N. W. point of Great Inagua is very low, the tops of the palmetto trees on it being only about twenty feet above the sea. Thence the shore bends round to the Eastward for two and three fourths miles to Saline Point, forming a sandy bay. A reef nearly dry at low water, and steep to, skirts this bay, at the distance of one mile and a half from the shore, and within it there is a snug anchorage for small craft drawing six feet, called Alfred Sound. The entrance lies between the N. W. point and the W. end of the reef; there is also a narrow intricate cut through the barrier, N. E. about one mile and a fourth from the point. With the wind to the Southward of E. a vessel of twelve feet draught may anchor in the opening to the Westward

named Alfred Road, taking care not to bring the N. W. point to the Westward of S. S. W., but it is by no means a desirable anchorage.

Water. Firewood may be obtained near the shore of the bay in Alfred Sound, and near the middle of the beach there is a well.

Tides. The flood stream in Alfred Sound sets to the Eastward, the ebb to the Westward, at the rate of about a knot.

North Coast. NORTH COAST.—From Salines Point, which is low and rocky, the Northern shore of Great Inagua takes a N. E. direction seven miles to Palmetto Point. The reef which protects Alfred Sound comes gradually home to this point, and E. N. E. ½ E. about five miles from the N. W. point there is on the edge a small cay about half a mile long. At three fourths of a mile to the Eastward of the cay, and N. ½ W. from a black isolated rock on the beach, there is a small cut through the reef, in which there are eight or nine feet water; the reef runs quite straight and steep to. Carmichael point bears N. E. by E. ¼ E. seven miles from Palmetto Point, and the coast between forms a bay about one mile and a half deep, with a bold rocky shore all round steep to. In the centre of the bay there is a small conical mound called James Hill, about ninety feet high, which is remarkable as being the only elevated ground on the N. side of the island to the Westward of Carmichael Point.

From Carmichael Point to the N. E. point of the island, which bears E. N. E. ¼ E. twenty-three miles, the shore falls back to the Southward and forms an extensive bay named Ocean Bight, which is eight and a half miles deep. On the E. side soundings run off about a fourth of a mile from the beach, but the bottom and the Western shore of the bight are steep to, and present a bold rocky coast, against which the sea breaks with great violence, particularly during Northerly winds. At the bottom of the bight there are a few hills from seventy to ninety feet high.*

Hogsty Reef. HOGSTY REEF or LOS CORRALES is in shape like a horseshoe, convex to the E., four miles and a half long, E. and W., and two and a half miles broad. The centre of the W. end bears N. by W. ½ W. forty-one miles from Middle Point, on the W. side of Great Inagua, and S. E. ½ E. thirty-eight miles from the W. end of Castle Island. The reef forms a good harbor, which forms a depth of from three and a half to five fathoms; there are a few black rocky patches on the clear white sand, but they may be easily seen and avoided.

At both ends of the Horseshoe there is a small low sandy cay, nearly devoid of vegetation. The reef extends about a mile to the W. N. W. from the Southern cay, and the passage in lies between it and the N. W. cay. There is good anchorage just inside the edge of soundings, in six fathoms, to the Southward of the N. W. cay; but there is plenty of room to work up into the Horseshoe, if necessary.

The Hogsties are three low cays, the Southernmost of which is the smallest, and bears from the centre one, the largest, S. S. E. The smallest cay requires a good berth, but a vessel may sail close to the largest, and anchor W. N. W. of it in four or six fathoms; there are eighteen and twenty fathoms water a mile to the Westward of the cays.

A stone beacon, sixty-two feet high, eight feet in diameter at base, and three feet at top, and a tank for rainwater, are erected on the N. W. cay of the Hogsty Reef.

Directions. Vessels bound through the Crooked Island Passage, and being so far to windward, are recommended by some navigators to use the anchorage at the Hogsty Reef for the night, in preference to that under Great Inagua; it will, however, be far more prudent to avoid so dangerous a bank altogether. The course from the anchorage off Mathew Town to Castle Island is N. N. W. ½ W. distant eighty miles, which will lead about ten miles to the Westward of the reef. It is seldom, indeed, that any weather current will be found here, and the run should be regulated so as to make Castle Island soon after daylight, to enable the vessel to get through the passage before dark.

Plana or Flat Cays. THE PLANA or FLAT CAYS are two islets situated W. N. W. twenty-two miles from the W. end of Mariguana Island, and are separated by a narrow channel of ocean water. The Eastern cay, which is five miles long E. and W., and only a third of a mile broad, is skirted by a reef extending a third of a mile from the N. and S. sides, and three fourths of a mile from the E. end. The W. end of the cay forms into a narrow point, is steep to, and near it is a small hill seventy feet high, but the rest of the cay is low and flat. A bank of soundings, three miles broad, extends E. S. E. four and a half miles from the E. end, and the general depth on it is from six to eight fathoms; but on the Southern edge there are some dangerous shallow spots, and the whole bank being a

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* Ciudad reef still retains a place on some charts, between Mariguana and Little Inagua, but its existence is more than doubtful. Captain R. Owen, R. N., made a strict search for it in 1832, without success. Moreover, the wreckers, who are continually passing over this neighborhood, have never seen anything like discolored water.

Another shoal spot is supposed to exist S. W. fifteen miles from the S. W. end of the Great Inagua, where the steamer Clarion, drawing ten feet, struck and knocked off part of her false keel, on the 17th of March, 1842. It being night the land was not seen. This has also been looked for in vain.

dark rocky bottom not easily distinguished, this end of the cay should be approached very cautiously.

The Western cay is oval shaped, two and three fourths miles long, N. N. E. and S. S. W., and one mile and a third wide. A reef extends two and a half miles to the Northward from the N. W. end, and at the N. extreme it is nearly dry; it then turns to the S. E. and joins a cluster of dry rocks, about three fourths of a mile to the Northward of the N. E. point of the cay. A bank of soundings extends off half a mile outside the reef to the N. E., and a full mile to the Eastward of the N. E. point, to within half a mile of the Eastern cay. All the Eastern side of the cay is fringed with a reef to the distance of about a fourth of a mile, terminating at the S. W. sandy point.

Anchorage. On the W. side of the Western Plana Cay, near the S. W. point, there is a clear bank of soundings extending about a third of a mile from the shore, on the edge of which anchorage will be found in about seven fathoms, with room enough to weigh, should the wind come unexpectedly from that quarter.

Water. At the back of the S. W. point of the Western Plana there are some wells of excellent water, a little behind the sand ridge; the casks can be rolled up and rafted off very conveniently; indeed, it is the best place for watering among these islands, with the exception of Nassau.

Crooked Island Group. CROOKED ISLAND GROUP.—This extensive group of islets is situated on a triangular-shaped bank, forty-eight miles long from N. E. to S. W., forty-five miles from N. to S., and about thirty miles from E. to W. The N. E. point of Acklin Island, the S. W. point of Castle Island, and the Bird Rock, form the angular points.

Castle Island. CASTLE ISLAND is about one mile and a half long in an E. and W. direction, half a mile broad, and about thirty or forty feet high. The S. E. end forms a remarkable bold sand cliff; the S. W end runs off to a low sandy point. The edge of soundings is not more than the third of a mile from the S. and W. sides of the island, but a bank with six to twelve fathoms on it, extends off to the distance of three miles from the E. side, and then trends toward the S. bluff of Acklin Island. A chain of small dry rocks runs off to the Northward for about one mile and a half from the N. E. end of the island halfway to the S. end of Acklin Island. The N. E. rock is very remarkable, resembling an old castle, hence the name of the island; and between it and Acklin there is a passage for boats.

Fish Cays. FISH CAYS.—From the S. W. point of Castle Island the edge of soundings runs almost directly from Salina Point, on the W. side of Acklin, about three miles from the S. end of that island. Salina Point is low and bushy, but the land rises gradually to the Eastward to the height of one hundred and fifty feet To the Southward of the point there is a good temporary anchorage, with the prevailing winds, in nine fathoms, on the edge of soundings. Thence the Western side of the bank takes a Northerly direction for twelve miles to the Southernmost of the Fish Cays, and then bends round to the N. W. to the S. end of Fortune Island, which bears N. ¾ W. twenty-seven miles from Castle Island.

Anchorage. Abreast the Fish Cays the edge of the bank is clear for about one third of a mile inward, but elsewhere it is foul and dangerous, until close up under Fortune Island, where there is a small, clear space on which a vessel will find good shelter from northers, with the S. point bearing N. W. by N. distant three fourths of a mile, and a small sand bore which breaks E. ½ S. Be careful not to shoot in too far, as the ground becomes foul a very short distance within the line of soundings.

Fortune Island. FORTUNE ISLAND, or Long Cay, is nine miles in extent N. E. by N. and S. W. by S., varying in breadth from one mile and a fourth at the S. end to barely a fourth of a mile at the N. extreme. About two miles from the S. end a hill rises gradually to the height of one hundred and ten feet, and is a good landmark coming either from the Northward or the Southward. Near the centre of the island, on the W. side, there is a small settlement containing about four hundred inhabitants, and at the back of it a very productive salt pond. The whole shore is steep to; nevertheless, with the usual Easterly winds, the few vessels that come here for the salt find a temporary anchorage off the pond, but so close in that there is not room to swing, and they must be prepared to quit the moment a change threatens.

Crooked Island. CROOKED ISLAND is separated from Fortune Island by a small channel, through which wreckers, drawing under seven feet water, find their way into shelter from N. W. winds. There is anchorage on the edge of the bank full three fourths of a mile off shore but not to be recommended. Thence the Western shore of the island trends N. N. W., W., nine miles; the shore is low, woody, and generally foul, and soundings do not extend off more than two cables' length; about three miles inland the Blue hills rise to the height of about two hundred feet.

A dangerous reef extends off in a N. W. direction two miles from the N. W. point of the island, it then bends round gradually to the E. and E. S. E., and skirts the Northern shore at the distance of about a mile. A small cay, called Bird Rock, about ten feet high, lies N. N. W. about a mile from the N. W. point, and close to the Southward of it

here is a narrow intricate opening in the reef, leading into a small well-sheltered basin within, named Portland Harbor, in which there are three and a half and four fathoms water, but it requires the assistance of a pilot. Thence the Northern shore takes an E. S. E. and S. E. direction eleven miles, and then trends to the Eastward for about eight miles, to the E. end of the island. At the bottom of the bight are the Major Rocks, and about four miles to the Eastward of them Mount Pisgah rises abruptly from the shore to the height of about two hundred feet.

Anchorage. The only anchorage off Crooked Island is situated about two and a half miles to the Southward of the N. W. point, nearly abreast a remarkable large house standing close to the shore, with a flagstaff near it. A short distance to the Northward is Landrail Point, which is low and rocky, and has also a small flagstaff near the extremity. The shore to the Northward of this forms a low, sandy beach. A convenient berth will be found with the flagstaff at the above house bearing S. E. by E. ½ E., and the flagstaff on the point N. ½ E., and in one with a house called Marine Farm, on the N. end of the island.

This anchorage must be approached with great care, under easy sail, and be prepared to come to the moment soundings are obtained, or to back off if necessary. The edge of the bank will be seen from aloft; the bottom is sand and grass, good holding ground. In the winter season it must be left the moment the wind veers to the Southward of E., but in the summer months a vessel may remain, as the wind is generally light from this quarter; it will, however, be more prudent to keep off under sail. A supply of stock and vegetables may generally be obtained here, but it will probably detain a vessel some hours.

Water. There are some wells of good water on the S. end of Crooked Island, but not conveniently got at. There is also a well of excellent water conveniently situated near Landrail Point, and a good landing-place on the beach to the Northward of it.

Tides. It is high water, full and change, at Crooked Island at 7h., and the rise is about two and a half feet.

Acklin Island. ACKLIN ISLAND, the largest in the group, is separated from Crooked Island by an opening about two and a half miles wide, but so shallow that it may be waded across at low water. The N. side of the island is about nine miles long E. and W., and seven miles broad, and its N. E. point bears E. ¾ S. twenty-eight miles from Bird Rock. The extreme length of the island from the N. E. to the S. W. point is forty-five miles, and its breadth varies from one to five miles. A bank of soundings extends E. and N. E. four miles from the N. E. point, having a general depth of from five to twelve fathoms on it; but E. S. E. ½ E. four miles from the point, there is a small, dangerous, rocky patch, about a fourth of a mile in extent, which generally breaks. It lies within a fourth of a mile of the edge of soundings, at which distance the depth is twenty fathoms, and bears W. N. W. ten miles from the N. W. end of Plana Cay Reef.

From the N. E. point the Eastern shore of the island trends about S. ¾ E. twelve miles, with a slight curve inward to Creek Point, where it is a little more than a mile in breadth; the shore is foul to the distance of about half a mile. About two miles from the former point there is a small reef harbor for wreckers. From Creek Point the shore takes a S. W. direction thirty-five miles, and is skirted by a reef to a considerable distance.

At about ninety miles to the S. W. of Creek Point the shore falls back to the Westward and forms Abram's Bay, in front of which there is an opening in the reef leading into an exposed anchorage, but this side of the island is very dangerous and had better be avoided altogether. E. N. E. six miles from the S. end of the island there is a remarkable prominent bluff headland named South Bluff, with a range of hills at the back about one hundred and fifty feet high. The Western side of the island is irregularly shaped, and only accessible to boats or very small coasters.

Mira-por-vos. THE MIRA-POR-VOS is a cluster of small, low, barren, rocky islets, situated toward the N. or thick end of a pear-shaped bank, eleven miles long from S. S. E. to N. N. W., and six miles broad at about three and a half miles from its N. W. extreme. The Northern islet, named North Rock, is about half a mile long N. E. and S. W., very narrow, from fifteen to twenty feet high. It lies about half a mile from the edge of the bank, and the soundings around, within about two cables' length, are from five to nine fathoms.

The N. E. Rock lies S. E. ¾ E. about two miles from the N. Rock, and is about the same dimensions. This islet is very foul to the N. E. to the edge of soundings, a mile distant; to the N. W. a dangerous ledge extends off three fourths of a mile, and between it and the North Rock the depths are five, six, and seven fathoms; to the S. W. it is connected to the South Cay by a reef nearly dry, on which there are several small, dry rocks.

The South Cay is the largest of the cluster, being three fourths of a mile long N. E. and S. W., and nearly half a mile broad; close off its Eastern side there is a remarkable square black rock. In the centre of the South Cay there is an uncultivated salt pond and on the S. shore are two remarkable sand hills about thirty feet high,

which may be seen from the S. E. point of the bank. In moderate weather, with the usual Easterly winds, a vessel may anchor about half a mile from the W. end of this cay, in eight or nine fathoms, clear sandy bottom.

To the S. E. of the above cays there are several detached coral ledges, on which there are only three fathoms water and a heavy swell generally rolls over them, which renders them dangerous. The outermost lies near the N. E. edge of the bank, S. E. by E. two miles from the N. E. rock, and W. S. W. ½ W. seven miles from the W. end of Castle Island. The outermost of the S. E. lies S. E. four and three fourths miles from the sand hills on South Cay, close also to the Eastern edge of the bank, and S. W. nine miles from Castle Island. It is two and a half miles within the S. E. extreme of the bank, and one mile and a half from the S. W. side. In these directions the soundings are from seven to ten fathoms, and these depths will be carried all along from one and a half to two miles within the Western edge of the bank up to the South Cay; the lead will, therefore, be of great use in approaching from these quarters.

Tides. It is high water at the full and change, at the Mira-por-vos islets, at 9h. 30m., and the rise is about three feet.

Diana Bank. THE DIANA BANK bears S. by E. eighteen miles from the S. end of Long Island, and W. ¾ S. twenty miles from the S. end of Fortune Island. This bank which is composed of coral, and four miles in extent from E. to W., and three miles from N. to S., carries a depth on it of from ten to fifteen fathoms, and twenty fathoms on its edge, and may be made a useful guide to vessels beating through Crooked Island Passage in the night.

Directions. Crooked Island passage has already been recommended as the best for vessels bound to the N or N. E. when coming from the Southward through the windward passage between Hayti and Cuba, except during N. W. winds. If intending to take this passage, it will be advantageous to get well up under the N. W. end of Hayti before shaping the course for Castle Island. In the winter season, however, when the wind generally blows heavy from the E. N. E., accompanied by a strong lee current and heavy sea, this will be a tedious matter, and it may be found more convenient to double Maysi Point (Cuba) as soon as it can be given a fair berth.

From a position ten miles E. of the point, the direct course to Castle Island will be N. by W. one hundred and fifteen miles, but the current must be allowed for, and other circumstances of wind and weather, and by no means attempt to run the distance in the night. There will not be much difficulty in this, for if there is a current, it will be found running directly across the vessel's track either way, but seldom to the Eastward.

Captain R. Owen, R. N., observes, that "it is desirable to keep over toward the W. end of Great Inagua, and if near it late in the evening, to endeavor to anchor for the night under the N. W. point, weighing before daylight, so as to pass Castle Island before dark; or, if more to the Northward at that time, the anchorage under the N. W. cay of Hogsty Reef would be still more convenient, as, with a good breeze, the passage might be cleared before dark."

Having passed Castle Island as early in the day as possible, the course to the S. end of Fortune Island will be N. by W. twenty-six miles, and thence to the N. W. end of the Bird Rock Reef N. twenty miles; and it is advisable to accomplish this run, if possible, before dark. No current will be found under the lee of the islands. Should the vessel be caught in the Crooked Island Passage by a Northwester, instead of beating about, which would be attended with considerable risk, it will be better to seek shelter, when the wind has drawn round that far, under the S. end of Fortune Island; or run out, and keep under the lee of Acklin Island, under easy canvas, until the wind draws round to the N. E., which it will do in two or three days, at the farthest.

Should the wind veer to the Southward before the vessel has entered the passage, she may haul round the N. W. end of Great Inagua, and pass out on either side of Mariguana, but this should be done in daylight, and a wide berth given to the Hogsty Reef.

Samana or Atwood Cay. SAMANA OR ATWOOD CAY is nine miles long in an E. and W. direction, and about one mile and a half broad. Its surface is hilly and uneven, and about one third the way from the W. end it rises to the height of one hundred feet; it is uninhabited, and lies almost entirely out of the usual track of vessels. The N. side of the cay runs nearly straight, and is skirted by a reef to the distance of about one third of a mile. Near the N. W. point are three dry rocks, close to the edge of the reef, and about one mile and a half from the W. point; the latter is low and sandy; and here a narrow reef, nearly dry and steep to, extends off the cay two and a fourth miles to the Westward, and is extremely dangerous in the night-time.

From the W. end of the cay the Southern shore trends E. S. E. three miles, where it falls back to the Northward, and forms two small bays. A dry reef sweeps out to the Southward in front of the bays, and within it, at the Eastern end, are two small cays. There is here, also, a remarkable white cliff, and the shore thence trends E. N. E. four miles, to the E. point of the island. About half a mile from the E. point lies a cay [illegible] mile in length E. and W., and seventy-five feet high, and two miles to the Eastward o[illegible]

t another, but much smaller and lower. The reef which skirts the Southern cays continues in an unbroken line for more than a mile to the Eastward of the latter islet, terminating in a detached breaker at the Eastern extreme.

There is said to be anchorage in eight fathoms, near the S. W. end of Samana Cay, about two miles from the W. point, and three cables off shore, but the ground is not good. *Anchorage.*

Good water may be obtained by digging wells. *Water.*

WATLING'S ISLAND is about twelve miles long from N. to S., from five to seven miles broad, and its shores are slightly indented. The interior is largely cut up by salt-water lagoons, separated from each other by small woody hills, from one hundred to one hundred and forty feet high; it is, however, considered to be the most fertile of the group, and raises the best breed of sheep in the Bahamas. The inhabitants are scattered about the island in consequence of there being no safe anchorage except at the N. end, where there is a reef harbor for coasters. *Watling's Island.*

A bank, with from six to fifteen fathoms on it, over a dark bottom, extends two and a half miles in a S. E. direction from the S. E. point of the island; and on the inner part of it, about half a mile from this point, are some small, but remarkable high, black, rocky islets, named the Hinchinbroke Rocks.

The Eastern shore of the island is fringed with a reef to the distance of about one third of a mile, which sweeps round the N. end of the island three miles from that shore. On the Eastern shore, soundings extend outside the reef to the distance of a mile and one mile and a half from the N. end of the spit

There are several small cays on and within the reef off the N. side of the island. White Cay, so called from its appearance, is the Northernmost, and lies about three fourths of a mile from the extreme N. W. point of the reef. About a mile to the Northward of the N. W. point of the island is Green Cay, and round the S. end of it is the channel leading into the anchorage for coasters not drawing more than seven feet.

Soundings do not reach more than half a mile from the W. side of Watling's Island. In many parts much less, and the edge is generally very foul. The S. W. end terminates in a long, low, sandy point, steep to, which bears N. by W. ½ W., sixty-six miles from Bird Rock, and N. E. ¾ N. eighteen and a half miles from the N. E. end of Rum Cay. About two miles to the Eastward of the S. W. point, in a small bay just under some houses on a rising ground, there is a confined anchorage for small craft under the lee of the reef, which extends a short distance from the shore.

RUM CAY is about nine and a half miles long E. and W., five miles broad at the E. end, and two miles at the W. The S. E. end rounds a little, and forms two remarkable high white cliffs, which may be seen nine or twelve miles off. A reef commences at the S. point of the cay, and sweeps off nearly a mile from the shore, terminating off some dry wells at the S. E. point; it is nearly steep to, and should be carefully avoided in the night. The Eastern side of the cay, to the Northward, is bold to and free of danger. A bank of soundings extends from it three miles, and runs out in a spit to the N. E. five miles from the N. E. end of the cay, on which depths are from twelve to twenty fathoms. *Rum Cay.*

The N. side of Rum Cay, from about two miles to leeward of the N. E. point, is foul all the way to the N. W. point, to the distance of about half a mile from the shore, and there are soundings about a mile from the shore, increasing in distance to the Westward. A narrow spit of dangerous reef extends out in a Northerly direction for upward of two miles from the N. W. point. *N. Side.*

Temporary anchorage may be found in seven fathoms, on the edge of soundings, off the W. side of Rum Cay, with the N. W. point bearing N., and the S. W. point, which is low and sandy, S. E. ¾ E., about a fourth of a mile from the shore. There is an excellent salt pond at this end of the island, and the salt is easily shipped at this anchorage in moderate weather. *W. End Anchorage.*

From the S. W. point of Rum Cay the shore trends to the Eastward to within a short distance of the S. point of the island, where it bends round to the S. E. and S. forming St. George Bay, at the head of which is the principal settlement, and near it a valuable salt pond. A bank of soundings extends about two miles from the shore, with a general depth on it of from four to six fathoms, but from the S. point of the bay the edge is fringed by a narrow, broken ledge of coral, which extends to the Westward about five miles, and carries from nine to fifteen feet water. Within it there is excellent anchorage, secure at all times, except in the hurricane season; but it requires a pilot to take a vessel through the narrow cuts and clear of the numerous shallow heads. *S. Side.*

Vessels leaving the anchorage at Rum Cay for the Northward had better pass round the W. end of the cay, but they should clear Conception Island before dark, as the current frequently sets strong to the N. W.

CONCEPTION ISLAND is a dangerous, uninhabited island, very irregular in shape, about two and three fourths miles long from N. to S., and one mile and three fourths wide near the centre, which is its broadest part. Its general height is about ninety feet, *Conception Island.*

but close off the E. point there is a small islet, one third of a mile in diameter and one hundred and thirty feet high, called Booby Cay. On the N. W. side there is a clear open bay, with good anchorage on a sandy bottom, sheltered from N. N. E., round Easterly, to S. S. E. The depth is six fathoms at about a fourth of a mile from the edge of soundings, but farther in the bottom becomes foul.

A reef, which skirts the S. W. side of the island at the distance of about a third of a mile, extends in a curve to the Southeastward, and terminates one mile and a half E. of the S. point, and at its extremity there is a cluster of small dry rocks running to the Northward. Thence the edge of the bank of soundings takes a Northerly direction, passing about two miles to the Eastward of Booby Cay, and is full of shoals: the approach to this side is extremely dangerous, even in the daytime, as the dark rocky heads are difficult to distinguish from the ocean water. The bank extends off to the distance of three and a half miles from the N. side of the island, and is equally dangerous. It is pretty clear in the centre, with variable soundings; but along its Western side there is a dry reef which always breaks, and extends N. three and a half miles from some small cays near the N. W. end of the island.

Water. On the Western side of Conception Island, at about half a mile to the Southward of the S. point of the N. W. bay, is the entrance of a small creek leading into a lake in the centre of the island, and near the mouth there is a well of good water.

Current. The current in the neighborhood of Conception Island generally sets strong to the N. W.

Great Bahama Bank. GREAT BAHAMA BANK.—This extensive bank is so irregular in its shape that we must refer the navigator to the chart for its general outline. From the N. end of the Mucaras Reef the Southern edge of the Great Bahama Bank takes an Easterly direction about twenty-six miles, and then bends down to the S. E. for about twenty miles, where it forms a large rounded point, called South Head. Near the extremity of the head, in lat. 22° 2′ N., long 76° 23′ 30″ W., there is a dangerous coral head, nearly awash, not easily seen, as the bottom is here covered with dark weed. Thence the edge trends round to the N. E. for about twenty miles, and then to the Southward, forming a curious bight ten miles deep and nine miles wide. All this part of the bank being studded with numerous small coral heads and ledges, nearly dry in many places, which extend from the edge of soundings to the parallel of 22° 30′ N., is quite impassable to strangers. There is generally, however, a depth of four and five fathoms between the coral patches in the space for about thirty miles to the Eastward of the Mucaras, and small vessels trading between Cuba and Nassau manage to pilot themselves across here by the eye into the Tongue of Ocean.

Blue Holes. BLUE HOLES.—A very remarkable feature frequently met with on this part of the Great Bahama Bank, is dark discolored water, having all the appearance of rocky ground but which are small, circular, wall-sided holes or wells, from thirteen to thirty-eight fathoms deep.

Magallanes Bank. MAGALLANES BANK is a narrow coral ledge about five miles long in a N. N. E. and S. S. W. direction, lying N. W. twenty-eight miles from Cay St. Domingo, and E. fourteen miles from the South Head. On the N. end the depth is five and three fourths fathoms, in the centre five and one fourth, and toward the S. end of the bank eight fathoms.

Cay St. Domingo. CAY ST. DOMINGO.—At the E. point of the above bight in the Great Bahama Bank there is a small dangerous head and thence the edge of the bank trends round to the S. E and S. to Cay St. Domingo. This little cay is only about a cable and a half long and fifteen feet high, and is situated on the extreme S. point of the bank, which forms a narrow spit. At two miles to the Northward of the cay, on the Western edge of the bank there is a dangerous coral ledge three and a half miles long from S. to N., with as little as seven and a half feet water on it. The space between is quite clear, and a vessel may anchor here in moderate weather, about midway between the S. end of the ledge and the cay. To the Northward of the ledge the bank is free of danger for eleven miles until within three miles S. W. of the Brothers where there are two small heads of coral lying close on the edge of soundings, and on which there are only two fathoms water. The Westernmost head bears W. S. W. ¼ W. four miles from the Western Brother. A seven miles N. W. ¾ W. of this there is another small head of nine feet lying S. W. ½ W. nine miles from the hill at Ragged Island.

A reef extends a mile to the N. E. by E. from the E. side of Cay St. Domingo; and three miles in the same direction from the cay, and near the edge of the bank there is a rocky patch which generally breaks. Thence the edge of the bank takes a N. E. by N. direction eighteen miles, and for the first twelve miles it is quite clear; the soundings near the edge are irregular, but a short distance within the depths are eight and nine fathoms on a clear sandy bottom. From the above position the bank trends Easterly for about ten miles, and then N. E. by E. eight miles to Cay Verde. All this part is very foul and extremely dangerous. There is a ledge nearly dry, called the St. Vincent Rocks, lying W. S. W. eleven and a half miles from Cay Verde, and the bank within

or the space of seven miles to the N. W. is full of dangerous small rocky heads, with deep water between.

CAY VERDE.—This narrow islet is about two thirds of a mile long, N. W. and S. E., covered with low sea grape trees and prickly pear bushes, and inhabited by large flocks of boobies and man-of-war birds. The N. end is low, but the S. point rises into a hill seventy-two feet high. On the W. side there is a projecting sandy beach skirted by a edge of rocks dry at low water, which makes landing difficult. There is anchorage under this side in seven fathoms, but not to be recommended, as a heavy swell rolls round both ends of the cay in strong breezes. A small cluster of low rocks lies off the N. W. point and half a mile N. N. W. of them there are a few more just awash at high water, with four and a half fathoms between the clusters, over a dark rocky ledge. From the outer rocks a shallow ledge runs off N. N. W., two and a half miles. *Cay Verde.*

The E. side of Cay Verde lies about a mile from the S. E. extreme of the Great Bahama Bank, which from this position takes a Northerly direction for seven miles, and is quite clear of danger; it then bends round to the N. W. for six miles, and becomes extremely dangerous. Thence the edge of the bank trends Westerly ten miles, and in this space there are a few small shallow heads, which may be seen in clear weather, and within them the ground is clear white coral sand for eight miles to the Southward; the edge then curves a little to the Southward, and trends for about fifteen miles to the Westward, toward the S. end of Ragged Island, and is quite clear.

LITTLE RAGGED ISLAND is a mile and three fourths long N. W. and S. E., and from half to a mile broad. Its N. end is very low, and is separated from Great Ragged Island by a little opening nearly blocked up by small cays and rocks, and under their lee there is an excellent boat harbor, which is entered from the Westward. Off the S. end of the island are several small, low, rocky islets, steep to, having a depth of four and five fathoms at two cables' length outside them. S. E. by E. ¾ E. nearly a mile and a half from the Southern islet, named South Rock, and N. E. by E. ½ E. a mile and three fourths from Hobson Breaker, there is a small rocky patch of sixteen feet, with six fathoms around it. *Little Ragged Island.*

HOBSON BREAKER is a small rock, lying S. by W. a mile and a half from the South Rock, off Little Ragged Island, and S. S. E. from the stone beacon on the hill of Great Ragged Island. Its summit is just level with the sea at low water, and always breaks, even in fine weather. There is a clear passage on either side. *Hobson Breaker.*

THE BROTHERS are two small black rocks about five feet high. The Easternmost, named Lloyd Rock, lies S. ½ E. five and a half miles from Hobson Breaker, and S. by E. Easterly from the above beacon; the other, called Icely, is a mile farther to the Westward. On the S. side they may be approached within half a mile, but a dangerous coral ledge extends four miles to the Northward of them, leaving a clear channel between it and Hobson Breaker a mile and a half wide. It will always be better, however, to pass to the Northward of the breaker, between it and the shallow sand spit which runs off about two miles to the W. S. W. of Little Ragged Island. *The Brothers.*

There is good anchorage under the W. side of this latter spit in three fathoms, with the S. end of Little Ragged Island bearing E., and the S. W. point of Great Ragged Island in one with the beacon N. N. E. In standing in, however, take care to avoid several small coral heads which are easily seen from aloft. *Anchorage.*

It was observed, when describing the old Bahama channel, that vessels of eighteen feet draught might be safely taken round the S. side the Ragged Islands by the charts, and thence across the bank within the dangers on the edge; provided they have good nautical experience of this peculiar navigation, which depends so much upon the eye; or the assistance of a pilot, which, however, is not so easily obtained. In coming from the N. or N. E. with this view they should run through the Crooked Island Passage, and, from a position about seven or eight miles W. of Bird Rock, the course will be S. by W. seventy-five miles for the hill, ninety-five feet high, near the S. end of Ragged Island. *Directions.*

Great care, however, must be taken in approaching the dangerous part of the bank to the Northward of Cay Verde bank, which should be done, if possible, in daylight, and the vessel should enter on the bank about six or seven miles to the Eastward of Ragged Island; the edge from this part is easily seen from aloft. A slight current will probably be found here, setting either to the S. W. or N. W. Should the vessel be set to the Northward, Ragged Island will be readily distinguished by its being so much higher than the islets in the immediate neighborhood.

Having entered on the bank, it will be better to round South Rock, off the S. point of Little Ragged Island, at the distance of about half a mile, and thence steer W. by S. eight miles, or until the Beacon Hill on Ragged Island bears N. E. ½ E., then haul up W. by N. eighteen miles. When the vessel has run nine or ten miles on this course, the tail of the Darvill Sand Spit will be crossed, the soundings being a sufficient guide to avoid it, for if they are three fathoms at *low* water, she will be rather to windward of her track, and should edge off to the Westward until they deepen to three and one fourth fathoms, and then haul up again.

Having run the above distance, eighteen miles, the course will be N. W. twenty-fiv miles, which will lead through the narrowest and worst part of the channel between th Cochinos and the Nurse sand-banks, and a good lookout must be kept for small blac rocky patches. In running this course the depths ought to be from four to four and fourth fathoms at low water; if less is obtained the vessel will be too far to the Eas ward; if more, to the Westward; but remember that the E. side is always the safes and take the precaution to measure the land line (when wet) to feet between three an four fathoms, for the soundings on the chart may be fully relied on. It is high water full and change, here at 8h., and the rise and fall three feet; scarcely any tida stream will be left. Should darkness overtake the vessel before she has reached thu far, she had better anchor, which may be done anywhere in safety. It would not b prudent to attempt to beat through this part of the channel. At the end of the abov course the vessel will be off the N. extreme of the Cochinos on the parallel of 22° 4 N. and a W. ½ S. course will lead off the Western edge of the bank to the Southward Guinchos Cay, clear of danger, and in from four and a half to five fathoms water all th way. Care, however, must be taken to keep on the above parallel by checking the lat tude as often as possible.

If approaching the bank from the S. E., Cay St. Domingo may be sighted and the ban entered on to the N. W. of it; but this requires more than ordinary care. In this cas having rounded the S. W. end of the cay within the distance of about half a mile, ste N. by W. for twenty miles, which will bring the vessel to a clear space on the edge soundings, where she can enter, and six miles farther upon this course Ragged Isla will be sighted bearing N. W., when the route can be taken described above. Gre care must, however, be taken when passing the parallel of the Brothers, to avoid t two shoals already pointed out, for these rocks will scarcely be seen from aloft, and t run should not be made without clear daylight.

The bank may also be entered upon at Cay Verde, and perhaps with less risk. taking this route, having rounded the S. end of the cay, steer N. W. ten miles, and th W. twenty miles, when the vessel will be up to Little Ragged Island; but on all oc sions, when among the shoals, the mariner must endeavor not to steer with the sun rectly in his face, which will blind him from seeing them, even at a short distance.

Great Ragged Island. GREAT RAGGED ISLAND is nearly four miles long, in a N. N. W. and S. S. E. rection, and the Southern half is about a mile and a half broad, but the Northern port is merely a narrow neck of low land; as already mentioned, near the S. end a lar woody hill rises to the height of ninety-five feet above high water, and on the sum there has been heaped up a rough pile of stones twenty feet high, which is a valua sea-mark. The island contains about one hundred and sixty inhabitants, and possesse valuable salt pond, but other supplies are scarce.

Water. The S. end of Great Ragged Island forms a sandy bay, and near the centre, not from shore, is a well of good water. There is also another well more conveniently sit ted, and with better water, in a small bay about halfway up the W. side of the island

Ragged Island Harbor. RAGGED ISLAND HARBOR.—At the N. end of Great Ragged Island, between and Hog Cay, there is a small harbor capable of receiving vessels not over thirteen f draught. The entrance lies close to the Southward of a small black rock off the S. rocky headland of Hog Cay, named Black Rock Point, between it and Outer Bar Re lying in the centre of the opening. The channel is, however, only half a cable wide, w a depth of thirteen feet across the bar at low water. The ebb runs out with great for but with the usual winds blowing strong, there will be great risk in attempting to b out, except in a handy fore-and-aft rigged vessel that can insure staying. In a case sheer necessity a vessel may run in by the eye with the assistance of the chart bringing the Black Rock on a S. W. bearing; but a stranger should take a pilot, w will be at hand by making the usual signal in time. Small coasters find their way over the bank to the Westward.

Beacon. A beacon thirty feet high (the base and upper part red, and the middle portion whi is erected on Pig Point, the S. E. extreme of Hog Cay, and when on a S. W. by W. be ing it will lead between Black Rock and Outer Bar Reef, until Pig Point and the N. e of Pigeon Cay are in one, when a vessel must steer to pass half a cable's length fr the point.

Tides. The following remarks on the tides at the Ragged Islands, are made from a long riod of observation by Mr. Duncan Taylor: "From the first of January to the last April they rise from sixteen to eighten inches, and the tide that flows an hour after rising of the moon is uniformly six or eight inches higher than the tide which flows af the setting of the moon. It frequently happens in the above months that they do rise more than from six to twelve inches. The spring tides in the above period genera rise from six to ten inches more than the neaps. From the beginning of May to the of October, the period of light winds, both tides gradually rise till they arrive at height of from ten inches to two feet four inches on the neaps, and from eighteen inc to three feet six inches on the springs, and then continue diminishing until January.

THE JUMENTOS.—From Great Ragged Island a range of low narrow islets and small barren rocks, lying nearly on the edge of soundings, takes a N. by W. direction ten miles to Flamingo Cay, which is one hundred and twenty-nine feet high, and by far the loftiest of the group. They then sweep round in a curve to the N. E. and E. for thirty-five miles to within a short distance of the W. side of Long Island. These islets are generally called the Jumentos, but the pilots and wreckers give this name only to those lying to the Eastward of Water Cay. These are much smaller and lower than the others, indeed most of them are only a few feet above the sea. There are several wide openings between them navigable for vessels of light draught; but the islets are so much alike, that until they are distinctly pointed out by beacons it would be extremely rash for a stranger to attempt to pass through, without a thorough knowledge of the locality, and experience in the navigation of these banks. *The Jumentos.*

RACCOON CUT, the first of these openings, is about eleven miles to the N. of Beacon Hill on Great Ragged Island: it is, however, so narrow and winding as to be difficult of access to vessels drawing more than twelve feet. Raccoon Cay has about twenty-five inhabitants on it, and possesses good water and a valuable salt pond, and the salt is conveniently shipped from an anchorage close under the W. side. Vessels bound here for this purpose, drawing over twelve feet, had better take the route already described, round the S. end of Ragged Island, and haul in round the Darvill Spit. *Raccoon Cut.*

NURSE CHANNEL, lying ten miles farther to the Northward, and W. S. W. fifty-eight miles from the S. end of Long Island, is much easier of access and three fathoms water may be carried through it on to the Bahama Bank, taking care to steer clear of the heads. The bottom, however, at the entrance, and for some distance in, is rocky, and being dark, is alarming, especially where the strong tide ripples over the ledges. To the Southward of this opening the cays lie close together, and are from fifty to seventy feet high. On the E. side of Nurse Cay there are some remarkable sand cliffs, fifty feet high, which serve as a good guide. To the Northward of the channel the small barren rocky islets are much lower and more scattered. *Nurse Channel.*

NURSE CAY.—There is a white stone beacon sixty feet high, on a small rock in Nurse Cay channel, in lat. 22° 29′ 10″ N., long. 75° 50′ 15″ W. *Nurse Cay. Beacon.*

To enter on the bank through Nurse Cay channel, bring the beacon to bear S. W., and run for it. Leave the beacon on the starboard hand going West. Give the rock a small berth, and you will carry three fathoms through.

MAN-OF-WAR CHANNEL, sixteen miles farther to the Northward W. ½ S. fifty-seven miles from the S. end of Long Island, and N. N. W. thirty-seven miles from an island, seven miles E. of Ragged Island, is by far the best of all. Here a depth of four and five fathoms may be carried on to the fairway of the bank, avoiding the rocky heads, which may be seen from aloft, provided the sun is astern of the vessel and the weather not overclouded. The opening between Jamaica and Man-of-War cays is three miles wide. The former is thirty-five feet, the latter eighty or about double the height, and Flamingo Cay, five miles to the Northward of the latter, being one hundred and twenty-five feet above the sea, while the islets to the Southward are very much lower, the opening is somewhat easily recognized. This is the Northernmost channel navigable for any but very small coasters. *Man-of-War Channel.*

In running through Man-of-War Channel we must refer the navigator to the chart, which clearly shows the dangers, and the track in. As the navigation of the Great Bahama Bank will mainly depend on his eye, and his judgment of the depth over coral patches—which, however, should not be trusted without very great experience—we may add to our former remarks, that when running with the wind aft, and the small clouds moving slowly, called by the pilots "flyers," he will be very apt to be deceived by their reflection on the water over the clear white sandy bottom, having all the appearance of a rocky shoal. It will, however, always be prudent to avoid a dark spot. *Directions.*

PEAR CUT, the only other opening, is situated about twenty-nine miles to the Northward of Man-of-War Cay, between Pear and No-Bush Cays, but it is only fit for small coasters, which find a passage thence along the S. side of Exuma, and through the sand-bore channels into the Tongue of the Ocean. *Pear Cut.*

LONG ISLAND is fifty-seven miles long in a S. E. by S. and N. W. by N. direction, and at the S. end, which is about the broadest part, it is three and a half miles across, but in several places it is scarcely a mile wide. From the S. extreme, named South Point, the Western shore trends N. N. W. for about fourteen miles, and then bends round to the Westward forming an extensive bay. Soundings extend from a mile and a half to four miles off this part of the shore, and good anchorage will be found anywhere with the prevailing Easterly winds. The most convenient position for communicating with Clarence settlement is with Stephenson Rock bearing N. W. by W. about four miles, in seven or eight fathoms, two and a half miles off shore, where there will be room to weigh, should the wind veer to the Westward. The above rock is twenty-five feet high, and is about a mile and a half from the shore, and N. W. seventeen miles from the S. end of the island. Abreast Stephenson Rock is a well of excellent water near the beach. *Long Island.* *Water.*

Clarence Harbor.

CLARENCE, OR GREAT HARBOR.—About a mile and a half to the N. E. of South Point there are some conspicuous white cliffs about fifty feet high, and thence the Eastern shore of Long Island curves slightly round, and takes a N. N. W. direction fourteen miles to Clarence Harbor. About four miles to the Northward of South Point, Mayers Hill rises to a remarkable sharp peak one hundred and fifty feet high, and between it and the harbor the interior is cut up by numerous salt ponds.

Clarence Harbor is formed between the shore and some small low islets, which extend off about a mile and a half to the N. W. It is capable of admitting a few vessels of thirteen feet draught, but they will require the assistance of a pilot, and being open to the Northward, it is much exposed, and frequently very difficult to get out of.

Supplies.

Wood and water may be obtained in Clarence Harbor; also, a small supply of beef and vegetables.

Directions.

Should a vessel be forced to run into Clarence Harbor without a pilot, the following directions may be useful: The S. shore of the harbor is skirted at the back by a ridge of low hills and on the Western fall of the highest part there is the ruin of a large building, and about a mile to the N. W. of it, at the end of the ridge, a house, and near it a flagstaff. Run in with the staff in one with Harbor Point bearing S. by W., until the ruin bears S. S. E., when haul up directly for it, and anchor in this line in eighteen feet water, just within the W. end of Strachan Cay, the Northernmost of the larger islets; a beacon forty feet high, the base and upper part red, and the middle part white, is erected on Lark Point, the S. W. extreme of this cay, to point out the position of the harbor. The channel within is little more than a cable wide, and the outer part generally shows itself on either side by the breakers, which extend out nearly two cables' length from the Booby Rocks off the N. end of Strachan Cay. Being open to the N. N. W., it is by no means a desirable place in the winter months for large vessels that cannot get under shelter of the cay. The cultivated salt ponds are situated close to the shore, and are very productive, and the salt is readily shipped.

Tides.

It is high water, full and change, in Clarence Harbor, at 8h. 30m.; springs rise four feet, and neaps two and a half feet.

A bank of deep soundings extends out at least four miles to the N. E. of Clarence Harbor, but its limits have not yet been determined. From the harbor the Eastern shore of Long Island falls back to the Westward for five miles, and then trends to the Northward, forming a deep bight, which should be avoided, as a heavy sea generally rolls in on this side of the island, and the shore is rocky and steep to.

From the N. end of the island a reef runs off half a mile, and soundings extend about two miles to the Eastward of it. There are also some detached reefs off the N. W. point of the island, near the edge of the bank, at about a mile from the shore. Temporary anchorage will be found about three and a half miles S. W. of the point, just within the edge of soundings, by picking out a clear spot, but be very cautious in rounding the N. end of the island. Thence the bank sweeps round to the S. W. toward the Exuma Islands, and for about fifteen miles it appears to be quite clear of danger for a space of two and a half miles within the edge. The W. side of Long Island is only navigable for boats and very small coasters, who manage to pick their way across by the eye to the Jumentos.

Little Exuma Island.

LITTLE EXUMA ISLAND is about eight miles long E. S. E. and W. N. W., but very narrow and low. Off the E. end are some small cays. White Cay, the most distant, is eleven miles from the nearest part of Long Island. The island contains about one hundred and sixty inhabitants, and the chief settlement is about three miles from the E. end, in the vicinity of a valuable salt pond. There is anchorage off this part of the shore, but it is an extremely exposed position, and only visited by a few small vessels who take a favorable opportunity to ship the salt. Those employed for this purpose generally come up from Nassau, with a proper pilot on board, and no stranger should attempt to approach this island without one.

Great Exuma Island.

GREAT EXUMA ISLAND, which is merely separated from Little Exuma by a small shallow channel, almost fordable at low water, is about twenty-five miles long, in a N. W. by W. and S. E. by E. direction, but its breadth is very irregular, varying from one to five miles. The S. shore is generally low and swampy, and skirted by sand bars and small cays to some distance, among which boats can only navigate at high water. The N. shore is more firm and elevated, and varies from fifty to one hundred feet in height.

The island contains about two thousand inhabitants; but as there are no large cultivated salt ponds, they are scattered about, and employed in raising stock and provisions; it is, consequently, only visited by small coasters, who convey the produce to Nassau. The whole of the Northern shore is skirted by a line of narrow woody islets and small barren rocks, to the distance of from a mile to a mile and a half, and within them there are several secure harbors for vessels drawing as much as fourteen or fifteen feet. The channels, however, are so exceedingly narrow and intricate as to be quite impassable to strangers, and even with the assistance of a pilot there would be considerable risk.

vessel of this draught being out. Those, however, drawing twelve feet, will not have this difficulty, as they can run in at the E. end and out at the W.

STOCKING ISLAND, the largest of the above islets on the Northern shore of Great Exuma, is three miles in length, and near the centre there is a remarkable round hill, one hundred feet high, and on the summit a well-built, solid stone pillar, twenty-eight feet high, which is the first object seen from the offing, and an excellent guide. Under its Western side small vessels may careen alongside the rocks. *Stocking Island.*

THE EASTERN CHANNEL lies between the small, low rocks, about four miles to the Eastward of the beacon, and N. by E. of the ruins of Rolla Town, which are conspicuously situated on the E. end of the rising ground on Great Exuma. Man-of-War Cay extends off about a mile from this part of the shore, and on the N. side are the ruins of a small battery. No safe directions can be given for this channel, the pilotage depending entirely upon the eye. *Eastern Channel.*

THE WESTERN CHANNEL is three miles to the N. W. of the beacon, and is much easier of access than the other. The opening between Conch and Channel cays is a mile wide, and serves to point it out, for the low, small rocks lying between Stocking Island and the former cay are close together. The entrance, however, is barred right across, leaving a small cut, two cables wide, close up to the reef which runs off about two cables' length from Conch Cay; twenty-one feet may be carried through this cut into an anchorage of five fathoms, within a cable's length of the S. W. side of the above reef. It is, however, scarcely safe in the winter season, as it is quite exposed to northwesters. *Western Channel.*

The mark to cross the bar is Industry Tree (a remarkable large tree, standing on the summit of the highest hill on this part of the shore) in one with the E. side of some small, low, black rocks, named Smith Cays, lying under it, a short distance from the land, bearing S. by W., but luff the vessel up the moment she is within Conch Reef, for the space is very confined. As before stated, vessels of eleven and even twelve feet may proceed as far as they like to the Eastward, provided they take high water to cross the flats to the Westward of the beacon. All these outer cays lie within about half a mile of the edge of soundings, and commence nearly abreast the middle of Little Exuma, about three miles from the shore.

EXUMA SOUND.—From Great Exuma a narrow range of similar small, low cays and rocks fringe the Bahama Bank in a N. W. direction nearly one hundred miles, when the edge of soundings sweeps round to the Eastward and S. E., to the S. end of Eleuthera Island, forming Exuma Sound. *Exuma Sound.*

There are several small, intricate openings between the cays leading on to the bank, the first of which, after passing Great Exuma Island, is Galliot Cut.

ADDERLEY CAY lies fifteen miles to the N. W. of the beacon on Stocking Island, and about three fourths of a mile from the N. W. end of Lee Stocking Island. A stone beacon, thirty feet high (ten feet of the middle part being red, the upper and lower parts white), is being erected on this cay, to the Southward of which there is a channel and harbor for small craft. There is a cultivated salt pond on Norman Pond Cay, and a well of good water on the W. end of Lee Stocking Island. *Adderley Cay.*

GALLIOT CUT lies N. W. by W. thirty-five miles from the beacon on Stocking Island, but the opening is so difficult to make out, so narrow and intricate, and the tides rush through with such velocity, that it is seldom used by the smallest craft. *Galliot Cut.*

CONCH CUT is situated N. W. twenty-eight miles from Galliot Cut, is almost equally difficult to recognize, from the similarity in appearance of the adjacent cays, which are from thirty to fifty feet high. It has, however, more water, and is more easily navigated, but still only adapted to small, handy fore-and-aft coasters. *Conch Cut.*

WIDE OPENING, about ten miles farther to the Northward, is more readily recognized, by the greater distance between the larger cays, which are here fifty feet high, and about three miles apart, forming a bight to the W. N. W. With the assistance of a pilot, a vessel of ten feet draught may safely navigate this channel, and run across to the Tongue of the Ocean, about thirty miles to the Westward; or under the lee of the cays, and round the E. end of New Providence, into Nassau. *Wide Opening.*

From Cistern Cay, on the N. W. side of this opening, the range takes a N. by W. ½ W. direction, and becomes somewhat more elevated.

WAX CUT, about ten miles to the Northward of Wide Opening, has the same depth, but is very narrow and intricate. The channel lies close to the rocks on the S. side, and in the narrowest part it is only a cable wide. Wax Cay, on the N. side of the cut, is ninety-three feet high, while those to the Southward are only fifty and sixty feet, which serves to point it out. The soundings here extend out three fourths of a mile from the islands. *Wax Cut.*

HIGHBORN CUT, ten miles to the Northward of Wax Cut, is a much better opening to run through, but extremely difficult to beat out of. It is easily recognized by Highborn Cay, which bounds the S. side of the channel, being the highest of the whole range. On the hill, near the N. end of the cay, there is a flagstaff one hundred and forty-five *Highborn Cut.*

feet above the sea. The tides run through this cut at the rate of three knots on the springs.

Ship Channel. SHIP CHANNEL, eight miles farther to the Northward, is the Northernmost and by far the best of all the above openings, and lies W. N. W. thirty-eight miles from the S. end of Eleuthera. At the S. end of Ship Channel Cay, which bounds the S. side of the channel, and has a small beacon on it, there are some conspicuous sand-cliffs, which, with Highborn Cay, are a good guide for the opening. The islets on the N. side of the channel are very low, barren rocks. As the opening is approached, an inner range of small cays, about thirty feet high, the Northernmost being a bold black rock, will be observed at some distance within the outer islets.

If there is sufficient local knowledge, there will be no difficulty in running in to this opening by bringing the above rock, named Mushroom, to bear N. W. by W., upon which line a vessel will carry four fathoms over the bar, which runs across. This is the channel generally used by vessels drawing not over twelve feet, bound to or from Nassau in this direction. The ground outside and at the entrance is dark and deceptive, but the shallow part of the bar on the N. side generally shows itself by strong tide ripplings. A stone beacon, fifty feet high, upper half red, lower half white, is erected on North Rock, which lies half a cable's length to the Southward of the Mushroom, and is thirty feet above low water. A vessel can steer in with it on a W. N. W. bearing.

Directions. Vessels bound to Nassau, having entered Ship Channel, and being abreast the Mushroom Rock—which should be passed at the distance of a fourth of a mile—should steer W. by S. eight miles, or until they have brought the sand-cliffs of Ship Channel Cay to bear S. E. by E. ½ E., as the run may be influenced by the tide. The course will then be N. W. by W. ½ W., which ought to lead across the Middle Ground in ten feet at *low* water, avoiding the small heads, which are easily seen.

Vessels drawing over twelve feet, and as much as fifteen, may cross the bank to the Westward into the Tongue of the Ocean, and proceed to Nassau round the W. end of New Providence Island. In this case, having brought the sand-cliffs of Ship Channel Cay to bear as above, steer W. S. W. eighteen miles, which course should take the vessel to the W. side of the Middle Ground, and to a depth of three fathoms at low water, as will be seen by reference to the chart. Thence, by steering W. eight miles, it will bring her to the edge of soundings. Should the water not deepen as above, the tide will have set her too far to the Northward, and she must haul a little more to the Southward until she has done so. Many small patches will be met with in the way, and by no means attempt to run in in the dark, or when the sun or weather prevents the shoals from being distinctly seen. A vessel may anchor anywhere, provided she has two feet to spare at low water.

Tides. It is high water, full and change, in Wide Opening, at 8h.; in Wax Cut, in Highborn Cut, and in Ship Channel, at 7h. 45m.; springs rise four and a half feet, neaps two and a half feet. The tides run regularly in and out of all the above openings with great velocity, according to their breadth. In the Ship Channel its rate is from two to three knots, gradually decreasing as the vessel advances upon the bank.

The small islets on the N. side of Ship Channel terminate about five miles from the entrance; thence the edge of the Bahama Bank sweeps round to the Eastward about twenty miles, and presents no opening whatever as far as Powell Point, on the W. side of Eleuthera Island. Here there is a channel of ten feet at low water, noticed farther on.

San Salvador. SAN SALVADOR, more frequently called Cat Island, is somewhat in the shape of a leg and foot. The former portion, from Columbus Point to the N. W. end of the island, runs nearly straight N. N. W. ½ W. about forty miles, the foot or S. side trends Westerly about fifteen miles. The average width is from three to four miles, and its height varies from two hundred to four hundred feet; it is consequently the loftiest of the Bahamas; the latter height, however, is confined to a small ridge at the N. W. extreme of the island. The island is very fertile, and generally well cultivated, but, possessing no large salt ponds, the inhabitants are scattered over it from one end to the other.

The N. E. side of San Salvador, from Columbus Point to Bird Point, thirty miles distant, is generally a rocky shore, bold and steep to; but thence it becomes foul, and is skirted by a reef which runs round the N. W. end of the island at the distance of two thirds of a mile. There is shelter for boats within, and deep soundings will be found two miles outside it.

The features of the Southern shore of the island are not quite so regular. W. by S. eleven miles from Columbus Point the S. extreme of the island terminates at some remarkable white cliffs, and here a dangerous reef sweeps round to the S. W., at a distance of one mile and a half from the shore; this end of the island should therefore be avoided in the night, and very carefully approached in the daytime. This reef skirts the shore for nearly five miles to the Eastward, to a remarkable bluff, and about midway between it and the cliff there is a small cut, which will admit vessels of twelve feet draught into good shelter in Port Howe.

Close to the W. end of this part of the island the land rises into a small, peaked hill of some height, called the Hawk's Nest. Hawk's Nest Point, underneath it, is very low and sandy, and a shallow spit, steep to, extends off from it nearly one mile and a half to the Westward. Thence the edge of soundings takes a N. W. by N. direction thirty miles to within a short distance of Little San Salvador, and about eight miles from the W. side of San Salvador. It is everywhere clear as far in as the depth of six fathoms, and about five miles to the Northward of Hawk's Nest Point there is a clear grassy bottom, with ten fathoms, shoaling to the Eastward to three fathoms. On the N. part of the bank deep soundings will be found closer to the shore than at the S. end. With the Hawk's Nest S. S. W. about four miles the depth is three and one fourth fathoms, dark ground.

Little San Salvador.

LITTLE SAN SALVADOR lies S. W. about ten miles from the N. W. end of San Salvador, and is five miles long E. and W. and one mile broad. The space between is almost filled with small rocks and dry ledges, leaving a single, intricate opening about two and a half miles from San Salvador, through which small coasters carry a depth of two and a half and three fathoms. The island is connected to the S. end of Eleuthera, which lies nine and a half miles W. of it, and to the Great Bahama Bank, by a ridge of soundings from a mile to a mile and a half broad, on which the depths are from ten to fourteen fathoms.

W. Side of Eleuthera.

WEST SIDE OF ELEUTHERA.—Eleuthera Island is of a very irregular shape, and may be said to form the N. E elbow of the Great Bahama Bank. It is thickly inhabited, and the soil is peculiarly adapted to the cultivation of pine-apples, which are largely exported. From Eleuthera Point, the S. extreme of the island, a reef, which generally breaks, extends off one mile and a half to the E. S. E. and S. E., and about a half a mile to the Southward of the point there is a small, black rock.

Miller Anchorages.

From Eleuthera Point the Western shore of Eleuthera trends N. W. sixteen miles to Bamboo Point, and soundings extend off about half a mile. About four miles to the Northward of the point, under Miller Hill, which is about sixty feet high, good anchorage will be found in seven fathoms, just within the edge of the bank, but be careful to look out for a clear spot, and move off on the approach of a Westerly wind.

Rock Sound.

ROCK SOUND.—From Bamboo Point the Western shore of Eleuthera takes a N.N.W direction three and a half miles to Powell Point, and here the island is eleven miles broad; it then turns abruptly to the S. E., and round to the Eastward, forming Rock Sound, where is situated one of the largest settlements. About half a mile S. by W. ½ W. from Powell Point there is a small islet, called Chub Rock, and there are no soundings with twenty-fathom line at one mile and a fourth to the S. W. of it. To the Westward of the point there are many shallow sand ridges, between which are channels capable of admitting vessels drawing less than twelve feet, on the Great Bahama Bank to the Eastward of the Middle Ground; those, however, bound here for fruit or stock, above this draught, generally enter on the bank from the N. W., through the Six-Shilling or Douglas Channel.

Tarpum Bay.

TARPUM BAY, the next settlement on the W. side of Eleuthera, is about nine miles to the Northward of Rock Sound. Small vessels may anchor here close to the shore, protected from the Westward by numerous sand bores nearly awash at high water. There are good wells bored through the rock at this settlement.

Governor Harbor.

GOVERNOR HARBOR is a small cove, situated about eleven miles farther to the Northward. In entering this cove keep close to the S. point, to avoid a small rock having only twelve feet water over it, lying about half a cable's length off, with three and three and a fourth fathoms between it and the shore. The anchorage is exposed to Westerly winds, but with good ground tackle and proper precaution there is no danger. The best berth will be in three and a half fathoms, with the S. point bearing S. W. ½ S. and the W. end of Cupid Cay N. W. by W. ¼ W.

Water.

There are some wells near the opposite shore about one mile and a half from the village, but the water is not very good. About a mile to the Northward of this, near the beach, is what is called James Cistern, where, after heavy rains, abundance of good water may be obtained, but it is scarce in the dry season.

Pitman Cove.

PITMAN COVE, generally called the cove, is the Northernmost settlement on Eleuthera, about twenty miles from Governor Harbor. This part of the shore is bold and steep to, and a vessel may anchor in four and a half or five fathoms within half a mile of it.

Directions.

Vessels bound to any of the above settlements from the Westward, will have not less than twenty-one feet water across the N. end of the Middle Ground, on a clear, sandy bottom. The depth is fifteen feet within about four miles of Finley Cay, which is very low and sandy, and in beating up the lead must be the guide. The channel between the Middle Ground and the rocks to the N. W. is about four miles wide in the narrowest part, abreast the Samphire Cays, whence it gradually opens out to the N. E. A vessel will have nineteen feet water as far to the S. E. within the Middle Ground as Tarpum Bay, and fourteen feet to the N. W. to within a short distance of the Glass Window.

It is high water, full and change, on the W. side of Eleuthera at 9h., and the rise and fall is from two and a half to three feet, but there is scarcely any tidal stream until a vessel approaches within five or six miles of the openings.

E. Side of Eleuthera. EAST SIDE OF ELEUTHERA.—From the S. point of Eleuthera Island the Eastern shore trends Northerly thirty-two miles to Palmetto Point, and is slightly indented. It is foul almost the whole way, and closely skirted by a reef with deep soundings from about half to a mile outside it. Close to the Southward of Palmetto Point there is a small opening through the reef carrying a depth of eight feet, leading into a little inlet called Savanna Sound, where there is also a settlement; there is here a small but good salt pond, but the fresh water is not good, the well being used by cattle. Thence the coast trends N. W. by W. seventeen miles to James Point. To the N. E. of Palmetto Point the soundings are ten fathoms two and a half miles off, but thence the edge gradually approaches the shore to within a mile. At James Point the reef runs off a mile to the N. E., and a small spit of bank one mile and a half beyond it. All this part of the island is low, with some sand hills from thirty to fifty feet high, and is scarcely a mile broad.

From James Point the coast trends W. N. W. fourteen miles to the Cow and Bull, two very remarkable, round-headed, black rocks, twenty to thirty feet high, at the S. end of a narrow, very low neck of land, which nearly divides the island in two parts. A short distance of the N. W. of these rocks the sea has pierced a large arch through the low, flat ridge of cliffs, called the Glass Window, which is also remarkable when seen from the E. or W.

Harbor Island. HARBOR ISLAND.—From the Glass Window the Eastern coast of Eleuthera trends N. N. W. two and a half miles, and is composed of low, rocky cliffs, bold and steep to. It then bends round to the Westward, forming deep coves and bays all the way to the N. end of the island, and is fronted by a range of small islets, which sweep round to the Northward and Westward, within which there is good shelter for small coasters drawing eight or nine feet. The Southernmost of these islets, named Harbor Island, is three miles long N and S., but scarcely half a mile broad; the E. side is composed of sand hills about fifty feet high, and on the W. side there is a considerable town, which is considered the healthiest spot in the Bahamas; the S. end is about the same height, but rocky and woody, and is separated from the main by a narrow channel, through which vessels of twelve feet draught may enter into a small but well-sheltered anchorage named East Harbor.

East Harbor. EAST HARBOR is barred across, which in heavy weather breaks, but there is not less than fourteen feet at low water. The opening is easily recognized by the sand hills to the Northward, and the ridge of bold rocky cliffs to the N. West of the Cow and Bull to the Southward. Bring the opening to bear S. W. and run boldly in, bordering toward Harbor Island, and anchor just within the bar, in three and a half fathoms, with the S. end of that island bearing N. N. W. The tide runs through with great rapidity, and it is therefore necessary to moor. A vessel will be prevented from going farther in by an extensive shallow and flat, which separates it from the anchorage off the town, and being exposed to the N. E. it is difficult to get out of, and consequently seldom visited. It would be found, however, a safe refuge for a vessel caught incautiously in the bight between it and James Point.

West Harbor. WEST HARBOR.—From the N. end of Harbor Island, a range of small low cays sweep round for about five miles to the N. W. point of Eleuthera Island, and are fringed by a reef to the distance of about half a mile. The entrance for small vessels into the Western Harbor is through a small intricate cut close off Bridge Point, the N. W. extreme of Eleuthera; but it requires the aid of a pilot. This end of Eleuthera rises from the shore to the height of about one hundred feet, at about four and a half miles to the Southward.

N. E. Bank. NORTHEAST BANK.—From Main Island, which forms the elbow of the above cays, a spit of bank about two and a half miles broad, with twelve and fourteen fathoms on it, runs five miles to the N. E., and with prompt attention to the lead it serves as a valuable safeguard in approaching this very dangerous neighborhood in the night; but the latitude is the great point to be attended to here, and if not certain of this a wide berth should be given to this locality, which is generally the landfall for vessels bound into the N. E. Providence Channel.

Egg Island Reef. EGG ISLAND REEF.—From the N. W. end of Eleuthera a range of small islands extend to the W. S. W for ten miles, and are bounded on the N. by a dangerous reef to the distance of about two miles. The Northern pitch of this reef lies W. by N. four miles from Bridge Point, and N. E. ¾ N. five and a fourth miles from the paps on Royal Island, which from this direction are seen nearly in one. From this pitch another narrow spit of bank, equally valuable as a guide in the night as the N. E bank, if proper attention be paid to the latitude and lead, runs off three and a half miles to the Northward; it is about two miles broad, with a depth of from seven to twelve fathoms on it. The W. end or elbow of the reef terminates W. by N. two and a half miles from

the paps, and N. W. ½ N. nearly two miles from the hill on Egg Island. Along the N. W. side the depths are nine and ten fathoms at three fourths of a mile from the reef, but at the elbow the edge of soundings comes close home; this neighborhood is very dangerous, and requires the greatest attention to the lead. George, Charles, and Russell islands, the Easternmost of this range, lie so close together that from the Northward they appear as one island, three and a half miles long E. and W.

George Island. GEORGE ISLAND, the Easternmost of the above group, is separated from Eleuthera by a narrow channel, leading round to Harbor Island. On the sandy point at the E. end of the island there is a small village of fishermen. Russell Island is woody, and about eighty-five feet high.

Royal Island. ROYAL ISLAND, the next and the largest of the group, is four and a half miles long E. N. E. and W. S. W., and lies parallel to Egg Island Reef, but is very narrow. Near the centre of the island there is a conspicuous large stone house, and about three fourths of a mile to the S. W. of it are two remarkably woody paps or hummocks close together, and about seventy-five feet high. On the S. side of the island there is a snug little harbor for small craft drawing less than ten feet. In the middle of the entrance lie two small dry rocks, and on entering it will be better to pass close to either of the points, E. or W. of them. The best berth is with the house bearing N. by E. or N. N. E. in ten feet at low water. About one mile and a fourth S. of the harbor there is a narrow rocky ledge nearly dry, and in working up from the S. W. it will be better to keep to the Northward of it.

Water. A well of good water will be found near the house on Royal Island.

Great Egg Island. GREAT EGG ISLAND is a wooden islet, about a mile long N. N. E. and S. S. W., a quarter of a mile broad, and sixty-seven feet high. The opening between it and Royal Island is little more than a cable across, and the elbow of Egg Reef terminates near the middle of the islet.

Little Egg Island. LITTLE EGG ISLAND, the Westernmost of the range, and lying about two cables' length to the Southward of the above, is a narrow rocky islet, less than a fourth of a mile long, and only fifteen feet high. The edge of soundings comes within three fourths of a mile to the Westward of it.

Anchorage. There is anchorage in eight fathoms, on the edge of the bank, with Great Egg Island hill in one with Little Egg Island, N. N. E. ½ E. about a mile from the latter; but the holding ground is not good, and a heavy swell generally rolls in round the elbow of Egg Reef. Vessels drawing under sixteen feet may go so far in as to bring Little Egg to bear W. N. W., and the paps on Royal Island N. ½ E., where they will have three fathoms at low water. In beating up, they may stand toward the cays by the lead, observing that the S. end of Little Egg is foul to the distance of three cables' length; when standing to the Southward, be careful when approaching the Southwest Reef.

S. W. Reef. THE SOUTHWEST REEF lies close to the edge of soundings, and its N. end bears S. S. E. ½ E. one mile and three fourths from Little Egg Island; it is two miles long from N. to S., and although nearly dry, it seldom breaks. About two miles S. by E. from the S. end of the reef is the Current Rock, a low, black, rocky islet; and two miles to the Southward of this is the N. end of the Pimlico Islands.

Tides. It is high water, full and change, at the Egg Islands at 7h. 45m.; springs rise three and a half feet.

Pimlico Islands. THE PIMLICO ISLANDS are a range of small, low, barren, rocky islets, extending four miles in a S. S. W. direction; and about two miles farther on are the Six-Shilling Cays, which may be readily recognized from the others by the beacons on them, and by the Quintus Rocks one mile and a half to the S. E. About two miles within the Pimlico Islands is Current Island, which is only separated from the W. end of Eleuthera by a narrow channel, called Current Cut, through which the tide rushes with the force of a rapid.

Fleeming or Six-Shilling Channel. FLEEMING or SIX-SHILLING CHANNEL lies thirteen miles to the Southward of Little Egg Island, and N. E. by E. ½ E. twenty-five miles from Nassau light-house. The opening between the Six-Shilling Cays and the Samphire Cays S. W. of them, is six miles wide, but the channel is not more than two miles broad, and lies close to the Westward of the former islets. It is capable of admitting vessels of twenty feet draught without much difficulty, provided they have some little knowledge of the locality. On the Southwesternmost of the Six-Shilling Cays is the outer or Shannon beacon, triangular shaped, fifty feet high, and visible seven or eight miles. The inner beacons on the Quintus Rocks, are two pole-beacons on the Southern rock; they bear N. by E. ¾ E. and S. by W. ¾ W. from each other, and the Southernmost lies E. by S. one mile and a half from the Shannon beacon.

Directions. When approaching the Fleeming Channel from the Northward, run down close to the edge of the bank, which is about a mile from the cays, and enter upon soundings with the Shannon beacon bearing E. ¾ S., when the Quintus beacons will be just open S. of it, and thence steer S. E. This course should lead about three fourths of a mile to the

Westward of the Shannon, and when it bears N. ¾ W. bear up up S. S. W., which will lead into Douglas Road or New Anchorage. There are many small heads in the way, but they may be easily seen from afloat.

As the tides run right across the inner part of the channel, the flood to the S. E., the ebb to the N. W., at the rate of two or three knots, steer accordingly, so as to pass two cables' length to the Eastward of a black buoy with vane, moored S. E. by E. ½ E. two miles from the Upper or N. E. Samphire Cay, and S. W. by W. six and a fourth miles from the Quintus poles; these latter, therefore, will be a good guide. The buoy lies in two fathoms, at the inner and narrowest part of the channel, which is little more than a mile wide. A short distance to the N. E. of the buoy, there is a small ledge of fourteen feet, called the Middle Ground, with twenty-one feet on either side, but it had better be left to the Eastward.

In beating out, do not stand farther to the Eastward than to bring the Quintus beacons in line, and to the Westward keep the Pimlico Islands open to the Eastward of the Six-Shilling Cays. The edge of the shoal ground on either side of the channel, however, may be seen from aloft. A vessel may anchor in the channel, or take up a convenient berth for quitting, about a mile to the S. W. of Quintus Rocks, but she will be exposed to the Westward.

Tides. It is high water, full and change, in the Fleeming Channel at 9h.; springs rise three and a half feet, and neaps one foot and a half.

Douglas Channel. DOUGLAS CHANNEL, twelve miles to the S. W. of the Fleeming, is similarly distinguished by two pole-beacons on small black rocks, in the centre of the opening, which is about one mile and a half wide between Booby Island and the E. end of Rose Island. It is navigable for vessels of twenty feet draught, but it is so narrow and tortuous, and the tides so rapid, that a pilot is absolutely necessary. However, in the event of a vessel being forced to run in without this assistance, the following directions may be useful:

Directions. Wait for the flood tide, and strike the edge of soundings with the beacons in one S. E. ¾ E., which line will lead close to the Westward of Booby Island Ledge, and when the small pile of stones on the W. end of that island bears E. ½ N. haul up about E. by S. ½ S., so as to pass to windward of the black buoy on the E. side of the Douglas Rocks. It is seldom, however, that the wind will allow a vessel to do this; but the tide is so strong under the lee, that by proper attention she may shoot through the narrows, which is only a cable and a half wide. Should she be forced to make a board, it had better be done under the W. side of the Douglas Rocks, where they are steep to. If under fifteen feet draught she may shoot in to the Southward of the beacons, but there is a very dangerous small rock, with four fathoms around it, right in the middle of the opening between the Douglas and South Channel rocks, which, on account of the strong rippling over the dark bar that runs across, is not seen.

If it be determined to take the latter channel, a boat had better be placed over the rock, for the tide runs here so strong that without a good commanding breeze the vessel will be scarcely under control. Having passed the black buoy, a S. E. course will lead between the Turtle Head and the black buoy off the N. end of the Hook sand, whence the course may be gradually shaped to the S. W. for Douglas Road or New Anchorage, guided by the eye and the chart.

A convenient berth will be found with the Block House on Potter Cay nearly in one with Montague Fort on New Providence W. by N., and the house on Rose Island N. W., about eight miles from the town of Nassau. An anchorage may also be taken up a short distance within the Douglas Channel in Shoe Hole Road in four or four and half fathoms, but it is not good holding ground, and in a strong norther vessels are liable to drag. The sea in these winds seldom breaks across, and they may, therefore, run in here when the bar at Nassau is impassable.

Water. There are wells of excellent water near the house on Rose Island, but difficult and inconvenient to get at.

Tides. It is high water, full and change, in Douglas Channel at 8h. 30m.; springs rise four feet, and neaps two and a half feet.

Hanover Sound. HANOVER SOUND, situated at the W. end of Rose Island, between Salt Cay and Athol Island, is a snug anchorage for two or three vessels drawing not more than eighteen feet. The entrance, however, is only about a cable wide, and being open to the N. E. it is a difficult matter to get out, and in the winter season a vessel may meet with a long detention. The leading mark in, is a remarkable conical bush near the Creek village, on New Providence, in one with the only cocoa-nut tree on Athol Island, S. S. W. ¾ W.

After rounding the end of the Rose Island ledge, which will be seen from aloft, haul up S. and anchor with Rose Island Rock N. E.; but a pilot is necessary for all these intricate openings. In running down from the N. E. bear in mind that the N. side of Rose Island is skirted by small low rocky islets and shallow coral patches to the distance of a mile and a half, and the edge of the soundings is about three fourths of a mile beyond them.

SALT CAY ANCHORAGE, at the W. end of Salt Cay, is also a snug spot for two or ree vessels of fourteen or fifteen feet draught. The entrance lies close to the Pork Fish ocks, on the N. side of Hog Island, between them and a rocky ledge extending off from e W. end of Salt Cay, and requires a leading wind. *Salt Cay Anchorage.*

It is high water full and change, in Hanover Sound at 8h. 15m.; springs rise four feet d neaps three feet. *Tides.*

NEW PROVIDENCE.—This island being the seat of government, and possessing a fe harbor for a few vessels of as large a draught as fifteen feet, is the most important and of the Bahamas. The island is oval shaped, sixteen and a half miles long, E. and ., and six and one fourth miles at its broadest part. *New Providence.*

HOG ISLAND, the Easternmost of several small low cays, which skirt the N. side of e above island, is three and a half miles long E. and W., and bounds the N. side of the rbor: the Western end gradually falls from low sand-hills to a flat rocky point. *Hog Island.*

SILVER CAY lies six cables' length to the Westward of Hog Island and half a mile m the shore. About two cables' length farther to the Westward is Long Cay, and a le and a half beyond this is North Cay. There is a navigable opening between the o latter cays, but the shore to the Westward of them should not be approached within e distance of a mile. There is also an opening through the foul ground a little to the estward of North Cay, leading into a small anchorage for vessels of light draught, but is seldom used. *Silver Cay.*

Nearly a cable's length within the extreme W. end of Hog Island stands a conical ite stone light-house, fifty-eight feet high, which exhibits a fixed white light at sixty- ht feet above high water. The light illumines the Northern quarter of the horizon, m N. E., round Northward to N. W., and may be seen ten miles off, but it is only in- ded for the purposes of a harbor light. A flagstaff is erected about one hundred and enty feet to the Westward of the light-house. *Light-house.*

NASSAU HARBOR.—The entrance to this harbor lies between Hog Island and Silver y; but between them a rocky bar runs right across, which breaks heavily with strong W. and N. winds, and is sometimes impassable for several days. The greatest depth low water springs is seventeen feet, but this is only in a space not fifty yards wide, and stated before, vessels drawing over fifteen feet cannot get into safety. *Nassau Harbor.*

When bound to Nassau from the N. or N. E., a wide berth should be given to the E. elbow of the Little Bahama Bank, until the parallel of 26° 30′ N. is reached. Ap- aching from the Eastward the latitude of 25° 45′ N. should be most carefully main- ned until either the N. end of Eleuthera, which may be seen about twelve miles off, is hted, or the Abaco light-house, which is visible in clear weather sixteen miles. *Directions.*

The current, as the Bahama Islands are approached from these points, and also from E. and S. E., generally runs to the N. W., but not strong. To the Northward of Eleu- era, however, a strong set in the opposite direction will sometimes be found after N. W. N. winds, and probably after light weather, on the increase of the moon, but it will safer not to depend on this. Should the land of Eleuthera be made, haul round Egg and reef at the distance of three or four miles; and when Great Egg Island bears the course will be S. W. by S., and the distance thirty-two miles to Nassau light- se.

The first objects seen when approaching Nassau Harbor, will be Forts Fincastle and arlotte, and soon after the government house, a remarkable large square building the top of the ridge between them. When near the entrance, a stone obelisk will be erved on the hill, a short distance to the Eastward of Fort Charlotte, which is the sternmost fort; and when the light-house bears S. about half a mile, a small low rock l be opened out close under the land, called Tony Rock, on which is a pole-beacon h a triangular frame on the top. The obelisk and beacon in one S. by W., will lead r the deepest part of the bar; and when the flagstaff on the W. end of Hog Island nes in line with the windows of the light-house, haul sharp up to the S. E. with the hing house on the end of the Ordnance wharf in one with the Presbyterian chapel, ring in mind that the flood will set the vessel strong toward the sand ridges on the E. of the channel. This mark will lead to the Eastward of Tony Rock ledge, at the N. of which there is said to be a small basket beacon, the existence of which, however, omewhat doubtful, and to the Westward of a buoy on the W. end of the sand ridges. en the cupola of the jail, a conspicuous building in the centre of the town, comes in with a small lookout house on the ridge, a little to the Eastward of Fort Fincastle, up on this line, and anchor with Tony Rock beacon in line with a cocoanut tree on th Cay W. ¾ N., abreast the navy-yard, Ordnance wharf, or barracks, as most con- ient.

hould the wind be scant, a vessel may sail in or out of the harbor, with the bathing se on the Ordnance wharf in one with the Presbyterian chapel, provided there is no ll on the bar, and she crosses it at the last quarter flood, which is the best time for purpose. It is clear, however, that these directions can only be of use to those fully ainted with the place, except in a case of the greatest emergency. Handy vessels

that can insure staying may beat in, but this must be done entirely by the eye. Every confidence may be placed in the pilots, who are always at hand. Vessels of fourteen or fifteen feet draught had better moor head and stern with their head to the Westward and the best bower to the Eastward, and be careful in swinging not to tail on the anchor. In the summer season, after the period of northwesters, it will perhaps be more convenient to have the vessel's head to the Eastward.

If the harbor is approached with a Northerly wind, and there is an uncertainty as to the state of the bar, should it be dangerous to cross, a red flag will be hoisted on the signal staff near the light-house. In this case it will be more prudent to proceed to the Douglas Channel, or to the anchorage at the S. W. end of the island. Should it be passable, but too dangerous for a boat to get out, a white flag will be hoisted, and the pilot boat will be seen in waiting just within the breakers, showing a flag red and white horizontally. In this case cross the bar upon the first leading mark, the beacon and obelisk in one, and when the flagstaff comes on with the light-house, steer for the boat and receive the pilot. This, however, is a dangerous experiment for a vessel of heavy draught and, except in a case of great urgency, it will be far more prudent to act as above stated.

Should a strong northwester overtake a vessel at the entrance of either of the Providence channels, it will perhaps be better to remain under the lee of the S. end of Abaco or anchor under the W. side of the Hole in the Wall, and wait until the wind moderates and the sea goes down. It may still continue to blow hard as the wind draws round to the N. E., but when it reaches this quarter the sea generally subsides on the bar in a short time. A good sheltered berth will be found under Abaco in eleven fathoms, with the light-house E. by N. ½ N. about three fourths of a mile from the shore.

Outer Anchorage. Vessels merely wishing to communicate with Nassau, or with the wind to the Southward, will find a temporary anchorage off the N. side of Hog Island in about eight fathoms on the very edge of soundings, with the government house just open to the Eastward of the town church S. S. W. This anchorage must, however, be approached under easy sail, and care must be taken not to shoot too far in; in the winter months, be prepared to quit the moment the wind threatens a change.

Eastern Channel. EASTERN CHANNEL.—Vessels drawing under eleven feet draught may enter Nassau Harbor from the New Anchorage, previously noted: but this is only to be done by the eye. A depth of nine feet may be carried at low water over the Eastern flats to Fort Montague, and the channel lies close under the S. sides of Athol and Hog Island.

West Bay. WEST BAY.—The W. end of New Providence forms a small bay, which affords good shelter for small craft drawing seven feet water from all points but the W. Directly off the middle of the entrance, about a mile from either point, is Goulding Cay, a narrow low rocky islet, about three cables long E. and W., and steep to on the S. side; but a reef, which generally breaks, extends off a fourth of a mile to the N. W. from its W. end and there are deep soundings about two cables' length beyond it. The channel into the bay lies to the N. E. of the cay.

S. W. Bay. SOUTHWEST BAY.—The S. W. end of New Providence is formed of remarkable bold perpendicular white cliffs, about thirty feet high. The best anchorage will be found with Clifton Bluff N. W. ½ N., and the S. extreme of the island E. ½ S., in four and a half fathoms, just on the edge of soundings and about half a mile off shore. A vessel may go farther in, according to her draught, and guided by the lead. Should she have to work up, be very careful to avoid a small rocky patch of eleven feet lying close to the edge of the bank, with the bluff bearing N. N. W. ½ W. nearly two miles, and the Conch Rock by S. The latter, however, is only about eight feet high, and so small that it will scarcely be visible from the deck of a small vessel. A vessel may also anchor to the Southward of this patch, in five and a half fathoms, with the bluff on the same line of bearing, and the above rock E.

S. W. Reef. SOUTHWEST REEF.—This very dangerous rocky ledge lies on the edge of soundings, S. by E. ¼ E., seven and a half miles from Clifton Bluff. It is nearly awash, and the ground is foul for a mile to the Northward of it.

Tides. It is high water, full and change, in Nassau Harbor, at 7h. 30m.; springs rise four feet and neaps three feet.

Tongue of the Ocean. TONGUE OF THE OCEAN.—This most remarkable inlet, or estuary of ocean water, is about one hundred miles in length from N. to S., with a bight to the Eastward which comes within fifteen miles of the nearest part of the Exuma Cays. This latter part is about thirty miles wide, but the Northern portion, between the W. end of New Providence and Green Cay, is only from fifteen to twenty miles across to Andros Island.

Green Cay. GREEN CAY.—From the S. W. Reef the edge of the Bahama Bank takes a S. E. by S. direction twenty-eight miles, and is very foul, there being several rocky heads near awash, and it is, consequently, dangerous to approach in the night. Thence it trends ¾ E. twenty-eight miles farther, to Green Cay; and this part is pretty free of rocky patches but it is so wall-sided that there are in some places only three and a half fathoms on the brink of soundings.

reen Cay is about a mile in extent, and near its centre sixty feet high. Near the N. end there are some wells of good water. Anchorage will be found about a mile he Southward of the cay, but it requires great care not to shoot too far in from the e of the bank, which is very steep, with dark foul bottom. About six and a half es S. E. of the cay there are some small barren black rocks, about twenty feet high, ed the Booby Rocks. Thence the edge of the bank sweeps round to the Eastward, then to the Southward, and being impassable, has received only a partial examina-

South-Side Channels.

OUTH-SIDE CHANNELS.—It has already been noticed, when describing the chan- through the Jumentos, that on the S. side of the Tongue of the Ocean are nume- small channels, clearly pointed out in the present charts, two of which, eight or miles in length, named Thunder and Blossom, may be navigated by vessels of four- feet draught. The navigation entirely depends upon the eye, but it is not difficult. clear white sand ridges take a S. E. direction, and commence a short distance within edge of the bank. The depth at the N. end of the entrance is from five to six fath- generally over dark bottom, so that the channels are well defined by the sand es on either side, and easily made out from aloft; but toward the inner or S. E. end sand ridges meet across, forming a bar with from three to three and a half fathoms , and therefore, coming from the Southward, the true channels are not so easily dis- ered. The tides run very rapidly through, and sometimes across the ridges, and the gation is, consequently, not safe in the night. A vessel may anchor, however, any- re between them.

Andros Island.

NDROS ISLAND, about the largest of the Bahama Islands, is ninety miles long N. N. W. to S. S. E., and forms the W. side of the Tongue of the Ocean. The thern part of the island is from eighteen to twenty miles broad; but near the centre, een High Cay and Williams Point it is forty miles across, and thence it gradually eases to the breadth of about ten miles at the N. end. The whole island is low, mpy, thickly wooded, and intersected by numerous shallow creeks, which almost the island into three parts at high water. Along the eastern side, however, from Cay to the Southward, there is a narrow ridge of hills, from seventy to one hun- feet high. This shore is skirted by numerous small cays and reefs to the distance om one to two miles, and being steep to, is very dangerous, particularly in the neigh- ood of High Cay, where the tongue is only fifteen miles across. The Western shore e island is composed of slimy mud, like pipe-clay, and is so low that in N. W. gales overflowed to a considerable distance inland. The water is here so shallow that, in places, a boat cannot come within many miles of the shore.

ere is no harbor whatever, but boats and small craft drawing four or five feet find way through the reefs on the Eastern side of the island, into some of the creeks, for urpose of collecting sponge, which is found in large quantities, and shipping the which is floated into them from the lagoons in the interior. There are but few in- tants, and the only settlement of consequence is at Red Bay, near the N. W. end of island. From this end an extensive flat of sand, dry in many places at low water, off twelve miles to the N. W., and on it are several small islets, the Northernmost hich are called Joulter's Cays. About two miles to the Northward of Morgan's , a remarkable rocky headland, forming the N. E. point of the island, there is an ing in the reef, abreast a small rock called Golden Cay, and it will admit a vessel e feet draught into shelter within, in moderate weather.

Tides.

is high water, full and change, on the E. side of Andros Island, at 8h., on the W. off the N. end, at 10h. 30m., and off the S. end 1h. 15m. The tidal streams meet e centre of the bights, where the rise and fall is only from twelve to eighteen inches, the flood runs from the Westward through the great bight three hours after high r.

N. W. Channel.

ORTHWEST CHANNEL.—From Morgan's Bluff, the N. E. point of Andros, the of the Bahama Bank trends N. N. W. eighteen miles, and then turns suddenly to E. S. E., along the S. side of the Berry Islands. At the head of this bight there is a w, intricate channel, between sand ridges, through which may be carried a depth n feet at low water on the bank, and it is usually used by wreckers. These small s leaving Nassau generally anchor under the Chub Cays for the night and con- to be at the entrance of the channel by sunrise, in order to be able to see the nume- heads which skirt the edge of the bank for about a mile and a half inward before come to the sand bores. The clearest route will be found by striking soundings Blackwood Bush (a small low bushy cay, the Westernmost of the Berry Islands), ng E. by N. ½ N. five miles.

THE BERMUDA ISLANDS.

The whole of the Bermuda Islands are situated on the S. E. side of an oval-shap coral reef, nearly dry at its edges, twenty-four miles long from N. E. to S. W., and fr ten to twelve miles broad. They are composed of sand and limestone more or l compact, and clothed principally by cedar trees of sufficient size for the scantling boats and vessels as large as two hundred and fifty tons. They are irregularly hil and the valleys contain a rich vegetable soil, capable of producing abundant crops arrowroot, potatoes, and other vegetables, which are largely exported; as also a sm quantity of straw plait and tropical fruit. The inhabitants have to depend almost tirely on rainwater caught in stone tanks, attached to the houses for this purpose. Th are a few wells, but they are only resorted to in cases of necessity. Poultry and fish generally to be obtained, but cattle are scarce, and supplied from America.

St. George. ST. GEORGE, the Northeasternmost island of the group, is about three miles lo and a little more than half a mile across at the broadest part; in the centre, howeve is nearly cut in two by a shallow pond or bight. On the S. side there is a considera town, once the seat of government, and in front of it a secure harbor for vessels of fo teen to sixteen feet draught, which can cross the bar at high water into the inner ba

St. David Island. ST. DAVID ISLAND is about two miles long, E. and W., but its shores are very regular. Its E. end terminates in a bold rocky promontory about eighty or one h dred feet high, called St. David Head, which forms the Eastern extremity of the gro

Hamilton, Long, or Bermuda Island. HAMILTON, LONG, or BERMUDA ISLAND,* the largest of the group is thirt miles long, and a mile and a half broad near the middle; its shores, however, are irregular, and so is its surface. The loftiest spot, which is situated near the S. W. of the island, is called Gibbs Hill, and is two hundred and forty feet high.

The town of Hamilton, situated near the centre of the island, is the seat of gov ment, and in front of it there is a most convenient, well-sheltered inlet, capable of ceiving vessels of ten or twelve feet draught, alongside the wharf, in front of the tow

Light-house. A white circular iron light-house stands on the round, barren, and rocky summ Gibbs Hill, and from it is exhibited a light of the first order, which emits a bril flash of seven seconds' duration every minute, at three hundred and sixty-two feet a the mean level of the sea. In clear weather a continuous dim light may be seen betw the flashes at the distance of twenty-two miles from a height of eleven feet, and the itself is visible thirty-three miles from a height of forty feet. It is, however, interce by some hills to the N. E. on the following magnetic bearings from the light-house, N. 47° 45′ E., N. 51° 55′ E., N. 53° 28′ E., and N. 61° 56′ E.

In coming from the S. E. the light should not be brought to the Southward of W S., or neared to less than six or seven miles during the night. Coming from the W ward it it should be kept at the distance of ten or twelve miles, until it is brought to Northward of N. E. by E. Between the bearings of N. E., by the N., and W., the may be approached in the night within three miles. A vessel sighting the light the Northward should haul off immediately.

Somerset Island. SOMERSET ISLAND is about two miles long from N. to S., a fourth of a mile b and is generally not so elevated as the others.

Ireland. IRELAND, the Northwesternmost island, is a mile and a half long, N. W. and a fourth of a mile broad, and is entirely occupied by the government establishment

Mangrove Bay. MANGROVE BAY.—At the N. W. point of the island is a good harbor with entrances, and is the location of the dock yard. From the Northwest and the S west Cut a ship can enter and anchor in three quarters of an hour and go to sea b East end or inwards in one hour and a half. Shipwrecked cargoes are landed he sale and convenience.

The Reef. THE REEF.—The S. E. side of this remarkable reef, from St. David Head t light-house is bounded by the islands which lie in most parts within one fourth mile of the edge, with soundings about a mile beyond it; the depth of ten fathoms almost alongside the reef. Nearly abreast the light-house the reef extends a mile the shore, and thence it takes a Westerly direction about nine miles, and is calle Long Bar. It then sweeps round to the N. and N. E. at the distance of about six from Somerset Island to the North Rock.

North Rock. NORTH ROCK.—This little rock is only twenty feet long, six feet broad and s feet high. It lies on the very edge of the reef, and from it the light-house bears W. sixteen miles: the N. E. part of Ireland Island S. S. W. eleven miles; and St. erine Point, the N. extreme of St. George, S. E. by S. eight miles.

From this rock the reef trends E. five miles, when it sweeps round to the S. E. and terminates within less than half a mile of St. David Head. There are severa row openings through this great barrier, leading into secure anchorages, but on navigable for ships-of-the-line.

* It is doubtful whether this island has any name whatever. Hamilton is the name of the to

ILLS BREAKER.—N. N. E. five miles from St. David Head, and N. E. about four a fourth miles of St. Catherine Point, on the E. extreme of the reef, is Mills Break- which dries at low water. *Mills Breaker*

ledge of soundings from half to a mile broad skirts the reef all around, and the hs are ten to fourteen fathoms on it. On the E. side, to the Southward of Mills aker, it becomes somewhat wider, and fifteen fathoms will be found a mile and a outside.

favorable weather, with the wind from the N. W., a vessel may pick up a tempo- anchorage on this part of the bank, under St. George. A good berth will be found St. Catherine Point W. N. W., and St. David Head S. ½ W., in seven or eight fath- ; care must, however, be taken to choose a clear spot, which may easily be done the clearness of the water, and be prepared to quit the moment the wind begins to .* *Anchorage.*

HIP CHANNEL is situated at the E. end of the group abreast S. George Island, re the reef is broken up into detached masses. It is, however, so tortuous and ow that, without a leading wind, and the assistance of the buoys which point it out, ould be impassable—even with the help of the pilots, who are the most quick-sighted expert that can be found anywhere; no marks are available, and it would be use- to attempt to give directions which would more probably lead to disaster. *Ship Channel*

T. GEORGE CHANNEL.—There is also at this point a narrow channel, which has straightened and deepened to admit vessels of sixteen feet draught into St. George bor. It is also buoyed, and the leading mark for the outer end is pointed out by ons on St. David Island; but no stranger should attempt it without the assistance of lot, nor come within the checkered fairway buoy until he has one on board. *St. George Channel.*

OILER CHANNEL.—There is also a similar winding channel through the coral s into St. George Harbor, close along the shore of St. David, called the Boiler nnel; but is still more intricate, and only used when the weather is moderate, and wind scant for passing through the other. *Boiler Channel.*

ASTLE HARBOR.—The next opening lies about two and a half miles to the S. W. t. David Head, leading into Castle Harbor, and has a depth of eighteen feet, but it extremely intricate and dangerous that it is never used. *Castle Harbor.*

OG-FISH CUT.—The next break to the S. W. is situated at the end of the Long and called the Hog-Fish Cut, through which small island vessels thread their way he eye into Elias Harbor. This snug little basin is formed between the ends of ilton and Somerset islands. On the N. W. part of the former there is a small coni- hill, about one hundred and fifty feet high, called Wreck Hill, which is a very con- ous and useful object in approaching from the N. or S. *Hog-Fish Cut.*

LUE AND CHUB CUTS.—On the N. W. side of the reef there are two more open- called the Blue and Chub cuts, through which small traders find their way into sy Bay and Hamilton Harbor, passing close along the N. W. side of Ireland Island, no directions can be given for them. *Blue and Chub Cuts.*

ORTH ROCK CUTS.—There are also two more openings, one on either side of the h Rock, capable of being navigated by vessels of large draught, provided they are iously buoyed, and the wind and weather favorable. *North Rock Cuts.*

is high water full and change at about 7h. 14m., both at St. George and Ireland ds: the rise at springs is about four and a half feet, but it is uncertain. At the s the rise is sometimes not more than a foot. Northerly winds cause the highest Southwesterly the lowest tides. The force of the stream is also variable, and prob- affected by the current prevailing outside. *Tides.*

W. BANKS.—These two coral banks are said to lie from nine to fifteen miles about V. by S. from the light-house. They are of small extent, and very close to each r; their limits, however, are still doubtful. On that nearest to the islands there are less than twenty-nine fathoms water, with forty fathoms on the edges. On the other, ch is out of sight of the land, the depth is from thirty-three to forty-seven fathoms. he Bermuda Islands are situated only about one hundred and eighty miles to the hward and the same distance to the Eastward of the outer limits of the Gulf or Flor- stream. Hence the current in its neighborhood is exceedingly variable both in force direction, as will be seen by the table that follows. Generally, however, it appears e greatly influenced by the wind, particularly if it has blown from the same point several days, when its velocity may be found to be a knot an hour or more in the op- e direction. The utmost attention is, therefore, requisite to the reckoning, and should *S. W. Banks.* *Current.*

Sir William Reid observes, in his valuable work on variable winds, that when a Northerly or N.W. with a rising barometer, has quickly followed a Southerly gale and falling barometer, ships may chored with confidence on the S. side of Hamilton Island, in clear places known to the pilots, un- e Northerly gale moderates. They should then weigh and stand to the Eastward in readiness to the main channel, and not remain longer at anchor on the S. side of the island, because the next which follows may be expected to set in from the E. or S. E.

the vessel's position be at all doubtful, and the weather unfavorable for seeing the lig the parallel should not be crossed in the night-time, for the soundings are too close the reef to give safe warning.

The following table, giving the account of currents experienced by the undermentioned ships near the Bermuda Islands, were made by order of Vice-Admiral Sir Char Adam, commander-in-chief on the Bermuda Station, April, 1844:

Vessels' Names.	Dates.	Prevailing Winds.	Force of Wind.	State of Weather.	Bearing and Distance of Bermuda.	Set and Veloc of Currents i 24 hours.
					° Miles.	Mi
Illustrious.	1842, July 10	S. S. E.	4 to 5	b. c.	S. 1 E. 114	N. 24 E. 1
"	" " 11	"	3	b. c. p.	S. 58 E. 64	S. 46 E. 1
"	" " 12	Southeasterly	2	"	S. 27 E. 30	N. 26 W. 1
"	" " 13	E. N. E.	2 to 0	b. c. o.	S. 24 E. 12	S. 45 W. 1
"	" Dec. 1	N. E. to S. W.	2 to 10	g. r. t. l.	S. 5 E. 112	S. 22 W.
"	" " 2	W. by N.	9 to 6	b. c. g.	N. 54 W. 22	S. 35 E. 1
"	" " 3	Northwesterly	7 to 1	"	N. 80 W. 24	S. 56 E. 1
"	1843, Apr. 28	N. W. to S. W.	0 to 5	b. c.	N. 58 E. 112	S. 25 E. 1
"	" " 29	Northwesterly	6 to 7	"	N. 40 W. 33	S. 15 W. 2
"	" " 30	N.	6 to 4	b. c. g.	N. 11 W. 2	S. 27 W. 2
"	" Nov. 28	Northwesterly	6 to 9	c. g. p.	S. 37 W. 82	N. 78 E. 2
"	" " 29	"	5 to 0	o. c.	N. 65 W. 19	S. 42 E. 2
"	1844, Mar. 23	Southwesterly	3 to 8	b. c. g.	S. 78 E. 74	N. 12 W.
"	" " 24	"	7 to 11	g. r.	N. 22 W. 3	N. 47 W. 1
Pique	1843, Jan. 11	Northeasterly	1 to 3	b. c. g.	N. 33 E. 129	N. 89 E. 4
"	" " 22	N.	2 to 4	b. c.	N. 13 W. 110	S. 8 E. 1
Spartan	1842, Jan. 7	Northeasterly	6 to 3	b. c. o.	N. 20 E. 101	S. 16 W. 1
"	" May 6	"	5 & 6	c. g. o.	N. 59 E. 48	N. 61 W. 3
"	" " 7	N. E. to S. E.	4 to 6	"	N. 88 E. 25	No observatio
"	" " 11	S. W. to N. W.	4 to 6	"	S. 10. W. to 170	W.
"	" Nov. 3	N. by W. to N. E.	4 to 7	b. c. g.	S. 36 E. 34	S. 62 E.
"	" " 4	Northwesterly	5 to 8	b. c. q. r.	W. 8	No observatio
"	" " 5	"	8	c. q. r.	S. 73 W. 14	No current
"	" " 18	Southwesterly	5 to 2	b. c.	N. 16 W. 115	N. 22 E.
"	1843, July 19	Westerly	3	b. c. g.	E. 154	S. 88 E.
"	" " 20	"	3	b. c.	Close off St. David Head.	No observatio
"	" " 29	Variable	3 to 1	"	S. 30	N. 53 E.
"	" " 30	Southerly	3 to 1	"	S. 2 W. 103	N. 9 E.
Electra	1843, May 1	E. N. E. to S. E.	2 to 5	b. c.	N. 54 E. 113	W.
"	" " 2	Southeasterly	4 to 2	"	N. 40 E. 16	N. 9 W.
"	" Nov. 10	N. W.	8 to 2	b. c. g.	S. 28 W. 77	S. 19 W.
"	" " 11	S. S. W.	0 to 6	b. c.	S. 16 W. 36	N. 82 E.
"	" " 15	N. by E.	7	"	N. 33 W. 180	N. 86 E.
Ringdove	1842, May 5	Southwesterly	5 to 2	"	N. 53 W. 45	N. 75 W.
"	" July 12	Southeasterly	3	"	N. 33 E. 72	N. 62 W.
"	1843, Mar. 8	W. N. W.	5 to 9	c. q.	S. 79 E. 34	S. 87 E.
"	" " 9	Northwesterly	7 to 2	b. c.	N. 10 E. 35	N. 80 W.
"	" Apr. 21	W. S. W.	3 to 5	"	N. 11 W. 140	S. 72 W.
Scylla	1842, May 28	Southwesterly	5	"	S. 72 W. 72	S. 41 E.
"	" " 29	"	5 to 2	"	W. 44	S. 74 E.
"	1843, Nov. 25	E. to S.	3 to 5	"	N. 15 W. 44	W.
"	" " 29	N. W. to N. E.	3 to 5	"	N. 15 W. 160	N. 27 E.
"	" Dec. 25	Southwesterly	4	"	N. 3 W. 71	S. 17 W.
"	1844, Feb. 9	Westerly	6	c. g.	S. 76, 46	S. 85 E.
"	" " 10	N. W. to S. W.	5 & 6	"	N. 36 W. 32	S. 23 E.
"	" " 11	N. W.	6	b. c. g.	N. 63 W. 42	S. 60 E.
"	" " 12	N. W. to S. W.	4 to 1	"	N. 70 W. 34	No observati
"	" " 13	Northwesterly	3 to 8	c. g.	N. 11 E. 10	S. 17 E.
"	" " 14	N. N. W.	6 to 3	b. c.	N. 11 W. 10	S. 50 E.

The differences in the ship's position, as found by actual observation, and wh would have been by dead reckoning (as shown in column sixth of the foregoing ta ought not to be taken as having been caused entirely by currents; it is most prob they are so in a great degree, but influenced also by various causes—such as erro the courses steered, distances run by log, and observations made; but from the graphical position of the Bermuda Islands, being so close to the Southern confines o Gulf Stream, therefore within the limits of the outer currents spoken of in M

ennell's Investigation of currents in the Atlantic Ocean (section 8th, page 251), &c., is natural to suppose that currents, and very strong ones, exist in their vicinity; but om the very different, nay opposite results shown by the log-books of the several ships ere quoted, or from which the foregoing table has been made, they appear to be altoether influenced by the force and duration of the winds that have been blowing, and not ose (in all cases) that prevail at the time of making the observations.

Mean Temperature of the Sea at Bermuda.

anuary	62° 00	August	82° 50
ebruary	63° 00	September	80° 75
arch (wanting).		October	76° 75
pril	65° 00	November	65° 00
ay	70° 50	December	62° 00
une	77° 25		
uly	79° 50	Mean Temperature	70° 73

Winds.

The Bermuda Islands appear to lie near the Northern limits of the variable winds, and so on the track of hurricanes, and revolving storms passing off and along the shore of merica, which is distant about six hundred miles. The revolving winds which pass er them are of various degrees of force, from breezes to storms. In the summer sean the winds are light, and usually steady for a considerable time, blowing in straight nes or on one point, with little fluctuation in the barometer. But after the commencent of November, veering winds of various degrees of force set in and gradually beme frequent, yet they seldom follow in such rapid succession as that one gale becomes afounded with another. Light winds and very fine weather usually intervene between e passage of revolving winds; while at other times, hard blowing straight line winds ith a high barometer intervene.

The arrival of each succeeding progressive circuit of the wind is indicated by the rometer falling, as well as by the increase of the wind's force, which will often occur ddenly. Except in the case of great storms, perfect regularity in the fall and rise of e barometer, and in the changes of the wind, will not be found; for the direction of e wind, as well as the atmospheric pressure, is no doubt modified by other revolving les or strong winds blowing at the same time, but when whirlwinds, tempests, or hurcanes, blow, they overpower such irregularities.

In the winter season Northerly winds sometimes blow hard without veering for two three days together. The air is then dry and cold, and while the thermometer falls e barometer remains stationary, or rises a little. Misty weather is very uncommon, t it constantly happens that a change of weather is first announced by increase of oth temperature and moisture in the air. The December gales generally commence om the S., veer round by the W., and terminate at about N. W. or N. N. W.

Directions.

During the winter months most of the gales which pass along the coast of North merica are revolving gales. Vessels from Bermuda, bound to that shore, should thereore put to sea when the N. W. wind, which is the conclusion of a passing gale, is becomg moderate, and the barometer is rising to its usual level. The probability is, more articularly in the winter season, that after a short calm the next succeeding wind will e Easterly, the first part of a fresh revolving wind coming up from the S. W. quarter.

A ship bound to New York or the Chesapeake might sail while the wind is still W. nd blowing hard, provided the barometer indicate that the W. wind is owing to a reolving gale which will veer to the Northward. But as the usual track which gales llow in this hemisphere is Northerly or Northeasterly, such a ship should be steered the Southward. As the wind at W. veers toward N. W. and N., the vessel would come p, and at last make a Westerly course, ready to take advantage of the E. wind at the etting in of the next revolving gale.

A vessel at New York and bound to Bermuda, at the time when a revolving gale is assing along the American coast, should not wait in port for the Westerly wind, but il as soon as the first portion of the gale has passed by and the N. E. wind is veering ward the N., provided it should not blow too hard. For the N. wind will veer to the Westward, and become every hour fairer for the voyage to Bermuda. A great number gales pass along the coast of America, following similar tracks, and in the winter ake the voyage between Bermuda and North America very boisterous. These gales, y revolving as extended whirlwinds, give a Northerly wind along the American conent, and a Southerly wind on the whirlwind's opposite side far out in the Atlantic. sailing from North America to Bermuda, it is desirable, therefore, to keep to the Westward, affording a better chance of having a wind blowing at N. instead of one at , as well as because the Gulf Stream sets vessels to the Eastward.

When vessels from Barbados or its neighboring West India Islands, sail to Bermuda a direct course, they sometimes fall to the Eastward of it, and find it very difficult to ake when Westerly winds prevail. They should, therefore, take advantage of the

trade-wind, to make the 68° or 70° of longitude before they leave the parallel o 25° N.

On a vessel leaving England for Bermuda, instead of steering a direct course, or fol lowing the usual practice of seeking for the trade-winds, it may be found a better wa on the setting in of an Easterly wind, to steer W., and if this wind should veer by the toward the W. to continue on the port tack, until by changing, the vessel could lie i course. If the wind should continue to veer to N., and as it does sometimes to the Eas ward of N., a vessel on the starboard tack might be allowed to come up with her hea to the Westward of her direct course. On both tacks she would have sailed on curve lines, the object of which would be to carry her to the Westward against the prevailin wind and currents.

There is reason for believing that many of the revolving winds of the winter seaso originate within the tropics, and that vessels seeking for the steady trade wind, even fa ther S. than the tropic, at that period of the year will be often disappointed. How nea the equator revolving winds originate in the winter season, is an important point not ye sufficiently observed. The quickest voyage from England to Bermuda, therefore, ma perhaps be made by sailing on a course composed of many curved lines, which canne be previously laid down, but which must be determined by the winds met with on th voyage.

THE WINDWARD LESSER ANTILLES—BARBADOS TO BARBUDA INCLUSIVE.

Barbados. BARBADOS is the most Easternmost island of the extensive group termed the A tilles, Caribbee, or Windward Islands, consequently the first landfall of vessels procee ing from Europe to the islands to leeward of it, or to the ports on the Northern shore Venezuela and New Grenada. Its form is triangular or pear-shaped with the point end to the N. about seventeen and a half miles in length, N. N. W. and S. S. E., a eleven miles in its extreme breadth, between the E. end of the island and Bridgetown.

In the absence of any accurate nautical survey of Barbados, we are unable to give correct detailed account of its shores, but enough for the purposes of general navigatio Compared with the neighboring group the island may be termed of moderate heig with gently undulating hills; between the E. and S. points the ground is level, slopi gently to the sea; while from the E. to the N. point the outline is broken and irregula In clear weather the highest hills may be seen from eleven to twelve leagues.

N. E. Coast. NORTHEAST COAST.—From Kitridge Point, which forms the E. end of Barbad the coast trends N. W. by W. to the N. point, and is formed of rocky cliffs varying fro fifty to eight hundred feet in height, intersected and skirted by sandy bays and beache which are protected by a coral reef, always breaking, and which encircles almost t whole island; in this space the reef appears to extend to not more than from a fourth a half mile from the shore.

The E. end of the island is about fifty or sixty feet high, and continues low and flat f about two miles inland, when it becomes more elevated, and at three miles W. of t point is Moncrieffe Hill signal post, which stands five hundred and sixty-four feet abo the level of the sea. At three or four miles to the N. W., the island begins to rise rugged hills abruptly from the shore, and at eight miles from the N. end, and abo midway between the Eastern and Western sides of the island, is Mount Hellaby, whi attains the height of one thousand one hundred and forty-five feet. The high ridge te minates about four miles from the N. point of the island in a remarkable hill, called Pi Teneriffe, two hundred and sixty-eight feet high, which at a distance appears almost d tached from the shore.

North Point. NORTH POINT.—The coast from Pico Teneriffe is composed entirely of low rugg cliffs from forty to sixty feet in height, and sweeps round the N. end of Barbados, in semicircular, to Harrison Point on the opposite shore, and between these two points t island is about four and a half miles broad. For the first mile from the N. point inla the ground is level and open, and thence it commences to rise gradually to the Sou ward. The reef in this space approaches the shore to within half a mile.

W. Coast. WEST COAST.—From Harrison Point to Pelican Point, at the N. end of Carlisle B the W. coast of Barbados trends S. by E. twelve and a half miles, and the shore is ge erally low, but a short distance inland it begins to rise in distinct successive terraces, terrupted by ravines, toward the central ridge. These terraces may be traced all t way from Bridgetown to near Harrison Point, where they terminate in a bold bluff. T reef still skirts the shore, but bcomes broken off at Harrison Point, where it extends o to the distance of a mile and is dangerous.

Speight's Town. SPEIGHT'S TOWN, the most considerable place in Barbados next to Bridgetow is situated about three and a half miles to the Southward of Harrison Point, and off there is a temporary roadstead, which is now unfrequented, as it is found more con

ent to ship the produce in droghers or small craft, and convey it to the vessels in arlisle Bay.

JAMES or HOLE TOWN, a small village about four miles farther to the Southward, s also a roadstead off it for small vessels, and it is used for the same purpose as that Speight's Town. *James or Hole Town.*

PELICAN and HALF-ACRE SHOALS lie about four miles to the Southward of ole Town, one mile and a half from Pelican Island, and about a mile off shore. They e nearly dry, and the depth is seven fathoms within a cable's length outside them. lican Island, or Bird Rock, is a small, low, rocky islet, with a small round building on lying about one cable and a half from the shore, within the reef, and with it forms the end of Carlisle Bay. *Pelican and Half-Acre Shoals.*

CARLISLE BAY, in which is situated Bridgetown, the capital of Barbados, lies be- een Pelican Island and Needham Point, which bear from each other N. N. W. ½ W. d S. S. E. ½ E., distant a mile and a half, and is a little more than half a mile deep. om Needham Point, which may be easily known by the forts at its extreme end, a oal rocky spit extends nearly half a mile to the Westward, and a red buoy, with staff d ball, is moored on it in five fathoms water, with the Garrison clock in line with the angle of Beckwith fort E. ½ N., and the outer house on Pelican Point, N. N. W.; but the buoy frequently breaks adrift, vessels approaching from the Eastward should not oss the spit until they have brought Pelican North Point in one with the E. end of elican Island bearing N. by W. ¾ W., and when the flagstaff of Fort Charles, on the int, is in one with St. Ann's castle, they can haul to the Eastward, and anchor as con- nient. The bottom is foul and uneven in many parts, but an anchor with a chain cable seldom lost. *Carlisle Bay.*

In the Northern part of the bay there are two rocky knolls, having as little as twenty- o feet water on them, but they will be avoided by not standing farther in that direc- n than to bring St. James church N. E. by N., and Beccles Spring mill (standing on e shore, in the centre of the bay) E. ½ S. The leading mark for the spit off Needham int clears the knolls, leaving them to the Eastward; and the tower of St. Ann's castle one with the centre of the dockyard storehouses, S. E. ½ E., leads between them, and st outside the foul ground off the S. W. end of Pelican Island.

Water may be readily obtained in Carlisle Bay, but firewood is scarce and expensive. *Water.*

NEEDHAM POINT LIGHT.—A fixed light is exhibited at the Southern part of rt Charles, on Needham Point. The light shows red when bearing to the Northward E., and as a white light when to the Southward of E. The white light is visible, clear weather, at the distance of from eight to ten miles, and the red light at three les. *Needham Point Light.*

SOUTHWEST COAST.—The coast from Needham Point runs nearly in a straight e E. by S. four and one fourth miles to Oisting Town, and thence it bends gradually and to the S. E. for a mile and a half to the extreme S. point of Barbados, forming sting Bay, in which there is temporary anchorage for small vessels in from seven to fathoms; the clearest ground will be found with a mill on the shore near the head the bay, bearing E. by N. or E. N. E. In hauling up for this anchorage, take care to e a good berth to the S. spit, which extends W. S. W. a long mile from South Point. e whole of this shore is flat and low, but at a short distance from it the land rises mewhat in terraces, and, at the distance of a mile and a half, Adams Castle Hill attains e height of four hundred and five feet. *S. W. Coast.*

SOUTHEAST COAST.—From South Point to Kitridge Point, the S. E. side of Barba- s trends about N. E. nine miles, curving outward a little about midway. The shore low and flat, and composed chiefly of bold rocky cliffs, from fifty to sixty feet high; in me places, however, the cliffs have been undermined by the sea, and fallen in huge asses on the beach beneath. This is the most dangerous part of the island, for at about ree miles from Kitridge Point the reef extends out a good mile from the shore (some thorities say three miles), and is called the Cobbler Rocks (Les Savetiers, *French;* Los pateros de viejo, *Spanish*), the name of Cobbler being given to a remarkable bold part the cliff at this spot. *S. E. Coast.*

SOUTH POINT LIGHT.—A light-house ninety feet high, and painted in alternate d and white bands, each being seven and a half feet wide, stands two hundred yards hore of South Point, and its base is fifty-five feet above the level of the sea. The light thus one hundred and forty-five feet above the mean sea level, and revolves once in ery minute; after an eclipse of twelve seconds, it again appears, gradually increasing twenty-four seconds to its greatest brilliancy, and then in twenty-four seconds more is ipsed. From the light Seawell Point bears about E. N. E. ½ N., and Needham Point, N. W. ¾ W; it is thus only seen from a vessel between the bearings of W. S. W. ½ S. und Northerly), and E. S. E. ¾ E., and is visible at the distance of eighteen miles. *S. Point Light.*

At Barbados there is a rise and fall of tide of about two feet, but it is uncertain and regular. *Tides.*

Vessels from Europe or from the Southeastward, when within two degrees of the me- *Directions.*

ridian of Barbados, should on all occasions endeavor to keep on the parallel of South Point, or in lat. 13° N. In these latitudes, where the atmosphere is in general so clear and favorable (except in the rainy season, when the islands are but seldom visited), this may be easily accomplished by observing at day-dawn and evening twilight, the meridian altitudes of stars N. and S., and which, with a little practice, may be depended upon generally to within five or six miles. This is a means so simple, and yet so neglected that we cannot too strongly bring it to the notice of those navigating any part of this sea where the currents are strong and variable. Observations for longitude may at the same period be equally depended upon to within very narrow limits.

It has frequently been observed, that at the distance of seventy or eighty leagues to the Eastward of the island, muddy discolored water is met with, having the appearance of soundings, most probably caused by the debris thrown out of the great rivers on the adjacent coast, and it is said to afford a means of checking the longitude; it will be prudent, however, not to put too much confidence in this remark. At the same time we warn the mariner who has only a single chronometer, not to rely altogether on its results, as it is seldom indeed that a watch will retain its original rate on being subject to the increased temperature within the tropics. The position in latitude should therefore be most carefully watched, and if there be any doubt about it, the island should not be sighted during the night. If South Point light has been made from the E. or S. E., care should be taken not to approach the shore within three miles, until it bears N. E., when a course may be shaped for Needham Point.

When approaching Barbados from the Northward, keep if possible well to the Eastward of the island, in order to pass to windward of it, and then run down and make it on the above parallel. Should the island be sighted in the night from the N. E., the light on South Point will not be visible until it comes open of Seawell Point, bearing W. S. W. ½ S., and if kept to the Westward of this, bearing well open of this point, it will lead clear of the Cobbler Rocks.

Should vessels coming from this direction fall to leeward and be obliged to pass under the W. side of the island, they should give the reef off the N. W. point a berth of two miles, and the shore must be carefully approached. It is said that soundings extend some short distance outside the reefs, and that a depth of not less than ten fathoms will avoid them; but as before stated, there is no good nautical survey of the island. In approaching Carlisle Bay from the Northward, do not haul round Pelican Island until the tower of St. Ann's castle is in one with the centre of the dockyard storehouses, bearing S. E. ½ E.

At Night. Vessels bound to Carlisle Bay from the Southward, at night, after passing the revolving light on South Point (giving the point a berth of at least two miles) may haul up W. by N. ½ N. for the bay, when they will soon make the red light on Needham Point. Keep the lead going, gradually nearing the point, and as soon as the light shows white, luff up into the bay and anchor.

Currents. In approaching the bay from the Northward, as soon as the light is seen, bring it on an E. S. E. ½ S. bearing, which will clear the shoals off Pelican Point.

When beating up to Barbados from the Westward, endeavor to keep directly under the lee in order to avoid the current which generally sets strong to the Westward. Sometimes, however, the current varies its direction to N. W., and even as far as N., particularly between the island and Tobago, and its rate is chiefly governed by the strength of the wind; in the rainy season it is sometimes scarcely perceptible.

Winds and Weather. January is generally dry at Barbados; the breeze sets in early, and it is altogether one of the finest and most healthy months of the year. February partakes of the same character. March and April are the driest months. May is also dry in the early part, but rain sets in toward the end. In June the breeze is light, the clouds are heavy, and thunder and lightning set in with frequent showers. July is most oppressive, the regular trade wind is interrupted, and breezes frequently prevail from S. W. and W.; rain descends in torrents. August and September are very similar, with calms and light airs from the Southward. October, toward the middle, becomes drier, and the refreshing trade-wind sets in after thunder storms. November is still rainy, the winds variable, and not unfrequently from the S. W. December has almost daily slight showers, but the month is generally cool, and the trade-wind becomes steady.

Grenada. GRENADA.—The appearance of this island on approach shows a gradual rise of hills from the shore to mountains of nearly three thousand feet about the centre, resembling, in its principal features, other of the West India volcanic islands, but dissimilar to those of calcareous formation, such as Barbados, Barbuda, or the Bahamas. The island and rises from a bank on which are the Grenadines, and most likely St. Vincent also, and which extends to the S. W. of the island, and probably joining the Margarita Bank. The Eastern edge, or hundred-fathom line, is at an average distance of seven miles from the E. coast of the island and the islets to the N. of it; the bank has about twenty-seven fathoms near the edge, decreasing to about twenty fathoms at a half to a mile from the shore. The Western edge is much nearer, averaging only two thirds of a mile from the island.

It will be seen on looking at the chart that there is but a narrow vein of deep water m all the Southern harbors or inlets of Grenada to the clear bank outside, and that nks on which are less than five fathoms extend off the adjacent point; this being the neral feature of all, increases the difficulty of taking ships into them, as in almost all ses, from the wooded appearance of the island, no natural leading marks can be given, d as the courses in are principally circuitous, it will be necessary for the utmost cau- n to be used in navigating them.

Winds.

Gales are of rare occurrence at Grenada, but strong trade-winds, almost approaching em in strength, sometimes blow for weeks, detaining the coasting vessels in port. The nal trade-wind varies from N. E. to S. E., and there is no land wind. Occasionally, en the trade-wind falls, calms and light airs from the Westward will be felt on the side of the island. The island is nearly free from hurricanes, two only having oc- rred since the year 1760, viz., 12th August, 1768, and 10th and 11th October, 1780, d were not then particularly violent.

Tides and Currents.

Off the bank to the Southward of Grenada the current generally sets two knots an ur to the Westward. On the bank it is checked by the ebb-tide, which sets round the W. point of the island and along the S. shore, but which is only felt for two or three urs, while the current and flood-tide run for eight or nine hours to the Westward. Grand Bacolet, on the S. E. side of the island, where the ebb scarcely reaches, the rrent, united to the flood-stream, runs down strongly for six hours, and weak for two urs; while the ebb-tide overcomes the current only for four hours. During the wet son, from June to the fall of the year, the ebb is often entirely overcome by the cur- t, probably caused by the water discharged from the South American rivers. rcely any tide or current is felt under the lee of Grenada, and if any, it is quite un- tain, except close along shore, where it is also weak. The water, also, in the South- harbors, is unaffected by the tide.

Directions.

Vessels approaching Grenada from the N. E. must guard against the effect of the atorial current, or indraught into the Caribbean Sea, which, meeting the N. E. shore South America, becomes concentrated, and passes Grenada with accelerated force; will be felt slightly running across the Atlantic, if far S., but when in the longitude Barbados will generally be found setting to the W. N. W. at from one to sometimes ee miles an hour, for which an allowance must be made. Having made the N. E. t of the island during daylight, and bound to St. George's in the S. W., a vessel may s through either of the channels N. of Grenada, or run round its S. shore, and work from the S. W. point to the town. The three main channels between Grenada and riacou are deep, safe, and cannot be mistaken; they are always used by those well uainted with the navigation.

The first channel, commencing from Grenada, is between Levera, a conical-shaped nd, three hundred and forty-three feet high, lying close off the N. E. point of Grena- and the London Bridge, a remarkable rock, seventy-five feet high, with a hole in it, two smaller rocks near, with a shallow two cables to the S. W. of it. A bank of than ten fathoms surrounds these rocks, and E. ¾ N., distant one mile from them is ank with eight fathoms over it. In taking this channel, steer midway between the ks and Levera Island, when the least depth of water will be seventeen fathoms.

The channel N. of London Bridge Rocks, or between them and Isle de Caille, is clear, carries twenty-three fathoms close to the latter. In passing through, give the ndon Bridge Rocks a berth of more than three cables.

The channel between Diamond Islet or Kick'em Jenny and the islets S. of the Island Carriacou is five miles wide, clear, and carries from twenty-five to thirty fathoms over bank. A shoal with sixteen feet over it lies W. by ½ S., four cables from the Bona- te Rocks, at the S. end of the Carriacou group, which is the only danger to be ided.

After passing through either of the above channels, the W. coast of Grenada may be roached to within half a mile, until off the town of St. George, the only danger near eh, in a vessel of more than eighteen feet draught, is the Annas Bank, extending a the S. point of entrance to the harbor, which will be avoided by not going farther he Southward than to bring Fort George Point on with the S. end of the military pital, bearing E. ⅓ S., until the harbor-master arrives on board; or a vessel may ad Fort George Point at the distance of two cables and anchor. Should a vessel pre- to run round the S. end of the island, keep from one and a fourth to two miles from coast, to avoid the shallow ground which extends off all the Southern points of the ad, until near the Porpoise Rocks, off Prickly Point, which may be passed at the dis- e of half a mile, but in rounding Glover Island and Saline Point in a heavy ship, p fully one mile off, to avoid the chord of the bank of twenty-one feet between the nd and point, and the Seringapatam Shoal. After passing Saline Point, which is one dred feet high, Mount Moritz open of Eloy Point will clear all the shoals, or keep bout the ten-fathom line; the eye will assist, as under that depth the bottom here is ly seen.

St. George's Harbor.

ST. GEORGE'S HARBOR.—St. George, the principal town in the island, stands a point of land about one hundred and twenty feet high, which forms the harbor c monly called the Carénage, in a bay of the same name, between St. Eloy Point on N. and Long or Goat Point, two and a half miles to the Southward of it. The h dred-fathom line of soundings W. of St. George's Point is only one mile and a fe from it, and the bank off the town is intersected by veins of deep water. It affords, h ever, excellent anchoring ground, but it is necessary to guard against the inconvenie of anchoring in the deep water holes. A ground-swell sets in here from the month November to March, sometimes causing a swell in the carénage. On the 28th and 2 November, 1858, the water was forced into the market square, and some of the stre were filled with sand. This ground-swell takes place in the same month throughout the islands. The harbor, which is small but secure, is entered by a channel of d water, carrying in some places from twenty-three to eleven fathoms to the anchor Vessels of the largest draught may therefore enter the harbor. The harbor-mas acts as pilot.

Annas Shoal.

The ANNAS SHOAL is about one third of a mile in extent, with an average de of four fathoms on it. There are, however, shoaler patches with nineteen and twe feet over them. The N. W. patch is half a mile from Fort George Point. The S. treme of the point on with the S. end of the military hospital E. ⅓ S. will lead less t a cable to the Northward of it; and the right extreme of Fort George Point on w the Governor's house will lead to the Southward of the other shoal patches.

Supplies.

Fresh beef and vegetables can be obtained, and an abundance of water from a p on the E. side of the carénage. Wood is scarce and dear. The West India Mail C pany have a supply of coals here, which are occasionally spared for about two pou a ton.

Directions.

Having Mount Moritz, the first high hill from Moliniere Point, open of St. E Point, bring the extreme of Fort George Point on with the S. end of the military ho tal, a large building on the first ridge inland E. ⅓ S. This mark will lead rather than a cable to the Northward of the N. W. twenty-foot patch of the Annas Shoal careful, therefore, not to open any part of the hospital to the Southward of the p When the square chapel tower with four turrets is in line with the spire of the ch N. E. by E. ¾ E., haul up quickly for the S. end of the sand in Martin's Bay, until end of Martin's wharf comes on with the extreme of the Ballast Cliff, a rocky point cable beyond it; keep on this line for the short distance of about a cable, or until buildings in the outer bay are shut in with Fort George Point; the course will the a curve to the carénage.

Sailing vessels from the Southward, whose draught will admit of crossing the A Shoal, should make a tack into Grand Anse Bay, to take advantage of the flaws of which occasionally come from the S. E., and which enable them to lay well up for carénage.

Anchorage.

Anchor about a cable's length off the coal wharf, or in the middle of the carén If intending to make any stay, it will be requisite to moor open hawse to the S. W there is but little room to swing at single anchor. In leaving this harbor, it wil necessary to place the ship's head in the right direction before starting, and in a v of twenty-six feet draught the elbows of the channel should be buoyed.

Tides.

The best anchorage in St. George's Bay for a line-of-battle ship is with Fort Ge flagstaff in line with the S. end of the high wall of Fort Frederick, the highest of forts on Richmond Hill, about E. ⅓ S., and Boismorice Point N. ½ W., in seven fath a short half mile from the shore. Small vessels may anchor farther inshore, and al Grand Anse and Martin's bays.

It is high water, full and change, at the carénage in St. George's Harbor at 11h. 4 springs rise a foot and a half, and neaps eight inches. An extraordinary high tide rise two and a fourth feet.

Grand Mal Bay.

GRAND MAL BAY.—St. Eloy Point, about four hundred and twenty feet hig the next N. of the town, with a reef extending a cable from it; no other reef exists this to the N. W. part of the island, and the shore may be approached close all the The Northward of St. Eloy Point is Grand Mal Bay, where the water is smooth affords good anchorage on either side of a vein of deep water in the middle of the In crossing this bay, vessels are liable to sudden and heavy gusts of wind, and mo less in all the Western bays.

Anchorage.

There is good anchorage on a five-fathom bank, extending from the point bet Beau Séjour and Perseverance bays, by keeping the S. W. point of the island op Boismorice Point. The bottom may be seen, and a vessel may conveniently land or produce from either bay.

Goyave or Charlotte Town.

GOYAVE or CHARLOTTE TOWN is two and three fourths miles to the North of Black Point, the N. point of Perseverance Bay, with anchorage two cables fro shore in seven fathoms S. W. of the village.

GRAND PAUVRE OR ST. MARK'S.—The anchorage in the bay of St. Mark

village of that name, is not so good as that off Goyave and the bays S. of it. It is posed to N. winds; but as they seldom blow strong, vessels often anchor here in ten eleven fathoms, about two and a fourth cables from the shore. *Grand Pauvre or St. Mark's.*

To the N. W. of St. Mark's are Cayfish and Du Quesne bays, where anchorage will be nd close inshore. Between the latter and St. David Bay the bank extends a little off, vessels may anchor in seven fathoms three cables from the shore. *Anchorage.*

SAUTEUR'S OR ST. PATRICK'S BAY.—To the Eastward of St. David Point, the W. extreme of Grenada, is Laurant Point, with shallow ground extending off both. mile S. E. from the latter is the village and bay of Sauteur's or St. Patrick, with a nt which shelters small boats only. The extremity of the point is a high perpendic- r cliff, where it is said the last of the Caribs, in their despair, took a final leap into sea. The hill was therefore called Le Morne des Sauteurs, or the Hill of the apers. *Sauteur's or St. Patrick's Bay.*

IRVIN'S BAY is the principal anchorage on the N. side of Grenada, where about half of the annual crop of the island is shipped. Vessels generally moor on a seven- hom bank extending from the shore, with open hawse to the N. E. It is recom- nded to drop the outer anchor with the S. end of the island of Levera in line with the extreme of Grenada, and to place the starboard or inshore anchor to the South- tward, with about seventy fathoms on the outer and thirty fathoms on the inner chor; the ship will then be about four cables from the shore. This anchorage is ex- sed, and the wind occasionally blows hard from the N. N. E.; it is not, however, dan- rous in the spring of the year, the holding ground being good. Droghers and small sels may take shelter in Levera Bay, under the lee of the island. *Irvin's Bay.*

SANDY AND GREEN ISLANDS.—The anchorages under these islands are safe and y of access, and vessels might load from the shipping place at Levera, but as the lee e sets strong round Bedford Point, and the trade-wind tends to increase it, there uld be considerable delay in loading vessels at either of these anchorages. *Sandy and Green Islands.*

The coast from Levera to Granville Bay is an open sandy shore with shallows off it, posed to the whole force of the trade wind, and on which the sea breaks, and in strong eezes everywhere within the five-fathom line, as it does generally on the whole of the and S. coasts. *The Coast.*

GRENVILLE BAY and village, on the E. side of Grenada, is the second place of portance on the island, and vessels of four hundred tons at moorings load here. ere is much difficulty and danger in entering this bay, and sometimes a protracted ay in leaving it. Vessels lie under cover of the end of an outer reef from the open lantic, until lightened to twelve feet draught, and in the same place while loading m above it. Within the inner reef it is smooth and safe for vessels of ten feet, but it necessary to warp out through the channel between the reefs for a long half mile to , which requires the finest weather, with the wind well to the Northward, but dro- ers of thirty tons can work out. *Grenville Bay.*

There are no distinct marks for entering this bay: only two small poles a few feet h are erected, which can only be seen with difficulty by the pilots.

In coming in from seaward for Granville Bay, it will be necessary to guard against ng set to leeward by the current. Here it runs so strong to the S. W. that a vessel ssing the bay will have to go round the island and again come in from the N. E. The eam striking Grenada on its Eastern face, turns along shore both to the N. W. and S. , and which at this point is not overcome by the tide. *Caution.*

ST. ANDREW BAY.—At the S. end of Grenville Bay is Marquis Island, inside which St. Andrew Bay and village, the latter consisting of a few small huts. *St. Andrew Bay.*

The mark for going in between the shoals on either side is the Western extreme of arquis Island on with the N. of two houses or stores on Grenville Bay beach, N. W. N.; anchor midway between the reefs, with the W. end of the island N. It is difficult get out of this bay, and it is hardly fit for anything but droghers.

From Great Bacolet Point S. of St. Andrew Bay to St. David Point, are several small ys which are used by droghers for the shipment of the produce from the adjacent es- tes; but at times this is effected with difficulty, for this part of the island is exposed, d the bays more or less open. *The Coast.*

ST. DAVID HARBOR is the first of any importance on the S. coast, in coming from e Eastward. The entrance is formed by St. David Point, and the reef extending from e point immediately to the Westward of it; from the latter a dangerous ledge extends the Southward, beyond St. David Point. The harbor is capable of affording accom- dation for vessels of moderate draught, and temporary anchorage will also be found little Bacolet Bay to the Westward of the reef; the latter is easier of access. *St. David Harbor.*

Water may be obtained here from the river of Little Bacolet, which empties itself se to the anchorage. *Water.*

Bring a prominent building, a church about halfway up the hills, to bear N. ½ E., d Mount Sinai, the highest Southern mountain, N by W. ¾ W.; the square cliffy int of St. David will then be recognized, which, with Little Bacolet Point, forms a *Directions.*

larger indentation than the bays to windward of it. In entering the harbor, steer midw between St. David Point, which is foul, and the reef extending from Middle Point. I sailing vessel keep sufficiently near the weather shore and be in readiness to anch should the flaws of wind come too much from the Northward, then warp in and anch E. of Middle Point in five and a half fathoms. In leaving, it will be necessary to ha the wind to the Northward of E. and close with the weather shore before standing out the harbor.

Bacaye. BACAYE.—To the Westward of Little Bacolet Bay is the harbor of Bacaye. It li within the projecting point of Westerhall, and affords excellent anchorage for small v sels in four fathoms. It is, however, necessary to warp out in fine weather, as far windward as the N. bank of Little Bacaye, so as to weather the rocks off Westerh Point. Little Bacaye has a hole of deep water with a sheltering reef.

Caliveney Harbor. CALIVENEY HARBOR is a small basin about half a mile in extent, E and W., lyi to the Westward of Bacaye, end separated from it by a narrow neck of land. The e trance will be known by Westerhall Point trending to the Eastward, with light-color cliffs on the S. E. side, and having three separate hills on it. Fort Jeudy Point, seve feet high, to the Westward, stretches well to the Southward, and has a detached ro off it.

Directions. Having made out the entrance of the harbor, steer N. W. midway between the sh lows at the S. extreme of Westerhall, and Eastern part of Fort Jeudy Point, through t lane of deep water, until within the basin, then anchor in the Eastern part in three a a half or four fathoms. It will be necessary t warp out, unless the wind should be fr the Northward.

Port Egmont. PORT EGMONT, to the Westward of Fort Jeudy Point, is one mile deep and one ble and a fourth wide, carrying eight fathoms of water to the upper part, where there an inner harbor or lagoon, landlocked, having four and five and a half fathoms, w twenty-one feet at the entrance; and where vessels may lie hidden from seaward. the head of this harbor the French, with three thousand troops, under the Count D'E taing, landed in the year 1779.

There is a secure little harbor under Adam Island, but it is difficult to get out of the course being S. E.

Directions. Bring the E. extreme of Isle Gary on with the extreme point of the W. side of t harbor, and a hill to the Northward of it, which will lead to the entrance of the harbo when the land to the Eastward of Fort Jeudy Point is shut in, steer more to the Nor ward, striking the weather bank, and should the wind be so far to the Northward as N. be prepared to anchor quickly when the flaws take the vessel and warp in. There is room to work in or out of this harbor, but a vessel will be able to sail in with the wi to the Southward of E., or out with the wind to the Northward of it.

Clark's Court Bay. CLARK'S COURT BAY.—The entrance to this bay is formed by Caliveney and H islands, and the shoals and reefs extending from them. It is larger than Port Egmo and capable of holding a large number of vessels, and would present no difficulty in tering under steam were the shallows buoyed. The anchoring ground is about a m deep and three cables broad, over seven and eight fathoms muddy bottom. The pass is through a narrow vein of deep water between the banks, of two to four fathoms on ther side. Here vessels may lie quite secure even in a hurricane. There are three sho in the bay, one in the N. E. and one in the S. W., both nearly dry; and one with six f over it in the Northern part.

Directions. Being to the Eastward of Caliveney Island, approach it with caution and bring t two Eastern points of Hog Island in line, taking care not to go to leeward of this ma When the S. extreme of Caliveney Island is in line with Fort Jeudy Point, haul up m way between the reefs, or close with the weather shore, and anchor in the bay wh convenient, avoiding the shoals before mentioned.

Anchorage. There is good anchorage for small vessels between Hog Island and the main in fo fathoms: the channel is narrow, but may be taken in fine weather.

Mount Hardman Bay. MOUNT HARDMAN BAY is also a safe anchorage, but the channel to it is crook and tortuous. It may, however, be used by small vessels by diverging from Hog Isln track, and steering round the reefs by the eye, the water being smooth.

Prickly Bay. PRICKLY BAY lies to the Westward of Prickly Point, the most Southern of G nada; it is easy of access, and affords good temporary anchorage for vessels of eight feet draught. There is a shoal toward the head of the bay not very distinct. To t Westward are True Blue and Hardy bays, which may be used by vessels of fifteen f draught.

Directions. Steer a fourth of a mile to the Southward of the Porpoise Rocks, and haul up Prickly Point, passing it at a cable's length over the bar in twenty-five feet, and anch where convenient, avoiding the shoal at the head of the bay. A little to the Westw of the track in there is some shoal ground with twenty-one feet of water over it.

The Porpoises. THE PORPOISES are a cluster of rocks about a cable in extent, three feet above water, steep to, and lying S. S. E. ¼ E., five eighths of a mile from Prickly Point, E.

a mile and three fourths from the S. end of Glover Island, and rather more than one ghth of a mile within the ten fathom line of soundings.

GLOVER ISLAND.—At a mile and a fourth S. E. from Saline Point, and five eighths a mile from the shore, is Glover Island, forty-one feet high. Small vessels will find nvenient anchorage under its lee, in order to await a tide when working to windward ong the S. shore. *Glover Island.*

SERINGAPATAM SHOAL lies S. W. ¼ W. three and a half cables from Saline or e S. W. point of Grenada, with twenty-one feet of water over it. This shoal is about e sixth of a mile in extent, with six or seven fathoms around it. The sea is always ugh over it. Vessels of sixteen feet draught may pass Saline Point at a distance of e cable. *Seringapatam Shoal.*

To the Westward of Seringapatam Shoal, at eleven and a half miles W. by N. ¾ N. om Saline Point, are some shallow patches with only twenty-nine feet on them.

LONG POINT SHOAL.—W. four and a half cables from Long or Goat Point is a angerous shoal, with only two feet of water over it, and not always seen. The E. ex- reme of Fort George Point on with the government-house, a large brick building on e first ridge N. E. by E., or the extreme of St. Eloy Point on with Mount Moritz, the rst high hill running up from Molinière or Moulinier Point N. E. ¾ N., will lead to e Westward. *Long Point Shoal.*

There is good anchorage on the bank extending to the S. W. from Long Point Shoal, ther more than a mile to the N. E. of Saline Point, in five or six fathoms, a long half ile from the shore. This anchorage is the resort of the American whaling vessels in ad weather, or for the purpose of boiling oil during the season from February to ay. There is a hole ten to thirteen fathoms deep nearer the shore, about three fourths f a mile in extent. *Anchorage.*

The GRENADINES are a chain of about one hundred islands and rocks, extending r sixty miles between the islands of Grenada and St. Vincent. They are of moderate eight, none exceeding eleven hundred feet; and free from outer dangers as to render pproach safe either by day or moonlight nights, and there are several channels be- ween them. The Eastern edge of the bank or one hundred fathoms line of soundings ten miles from the islands, with depths between ranging from ten to twenty-five fath- ms, while the bank to the Westward does not extend near so far. *The Grenadines.*

DE CAILLE AND RONDE ISLETS.—At rather more than one mile and a half to e Northward of the London Bridge Rocks, off the N. W. end of Grenada, is Isle de aille, two hundred and forty feet high, and close to the Northward of it Isle Ronde, ve hundred and twenty feet high. There is a narrow channel between them having ree fathoms of water, but which breaks during strong winds. There are passages be- ween the Sister Rocks, to the Westward, and also between them and Ronde Islet. *De Caille and Ronde Islets.*

Between Ronde and Diamond islets, or Kick'em Jenny, six hundred and sixty-eight et high to the N. of it, is a passage less than half a mile wide, carrying seven fathoms e least water. In the centre of the channel there is a deep hole with thirty-nine thoms over it. The tide runs strong through this channel. Les Tantes, two hundred nd fifty feet high, lies one mile and a half to the Eastward of Ronde and Diamond lets, free from hidden danger, and may be passed close to on either side. The chan- el between them and Ronde Islet is deep and clear, but the tide being strong, it is not ecommended.

Anchorage, with the usual trade-wind, for small vessels, will be found under the lee f Isle de Caille, in the S. and N. W. bays of Isle Ronde, and on the W. side of La ante, in convenient depths. *Anchorage.*

LARGE and FRIGATE ISLANDS are the largest of a number of islands and ocks, which, with Saline, White, Mushroom, Rose, and the Bonaparte, form a group at e S. end of Carriacou. Between the Bonaparte Rocks, at the S. extreme of the roup, there is a narrow channel ten fathoms deep, but a rock almost dry lies a little to e Northward of the fairway, which renders it unfit to pass through. The channels be- ween Large Island, and the Bonaparte Rocks to the Southward of it, has a shoal retching to the Northward from the latter, and one with three fathoms over it half a ile to the N. W. The tide here runs with great strength, which renders it dangerous use the channel, or to approach the rocks on the Eastern side, unless in cases of ex- eme necessity. A rock one foot dry lies one cable and a fourth from the W. point of arge Island. *Large and Frigate Islands.*

FRIGATE CHANNEL, between Large and Frigate islands, is narrow, but clear, hich may be used by passing to the Southward of the Rose Rock, thirty-two feet high. here is also a channel carrying five fathoms between the Rose and Frigate islands. *Frigate Channel.*

SALINE CHANNELS.—That between Frigate and Saline islands is seven cables ide, carrying eighteen fathoms, and may be used from E. to W. by any size ship. here is also a narrow channel with six fathoms in it Northward of Saline Island, be- ween it and Cassada Rock and White Islet. Also a channel eight to ten fathoms deep, n the N. side of Cassada Rock and White Islet, and the reef joining them. In using *Saline Channels.*

this channel pass between White Islet and the Great Mushroom. The latter may b passed close to on the S. side. There is a narrow passage to the Northward, betwee the Great and Little Mushroom, but rocks above water lie off the S. W. point of Carria cou, at the distance of one cable and a half. The above channels can be taken onl from E. to W. with the usual trade-winds, except by steamers. Small vessels havin local knowledge, with the assistance of the tide, may work through them. A rock on foot out of water lies N. W. two cables from the N. W. point of Frigate Island.

Anchorage. Anchorage for small vessels, in five fathoms, will be found in the N. W. bay of Larg Island, one cable from the shore; also, on the N. W. side of Frigate Island, in fiv fathoms. Between Saline Island and Cassada Rocks and reefs there is good shelter fo small vessels, taking care not to be set to leeward on White Islet.

Carriacou. CARRIACOU, the largest of the Grenadines, is six and two thirds miles in length in a N. E. and S. W. direction, and two and one third miles broad. The Eastern and Southern sides are more or less bordered by dry reefs, which protect shallow anchor ages inside them. The Western side is clearer and deeper, and has two good anchor ages for large vessels. The island exports a small quantity of sugar and cotton, and carries on a small trade with Grenada and Trinidad, but depends mainly on the former for its own supplies.

Wood and Water. Wood is plentiful at Carriacoa, but water is scarcely to be had, as there are no run ning streams, and the inhabitants have to depend on rain for their supply.

Tyrrel Bay. TYRREL BAY, formed by the extension of the S. and S. W. points of the island affords anchorage for large ships in from five to fifteen fathoms, in the Northern part o the bay. Small vessels can anchor farther in, in two fathoms. A reef extends to the Northward from the S. side of the bay for nearly two cables, and a nine-foot shoal lie in the Northern part, both within the line of anchorage for large ships. Small vessel can pass between and above them almost up the beach. In the Northern part of thi bay inside the low lands, is a lagoon nearly half a mile long E. and W., with from fou to twenty-six fathoms of water in it. The entrance to it, called the carénage, is throug a lane of deep water. The extreme of Carriacou, on with the centre of Diamond Islet in five fathoms, will place a vessel in the fair way of the channel; but it will be neces sary to warp in by the eye, as the channel is only sixty yards wide. Vessels of eight een feet draught, if not too long, might manage to get in the outer part of the lagoo for careening or safety in a hurricane. The land, however, is swampy, and mosquitoe plentiful.

Sister Rocks. The SISTER ROCKS, seventy-three feet high, lie Westward six cables from the W point of Carriacou, with a shoal extending from them E. S. E., nearly a cable's length The W. point of Carriacou is also foul for about the same distance. The channel be tween the point and rocks is otherwise clear and deep.

Hillsborough Bay. HILLSBOROUGH BAY.—From Cistern Point, projecting a little Northward fro the W point of the island, the shore curves to the Eastward and Northward, formin Hillsborough Bay, in which is situated the village of that name, and off it is the princ pal anchorage in Carriacou. At nearly half a mile Northward of Cistern Point Mabouya Island, one hundred and thirty-five feet high, and about the same distance t the Eastward a low, sandy islet, with trees thirty feet high. At one mile N. E. from the E. end of Sandy Islet, and the same distance from the village, is the small isl of Jack-a-Dan, thirty-three feet high. A shoal, with four feet of water over it, lies be tween Jack-a-Dan and Craigston Point E. of it, rather nearer the point than the isle leaving a narrow channel between Jack-a-Dan and the shoal carrying seven fathom The passage between the shoal and the shore has sixteen feet in it. A bank one mil and a half in extent E. and W., with five to seven fathoms on it, lies one mile off th N. W. part of the island, where vessels may anchor if necessary.

Directions. The N. Point of Carriacou is clear, and may be passed at a distance of two cable Approaching the anchorage in Hillsborough Bay, a vessel may pass close to Jack- Dan on its W. side, and anchor in fourteen fathoms, with the isle bearing N. by W distant three cables, and Sandy Isle on with the Sister Rocks. If necessary, a vess may anchor farther to the Eastward, but not in less than seven fathoms, as from th depth the water suddenly shoals to two fathoms, and the wind sometimes comes fro the N. W., causing a swell. Small vessels can go in almost to the beach. The landin is exceedingly good, except when interrupted by the N. W. swell. Anchorage for larg ships may also be taken in seventeen fathoms, with Jack-a-Dan bearing S. E. distant on mile.

Watering and Grand Bays. WATERING and GRAND BAYS, on the E. side of Carriacou, are protected by a d reef, and afford anchorage for small vessels of nine feet draught. The Northern Si clair or Watering Bay, the Southern Grand Bay, off two estates of the same nam There are three channels for entering, but that between the N. end of the reef, which is a dry sand-bank, and the shore is the safest. The two Southern channels, though deep breaks in the reef, are difficult to enter without local knowledge.

PETIT MARTINIQUE, seven hundred and forty-six feet high, lies nearly two mil

stward of the E. point of Carriacou, and one third of a mile N. of it is Petit St. Vin- *Petit Martinique.*
nt, two hundred and seventy-five feet high. Off its S. W. side are the islets Petit To-
go and Fota, the former two hundred and the latter eighty feet high. On the N. W.
e of Petit St. Vincent are two sand-banks, three feet out of water, from which a dry
f sweeps round the Eastern side of the islands. At two cables S. S. W. ¾ W. from
tit Tobago is a rock with nine feet over it, and S. by W., seven and a half cables from
e Western sand bank, is a shoal with two fathoms over it.

The channel between the Carriacou Reef and the Isle of Petit Tobago is seven cables
de. In using it from the S. E. keep one third the width of the channel from the edge
the reef, and when Fota opens on the N. W. part of Petit Tobago a vessel will be to
e Westward of the nine-foot rock. Between the nine-foot rock and the reef there are
m six to ten fathoms, but the tides in this channel are very strong and it is not rec-
mended. Fota Channel, or that between Petit Tobago and Fota, although narrow, is
tter than the former. A small dry reef extends to the N. from Petit Tobago to the
tance of thirty fathoms

Between Fota and Petit Martinique is a passage carrying four fathoms, but it is not so
od as the Fota Channel.

As the tide sets fully three knots through the above channels, it is necessary in work- *Caution.*
g through from the N. W. that the tide should be setting to the S. E.; and in standing
the Southward, do not approach too near the Carriacou Reef, as the sea runs heavily
it.

About half a mile off the N. W. side of Petit Martinique, protected by Petit St. Vin- *Anchorage.*
nt, the sand banks, and reef surrounding these islands, is most excellent anchorage in
m eight to twelve fathoms; taking care to avoid the two-fathom shoal S. by W., seven
d a half cables from the W. sand bank.

MARTINIQUE CHANNEL.—At three miles N. of the N. end of Carriacou is Frigate *Martinique Channel.*
let, two hundred and fifty feet high, with reefs E. and W. of it, and two and one fourth
les Eastward of the islet is Prune Island, one hundred and sixty-four feet high, with a
f extending two and one fourth cables from its S. side. Between these islands and
fs and those of Carriacou and Petit Martinique, is a clear channel carrying not less
n seven fathoms, except on the five-fathom bank off the N. W. end of Carriacou, and
ich is recommended in preference to the channels between Carriacou and Petit Mar-
ique.

There is anchorage for small vessels close under Frigate Islet, and large vessels will *Anchorage.*
d temporary anchorage to the S. W. of the islet.

It is high water, full and change, at Carriacou at 3h., and the rise and fall seldom ex- *Tides and Currents.*
eds a foot and often but a few inches. An extraordinary high tide may, however, rise
o feet. At the Southern part of the Grenadines, the stream turns at 6h. or nearly
lf-tide. The tides throughout the Grenadines act with or against the general indraught
o the Caribbean Sea; consequently the flood-tide generally runs strong while the ebb
often weak. The flood-stream will sometimes run through the narrow channel full
r miles an hour, while the ebb seldom runs more than three, and often not more than
e mile an hour. The average strength of the tides, however, in the channel are about
o miles, and in particular places three miles an hour. In proportion as the flood-
eam is accelerated by the equatorial current, so will the ebb or tide setting E. be re-
ded. The ebb will always be felt inshore first, slowly sweeping round the points,
hile the flood is running in the middle of the channels.

UNION ISLAND lies five miles to the Northward of Carriacou, and is rather remark- *Union Island.*
le, having high pointed hills. On the S. W. side there is good shelter in Chatham Bay,
e entrance to which is quite free from danger, but the shore is skirted by a shallow
dge to the distance of half a cable. Endeavor to enter the bay from the Northward on
e port tack. Off this side will be seen a remarkable small island, which must be kept
ose on board, as it is bold to, and when abreast it, and the vessel having good way on,
orten sail, and she will shoot into an anchorage about one cable and a half distant from
e shore, in fifteen fathoms water, blue clay; the extremes of the bay will then bear from
N. W. to S. S. W.

In Chatham Bay fish can be procured with the seine in great abundance. Firewood *Supplies.*
plentiful, but no water. The inhabitants are entirely dependent on what is collected
tanks during the rainy season.

CANOUAN.—Eleven miles to the Northward of Little Martinique, thirteen miles *Canouan.*
m Carriacou, and N. E. nine miles from Union Island, is the island of Canouan, about
ree square miles in extent. A reef runs along the Southern side of the island and ex-
nds nearly a mile off shore: the Northern sides are bold and clear of danger. On the
estern side there is a small bay where a vessel may anchor in seventeen fathoms, with
e N. point of the island bearing N., the S. point S. W. by S., and a conspicuous house
the hill, E. S. E. ½ S.

There are several rocky islets between Union and Canouan, one of which is named
ayo or Mayoro, and wears a cultivated appearance. They are all bold and steep to,

but S. E. about four miles from Canouan is the Sail Rock, which is so small that it should be carefully avoided in the night.

Mosquito Island. MOSQUITO or MISTIQUE ISLAND lies a good thirteen miles to the N. E. of Canouan, and contains two square miles of land. Between them are numerous smaller islands, but without any known danger about them. A shoal is reported to exist on the W. side of Mistique, called the Montezuma Rock, and to lie W. two and a half miles from an old fort on the hill in the middle of the bay. A vessel may sail within a cable's length of the N. point of the bay, but the S. point is foul to the distance of three fourths of a mile.

Baquia Island. BAQUIA, or CRAB ISLAND, the Northernmost of this group, is of an irregular shape, six miles long, one mile and three fourths at its broadest part. The island is not lofty, but has a remarkable peaked hill on its S. side. The town stands on its W. side at the head of Admiralty Bay, in which there is not only good anchorage, but a small basin where vessels of considerable size may be hove down without much difficulty.

From the N. point of the bay (which is formed by a high bold headland having on its Southern extremity a small fort), its width, measured in a S. W. by S. direction, is not quite half a mile, and it is but little more than half a mile deep. The Southern shore is foul to the distance of a cable's length, and must be carefully approached. The Northern side is bold and steep to until nearly halfway within the bay, when a shoal flat extends out to within half a cable's length of the flat on the S. side, leaving a short but deep channel between them, into the careening basin.

Just within the line of the bay, and toward the Northern shore, there is a small shoal of fine coral and sand, with but fourteen feet on it, but steep to, all round. From the centre of the shoal Fort Point bears N. W. by N. a cable's length, and the only mill on the island, near the head of the bay, N. E. by E. Vessels visiting the anchorage for a temporay purpose, had better anchor outside this shoal in seventeen or eighteen fathoms, which they will do by shutting in St Vincent of the Northern bluff of the bay. If intending to go into the basin, beat up as far as can be done conveniently, taking care of the Southern shore; anchor off the channel, and warp in. The Eastern shore of the basin is bold to, having eighteen feet almost alongside it, and five, six, and seven fathoms all around.

Water. Water may be obtained in Admiralty Bay by digging wells in the sand at about fifty yards from the beach.

Tides. There is a rise and fall of tide of three feet in Admiralty Bay, but the periods are uncertain.

Directions. Baquia lies about S. five miles from St. Vincent, and the channel between being free of danger, is frequently used by vessels proceeding from the Eastward to the islands to leeward, and the Spanish Main. The current through it generally sets strong to the Westward, but sometimes there is found an eddy either on one side or the other; therefore, if working to the Northward from the Grenadines, with the trade-wind at N. E., it would be as well to try the Baquia side first, before stretching across.

St. Vincent. ST. VINCENT.—This island is oval-shaped, about thirteen miles long, N. and S., and eight miles at its broadest part. The shores are generally bold and rocky, intersected, however, by many sandy bays, off which droghers find temporary anchorage for the purpose of shipping the produce of the neighborhood to Kingstown, the capital of the island. The surface is regular, and a chain of lofty ridges divides the island in the centre from N. to S. The most remarkable is the Soufrière, a volcanic mountain three thousand feet high, at the N. W. end of the island, near Tarratee Point, and may be seen at eighteen leagues distance. It rises abruptly from the shore in this quarter, but its N. E. face slopes gradually on that side, and forms an extensive and highly cultivated plain.

Numerous small streams descend through the valleys in to the bays of sufficient strength to turn sugar mills, and afford convenient means of watering.

Kingstown Bay. KINGSTOWN BAY, the principal anchorage for vessels-of-war, lies at the S. W. end of St. Vincent, and six miles N. of Baquia. It is formed between Old Woman Point, on the S. E., which is long, sloping, and low, but steep to, and Kingstown Head, equally bold and steep, a mile distant to the N. W.; the bay from the edge of soundings is little more than half a mile deep. The inhabitants and some navigators call Old Woman Point Kingstown Head.

Water. Water is readily obtained from the streams which run through the town of Kingstown.

Light. When the mail-steamers are due, a white light is shown at an elevation of six hundred and forty feet above the sea, from Fort Charlotte.

Dangers. Kingstown Bay is generally entered from the Southward. Having closed with the S. E. side of St. Vincent, Young's Island will be recognized, on the lofty summit of which is a fort, lookout house, and signal staff. It is commonly called Young's Sugarloaf from its remarkable shape. Passing about a mile to the Southward of this island, the S. E. point of the bay and the fort which stands over the N. W. part of the town will

ome open, about four miles distant. This point may be boldly approached, and after ounding it within half a cable's length, haul sharp up for the anchorage.

Should the baffling winds from the high lands prevent the vessel fetching in, she may tand over to the Western shore without fear, and having tacked, the best anchorage vill be found at half a cable off shore, with the church bearing N., or N. by E., and the N. W. point W. ½ N. As the wind, during the middle of the day, frequently rushes down through the valleys with great violence, be prepared to give the vessel a good cope of cable, or she may drag off the bank. At night the breeze generally falls light, and a weather current sets round the bay, and should the anchorage be crowded, it may be necessary to steady her with another anchor. At a fourth of a mile from the shore the depth is twenty-four fathoms, dark sand, good holding ground, with the court-house N. N. E. and Old Woman Point S. ½ E.

The rise and fall of tide in Kingstown Bay is about four feet, but we have no account of the periods. *Tides.*

TYRREL or CALLIAQUA BAY is the most convenient anchorage for merchant vessels to load at. It lies a short distance to the Eastward of Young's Island, and may be easily recognized by a singular insulated rocky bluff, two hundred and sixty feet in height, having on its summit Fort Duvernette, which forms the N. W. point of the bay; and in the interior, some distance above the village, will be seen the vigia or lookout. *Tyrrel or Calliaqua Bay.*

There appears to be no difficulty in entering this bay; the shore is bold and steep, and a vessel may anchor in fifteen, eighteen, or twenty fathoms, as most convenient. Two rivulets empty themselves into the bay.

PRINCE'S or BARRAWALLY BAY lies about five and a half miles to the N. W. of Kingstown. Its N. side is formed by some remarkable rocks, called the Bottle and Glass, which are clear of danger, and have a boat channel within them. If coming from the Northward, haul close round these rocks, and anchor in twenty fathoms, sandy bottom, with the rocks bearing N. W. and the barracks E. N. E. ½ N. The bottom on the N. side of the bay is foul. The wind is so variable and unsteady under the high land that, if intending to remain any time, it will be better to warp in, and drop a second anchor to the Eastward, in about twelve fathoms. If coming from the Southward, the shore may be kept aboard equally close, and the vessel may probably be able to shoot far enough in to drop the inner anchor first. *Prince's or Barrawally Bay.*

Water may be obtained from a stream at the head of Prince's Bay. *Water.*

It may be here remarked, that to navigate under the lee of any of the more lofty islands is generally extremely tedious and uncertain. Sometimes a vessel may be becalmed for hours and indeed days, when the trade-wind is light. When it is strong, great precaution is necessary to be prepared for the sudden gusts which rush with such violence down the valleys as to endanger the spars. *Caution.*

As the anchorages generally lie close to the shore, and the narrow banks are steep so, if taken aback, there may be some danger of falling on the rocks; the boats should, therefore, be ready to tow. Anchors must not be depended upon altogether.

ANSE MORLUSE OR WINN'S BAY.—The points of this bay bear about N. by W. and S. by E. from each other, with soundings across from ten to twelve fathoms about a cable's length from the shore. The N. point is foul. *Anse Morluse or Winn's Bay.*

LAYOU or RUTLAND BAY lies N. W. about a mile from Kingstown, and runs in a N. W. and S. E. direction, with soundings of twenty to twenty-five fathoms at only half a cable's length from the shore. The S. E. side has a sandy bottom; the N. W. side is rocky. *Layou, or Rutland Bay.*

BOCCAMAW BAY is noted for the stream of excellent water which flows into it. It lies N. N. W. and S. S. E., with a depth of twenty-six fathoms across, within half a cable's length of the shore; a vessel may anchor at that distance off shore, a little to the Northward of the river, in seventeen fathoms. *Boccamaw Bay.*

CHATEAU BELLAIR BAY lies about thirty miles to the N. W. of Kingstown, and the best anchorage is on its Eastern shore, in thirteen and a half fathoms, with the N. E. point N. ¼ E., the W. point W. by S. and the town S. by W. ½ W. In the middle of the bay there is no bottom with fifty fathoms, and on the W. side there is none with thirty fathoms, at half a cable's length from the shore. Anchorage will be found all along the E. side within two cables' length. *Chateau Bellair Bay.*

ST. LUCIA.—This island is nearly oblong in shape, twenty-three miles in length from N. N. E. to S. S. W., independent of a curious narrow high ridge of land, three miles long, which forms its extreme S. E. point; and its breadth is seven miles at the N. end and ten miles at the S. It is mountainous throughout its whole extent, with the exception of a small plain at the S. E. end, and the volcanic peaks rise to a great height, the most remarkable and elevated of which, called the Soufrière, is at the S. W. end of the island, and is visible eighteen leagues. The mouth of the crater is on an eminence between two peaks, and appears at first view like a lime kiln, and the vapor which issues from it may be seen at some distance. Near the base of this mountain two most remarkable conical rocky peaks, thickly wooded to their summits, rise perpendicularly out of *St. Lucia.*

the sea to a great height, and are called, from their appearance, the Pitons or Sugar-loaves; they lie nearly N. and S. of each other, a mile and a half apart, and the Southern one forms the S. W. point of the island.

Numerous small rivulets descend from the rugged heights, but not of sufficient strength to force their way to the sea, and consequently, spreading out on the low lands, create great swamps and marshes, making the island most unhealthy.

St. Lucia has only been partially examined, and a correct description can be given of its Eastern shore, which does not appear, however, to possess any secure anchorage, but to be free of danger, with the exception of a bank two miles in extent, about a mile from the shore, and three miles to the Southward of the N. E. point of the island. On the Western side are several safe and commodious bays and harbors, and we shall begin the description of these from the S. end of the island, at Vieux, or Old Fort Bay.

Vieux or Old Fort Bay. VIEUX or OLD OLD FORT BAY is formed by Moulacique Point, the extremity of the narrow ridge of land before noticed, forming the extreme S. E. point of St. Lucia, and Caret Island, which bears from it N. W., distant two miles. It affords excellent anchorage with the prevailing winds, and there is no danger whatever to be described. A vessel having rounded the point within a cable's length may haul into the bay and anchor in five fathoms within less than a fourth of a mile of the shore, with the church of the village N. E. by N. and Moulacique Point S. by E.; or take up a berth farther out, in twelve fathoms, with the church on the same bearing, and the Western extreme of the island N. W. by W.

Water. Water may be obtained from a small river which runs into the N. side of the bay, but in the dry season the boats will have to proceed half a mile up before it is sufficiently good. A rocky ledge, nearly awash, extends off about fifty yards, from nearly abreast the river.

Laborie. LABORIE.—W. N. W. about three miles from Vieux Fort is the little bay and village of Laborie. The shore is skirted at a short distance by a reef, within which there is shelter for coasters; but there is no anchorage for large vessels.

Balambouche. BALAMBOUCHE is situated three miles to leeward of Laborie, about midway between Moulacique Point and the Great Piton. Off this place a reef, which does not always break, extends out upward of a mile, leaving between it and the shore a boat channel in moderate weather.

In running down or beating up, the reef will be avoided by keeping the Great Piton just open to the land to the Eastward of it; the water shoals rapidly on nearing the reef, but the lead is a safe guide, either by day or night.

Anchorage. A short distance to the Westward of Balambouche is the river Doré, off which there is anchorage in five or six fathoms, at nearly half a mile from the shore. A little farther on there is also anchoring ground in seven fathoms off the village of Choiseul, about a fourth of a mile from the shore, abreast the church that stands on the beach.

Water and Wood. Water and wood may be obtained at Choiseul in case of need, and vessels bound to windward, being unable to stem the current, will find the above anchorage convenient resting-places. Between Choiseul and the Balambouche reef there is no danger.

Souffrière Bay. SOUFFRIERE BAY.—At the S. W. end of St. Lucia, immediately to the Northward of the Little Piton, the shore bends round, forming a bay two miles deep, sheltered from S. S. W., round E., to W. N. W.; the shore all round, however is so bold, that there are thirty fathoms water only a cable's length from the beach; it therefore possesses no convenient anchorage; still, it is visited by merchant vessels which load here, moored stern on the shore.

The town of Souffrière is next in importance to Castries, and contains about sixteen hundred inhabitants.

Directions. In entering Souffrière Bay, the wind must be guarded against as it rushes off from the valleys with such force as to endanger the spars; therefore, before entering, sail should be reduced, and, if the breeze outside is a strong, a reef taken in. When beating in the wind will be found more steady on the S. side than on the N.

Having approached to within a short distance of the town, a strong hawser should be sent to the shore, and made fast to one of the trees on the beach in front of it, and a other hawser coiled in a boat ready to leave the ship and bend on if required. The moment the end of the hawser is on board, all sail must be furled, for should it part, it would be useless to drop the anchor, as it would immediately drag into deep water. The depth is three fathoms only ten yards from the beach.

It will be necessary to hang the vessel by the stern by a stream chain from either quarter, and drop a bower anchor on the edge of the bank, in case the wind should veer to the Westward; this, however, never takes place except in the hurricane months, and at all other times the sea is as smooth as a mill-pond.

Roseau Bay. ROSEAU BAY lies about ten miles to the Northward of Souffrière, and between the is La Raye Bay. Both are of the same character as Souffrière Bay; the former has fifteen fathoms within a cable's length of the beach, and the latter ten fathoms at half that distance. Water and wood may be obtained at La Raye Bay.

Water.

MARIGOT DE ROSEAU is the name given to a most remarkable little creek leading into two deep basins, capable of holding two or three vessels of the largest draught, besides half a dozen smaller vessels, quite secure even against hurricanes; the neighborhood, however, is considered one of the most unhealthy spots in the Windward Islands. *Marigot de Roseau.*

GRAND CUL DE SAC BAY, about two miles to the Northward of Roseau, affords shelter to coasters. The river Cul de Sac falls into the N. E. side of the bay, but in the dry season the mouth is nearly choked up, and a stagnant lagoon is formed just within it; the stream, however, flows continually, and some distance up, where it is free of vegetable matter, the water is fit for use. *Grand Cul de Sac Bay.*

PORT CASTRIES or LE CARENAGE lies about nine miles from the N. point of St. Lucia, and is one of the safest harbors in the West Indies, even in the hurricane season. It is about a mile and a fourth long, E. S. E. and W. N. W., but its breadth varies from one and a half to two and a half cables, and as the wind blows directly out, it is consequently too narrow for a vessel to work in. Its shores in the inner part are so bold and convenient that vessels of the largest draught may be hove down alongside them without much difficulty. At the head of the inlet, on the S. shore, is situated the town of Castries, the capital of the island. *Port Castries or Le Carénage.*

On Tapion Point, the Southern point of the entrance to Port Castries, there is a temporary light-house for the guidance of the mail steamships. The lantern is eighty feet above high water, and exhibits a fixed red light, which may be seen at the distance of three miles. For the same purpose there is also a fixed light placed on the wharf at the town; and all are shown from the day the mail is due until it arrives. *Light-house.*

When bound to Port Castries from the Northward, which is the best route, having passed Gros Islet, the entrance may be easily recognized by the high bold bluff which forms the N. point, having on its summit a fort and signal tower. This point is steep to, therefore haul sharp round it within half a cable's length, and anchor as close under the N. shore as can be conveniently done for weighing. *Directions.*

Coming from the Southward, the position of the port is as readily pointed out by the barracks on the Morne Mountain. Tapion Point is low, with a small fort on its extremity, and a small shoal extends a little more than half a cable's length to the N. W. from the point; a vessel, therefore, having cleared the shoal, should luff up and anchor as far in as she can shoot. In general, during the middle of the day the wind rushes down the port with great violence; every preparation should therefore be made to give a good scope of cable in bringing up, to prevent dragging: and it will, perhaps, be found more safe and convenient not to commence warping in until the breeze begins to slacken, which is usually the case toward evening.

In warping, be careful to keep in mid-channel, for shallow rocky flats extend off most of the points; but the water is here so clear that, with the sun unclouded, they are readily seen and avoided. On the outer edge of the Vielle Ville Shoal, on the N. side of the inlet, and also on the edge of the Cocoa-nut Shoals, on the S. side, there is a red beacon, with ten feet water painted on it in large characters, and both have twenty feet close outside them.

ANSE DU CHOC is a bight about four miles in length, between Port Castries and Brelotte Point, in which a vessel may anchor to the Westward of a small islet, which lies not far off shore, near the centre of the bay; half a mile to the N. E. of this there is a large rivulet. In approaching this part of the shore, however, be careful to avoid a rocky shoal, nearly a mile long and two cables broad, lying S. by E. a mile and a half from Brelotte Point (or Brelata, *Spanish*), the N. point of the bay, and running parallel to the shore, half a mile distant. The S. end of the shoal lies about W. by N. from the above stream. To avoid it, keep the W. side of Gros Islet open of Brelotte Point. *Anse du Choc.*

GROS ISLET BAY (Santa Cruz, *Spanish*) lies five miles N. N. E. of Port Castries, and about the same distance from the N. end of the island, and being more easy of access, is the general anchorage for vessels-of-war intending to make only a short stay. It is formed between Gros Islet or Pigeon Island on the N. and Fourreur Isle or Barrel of Beef on the S., which lie S. W. by S. and N. E. by N. from each other, distant a mile and a half, and measured from this line it is about a mile deep. *Gros Islet Bay.*

Pigeon Island is high, bold, and steep to, not quite half a mile in length from E. to W., and half that distance in breadth, and on its summit there is a small fort, and at the S. end the barracks; it lies about half a mile from the shore, with a channel between for small coasters. Fourreur Isle is a small, low, rocky islet, lying about a fourth of a mile from the shore, and this channel is also safe for small vessels. There is a village on the Eastern shore, and a watering place on the Southern side of the bay.

As there is no danger whatever in entering Gros Islet Bay, both points may be rounded within a cable's length. A vessel will most probably have to beat in, and the best anchorage will be found with Pigeon Island bearing N. W. by N., and Fourreur Isle S. W. ½ W., in five and a half fathoms, clear sandy bottom. Take care not to shoot within this, for the bank which borders the bay is steep to, and at a fourth of a mile from the shore there is as little as two fathoms. *Directions.*

A vessel bound either to this bay or to Castries, from Barbados, had better pass round the N. end of the island, and, in shaping the course, make a large allowance for a lee or Westerly current, which generally prevails. By this route she will not only avoid the violent squalls and tornadoes which beset the channel between St. Lucia and St. Vincent but also the vexatious delays in contending with the baffling winds on the W. side of the island.

Current. The current around St. Lucia runs generally with great strength to the W. N. W. and N. W., more particularly in the passage between it and St. Vincent. Within two or three miles of its S. and W. sides, however, there is often a strong eddy, which will assist a vessel in beating to windward. The native fishermen say there are periodical changes in the currents, that observe great regularity, and of which they avail themselves to catch fish, always going out when the current sets to windward.

Bank. A bank of ten miles in extent in a N. W. and S. E. direction with from forty-four to eighty-four fathoms, has been discovered, N. W. end in lat. 14° 44′ N., long. 59° 59′ W., S. E. end, lat. 14° 37′ N., long. 59° 53′ W.

Martinique. MARTINIQUE is thirty-four miles in length from N. W. by N. to S. E. by S., between Cape St. Martin and Salines Point, but varies considerably in breadth, and its area is about three hundred and eighty square miles. At its N. W. end it is about eight miles across; on the S. side, from Cape Solomon to the Eastern shore, it is sixteen miles; but near the centre of the island, between the head of the bay of Fort Royal and that of François, the distance is scarcely seven miles.

This island is very lofty and irregular in height, and may be readily distinguished by three remarkable mountains of different forms, rising far above the general chain which runs through the whole of the island from N. W. to S. E., and may be seen about forty-five miles off. The most Northern of these is Mount Pelée, nearly four thousand five hundred feet in height, situated about four miles to the S. E. of Cape St. Martin, and its summit, when seen from afar, appears rounded, and presents nothing remarkable. The Pitons du Carbet, which rise three and a half miles from the Western shore, between St. Pierre and Fort Royal are a group of conical peaks, with very steep and abrupt declivities, the most elevated being about four thousand feet high; but their summits are generally in the clouds, and seldom visible. On the S. E. side the Vauclin Mountain rises to the height of about seventeen hundred feet, and has the appearance of a flattened cone. It is situated at the E. end of a chain of hills, which are divided toward the S. into two branches, one terminating at Salines Point, and the other uniting itself with the steep ridges that command the bays of forts Royal and Diamond.

The N. E. and N. W. shores of Martinique are clear, bold, and steep to, from the Sugar loaf Rock on the N. W. side of Trinité Bay round to Fort Royal; but to the S. and S. E. of these points the shores become irregular, deeply indented, and dangerous, particularly on the E. side, which is skirted by low islets and reefs to the distance of upwards of two miles, and should be very carefully approached.

Diamond Rock. THE DIAMANT or DIAMOND ROCK lies S. E. a mile from the Morne du Diamant, which forms the S. W. point of Martinique, with a clear passage between. The rock is very remarkable, nearly square in form, each side about two cables long, and rises almost perpendicularly to the height of five hundred and seventy-four feet above the sea. It is inaccessible on all sides, except at a small spot on the W. side, where landing may be effected under favorable circumstances.

The S. and W. sides of the rock are steep to, but to the Northward a small bank of soundings of from five to seven fathoms extends to the distance of the fourth of a mile, and a cable's length to the Eastward there is as little as four fathoms. E. S. E., three fourths of a mile from the rock, there is also a small detached coral bank of four fathoms. Morne du Diamant, or Diamond Hill, rises abruptly from the shore nearly sixteen hundred feet, and may generally be seen at a great distance; it is steep and bold to.

Martinique possesses but one safe and secure harbor for vessels of large draught, named Fort Royal, in which is situated the capital of the island and the government dépôts. There are, however, several good anchorages, which will be described in order, commencing from the S. end of the island round Westerly.

Cul de Sac Marin. CUL DE SAC MARIN, at three and a half miles to the N. W. of Salines Point, is a small inlet, nearly two miles deep, but very irregular in breadth, and the anchorage in it is so circumscribed by shoals, and so narrow at the entrance, that vessels of large draught must either warp or tow in, which cannot be done without the assistance of a pilot. Small vessels may, however, work in without much difficulty, as the water is so clear that the numerous rocks and sand-banks can be easily seen and avoided. To the Westward of Marin Point, the S. point of the inlet, the channel is divided into two parts by the Singe Bank, and becomes not more than a cable wide. The passage to the S. and E. of the bank will be found the easiest to navigate.

Anchorage. The best anchorage for vessels of large draught in Cul de Sac Marin will be found with Marin Point bearing S. W., and the Piton Crève-cœur E. by S. ½ S., in twelve fathoms, good holding ground. The anchorage farther in under the town is only fit for dreghers.

mall vessels, bound to windward, finding the current too strong, will find temporary horage outside the islet on the bank to the Westward of the town of St. Anne, or off river Pilote, a mile and a half to the N. W. of this inlet.

Grande and Petite Anse d'Arlet, &c.

RANDE and PETITE ANSE D'ARLET, and PETITE ANSE DU DIAMANT, three small bays on the S. W. part of Martinqiue, between Diamant Point and the d headland forming the N. side of Grande Anse d'Arlet, named Cape Solomon, in ich good anchorage will be found within a fourth of a mile of the shore, in from sev- to ten fathoms, white sand. There is no difficulty in taking up an anchorage in either hese bays, as there is no danger but what shows itself.

Supplies.

t the E. end of the Northern beach, in the Grande Anse d'Arlet, there is a small ing of excellent water, and wood, poultry, and vegetables, may be obtained from the age.

Directions.

essels coming from the S. or S. E., and bound to either of the anchorages just de- ibed, will first make the Vauclin Mountain, which will guide them to Salines Point, S. end of Martinique. This point is very low, and at three fourths of a mile to the E. of it are the three small low Cabris Islets; the Eastern one being considerably ger than the others, shuts them in on an E. and W. bearing.

hoal ground extends S. W. nearly half a mile from these islets, and having rounded m, if bound to Cul-de-Sac Marin, the shore should not be approached within that dis- ce. The bank of soundings is so steep, that they will greatly assist the lead, the colored water being easily seen from aloft. Having passed Dunkerque Point, large sels should carefully approach Borgnesse Point, to avoid the shoal ground off St. ne, and anchor about one fourth of a mile to the S. W. of the latter point, and be dy to warp or tow in, as the breeze slackens toward evening.

f bound to the Westward, having passed the Cabris Islets, a W. by N. ½ N. course, and a half miles will lead to abreast of the Diamant Rock, when hug the shore close board, and choose an anchorage as before directed. It is necessary, however, to ob- e, that when under the lee of the highlands, preparation must be made to meet the den and violent gusts which rush down the gorges of the mountains, and which are more dangerous as they come upon a vessel when she is probably becalmed and te unmanageable.

Fort Royal Bay.

ORT ROYAL BAY lies between Cape Solomon, the bold headland which forms the side of Grande Anse d'Arlet, and Nègres or Negro Point, five and a half miles N. of its width, however, may be more properly confined to the space between Ilet-aux- miers and the above point, three and a half miles distant. Its shores are so irregular t it varies considerably in depth, and so indented as to afford several safe and secure horages against all winds. The passages to them, however, are intricate, and they only be navigated with the assistance of a pilot.

he town of Fort Royal, situated on the Northern side of the bay, at a mile to the stward of Nègres Point, is built on a low, level plain, bounded on the W. side by the er Madame, on the E. by the Carénage Inlet, and on the N. by a canal, which forms a mmunication between them. The anchorage for vessels-of-war lies off the town, and rotected by Fort St. Louis, constructed upon a narrow peninsula, which rises abruptly m the sea to a considerable height, and separates the anchorage from the Carénage he Eastward of it.

he best anchorage will be found with the flagstaff on the fort bearing N. E. ¾ E. and gres Point, from N. W. to W. by N. Small vessels may proceed farther in toward the n according to their draught. This anchorage is secure from November to July; during the hurricane season, vessels-of-war are secured in the Bay of Trois Ilets. bank of gravel and rock extends half a mile to the S. W. of the peninsula, and a buoy moored in six fathoms at its extreme S. W. end, with the fort flagstaff bearing N. E. ¾ and Nègres Point W. by N. ½ N.

Water.

Water may be obtained in Fort Royal Bay from a spring in the Carénage, but it is very good. The better plan will be to procure it from a watering place near the er Madame, where it is brought to the shore by means of pipes, and with a hose the ks may be filled in the boat.

Lights.

wo fixed white lights, horizontal, are exhibited at one hundred and thirty-one feet ve the level of the sea, at the S. W. end of Fort St. Louis, and (in the direction of t Royal Bay) they are visible from five to six miles. There is also a red light hoisted a red mast in the fort at Nègres Point, and visible about six miles.

Banc du Mitan.

ANC DU MITAN is a small rocky patch lying on the S. side of the general an- rage in Fort Royal Bay. It carries as little as four fathoms, with the flagstaff of t St. Louis bearing N. E. by N., and Nègres Point N. W.

Banc du Gros Islet.

ANC DU GROS ISLET is a shoal lying still farther out to the S. W., and nearly way between Ilet-aux-Ramiers and Nègres Point; on its N. end, with Fort St. Louis ring N. N. E. ¼ E., and Nègres Point N. N. W., there are only three and a half fath- s. Between this bank and the shore to the Southward, the bottom is uneven and ky, and the depth varies from four and a half to eleven fathoms.

Banc de la Vierge. BANC DE LA VIERGE is merely a small rocky knoll, of about two cables in ex tent, with a depth of nine fathoms, which should be avoided in coming to an anchor When on the knoll the flagstaff of Fort St. Louis bears N. E. by E. and Nègres Poi N. N. W. ½ W.

Directions. Having rounded Cape Solomon, which is steep to, Fort Royal Bay will come open, an a vessel may haul to the wind accordingly. Should the wind be to the Southward of care must be taken to avoid the Gros Islet bank, the edge of which may be distinctl traced by the discolored water; and having passed this bank, not to steer for the anchor age until the flagstaff of Fort St. Louis bears N. E. ½ N. to avoid the Mitan. Should th wind be to the Northward of E., which is generally the case, she will have to work i and in so doing she can stand boldly in to the N. shore, and to the S. E. according to he draught, or until the flagstaff of Fort St. Louis bears N. E. ½ N., and anchor as befor directed.

At Night. When entering Fort Royal Bay from the Westward, at night, bring the two whit lights on Fort St. Louis open to the Southward of the red light on Nègres Point, or bea ing E. by N. ½ N., and steer for them, and when the red light bears W. N. W., anchor i seventeen or eighteen fathoms.

Anse de Navire. ANSE DE NAVIRE is a small bay, a mile and a half to the N. W. of Nègres Poin in which there is good holding ground in twenty-five fathoms water, at about a cable length from the shore. Care must be taken to shoot gently into the bay under easy sa for the bank is so steep that there is a depth of forty fathoms at half a cable farther ou over rocky bottom. The best berth will be found from abreast of the battery to abreas of the Westernmost houses. There is a rivulet of excellent water at the village.

Anse de Case Pilote. ANSE DE CASE PILOTE is a similar anchorage, at two and three fourths mil to the N. W. of Navire Bay; but it is seldom visited by large vessels.

St. Pierre Road. ST. PIERRE ROAD lies about N. W. eleven miles from Nègres Point, and in th space the W. coast of Martinique is bold and steep to, and quite clear of danger. may be said to lie between St. Marthe Point on the S., and the river des Pères, a mi and one fourth to the N. of it. On the sandy shore is situated the town of St. Pierr which is the chief commercial depot of the island.

The best anchorage for vessels-of-war is a little to the Southward of St. Marthe Poi in about twenty fathoms water, at two cables' length from the shore, for the bank exten farther out here, and is not so steep as abreast the town; from this circumstance it called the Plateau du Carbet. Merchant vessels anchor off the town, at about two cable length from the shore, and it is necessary for them to moor; but the bank here is so e ceedingly steep that they must be certain of obtaining soundings before letting go anchor, and half a cable must be veered out before checking.

Water. Excellent water may be obtained from a fountain at the S. end of the town of St. Pier without removing the casks from the boat.

Directions. Vessels bound to St. Pierre Road from the Eastward generally pass round the N. e of Martinique, which is bold and steep to, and presents no danger. In approaching t road, from either the N. or S., the shore must be kept close aboard.

Trinité Bay. TRINITE BAY.—The N. E. and E. sides of Martinique, as before stated, are da gerous to approach, yet they possess several safe anchorages, readily accessible steamers or small vessels, with the assistance of a pilot. Trinité Bay is the most Nort ern of these, and, being more easy of access, is frequented by vessels of large draug and is quite safe during the ordinary winds. After St. Pierre and Fort Royal it is t most important commercial port in the island. It lies about S. W. six miles from Car velle Rock, and twelve miles to the Eastward of Macouba Point, the N. extreme of t island.

The bay is protected on the N. by a shallow, rocky bank, on which there are sever dangerous shoals, extending from Point de Sucre to the end of the peninsula of Car velle, which forms the N. E. point of Martinique, a distance of six miles. This ba has very irregular depths on it, varying from nine to four fathoms, which causes in ge eral so high a sea that vessels of large draught, coming from the Northward, had bett pass round its W. end instead of crossing it.

Water. The best watering place in Trinité Bay is under the house at Beau Séjour.

Caravelle Rock. CARAVELLE ROCK lies N. one mile and three fourths from the N. E. point of Ma tinique, and is very remarkable, and an excellent guide for vessels bound to Trinité Ba or the anchorages on this side of the island. It is quite barren, and rises to the heig of ninety-five feet, and its summit terminates in a sharp point, completely blanched the continued presence of birds; when seen at a distance it appears like a vessel und sail.

Light-house. There is a light-house at the extremity of the Caravelle Peninsula, in lat. 14° 46′ N., long. 60° 53′ W. It shows a fixed white light at an elevation of four hundred a ten English feet, which is visible at a distance of twenty-four miles. The light placed upon the top of a white tower erected on the summit of Caracon Mountain, a third of a mile inland. The Caravelle Rock bears N. a distance of two and a four miles.

CARAVELLE PENINSULA may be said to form the Eastern side of Trinité Bay. *Caravelle Peninsula.*
is about five miles in length, but its S. side is so irregular that it varies in breadth
om a half to two miles. At its inner end it separates the port of Trinité from the bay
f Galion by a narrow isthmus of moderate elevation, on which may be seen the wind-
ill and mansion of Beau Séjour. The land rises toward the E., and about the middle
f the peninsula the hill of Tartance, on which there is a signal post, rises to the height
f three hundred and fifty-eight feet. The N. side is composed of low reddish cliffs and
andy bays, skirted by a coral reef, which generally breaks, to the distance of from one
three cables' length.

ST. AUBIN ISLE.—The Western side of Trinité Bay terminates to the N., at St. *St. Aubin Isle.*
ubin Isle, one mile and a half from the fort at the W. side of the entrance of the inner
nchorage. This islet is high, steep on all sides, and its summit rounded and wooded,
nd lies three fourths of a mile from the shore. Its N. side is bold and steep to, and
ay be approached freely, but to the E. S. E. foul ground extends to the distance of a
urth of a mile, and its S. side is nearly connected to the shore by a coral bank, in
laces nearly dry.

LOUP-MINISTRE.—Near the centre of Trinité Bay, W. from Diable Point (the N. E. *Loup-Ministre.*
nd of the peninsula), and N. N. E. from the fort of Trinité there is a small reef called
oup-Ministre,* which almost always breaks, and is consequently useful as a guide to
he bay. Between it and the shore of Caravelle there are many small coral shoals,
hich render the passage from the Eastward dangerous.

THE MITAN BANK is small, carries a depth of only eleven feet, and does not al- *The Mitan Bank.*
ways break. It bears N. E. by N. from the fort, E. S. E. from the highest part of St.
ubin, and lies on a line between the fort and Loup-Ministre.

STE. MARIE SHOAL.—The W. end of the main bank terminates one mile and a half *Ste. Marie Shoal.*
. of St. Aubin Isle; but at a little less than a mile W. N. W. of this, and a mile N. N. E.
f the islet of Ste. Marie—situated in front of the village of that name, and connected
o the shore by a narrow sand bank—lies Ste. Marie Shoal, three cables long, N. and S.,
nd a cable broad, with a depth of five and a fourth fathoms on it; but with strong N.
. winds it frequently breaks. There is a clear channel on either side of the shoal; the
ill of Beau Séjour, open a little to the Eastward of St. Aubin Isle, leads close to the
indward of it, and a little open to the Westward of the leeward of it.

In approaching Trinité Bay from the Northward keep well to windward, and en- *Directions.*
eavor to make the Caravelle Rock bearing E., and steer for it on that bearing until St.
ubin Isle bears S. ½ E., when the vessel will be abreast and half a mile distant from
he W. end of the main bank. Thence steer in upon this latter course toward St. Aubin
until the Loup-Ministre (which, as before stated, generally breaks) bears E. S. E., or Isle
te. Marie W. ½ S., when she will be inside the bank, and may then haul to the wind, or
hape a course to pass a third of a mile to the Eastward of St Aubin Isle.

Good outer anchorage may be found in nine fathoms, with the fort bearing S. W. ½ S.,
nd the mill of Beau Séjour S. E. by E.; but, if more convenient, proceed farther in, the
ye being a sufficient guide, as the shoal ground on either side will be distinctly seen.
hould the wind be to the Southward of E., a vessel will have to beat into the bay. In
his case great caution must be observed in approaching the Loup-Ministre, should it not
reak.

It is generally more difficult for a vessel to leave the port with the prevailing wind
han to enter. In this case endeavor to keep the Eastern edge of the bank, which shows
self, close aboard, until she can fetch clear of the reef, which extends out E. N. E. two
ables' length from the fort; she may then stand boldly toward the reefs, which are visi-
ble for the greater part of their extent; great care, however, must be taken to avoid the
litan Bank.

CARACOLI CHANNEL is formed between Caracoli Point, the S. E. end of the penin- *Caracoli Channel.*
ula of Caravelle, and the N. end of the coral bank which extends hence to the South-
ward, along the whole face of this side of Martinique to a distance of upwards of two
miles. There are several small openings through it, to be mentioned hereafter, but the
Caracoli is by far the best for small vessels or steamers bound to any of the ports or
anchorages within it.

Caracoli Point is a most remarkable, bare, steep, rocky headland, ninety-five feet
above the sea, which may be seen at a great distance. The land slopes from the heights
above toward the point, and from the foot of which a flat bank of coral extends to the
distance of a cable's length. The N. end of the main bank bears from it S. S. E. distant
one mile; nearly midway between, however, lies a small coral bank, which, although
having a depth of five and a half fathoms, causes a heavy roll of the sea, and should be
avoided by bordering toward the point. When the sun is sufficiently high, it will be
readily distinguished by the discolored water.

* The word *loup* (wolf or seal) is used in Martinique to signify a shoal with little water on it.

Galion Bay. GALION BAY lies at the inner end of the peninsula of Caravelle. It is four miles wide between Caracoli Point and Ramville Islet, which is about three hundred feet high, and has a bushy and rounded summit, but becomes contracted toward its inner end, and between Brunet Point and Banane Point, to the Southward of it, it is not more than a mile broad. The Western shore is much indented, and forms several small bays which, however, are obstructed by numerous coral shoals, and a heavy swell of the sea. The river Galion empties itself into one of these bays situated to the S. W. of Galion Island. a remarkable, conical, wooded islet. The only safe anchorage against all winds is on the N. side of the bay, under the W. side of Brunet Point, which is two and a half miles to the S. W. of Caracoli Point, nearly S. of the semaphore on Tartane Hill, and is bold and steep to.

Directions. Having entered the Caracoli Channel, in running down the S. side of the peninsula of Caravelle the shore should not be approached within three cables' length until Brunet Point bears N. W., when haul boldly in and anchor as convenient, about a fourth of a mile from the Eastern shore, or with a large house, N. of the point, bearing N. N. E., and the point S. E. by E., in four and a half fathoms water. In leaving this anchorage a vessel will have to beat out, and care must be taken to avoid the two small banks, Loup-Banane and Loup-Charpentier, which lie without the reefs which skirt the whole of the S. side of the bay. The first has nine feet water on it, and lies S. six cables' length from Brunet Point, and E. by S. ½ S. from Galion Island; the latter lies S. S. E. from the same point a little more than a mile, and E. of Banane Point, and carries a depth of thirteen feet. To the Eastward of these shoals the bay is quite free of danger up to the inner side of the main bank. Immediately in front of the bay, and nearly three miles S. by E. ½ E. from Caracoli Point, there is a dry spot on the reef called Loup-Bordelais.

Havre du Robert. HAVRE DU ROBERT, at its entrance between the Grotte Rock and the Chardons Isles, is not more than four and a half cables wide, but becomes much wider within. The former, situated on the N. side, is steep to, and is connected by a bank of coral gravel (barely covered by the sea) to a small island of the same name, which is also united by the same means to Ramville Islet, at the S. point of Galion Bay. The S. side of the channel is formed by a reef nearly dry, which extends off to the Northward from Rose Point, and on which lie two small islets named Rose and Chardon. The reef extends about half a cable from the latter, and is bold and steep to.

The harbor is large, safe, and commodious, for the swell is here broken by the outer reefs in front of it. It is very irregular in shape, but affords in several places good security for small vessels, and good holding ground everywhere in from seven to nine fathoms, sand and mud. The town is situated at the N. W. corner of the harbor. On the W. side of the little island of Petit Martinique, which lies off the middle of the Northern shore, there is a cove sufficiently secure for careening.

Directions. Having entered within the main bank by the Caracoli Channel, there is no difficulty in making or entering the Havre du Robert, for the reefs are nearly dry and readily distinguished by the discolored water. It is not, however, so easy to beat out of, being very narrow, and the eye must be the chief guide. Having passed outside the islets, a course may be shaped either for the Caracoli or the Mitan Channel to the S. E.

Mitan Channel. MITAN CHANNEL lies nearly midway between Mitan Cay, on the N., and Thierry Island two and a fourth miles S. of it. The former is a small low cay, on the inner edge of the reef, E. two and a fourth miles from Rose Point, at the entrance of Havre du Robert, and S. by E. ½ E. six miles from Caracoli Point; about a mile N. by W. ½ W. from it will be seen the Loup-Garou, a similar small islet.

Thierry Isle is the Easternmost of a group of small islets, lying about one mile and a half from the nearest shore. It is about one hundred feet high, and its summit has the appearance of a rounded cap covered with brushwood; at one mile and a half E. S. E. of it lies a dry, flat, rocky ledge, on the outer reef, called Pinsonelle Cay, which forms the S. E. point of the Mitan Channel.

Directions. With the wind at N. E., or even E. N. E., with moderate weather, vessels bound out from either Galion Bay or Havre du Robert, will find the Mitan Channel preferable to the Caracoli. In general, the sea is much smoother to the Southward of Mitan than at other parts of the reef. In leaving the former care must be taken to avoid the Loup-Marseillais, which is a narrow ledge, lying half a mile W. by N. from Loup-Garou; it, however, generally breaks, and its S. end bears W., three cables' length from Loup-Garou. In leaving the latter, do not attempt to pass to the Southward of the reefs which extend to the Eastward of Chardons Isle and Rose Point, until the semaphore on Mount Tartane comes open of Ramville Isle. The only further directions that can be given are that having brought Mitan Cay to bear N. about half a mile, a vessel must haul to the wind through the channel. The semaphore of Tartane on with Mitan Cay leads just outside, and to windward of the reefs on the S. E. side of Martinique.

Francois Anchorage. FRANCOIS ANCHORAGE lies between Rose Point and Thierry Isle. There is excellent holding ground here completely sheltered from all winds by the land and

dry reefs, through which there are two narrow intricate channels. These, however, are so extremely difficult to navigate, that none but steamers or small vessels can get out of them.

CULS-DE-SAC FREGATE, SIMON, SANS-SOUCI, and VAUCLIN, are small inlets, in which vessels of light draught will find good anchorage, but they are all equally difficult to navigate, without the assistance of a pilot. In front of these inlets, however, there are several small openings or passes in the reef, which may be entered in case of great emergency by those well acquainted with the locality. *Culs-de-Sac Frégate. Simon, Sans-Souci, and Vauclin.*

PINSONELLE PASS, the first to the Southward of Mitan, is formed between Cay Pinsonelle and the Sans-Souci Cays. To run through, bring the Vauclin Mountain upon a S. W. by W. bearing, upon which line there will not be a less depth than four and a half fathoms. *Pinsonelle Pass.*

BRIGOT PASS lies two and a half miles to the Southward of the above, and E. by N. ½ N. from the church in the village of Vauclin; but it is too dangerous for any vessel to attempt without the assistance of a pilot. *Brigot Pass.*

VAUCLIN PASS, at one and a half miles farther to the Southward, is somewhat larger, and less intricate, but still only available for small coasters. To enter from the Southward, bring the little hill on Vauclin point to bear N. W. ¼ N., which course will lead through between the reefs, which are only a cable's length apart toward the inner end of the channel. The depth varies from seven to eight fathoms. *Vauclin Pass*

VAUCLIN POINT is the extremity of a fork of the great mountain of that name, which separates the Cul-de-Sac Vauclin from those of Grenade and Sans-Souci to the Northward of it. The ridge declines uniformly but rapidly, and terminates at a small steep hill on the shore, two hundred and sixteen feet above the level of the sea. The main bank may be said to terminate here, and confines itself gradually to the shore to the Southward, at the distance of from a mile to half a mile. *Vauclin Point.*

The time of high water at Martinique depends greatly on the strength of the trade-wind, but in general, at full and change, it takes place at 4h. From the same influence, the rise and fall at Havre du Robert is two and a half feet, while at Fort Royal Bay it is only one foot and a half. The rise being so small, the stream becomes entirely influenced by the great equinoctial current; consequently, near Salines Point on the S., and the Perle Rock on the N. W. side of the island, the stream runs generally to the Westward. On the E. side, with the wind at N. E., it runs to the S. W., and with S. E. winds to the N. W., and sometimes at the rate of three knots. On the W. side, however, close in shore, there is scarcely any stream at all, and after a prevalence of light winds, it is sometimes found running strong to the N. E. and E. *Tides and Current.*

In the channel between Martinique and St. Lucia, the current is frequently imperceptible.

ST. ESPRIT REEF does not exist. *St. Esprit Reef.*

DOMINICA has been in the possession of Great Britain since 1783, but it has not yet been regularly surveyed. Its surface is rugged, and the mountains are among the highest in the Antilles; Morne Diablotin, situated at the N. end of the island, rises five thousand three hundred feet above the main level of the sea, and should be visible twenty leagues in clear weather. The valleys are fertile and watered by numerous streams, which abound with excellent fish. It is somewhat oblong in shape, twenty-five miles long, N. N. E. and S. S. W., seven miles broad at four miles from the S. end, and ten miles at the same distance from the N. end. Its extreme ends are about two and a half miles in length, and its W. side trends almost on a straight line. *Dominica.*

The shores appear to be all bold and steep to, entirely free from danger, but without a single harbor. There are, however, several good roadsteads on the Western side, the principal of which is Rosseau, where is situated Charlotte Town, the capital of the island.

ROSSEAU ROAD lies nearly five miles to the Northward of the S. W. point of Dominica, named Scott Head, which is very remarkable, for at a distance it has the appearance of a high rocky island, with a fort and signal staff on its summit, but it is connected to this island by a narrow low isthmus. About a cable's length from the head lies a small rock, on which the sea generally breaks. Anchorage will be found round the N. side of the head in Soufrière Bay, in from five to six fathoms water, and here the sea is frequently so calm that in case of necessity a vessel might careen close to the shore. *Rosseau Road.*

Having rounded the S. W. end of the island, Charlotte Town will soon become visible, and on approaching it, run in under easy sail, and having brought Fort Young to bear N. E., and being abreast of a gibbet, which will be observed on the shore, anchor in about six fathoms. As a vessel will have to stand to within half a cable's length of the beach, the topsails had better not be clewed up until the anchor is dropped, in order that she may be backed off should she shoot in too far. This anchorage, besides being so close to the shore, is not altogether good, and men-of-war, therefore, generally proceed to Woodbridge Bay, about a mile farther to the Northward.

The depth is twelve fathoms at a cable's length from the beach, with Fort Young bearing N. E.

Light. A white light is hoisted on Fort Young flagstaff, when the mail packets are expected.

Woodbridge Bay. WOODBRIDGE BAY.—As Charlotte Town is approached, a low point will be seen running off from it to the S. W. Round this point within a cable's length and haul in toward the shore, and when the point comes in line with the outer part of Scott Head bearing S. S. W., and a large sugar factory comes in one with a road leading up the mountain E. ½ N., a vessel may anchor in six fathoms, sandy bottom, about one cable and a half off shore.

The bank is very steep, therefore give out a good scope of cable briskly, to prevent dragging; a reef extends out to the distance of two cables' length from the N. point.

Water. Water may be obtained from a river in Woodbridge Bay, but the beach being rough and stony, it is attended with much inconvenience.

Prince Rupert Bay. PRINCE RUPERT BAY is fifteen miles to the Northward of Charlotte Town, and three and a half miles to the Southward of Cape Melvil, the N. W. point of Dominica. If bound to this bay from the Eastward or from Barbados, it will be better to pass to windward of the island and round the N. end, by which means the risk will be avoided of being becalmed under the lee of the highlands. This end of the island is lofty and bold, and the shore from Jaquet Point to Cape Melvil, or Capuchino Point, runs in almost a straight line E. and W.

Having rounded the latter, two remarkable fortified hills will come open to the Southward, called the Cabris, appearing as islets, but they are joined to the shore by a neck of low swampy ground, which together with them forms the N. side of the bay, about a mile in length. The Western Cabri rises abruptly from the shore and forms Prince Rupert Bluff, which is bold and steep to. The town of Portsmouth stands on the N. E. side of the bay, whence the shore inclines gradually to the S. W., and terminates in a low point, a little within which is a remarkable hill called Rolla Head or the Barber's Block, situated two miles to the Southward of Prince Rupert Bluff.

Water. Wood, water, and an abundance of fish, may be obtained in Prince Rupert Bay. The most convenient river to water at is that near the tamarind tree, by landing the casks on the beach a little to the Northward of it.

Anchorage. There is anchorage for small vessels in the bay on the N. side of Prince Rupert Bluff.

Directions. The shore in Prince Rupert Bay, to the Northward of the town of Portsmouth, is clean and bold, but to the Southward it becomes foul to the distance of two cables' length off, and the ledge is steep to. A vessel will probably have to work into the bay, but there is no danger beyond that just pointed out. About halfway up the N. E. side of the Eastern Cabri there is a sentry-box, and when it comes in sight she will be on the edge of soundings. The best anchorage will be found with the Easternmost of the arches which cover drains on the low isthmus, in one with the N. W. bluff seen over the swamp, and a single tamarind tree close to the beach in the centre of the town, bearing E., in ten fathoms over muddy bottom. If intending to remain any time it will be prudent to steady the vessel with another anchor.

Guadaloupe. GUADALOUPE.—Guadaloupe may be properly described as two islands of nearly equal dimensions, being divided near the centre by a narrow boat channel, about four miles in length from N. to S., called the river Salée.

The Eastern part is named Grande-Terre; the Western forms two divisions, the Eastern of which takes the name of Cabesterre, the Western that of Basse-Terre. The separation is formed by a range of lofty mountains running from N. to S., and at the latter end the Soufrière, an active volcano, rises to the height of five thousand five hundred feet, and is often seen to smoke, and during the night flame is frequently emitted.

Grande-Terre, the Eastern division of Guadaloupe, is nearly in the shape of a right-angled triangle, its base being to the S., its perpendicular to the W., and its apex at the N., a little flattened. Its N. E. side, from North Point to Point Chateaux, is twenty-three miles in length; its S. side, from the latter point to Pitre Point, is also about twenty-three miles; and its W. side, hence to Antigue Point, twelve miles. The N. end, from Antigue Point to North Point, is about five miles. The centre is occupied by a range of lofty hills called Mornes St. Anne. This part of the island is but scantily watered.

Basse-Terre, the Western division of Guadaloupe, is nearly in the shape of an egg, with its small end to the S.; and from Vieux-Fort Point to Valluet Point on the N., it is twenty-four miles in length, and near the N. end it is about fifteen in breadth. Between the N. side of this division and the W. side of Grande-Terre, a deep bight is formed, studded with shoals and small islets, difficult and dangerous to navigate, without the assistance of a pilot; and on the opposite or S. side of the island the numerous shoals which bar the entrance to Pointe-à-Pitre require to be approached with equal caution. The remaining portions of the coast present but little danger.

The capital of Guadaloupe is Fort-Louis or Pointe-à-Pitre, which is built on the S. W. end of Grande-Terre, at the entrance of the river Salée. The chief commercial city is

Basse-Terre, situated a little to the N. W. of Vieux-Fort Point, and here reside the government authorities.

There are several other towns with anchorage before them, which we shall describe, commencing as before from the E., or to windward, round by the S. and W.

PORT ST. FRANCOIS lies six miles to the Westward of Point Chateaux, the E. end of Guadaloupe. This point is very remarkable, being the S. E. extreme of two small sharp-pointed barren rocky islets lying a very short distance from the E. end of Guadaloupe. The port is merely a reef harbor, capable of admitting droghers of nine feet draught. There are two small openings for them through the reef; the Eastern called Champagne; the Western, St. Francois. *Port St. Francois.*

PORT ST. ANNE, seven miles farther to the Westward, is a similar small harbor, fit only for vessels of the lightest draught. *Port St. Anne.*

At two and a half miles to the Westward of St. Anne, will be seen two very remarkable islets, named the Diamants, lying close to the shore; and four and a half miles W. N. W. of them, Gozier Isle, which is very low and sandy, about a fourth of a mile long from N. E. to S. W., and one cable and a half broad: it lies about a fourth of a mile from the shore, and in the channel between there are from ten to sixteen feet water. From this islet commences the outer line of shoals and cays before spoken of, which extend in a S. W. direction to Cabesterre Point, seven miles distant.

GRANGE BAY.—A mile to the Westward of Gozier Isle, the shore forms a deep bight, called Fergeant or Grande Bay, which terminates to the Westward in a bold head-land of moderate elevation, on which will be seen Fort Louis; and three fourths of a mile to the Eastward of it, Fort Fleur-d'Epée, which, with the fort on Islet aux Cochons, protect the anchorage in front, and the entrance to the river Salée. *Grande Bay.*

MOUILLAGE DE FLEUR-D'EPEE, or the outer anchorage of Pointe-à-Pitre, lies immediately to the Westward of Grande Bay, and S. of the entrance to the river Salée. To the N. W. and to seaward it is sheltered by the cays and shoals in the Bay of Pointe-à-Pitre. The nearest of these to the N. W. is Cochons Islet, which is very low and sandy; it is half a mile long E. S. E. and W. N. W., and one cable and a half broad, and has on its E. end a fort, bearing W. half a mile from Fort Louis, and is on the W. side of the entrance to the Salée. The principal and most conspicuous of the other cays are, Anglais, Grand Islet, and the two Frégate islets; the highest and nearest of which lies W. three and a half miles from Gozier Isle, and S. W. by S. one mile and a half from the fort on Islet aux Cochons. The outer edge of the shoals lies about one mile and a half to the S. E. of these islets. *Mouillage de Fleur-d'Epée.*

The anchorage is about a mile in extent, with a depth of from four and a half to nine fathoms, good holding ground. The channel for vessels of large draught lies about two miles W. N. W. of Gozier Isle, and the same distance S. by E. from Fort Louis. Between the shoal ground which extends to the S. W. of Gozier Isle, and that which lies three cables E. of the Mouchoir Carre there is a coral patch which generally breaks. It is about half a mile long N. W. and S. E., and three and a half cables broad, and the least depth on it is twenty-six feet.

On the E. side of the channel there are three buoys; the outer one, painted red, is in twenty-three feet water, with Fort Louis bearing N. by W., and the Eastern or highest Frégate islet, W. by N.; the middle one, painted white, is in twenty-five feet, half a mile N. W. by N. from the above; and the inner one, which is black, is in the same depth, about a cable's length beyond, and between these two there are twenty-one feet water. *Buoys.*

A mile S. by W. from the Mouchoir Carré lies the Mouton Vert, a small shoal, on which there are seventeen feet water, and, although the sea rolls heavily over it, it does not break, and is therefore not so easily distinguished. At three fourths of a mile to the Southward of this is the Dupont Ledge, which generally shows itself. There are channels between all the shoals and the islets within them for small vessels bound to Petit-Bourg, Goyave, and Ste. Marie, on the Eastern side of Cabesterre.

POINT CHATEAUX, the Easternmost land of Guadaloupe, is composed of irregularly shaped rocks, some of which appear ready to tumble over into the water. From this point you run down the S. side of the island, within two miles of the shore, until you pass the island called Gozier, between which and the main island there is no passage, and only a small opening. From this island to near the harbor you may go along in the edge of the white water. When up with Isle le Gozier, you will see a building on a hill to the Westward near the water, which is the Fort of St. Louis, although it has not much the appearance of one. Before you get to this fort you can always get a pilot. *Point Chateaux.*

About a mile from the fort is the entrance to the harbor of Pointe-à-Pitre. In running along you will, if not too far off shore, observe an island so low that the mangrove bushes appear to stand in the water, from which a reef extends off some distance to the Westward.

On this island there is a harbor light, and opposite this island there is a telegraph. Vessels, after passing Point Chateaux ten miles, should hoist their signals for the telegraph. *Light.*

A little to the Westward of this last is another island, larger and higher, with cocoanut-trees and some houses on it, from which a large reef extends off in an Easterly direction. Between these two reefs is the entrance to the harbor. A little inside the low island are several large square buoys, near which you pass, leaving them all on the starboard hand. There are several islands to the Westward of those already mentioned, among and around which the ground is foul, so that vessels lying off and on should keep to windward.

There are three fathoms on a small piece of shoal ground, nearly S. by E. from the entrance to the harbor. Pointe-à-Pitre is one of the best harbors in the West Indies.

The pilot boat is a yawl with a square white burgee and a blue border.

Directions. Vessels bound to Pointe-à-Pitre from the Eastward, should pass along the Southern side of Guadaloupe at the distance of about a mile, and when abreast of Gozier Isle, the buoys will come in sight. The only direction necessary is to steer close to the Westward of them, and, having passed the inner one, to haul to the wind and anchor as most convenient. Should the buoys have broken adrift, which is frequently the case, great caution must be observed not to run too far to leeward, and to haul into the channel when Fort Louis bears N. ½ W., upon which line there will not be less than twenty-two feet water, and when Gozier bears E. ½ N., the vessel will be within the bar.

Small vessels drawing not more than sixteen feet may pass to the Eastward of the buoys, and as close to the shore as to bring Fort Louis to bear N. N. W., upon which line they will have not less than nineteen feet. In beating up from to leeward, great care must be taken to keep well to the Southward, until Fort Louis bears to the Westward of N.

The town of Pointe-à-Pitre is situated about two miles to the N. W. of Fort Louis, at the entrance to the narrow part of the Salée. The mouth of the river between the reefs, which lie to the Eastward of Cochons Islet and to the Westward of Fort Louis, is scarcely a cable wide, and is tortuous and intricate, although having a depth of twenty-six feet.

On the Eastern side of the channel are four buoys; the Southern one of which is placed on the extreme point of the shoal ground running off from Fort Louis. The inner one is placed about half a mile to the N. N. W. of it, and nearly a cable's length N. W. of the Islets à Rats, three small cays lying about a cable's length from the shore under Fort Louis. These buoys must be left close aboard to the Eastward; but it is impossible for strangers to navigate the interior of the channel without the assistance of a pilot. The anchorage off the town is quite secure, even against hurricanes, and varies in depth from two and a half to four and a half fathoms; small vessels may lie alongside the wharves.

Basse-Terre. BASSE-TERRE lies two and a half miles to the N. W. of Vieux-Fort Point, the S. W. end of Guadaloupe, and is merely an open roadstead.

Vessels bound to this road and having rounded the above point, which is bold and steep to, should luff up, keeping the shore close aboard, and anchor off the town as most convenient within the buoys, which are placed near the edge of the narrow bank of soundings. The depths from sixteen to twenty fathoms at one and a half to two cables' length from the shore. A heavy swell generally rolls in on the coast, and should the wind veer to the S. E. they must be prepared to quit.

In sailing along shore during the day, the usual caution must be observed, to be prepared to meet the sudden and violent gusts which rush down the gorges of the mountains.

Water may be readily obtained from the town of Basse-Terre, without removing the casks from the boat. This side of Guadaloupe is far better supplied with water than Grande-Terre, and it is said that not less than fifty small streams find their way into the sea between Vieux-Fort Point and the N. W. end of Basse-Terre.

West Coast of Guadaloupe. WEST COAST OF GUADALOUPE.—Between Basse-Terre and Grande-Anse, twenty miles to the N. W., will be found many small bays affording anchorage for coasters. The principal are Duplessis, Barque, and Bouillante; the latter is eight miles from Basse-Terre, and receives its name from two hot springs in the neighborhood. At one mile and a half farther on is Criquet Bay, sheltered on the W. by Goyaves Island, leaving between it and the shore a channel called the Passe des Vaisseaux. Beyond this are those of Caillou, Ferry, Deshayes, and lastly Grande-Anse, which is only separated from the former by the lofty promontory of Gros-Morne.

From Lebreton Point, the N. point of Grande-Anse, a sand-bank extends off to the Northward in front of Perle Bay to the distance of nearly a mile from the shore. The N. point of Perle Bay, named Basvent (in the old charts Vieux-Fort St. Pierre), is remarkable, having a small islet lying a short distance to the N. W. of it, skirted by reefs.* This is the N. W. extreme of Guadaloupe, and hence the coast turns suddenly to the Eastward, continues greatly elevated, and requires to be navigated with extreme caution

* This is probably the small island called, in former charts, Tête à l'Anglais, and described as a remarkable gray rock.

On the W. side of Guadaloupe a light land wind generally blows off during the night, as far as two miles from the shore, and it will be found advantageous to vessels proceeding either to the N. or S. Beyond that distance calms and light baffling winds frequently detain them many days; and if they cannot take advantage of the land wind, it will be prudent for them not to approach the W. side of the island nearer than twenty miles. *Winds.*

A strong S. E. current frequently prevails on the Western side of Guadaloupe, and appears to be influenced entirely by the strength of the trade-wind.* There is but little rise and fall of tide. *Tide and Current.*

NORTH COAST OF GUADALOUPE.—About a mile to the Northward of Basvent Point lies Kahouane Islet, at the W. end of a reef which extends along the shore to the distance of from one to three miles, almost as far as the W. side of Grande-Terre. On this reef are several small cays, which serve to warn a vessel of her approach to the reef when beating to windward; and within it there is a good channel for small vessels. There are also several cuts through it, navigable for vessels bound to the small ports of Rose, Mahaut, and Lamentin. *N. Coast of Guadaloupe.*

The best of these passes are, Grande-Coulée, situate between the reefs which extend from the E. side of Anglais Isle and the W. side of Blanc Isle, in which there is a depth of eight and a half fathoms; Passe à Caret, between the islet of that name and Fajou Isle, has a depth of four and a half fathoms; and Passe à Colas, the most Eastern, is of greater depth, but neither of them can be navigated safely without the assistance of a pilot, though the water is so clear that the shoals can generally be seen from a short bay aloft. In working up the channel within, it will be advisable to border toward the reef, particularly after passing to the Eastward of Rose Bay, when the shore becomes skirted by reefs and cays.

ROSE BAY, about E. four and a half miles from Anglais Isle, is sheltered N. by a reef, through which are two small openings, with a depth of from fifteen to twenty-two feet: the Western opening leads to the small Bay of Ramee: the Grande-Coulée Channel lies N. of it. On this part of the shore, a long, low, narrow, level plain lies at the foot of the great mountain range. *Rose Bay.*

MAHAUT BAY is about ten miles farther to the Eastward, on the N. side of the narrow tongue of land which separates Grande-Terre from Cabesterre, and about two miles from the entrance to the river Salée. There is excellent anchorage in the outer port, in from seven to eight fathoms, and farther in, off the town, in from three and a half to four and a half fathoms. The best pass by which to enter is the Caret, which lies four miles N. N. W. of the bay, and Fajou Isle, on the E. side of the opening, bears N. of it. *Mahaut Bay.*

LAMENTIN BAY is separated from the above by a narrow ridge of land, the N. point of which is called Nègres Point, but its entrance is so obstructed by sand-banks that only very small vessels can find their way in. *Lamentin Bay.*

PETIT CANAL BAY extends from Macou Point, which lies one mile and a half to the Northward of the entrance to the river Salée, to Grisgris Point, two miles to the Northward of it, on the W. side of Grande-Terre; it is, however, only an anchorage for proghers, who find their way by the eye through the reefs which protect it to the Westward. *Petit Canal Bay.*

PORT LOUIS is an open roadstead about two and a half miles farther to the Northward and two miles to the Southward of Antigue Point, the N. W. end of Grande-Terre. Anchorage will be found off the town in eight fathoms, at about a fourth of a mile off shore. This part of the coast is foul to the distance of two cables' length, and the bank of soundings does not extend beyond two thirds of a mile from the shore, at about which distance a vessel may anchor in nineteen or twenty fathoms water. *Port Louis.*

From Antigue Point to Grande-Vigie Point, or North Point, and thence as far to the S. E. as Ste. Marguerite Bay, the Eastern shore of Guadaloupe is bold and clear, and throughout rocky and moderately elevated.

STE. MARGUERITE BAY is merely an open roadstead, without any protection from the trade-wind, and consequently not safe for large vessels. From this bay the shore again becomes foul to the distance of from one to two cables' length all the way as far as Point Châteaux. *Ste. Marguerite Bay.*

PORT MOULE, situated nearly midway between North Point and Point Chateaux, is sheltered to the Eastward by the reef just noticed, through which there is a channel for vessels of large draught, which will find anchorage under its lee, but they require the assistance of a pilot. Small vessels will be more secure farther in, off the town. In the outer roads there is a depth of from four and three fourths to five and a half fathoms, which gradually decreases toward the bar at the entrance of the port, on which there is only from ten to fourteen feet. From Fort Moule to Point Chateaux there is no safe anchorage. About four and a half miles to the N. W. of the latter is Gourde Isle, which is rather remarkable, and lies just outside the reef, which is bold and steep to. *Port Moule.*

* From experiments made by Captain Deacon, of H. M. S. *Niobe*, in November, 1815, it was found to extend to the depth of eight fathoms below the surface of the sea.

Port Moule. A white flag, with a black ball in the centre, at Port Moule, is the signal not to attempt to enter. A plain white flag is the signal to approach for a pilot. There is a harbor light there.

Rollers. From the following remarks made by Mr. Llewelyn, master of H. M. S. *Niobe*, in 181 it appears that Guadaloupe is subject to the rollers, which are more generally observed to occur at the islands to the North and West of it, and which evidently will expose a vessel not furnished with good ground tackling to great danger:

"Having anchored off Basse-Terre on the evening of the 20th October, we commenced watering on the following day, and continued the whole day without any more surf than usual, but on the morning of the 22d the surf set in so high as to oblige us to give over at 8 A. M. The weather was remarkably fine, and the horizon clear, except at intervals and a light wind from E. to E. N. E. The swell increased during the day to a tremendous height, and the surf broke with the violence of a great storm, so as to stop all communication with the shore, and to endanger several parts of the town. It was at its height about 4 P. M., and continued so until about 8 A. M. on the 23d, when it began gradually to subside; but it was several days before the surf resumed its general character. It came from the W. S. W., and commenced three days after the full moon, which was nearly vertical at the time. Whether that was the cause I cannot pretend to say, but I can affirm with confidence that it was not caused by any unusual strength of the wind; and it was observed, at precisely the same period, at all the Antilles from Grenada to St. Bartholomew, and the tide rose from two to three feet higher than usual. When the swell was at its greatest height, a large boat with a mast was riding close in. We perceived the anchor gradually come home, and having reached the breakers, she was dashed to pieces in a moment, and every fragment thrown ashore, contrary to what is generally met with, where the outset of the surf keeps a vessel off the shore. We were riding close in, and had a taut cable from the action of the wave."

Les Saintes. LES SAINTES (so called from having been discovered on All Saints' Day) are a group of small islands attached to the government of Guadaloupe, occupying a space of about four and a fourth miles from E. N. E. to W. S. W., and two and a half miles from N. W. to S. E. They lie fifteen miles to the N. W. of Dominica, and six miles to the S. E. of Guadaloupe, and the channels both N. and S. of them are quite free of danger. The Easternmost and largest island, named St. Peter or Terre-d'en-Haut, is separated from the Westernmost island, named St. Paul or Terre-d'en-Bas, by a channel nearly half a mile wide, safely navigable for vessels of the largest draught.

Water. The Saintes are but scantily supplied with water, the inhabitants depending chiefly on what they are able to catch in tanks. No wood is to be obtained.

St Peter Islet. ST. PETER ISLET is about two and a fourth miles in length from N. E. to S. W., but its shores are so irregularly shaped that it varies in breadth from a fourth to three fourths of a mile. It is of moderate elevation, its highest part being at the S. W. end where Mont Rossel, also called Des Filles, rises to the height of eight hundred and thirteen feet above the sea, and a short distance to the N. W. of it the shore terminates in a bold promontory, known as the Sugarloaf. The town is situated on the W. side of the island, and a little to the Northward of it is Fort Charlotte, which protects it.

Anchorage. There is a temporary anchorage, with the prevailing winds, in from seven to eleven fathoms, at about two cables' length from the Southern shore of St. Peter, between Redondo Islet and Cointe Head; but the principal anchorage lies off the town, and is so well sheltered on the W. by the island of St. George as to make a safe harbor about half a mile in extent, with a depth of from six to fourteen fathoms. Vessels not wishing to enter the harbor will find excellent anchorage in the Outer Road, between the S. W. side of St. George and the Sugarloaf, in from ten to thirteen fathoms, good holding ground, and for this purpose, when coming from the Northward, they may round the W. end of St. George within a cable's length.

St. Paul Island. ST. PAUL ISLAND is nearly square, each side being about a mile and one fourth in length. Its shores are but slightly indented and quite free of danger to within a cable's length, except, however, at its N. end, where, about a fourth of a mile from the shore lies the small, low, rocky islet, called La Paté, which is bold and steep to on its E. side but it is foul on its S. side to the distance of nearly a cable's length, and on its W. side as far as nearly midway between it and Paté Point, and contracts the channel to the width of a cable and a half. By bordering close along the shore of St. Paul a vessel may run through this passage, and have not less than six fathoms.

Anchorage. There is temporary anchorage on the W. side of St. Paul, just to the Northward of Bolt Head; and on the E. side of the island there are two small coves convenient for droghers.

St. John Island. ST. JOHN ISLAND or GREAT CAY lies nearly half a mile to the Southward of Redondo Islet, which is about a cable's length from the S. point of St. Peter, under Mont Rossel. It is three fourths of a mile long E. and W., and at its centre three cables broad. Nearly adjoining to its W. end is Sow Island, four cables long, and scarcely one broad, and a little to the Westward of Sow Island is a small rocky islet of St. Augustin; the channels between them being only safe for boats.

These three small islands are steep and bold to, except at the W. end of St. Augustine, ich is foul to the distance of a little more than a cable's length. In taking the chan- l between it and St. Paul, which is otherwise quite free of danger, care should be ken not to haul in too suddenly, or until the W. end of St. George is seen midway be- een St. Peter and St. Paul, and when Redondo comes on with the S. E. extreme of St. ter, a vessel will be to the Northward of the spit off the W. end of St. Augustine, and y haul her wind. The channel between St. John and Redondo is quite safe and free danger.

ST. GEORGE, or CABRIS, or SOBER ISLAND is of an irregular shape, four les long E. and W., three cables broad at its E. end, and it terminates at its W. end a sharp bold headland, wooded to the summit of the hill. *Sober Island.*

WHALE PASSAGE, the Northern channel between St. George and St. Peter, is arly three cables wide, with a depth of from ten to eighteen fathoms. Nearly in the tre of the Northern part of the entrance is Whale Shoal, a small rocky patch, on ich there are only four feet water. It is steep to, and lies two cables' length to the estward of Duportaille Point, the N. W. end of St. Peter: nearly three cables' length E. of Bombo or Bombarde Point, the N. E. end of St. George Island; and a little re than a cable's length N. by W. from the Whale Rock. The latter is a small rocky et eight or ten feet in height, lying about a cable's length from the N. W. side of St. ter. Should the shoal not break, the water is here so clear that it may readily be rceived from a short way aloft. There is also a similar small patch, called the Caille, ng a cable's length to the N. E. of Duportaille Point. *Whale Passage.*

SUGARLOAF PASSAGE is between Sandy Point, the S. E. end of St. George Island, d Morne Rouge or Red Head, on St. Peter, three and a half cables' length S. S. E. of both of which are bold and steep to. The passage, however, is obstructed about one rd the way across by a small coral patch of four feet, which, for the purpose of de- ption, we shall call the Cabris Rock, for it has no name attached to it on the present arts. The marks for it are, the summit of the hill at the W. end of St. George, in line h Sandy Point and the bluff of the Sugarloaf in one with Cointe Head. It does not ways break, but the discolored water points it out. There is a clear passage both N. d S. of this rock, with a depth in it of from six to nine fathoms. *Sugarloaf Passage.*

Vessels bound into the harbor of St. Peter, will enter by either the Whale Passage, the Passage des Vaisseaux. The former is the best, except with the wind to the uthward of E., when the latter may be pursued with more advantage. *Directions.*

To sail in through the Whale Passage, having passed the N. end of St. Peter at the tance of from a fourth to half a mile, steer to the Westward until the flagstaff in the wn comes open of Coquelette Point, or the highest hill on St. John seen over St. Peter, rs S. by E., when a vessel may haul her wind into the passage, and anchor as most venient off the town, about a cable and a half distant from the shore with the Whale ck seen just clear of the land.

To navigate the Passage des Vaisseaux steer as above directed, until the S. W. pas- e between the S. E. point of St. George and Cointe Head comes just open, which rk will lead through between the Whale Rock and Whale Shoal; and when the flag- ff in the town opens out, haul in to the anchorage. In passing the Caille Shoal take e not to open the Whale Rock outside the Sugarloaf.

In leaving the anchorage it will be better to pass out through the Western channel, her to the Northward or Southward of the Cabris Rock. In the former case cast to rt, and stand to the N. W. until the S. side of Pie Island is in one with Pie Point, or right extreme of the Sugarloaf Bluff is in one with the left extreme of St. Paul, en bear up and run through upon either mark, according to the direction the vessel bound.

If the Southern or Sugarloaf passage is taken, it will perhaps be better to cast to star- rd and run out with the Red Head close aboard, or with the flagstaff in the town bat- y bearing E., or Fort Morne-à-Mire, situated at the N. end of the town, E. N. E.; when abreast of the Sugarloaf, or when the N. W. hill of Cabris comes open of its point, the course may be shaped through the channel outward as most convenient, ing care to avoid the shoal off the N. end of St. Augustine.

The tides among the Saintes are much influenced by the winds, but the general rise d fall is from eighteen to twenty-two inches. *Tides.*

MARIE-GALANTE, a French possession under the government of Guadaloupe, lies rteen miles to the Eastward of the Saintes, in the channel between Dominica and adaloupe, eighteen miles N. N. E. of the former, and fifteen miles to the Southward the E. end of the latter. The area of this island is about sixty square miles. Its pe is nearly oval, being ten miles long, N. and S., and about eight miles E. and W. s of moderate elevation, and rises gradually from the S. toward its N. E. end, where it aid to be about the height of Barbados. The Southern and Eastern shores are danger- being skirted by a reef to the distance of from two to three miles. The W. side is r, and affords anchorage off almost all parts; the soundings are regular and gradu- diminish toward the shore, and quick attention to the lead is all that is required. *Marie-Galante.*

Basse-Terre. JOINVILLE, GRAND BOURG, or BASSE-TERRE, the principal town in Mari Galante, is situated at the S. W. end of the island, having in front of it a small reef ha bor for droghers, carrying a depth of ten feet; there are two narrow openings in the re through which a vessel will carry sixteen feet.

St. Louis Bay. ST. LOUIS BAY lies between May Point, the N. W. extreme of Marie-Galante, a Sable Point, three miles S. S. W. of it, and is the best anchorage for large vessels; t most convenient berth will be found about halfway between the village in the bight a Sable Point.

Vieux-Fort. VIEUX-FORT is a small anchorage at the N. end of Marie-Galante, about three mil to windward of Mary Point, and to the Southward of a small islet of the same nam called also Frégate Islet; but as yet we have no particulars respecting it, the island n having been minutely surveyed.

Cabesterre. CABESTERRE, a small town at the S. E. end of the island, has also a reef harbor b fore it, where droghers may find shelter.

Directions. When proceeding from the Northward to either of the anchorages on the W. side Marie-Galante, give the islet of Vieux-Fort a wide berth, to avoid the shoal ground e tending some distance to the Westward of it. For this purpose, keep the islet shut with the N. E. end of Marie-Galante until St. Louis Bay is well open, when a vessel m haul in by the lead; Sable Point must also be given a good berth. A vessel will prob bly have to work up to the anchorage off Grand-Bourg, and in so doing care must be tak not to stand to the Southward of the town on the port tack. As before observed, the end of the island is very dangerous, and should not be rounded within the distance from two miles.

Petite-Terre. PETITE-TERRE, a low sandy island, two and one fourth miles long, N. E. and S. and a little more than half a mile broad, lies N. N. E. twelve miles from Marie-Gala and S. E. five and a half miles from Chateaux Point in Guadaloupe, the channels betw being quite free from danger. It would be more properly described as two small isl as it is divided near the centre by a narrow cut; the Eastern half being called Terre Haut, the Western Terre-de-Bas. All its shores are foul and rocky, to the distance from a fourth to half a mile.

When coming from the Eastward a depth of from thirteen to twenty fathoms will found at two miles N. and S. of the island, and it should not be approached within t distance.

Light-house. A light-house, seventy-five feet high, stands at a cable's length from the E. end Petite-Terre Island, and exhibits, at one hundred and eighty feet above the sea, a fi white light, dioptric, and of the third order, which may be seen all round to the dista of fifteen miles. It bears S. E. ¾ S. from Chateaux Point. S. ½ W. from Morne-à-Freg to the W. end of Désirade, and S. W. by S. from the N. E. point of that island. Th is a rock named Baleine du Sud lying S. by W. ¾ W., nearly half a mile from the li house.

Bank. About seven or eight miles to the Westward of Petite-Terre, and to the Southward Port St. Francis in Guadaloupe, there is a bank with as little as five and six fathoms it, and it is probably the summit of a great bank of soundings, which appears to ext to the Southward of these islands. Sir Robert Calder, in 1795, gave the following count of it:

"Beating up between Guadaloupe, Marie-Galante, and Petite-Terre, discovere bank; hove to, lowered a boat, and having sounded with the master, anchored the on it, in six and a half fathoms, sand and long grass. Found it to be three miles l and one and a half broad, and the least water six fathoms. It slopes from six to tw and fifteen fathoms, and then in very deep water on all sides. The bearings wer follows: Marie-Galante, from S. S. E. ¼ E. to S. ¾ W.; Chateaux Point, N. E. ¼ N. W. end of Désirade, N. E.; S. point of Désirade, a cable's length open of Chate Point; the town of St. Francois, N. ½ E.; the town of Ste. Anne, N. W. ¾ N.; Ca terre Point, W. S. W., and the centre of the largest Sainte, S. W. ½ W. We had g fishing."

There is also said to be a bank with seven fathoms on it, lying about seven miles to N. W. of May Point in Marie-Galante.

Désirade. DESIRADE, DESEADA, or DESIRADA, lies about four miles to the Eastwar Guadaloupe and is attached to the government of that island. It is eight miles in le from E. N. E. to W. S. W., and from one and a half to two and a half miles in bre its N. E. end terminating in a sharp point. Its shores are slightly indented and of erate elevation; its N. W. side is steep and bold to, but its S. E. side is fringed wi coral reef to a short distance with soundings beyond it; as yet, however, we know little of their extent.

Grande Anse. GRANDE ANSE, the chief town in Désirade, stands on the S. E. side of that islan about four and a half miles to leeward of its E. end. In front of it there is a small o ing in the reef, which will admit droghers into a sheltered anchorage under its lee, under very favorable circumstances, large vessels may anchor outside,

NSE DE MAHAUT, near the E. end of Désirade, on the S. side, is a similar small harbor, on the shore of which is the village of Camp-des-Lépreux. *Anse de Mahaut.*

ere is anchorage under the S. W. end of the island, in from nine to twelve fathoms, t half a mile W. N. W. of the old fort near the village of Galet; but care must be to pick out a clear spot, as the ground is in some places rocky; this may be done e eye. In the channel between Désirade and Guadaloupe the soundings vary from ty to twenty-two fathoms.

om the following report made by Mr. G. Filmer, master of H. M. S. Pique, in May, it would appear that soundings of no great depth extend to some distance from the side of Désirade:—

When passing through the channel between Guadaloupe and Désirade, having round- e S. W. point of the latter within half a mile, and steered to the S. E. about two observed the water to become so discolored as to induce me to believe the ship n danger, and that there could not be more than five fathoms water; the lead was , but as the ship was running at the rate of nine knots, the bottom could not be ned. Shortened sail immediately, and bore up W. towards Petite Terre, for about e and a half, sounding in from twelve to fourteen fathoms, the bottom distinctly and discolored all round to a considerable distance in light and dark patches. The part when the ship bore up, must have been S. E. ¾ E. between two and three miles the S. W. part of Désirade."

e channel between this island and Guadaloupe is frequently taken by vessels bound e Northward, and cannot fetch to windward of Désirade; in this case Désirade ld be kept aboard within a mile, and the least depth that will be obtained will be thoms.

ARTIN REEF.—This shoal was seen by the brig Transit, in February, 1842, and de- ed as about two hundred feet long, eighty feet wide, with three fathoms water in entre, and much shallower on the edges, and to be in lat. 16° 42′ N., long. 59° 6′ It was also observed by the ship John Manning in July, 1816, and said to consist llow sand with sea-weed on it, about half a mile long E. and W., a fourth of a mile , and to be in lat. 16° 42′ N, long. 58° 45′ W. It was also seen from the ship Ce- in July, 1823, and it then appeared to be one and a half or two miles long, about feet wide, and its Western part, shaped like the bulb of a thermometer, seemed dan- s The position given to it by the latter vessel was lat. 16° 44′ N., long. 58° 50′ and by taking the mean of the above positions it would place the shoal in about lat. 3′ N., long. 58° 54′ W. *Martin Reef.*

NTIGUA.—This island is thirteen and a fourth miles long from E. to W., and nine fourth miles from N. to S., and compared with the lofty islands to the Southward, be said to be of moderate elevation, and its heights are seldom obscured; near its end, Boggy Peak, the highest part of the island, rises about thirteen hundred feet the level of the sea. Almost all its shores are deeply indented, particularly those rd the N. E., where there are many bays and creeks navigable for small vessels. end of the island is low, but it rises gradually in height towards its S. W. end where ills become very irregular, and so remarkable as to serve the purpose of guides gh the dangerous reefs and shoals which surround almost the whole island. The clear space is on the S. side, between Willoughby Bay and Old Road; here it is and steep to: all elsewhere it should be approached with great caution, and with ad continually going. *Antigua.*

tigua lies on the Southern edge of an extensive bank of coral and sand, which es as far to the Northward as Barbuda, which also lies on its extreme edge in that tion. The bank runs off to the S. E. to the distance of five miles; to the E. from of-War Point, seven miles, and thence the edge takes almost a straight line to the point of Barbuda. From the W. side of Barbuda the edge is twelve miles distant, t is the same distance E. of the St. Bartholomew bank. From about the parallel of end of Barbuda, it turns to the S. E., forming a deep bight, the bottom of which ourteen miles from the S. W. point of that island, and here the bank is only twelve wide. This bight will be found of great value to vessels passing to leeward of the ds in the night, as it will enable them to judge of their distance from either; but ad must be well attended.

om Sandy Island at the entrance of St. John's the bank extends W. by N. twelve and terminates abruptly from a depth of twenty-five fathoms. Thence it turns in- again to the E. S. E. and the edge comes within three miles of the shoals on the de of the island, and then trends outward and terminates to the S. W. seven and a iles from Johnson Point.

EEN ISLAND.—Commencing our description as usual, from to windward, the E. f Antigua may be said to be formed by Green Island, the Eastern extreme of which nates in a bold rocky headland, one hundred and seventy feet high, called Man-of- Point: this point is steep to, and may be rounded within a mile. *Green Island.*

N POUND BAY lies nearly half a mile to the S. W. of Man-of-War Point, *Ten Pound Bay.*

and is unnavigable, from the heavy swell which always rolls in at the entrance of cut.

Ricket Harbor. RICKET HARBOR, at the S. W. end of Green Island, affords shelter for droghers der the lee of the reef.

York Island. YORK ISLAND is a small round rocky islet, lying a mile and one fourth to the S. of Man-of-War Point, at the outer part of the Eastern entrance to Nonsuch Bay ready described. This island is nearly connected by dry reefs to the shore of Ant which thence takes a S. W. direction for a mile and a half, where it terminates in bold precipitous rocky headlands two hundred and fifteen feet high, very remark from the Eastward, especially when the morning sun shines on the white cliffs. In space are the two small bays Marie-Galante and Exchange. The shore is skirted reef, but in moderate weather it may be approached within a mile.

From Hudson Point, the Southernmost of the above headlands, the coast takes a den turn to the W. by N. for three miles, forming the N. side of Willoughby Bay, wh is a remarkable flat, woody table-land, three hundred and fifty feet in height; it takes again a sudden turn to the S. S. E. for two and a half miles, forming a deep bi named Willoughby Bay.

Willoughby Bay. WILLOUGHBY BAY, the head of which is low and sandy, although capable of fording safe anchorage to large vessels, is, however, so difficult and dangerous of acc that it is seldom or never frequented, the produce of this part of the country being by droghers to St. John's. Its entrance is protected by a coral ledge, dry in many p through which there are two cuts; that to the N. E., named Horseshoe Channel, is seventy-five yards wide, with a depth of twenty-nine feet in it; the other is nearly ble wide, but so tortuous and intricate that no good marks can be given for its safe igation.

Directions. To enter Willoughby Bay by the N. E. or Horseshoe Channel, run down about a distant from the reef, and when Lyon's steam-mill, on the N. shore, comes in one w remarkable Bush on Dellap Hill, situated some distance in the interior, steer in on line, until Cochrane's mill, on the low land at the head of the bay, is in one with the rocky point on the S. side of Christian Cove N. W. ¾ W., which mark will lead thro the narrow cut; on the point there is the ruin of a small fort, forty feet above the lev the sea, but it is scarcely visible. When Fort Shirley comes in line with the S. poi the inner point of the bay, the vessel will be within the reef, and may haul up for anchorage.

With the prevailing winds, marks will be useless to vessels leaving the bay, as cannot fetch out; and as no safe directions can be given for the other channel, the chorage in this bay is only free to steamers, and they will require the assistance o experienced pilot. The bight is exposed to the full force of the sea, and swell o ocean, which makes it even dangerous to approach in strong winds.

Shirley Heights. SHIRLEY HEIGHTS is a remarkable bold, rocky promontory, rising perpendic ly from the sea to the height of five hundred and forty-five feet, at four miles to the of Hudson Point. On the flat summit will be seen the barracks and other buildin the garrison; and at the Western edge of the precipice, a little more elevated, the signal posts of Fort Shirley, which overlooks the entrance to English Harbor. Bet Willoughby Bay and the heights are two small inlets, Mamora Bay and Indian C which afford safe anchorage to droghers; the entrance to the former is obstructed bar of ten feet; the mouth of the latter is about a cable wide, and has a shoal near the centre, which generally breaks.

English Harbor. ENGLISH HARBOR, being entirely occupied by the government as a naval ar is only visited by vessels-of-war, and is so well sheltered that they may heave alongside the dock-yard, and ride out the hurricane season, with almost perfect sec Water may also be obtained with great ease and facility, by hauling the vessel wharf, where it is conveyed on board through hose from tanks in the yard. The bor is, however, very confined in space, and its turnings are so sharp that vessels of length must warp in.

The entrance to the harbor, which is only a cable wide, lies at the foot of Sh Heights, the W. end of the lofty promontory forming the S. E. side of the entrance a long, low, narrow, rocky, fortified ridge, on the S. E. extreme of which is Fort Ba the N. W. side. The greatest depth in the narrows is twenty-four feet, but only o exact line of direction, viz, the N. end of the wall of the governor's house on Dow in one with the rocky point at the N. end of the sandy beach in Freeman Bay; a doubtful mark, from the hill being so greatly elevated above the point. In the c of the channel there is a small patch of twenty-one and a half feet; consequent twenty-four foot channel is not more than forty yards wide; and as no confidence c placed in the wind, which baffles about in all directions, when under the heigh stranger should attempt to follow these directions without the assistance of a pilo is always at hand.

If the wind be at N. E. or E. N. E., prepare to anchor outside the narrows, with

nd a kedge ready to warp in. Should it blow strong, the gusts rush down the s with such violence, and the holding ground is so exceedingly bad, that a second will most probably be required to bring up with; and if this is not done in time, ssel may be exposed to much danger. A small fairway buoy is generally placed E. or weather side of the channel.

Lights.

en the mail steamers are expected, three fixed lights triangularly placed, are ex- d from the flagstaff at Fort Barclay. The lights are sixteen feet apart: the upper hich is red, is sixty-two feet above the level of the sea; and they may be seen at tance of eight miles.

Directions.

ntending to enter English Harbor with the prevailing wind at E., steer boldly in the heights a little to the windward of Fort Charlotte Bluff (the E. point of the ce), and then stand toward it under full plain sail, trimmed sharp up, with the s set. Hug the shore close, giving the bluff a short berth, and passing close to estward of the buoy, luff close up, keeping the leading mark on, given above. the flagstaff in the dockyard comes in one with the end of Fort Barclay, haul the s up, and if the vessel has good way she will most probably shoot round that fort the baffling wind from the high lands comes off from the Northern shore. If she ds in shooting in, be prepared to bear up short round, and when in the centre of nnel, clue all up, as she will most probably have sufficient way to carry her to chorage off the dockyard. Should the vessel lose her way, and become unman- e at the entrance, anchor immediately, and be prepared to act as before directed. ot going farther than Freeman Bay, which lies just within the outer channel, keep wind, and shoot up as far as possible, to be able to drop the anchor in good hold- ound, ready for warping up to the moorings laid down in the bay. Boats from ckyard are generally in readiness with hawsers, but the vessel's own should also r at hand, if not in her boats.

n the entrance being so narrow, large steamers will find it extremely difficult to fficiently quick and short round after passing Fort Barclay, and it will be more ient for them to anchor in Freeman Bay.

wind generally slackens toward evening; and early in the morning a light land vill enable a vessel to get out of the harbor without much difficulty.

Falmouth Harbor.

MOUTH HARBOR lies a mile to the Westward of English Harbor, and affords nt anchorage for a few vessels of large draught, there being twenty-four feet wa- the centre; it is, however, never made use of except by droghers. The harbor e said to be divided into two parts, the Eastern or inner end being separated from estern by a spit, which extends from Blake Island to nearly the centre of the har- here it terminates in a small patch named Spit Shoal, with a depth of only twelve it. Between it and the foul ground off St. Anne's Point the channel leading e inner basin is not quite a cable wide; a sailing vessel of large draught would, re, have to warp through against the prevailing wind.

heads of the inner basin and English Harbor are only separated from each other arrow, low, sandy ridge, about a cable's length across.

outer anchorage, at the entrance to the harbor, for large vessels is confined to a space about two cables' length each way; the inner is more capacious, being he same dimensions in width, but nearly half a mile in length from E. to W.

Directions.

ding in for Falmouth Harbor from the Eastward, having passed Shirley Heights, rance immediately shows itself, and a vessel may then steer boldly toward the of the opening, until the E. end of the fort on Blake Island comes in one with a able house on the Western slope of Monk Hill, bearing N. by W. This mark d through the entrance; and having passed the Bishop Shoal, which always itself, haul up and anchor as most convenient, according to the vessel's draught.

n Falmouth Harbor Westward is the loftiest part of Antigua, and in many places gged irregular hills rise abruptly from the shore, particularly between the harbor l Road. In the immediate vicinity of the harbor are two conspicuous elevations, re frequently of great value to vessels navigating the N. side of the island. The Monk Hill, on the N side of the harbor, and it may be readily distinguished by and signal staff which crown its summit, the S. E. side overlooking a rocky preci- hundred and ninety-five feet above the level of the sea. The other is on the ide of the harbor, one mile and a half to the Westward of Monk Hill, and is a rger conical hill, thickly wooded, and rises to the height of one thousand and fifty- et. When seen from the N. E. and S. W., its summit appears to terminate in a but from the N. W. and N., and points opposite, it forms two peaks, and is conse- sometimes called the Saddle Hill; but as there is another of that name, we have it the Falmouth Peak. In clear weather both of them may be seen from Bar- rty-five miles off. The hills to the Westward of these are more lofty, but not so able to strangers, with the exception of the highest in the island, named Boggy hich is thirteen hundred and thirty-nine feet high, and slightly elevated above ining mass of hills.

Ding-a-Ding Nook. DING-A-DING NOOK lies one mile and a fourth to the Westward of Falmo Harbor, and is merely a small bay in which droghers find temporary shelter.

Old Road Bluff. OLD ROAD BLUFF, at two and three fourths miles to the Westward of Falmout a remarkable bold rounded headland, one hundred and thirty-five feet in height, steep and easily recognized from the E. or W., as it is then seen to stand out a short dista from under the high land within it. On the W. side of the bluff the shore turns denly to the Northward for half a mile, and forms the E. side of Carlisle Bay.

Old Road or Carlisle Bay. OLD ROAD OR CARLISLE BAY.—A sandy beach sweeps round the head of bay, and terminates to the Westward in a bold rocky point, on which there is an fort; the village will be seen just to the Northward of it. Immediately behind beach there is an extensive pond or lake, in which there is good fishing with the se but it is private property. A spring of excellent water runs through the valley, loses itself in the swampy ground at the head of the pond, some distance from the sh There is good anchorage about midway between the Old Road Bluff and the fort, in fathoms water, a fourth of a mile or more from the shore. A long ground swell, h ever, generally sweeps in from the Southward, causing a vessel to roll heavily; landing is sometimes difficult, as the surf breaks a considerable distance from the sh

At one mile and a half to the Westward of Old Road Bluff, on a projecting ro point, will be seen a small rounded eminence, called Goat Hill, one hundred and fif feet high, which is very remarkable, especially when seen from off the W. end of island. Between it and Old Fort Point are three small sandy beaches skirted by a ledge, which, from abreast Morris' old mill (the only one seen on this part of the sh Brooks' mill, near it, being hidden by trees) to Goat Hill, extends off to the distanc upward of a cable's length. From Goat Hill to the S. W. end of the island the sho low and sandy, with swampy ground at the back; and it is still skirted by a flat ledge, nearly dry, through which are one or two boat channels leading to good lan

Cade Bay and Cade Reef. CADE BAY AND CADE REEF.—This part of the coast is also bordered wit outer barrier reef, nearly dry in many places; and at the W. end there is frequen small sandy cay, which is occasionally heaped up and washed away by the violen tion of the rollers.

This danger, named Cade Reef, lies about three fourths of a mile from the shore runs nearly parallel to it. Its E. end lies S. three fourths of a mile from Goat Hill extends thence to the Westward two miles. Its Southern or outer edge is compl wall-sided, and consequently very dangerous to approach during the night, as the will give no warning, and being under high land, no estimated distance can be depe upon. In the daytime it may generally be seen, and will be avoided by keepin governor's house, on Dow Hill, just open of Old Road Bluff.

Within the barrier there is an inner danger, named Middle Reef, lying nearly mile from the shore, and running also parallel to it; and between it and the land is an excellent anchorage, called Cade Bay, with a good watering place. The E or Goat Hill Channel, leading into it, has not less than twenty-five feet water, a easy of access, but too narrow to work out of; a vessel will, therefore, have to ru through the Western passage, which is barred by a flat, rocky ledge, on which th not more than twenty-two feet water.

Anchorage.

Directions. Vessels running for the anchorage in Cade Bay, or with the view to take the route to St. John, between the reefs and the shore, should haul close round Old Bluff in toward Morris' old mill, passing Curtain Bluff, which forms the Eastern s Morris Bay, within one fourth of a mile. When abreast of the mill, if the weath clear overhead, discolored water will be seen off the end of the reef, and the e the ledge which runs off Goat Head, and this will enable the mariner to dire course in mid-channel, which is nearly a fourth of a mile wide. No leading mark given, and the directions are not sufficiently safe to guide a stranger without the an experienced pilot. The best and most convenient anchorage for watering i Morris' old mill in line with the S. side of Goat Hill, and the large house on Ha or Cade Bay estate—which will be seen near the head of the valley under Boggy —bearing N. E. by N. Round to under small sail so as to take as little sweep a sible. The above berth will place a vessel about midway between the reef a shore.

If beating up for this anchorage from the Westward—which must be done outs barrier, and with the caution before pointed out—a rocky, barren fork will be se Goat Hill branching off to the Southward from the main or highest ridge of hi which are three rather remarkable peaks, particularly the Southern one, which lowest. When these peaks are in one with Morris' old mill, a vessel will be to ward of the shoal ground off the E. end of the reef, and may then stand on to the ward until she has reached mid-channel, and then proceed as before directed.

As already observed, the anchorage in Cade Bay must be left by the Western nel; therefore, having weighed, run down with the shore aboard, which may b without fear, for the edge of the ledge which skirts it is generally to be seen

, however, not to open Morris' old mill to the Southward of Goat Hill, until the ing mark for the bar (viz., Fry's mill just in sight to the Westward of Crab Hill, ing N. ⅝ E.) comes nearly on, which will be known when Pearn's Hill is on with Point.* The sails should then be trimmed, and courses set, ready to haul sharply e wind to the Southward upon the leading mark. This is a point which requires and great attention, to prevent the vessel falling on the lee side of the bar, which ry dangerous; should it, however, be found that too great a sweep has been taken, that the vessel is to leeward of the mark, there is room to make a small hitch, pro- d it be done in time. When Morris' old mill is just seen to the Southward of Goat , she will be between the shoals on the bar, which are three cables' length apart; when Dow Hill House comes open of Old Road Bluff she may haul her wind to the ward.

Old Fort Point.

LD FORT POINT.—The S. W. end of Antigua terminates at Old Fort Point, ch is low and rocky; there are the ruins of a fort near the extremity, and the bar- will be seen a little within them. A short distance to the Southward of the Point ohnson Island, a small rocky islet, eighteen feet above the sea, covered with brush- d; being, however, under the high land, these objects are not easily made out until N. W. or S. E. bearing.

The W. Coast of Antigua.

HE W. COAST OF ANTIGUA, from Old Fort Point, turns rapidly to the North- d, for a distance of two and three fourths miles, to Reed Point. In this space are e small sandy bays, named Picartes, Fry's, and Morris, which are separated from other by remarkable bold bluff headlands of the same names, about one hundred in height. The highest part of Antigua may be said to terminate at Morris Bay; he vicinity, however, there are several remarkable heights, which are of great e to vessels navigating the W. side of the island, and become very conspicuous passing Old Fort Point. Six of them are situated close together on the S. side ive-Island Harbor. The Saddle, five hundred and ninety-six feet, and Flat Top, hundred feet high, are the most Eastern, and are at once distinguished by their es; Leonard's, Pearn's, and Mosquito hills are conical, with peaked summits ly wooded; the two former are nearly of the same elevation, the latter much r. Mount Thomas or Round Hill, five hundred and forty-seven feet in height, uated on the N. side of Five-Island Harbor, and makes as a large, rounded, dy hill, from all directions except the N. N. W., when it appears more peaked; e fourths of a mile to the Westward of it there is a narrow table ridge of moderate ation, terminating near its E. end in a small peak, four hundred and sixty-three feet ight, named Table Hill, which may be seen at a long distance, and is a valuable mark.

ed Point lies at the foot of a wooded hill of moderate height, separated from the e by a narrow neck of low, swampy land, forming the S. side of Mosquito Cove, which arly half a mile deep E. and W., and a fourth of a mile wide from Reed Point to the site shore under Mosquito Hill. Pearn's Point, at the N. W. extremity of the cove, w and rocky.

l this part of the coast of Antigua is extremely dangerous to approach, a coral ledge ing it, the outer edge of which lies two miles to the Westward of Fry's Bay. ledge is studded with rocky heads, carrying as little as ten feet water; and three hs of a mile W. of Fry's Bay there is one which generally shows itself.

ere is, however, a good channel within the shoals for vessels drawing not over four- feet, provided the trade-wind is not to the Northward of E. N. E., and they have the of a pilot.

Five Islands.

HE FIVE ISLANDS are very remarkable, and valuable objects when seen from the ward or Southward; but from the Westward, being backed by high land, they are asily made out, except the largest, which is fifty feet above the sea. The innermost l lies a cable's length from the shore, with a channel between for droghers. There n fact, but four islets, for the N. E. part of the highest, which is called the fifth— its appearing disconnected at a certain distance—is attached to its Eastern end by rocky ledge. The two outer islands lie about half a mile to the Westward of n's Point, and are steep to on their N. and W. sides. They are all, with the excep- of the largest, low, small, rugged, rocky islets, scantily clothed with brushwood. hip channel lies between the highest and the one to the Eastward of it.

Directions for Inner Channel.

ving passed the bar off Old Fort Point, or if pursuing the inner route through Bay anchorage, give Johnson Island a berth of a fourth of a mile, and when Sandy d comes in one with the E. side of the highest of the Five Islands bearing N. by W., up on this line until the Hawk's Bill Rock comes in one with Pelican Point, which will lead through the Five-Island Channel. This passage, however, is only a wide; if, therefore, on approaching it, the wind should be found too scant to allow

* These are remarkable objects on the W. side of the island, a little to the Northward of Old Fort

the vessel to make certain of laying through, she had better pass out to the S. W. of t Five Islands, taking care to avoid the N. end of the Irish Bank by not opening Flat T Hill to the Southward of Mosquito Hill, E. ½ N., when near the shoal

Having passed Johnson Island, good anchorage will be found in Picarte's Bay, three fathoms, about a fourth of a mile from the shore, and good landing on the N. si of Fry's Bluff.

Vessels passing the S. and S. W. ends of Antigua, outside the shoals from the Ea ward, should take care, as before directed, not to shut in the governor's house on D Hill with Old Road Bluff until they have passed to the Westward of the leading ma for the bar; they may then haul gradually round to the N. W., taking care to op Hawk's Bill Rock out to the Westward of the Five Islands N. N. E., before John Island comes in one with Old Road Bluff E. S. E. ¼ E., when they may haul up N. T soundings off the S. W. end of Antigua, in this track, are very irregular and rocky, va ing suddenly from seven to twelve fathoms; and in the night do not come within t depth of from ten to twelve fathoms.

Five-Island Harbor. FIVE-ISLAND HARBOR, a bight lying to the Northeastward of the Five Islan is one mile and a half deep, and, although exposed to the rollers, is a secure anchora with the prevailing winds, for vessels of sixteen feet draught. The S. W. point of t entrance to the harbor is formed by a remarkable red cliff, about thirty feet high, s arating two sandy beaches at a fourth of a mile to the Northeastward of Pearn's Poi and thence across to Pelican Point, which forms the N. point of the entrance, it is th fourths of a mile wide. In the inner or Eastern part of the harbor is a remarka small round islet, called Maiden Island, with precipitous rocky sides crowned with sm trees, the tops of which are ninety feet above the sea.

Cook and Pelican Shoals. COOK AND PELICAN SHOALS.—The anchorage in Five-Island Harbor is structed by Cook Shoal, a small rocky head of nine feet water, which lies in the cen of the harbor, with Sandy Island in one with Pelican Point, but no cross mark can given. It is also obstructed at its entrance by the Pelican Shoal of fifteen feet wa which lies with Drew Hill in one with Maiden Island, and the Ship-stern Islet just s in with Ferris Point. Pelican Island, a small rocky islet eight feet above the leve the sea, lies two cables' length to the Westward of Pelican Point, and is foul on it and W. sides to the distance of a cable's length.

Directions. Vessels of sixteen feet draught, when approaching Five-Island Harbor from the So ward, will have to pass outside the shoals; if from the Northward, within them. In former case it will be better to beat in to the Southward of the Pelican Shoal, betw it and the Five Islands. A vessel may stand toward the latter without fear, as they bold and steep to, and toward the shoal until Drew Hill is a little open to the South of Maiden Island, bearing E. ⅝ N. When Johnson Island is seen through the Five-Is Channel, she will be to the Eastward of the shoal, and the board may be prolonge the Northward. When within the points of the entrance, she may stand to within cable and a half of the shore, until the leading mark for the Cook Shoal is nearly It will be better to pass to the Northward of this shoal; therefore, in standing to it, do not open Drew Hill to the Southward of Maiden Island. When within the s proceed as far in as convenient, the lead being a sufficient guide.

Coming from the Northward, the wind will be free, and having passed Ferris P keep the shore aboard within a cable and a half's length, and having rounded Pe Island rocks, should the vessel not fetch in, act as above directed. In leaving the bor, run out with Seaforth Bluff just shut in with the S. side of Maiden Island, w will lead to the Northward of Cook and Pelican shoals, and to the Southward of P shoals.

The Coast. From Pelican Point the coast trends N. N. E. a mile and a fourth to Ferris Po woody bluff of moderate elevation. Thence it turns to the N. E., forming two deep s bays, named Galley and Goathill, which terminate at Goathill, which is remarkabl ing one hundred and seventy-six feet above the sea, and crowned with a small fort two signal posts, and when seen from the Southwestward, open of Ferris Point, ap a well-defined object. Nearly a cable's length to the Westward of the point of hill there is a small, flat-topped, rocky islet, slightly wooded, called the Ship-ste W. side having somewhat that appearance, being a bold perpendicular cliff, about feet high, with several large masses of rock lying at its base, which are very rem ble when seen from the S. W. or N. E.

Midway between Pelican and Ferris points, about a cable and a half distant fro shore, lies the Hawk's Bill, a small, barren, black, rocky islet, twenty-five feet high, and bold to on its W. side, which may be passed within a cable's length. Its W. side composed of soft sandstone, has been cut into by the action of the sea, forming a p dicular cliff to nearly the top of the rock, where it overhangs, projecting out horizontally some feet. Its rounded summit terminates in a small knob, and whe clear of the land from the N. N. E. or S. S. W., has the appearance of a hawk's bi cannot be mistaken, and will be found of much value in navigating this side of A

rom Goat Hill the shore turns sharply to the E. S. E. for two and three fourths miles, ing the S. side of the harbor and roadstead of St. John.

T. JOHN'S HARBOR, at the head of which is situated the city of St. John, the cap- of the island, is the chief commercial port in Antigua, whence is finally shipped al- t all the produce of the island, which is brought by droghers from the outposts. The lies on the side of a gentle acclivity, which at the upper part is about eighty feet ve the sea. From the offing its locality is at once pointed out by the cathedral, a e massive white structure, with two lofty towers, the vanes of which are one hundred sixty-three feet above the sea. The only other remarkable object is the kirk, a much ller square white building with a sloping roof, and a small bell turret at its W. end; ands a little above the cathedral, and about a fourth of a mile to the Southeastward t. At the back of the city there is a small wooded ridge of table land of moderate ation, with a distinct peak at either end; that to the S. E. is three hundred and fifty- feet high, and called Drew Hill; the other, at the N. W. end, called Scott Hill, is quite so lofty, and being more rounded is not so well defined; they are both, bow- r, serviceable landmarks. *St. John's Harbor.*

he harbor is secure against all winds except hurricanes, but confined, and not at all venient; for vessels of only twelve feet draught cannot come within three fourths of ile of the wharves, and those drawing over fourteen feet are obliged to load in St. n's Road; it is also exposed to the rollers which frequently break over the jetties and ict serious damage. The harbor is of irregular shape, nearly two miles in length from bar to the head, and the inner part, between Week Point and the W. point of the e to the Northward, is three fourths of a mile wide. Here, however, it is divided by Island, a small, rugged, steep, rocky islet on the summit of which is a large build- and lofty signal-staff, which are conspicuous objects; the wall surrounding the build- is one hundred and thirty-seven feet above the sea. The islet is connected to the re by a well-built causeway with a carriage-road to the foot of the hill.

he N. W. point of the harbor terminates in a small rocky bluff thirty-seven feet high, which is Fort James, and the width of the entrance across hence to the opposite shore alf a mile. A little without the entrance a flat of sand runs along the whole front of harbor, on which the greatest depth at low water, is fifteen and a half feet, which near the Southern shore, and the channel is not half a cable wide. A small nun- y is said to be placed on the N. side of the channel, but its existence is doubtful.

T. JOHN'S ROAD lies immediately to the Westward of the bar, and may be said to nd from Goat Hill to the Great Sister, a space of two miles. The road is obstructed ne centre by the Warrington Bank and the Middle Ground. *St. John's Road.*

ARRINGTON BANK.—The outer part of this bank bears W. S. W. ½ S. from the at Sister, and N. from Goat Hill; it frequently breaks, and is extremely dangerous to roach. The bank is four cables long from N. to S., and the same from E. to W. *Warrington Bank.*

HE MIDDLE GROUND is a circular bank, about two cables in diameter, with a th of from twenty to twenty-three feet on it, lying between the Warrington and the e. The mark for the cut between these banks is Table Hill Peak in one with Fort rington on Goat Hill S. by W ¾ W.; but it should only be taken in a case of neces- To the Eastward of the Middle Ground there is a clear ship channel, four cables e. *Middle Ground.*

here is good anchorage both to the Northward and the Southward of these banks; the Northern is the best and most convenient, as boats will in general fetch in to entrance of the harbor, and it is always used by vessels completing their cargoes ide. *Anchorage.*

HE SISTERS.—The Great Sister is a small rocky islet lying about three fourths of le from the shore, and when seen from the N. W. has the appearance of a wedge, its thick end to the S. W., which is thirty-six feet high, steep and bold to within a e's length. A fourth of a mile to the E. N. E. of this islet are the Little Sisters, a ll cluster of rocks only four or five feet above the level of the sea. *The Sisters.*

ANDY ISLAND.—The approach to St. John's Harbor is also obstructed to the W. by a shallow bank from half to three fourths of a mile in extent, on the Eastern of which is Sandy Island, a small cay, fortunately clothed with stunted trees, the of which are thirteen feet above the sea; it is therefore easily made out in the day- , but is extremely dangerous to pass during the night. It lies W. by N. two and one th miles from Goat Hill, and N. by W. nearly five and one fourth miles from the Islands. A dry ledge extends W. S. W. four cables' length from it; on the E. side steep to. *Sandy Island.*

he approach to the harbor from the Northward is still more dangerous, for the shoals nd in that direction three miles from the nearest part of the shore.

IAMOND BANK, the outermost danger, half a mile long, E. and W., and three ca- broad, is a coral ledge, and although nearly even with the surface of the sea, sel- breaks; under favorable circumstances, however, the discolored water may be seen aloft when near it. From the Great Sister it bears N. by W. ½ W. two and a half *Diamond Bank.*

miles; and from Boon Point (which is well defined) W. N. W. ½ N. nearly three and half miles. It is situated also near the W. end of the dangerous reef or ledge which e tends hence to the Eastward all along the N. shore of Antigua at the distance of fro one to two miles, from which it is separated by a passage half a mile wide, called t Diamond Channel, in which the depth is from four to six fathoms.

Bannister Bank. BANNISTER BANK, lying nearly midway between the Diamond and the Great S ter, is nearly half a mile long, in an E. and W. direction, and a fourth of a mile broa and has as little as seventeen feet of water on it.

Directions. From the above description, it will be seen that there are three principal channe which may be used to enter the road and harbor of St. John; the N. W., W., and S. or Sandy Island channel. The W. channel is, however, but seldom used, except by ve sels leaving the harbor. Merchant vessels bound in from the Eastward, having ma that end of Antigua, generally take the N. side, and receive their pilot, who is alwa on the lookout, in the offing near Parham. The shore, however, should not be a proached within at least two miles, as it is everywhere foul and exceedingly dangero to strangers.

Having passed the N. E. end of Antigua, steer W., taking care to keep the highe part of Great Bird Island, a remarkable bold rocky bluff, one hundred and ten feet hig open to the Northward of Long Island, which is low and woody; but great caution mu be used with the lead and eye, for this is a long mark and not always easily seen.

Diamond Channel. DIAMOND CHANNEL.—If intending to run through the Diamond Channel into S John's Road or Harbor, which, however, absolutely requires the assistance of a pilot, a a leading wind, watch the Great Sister, and when it bears nearly S. it will be seen one with Hutchinson's Old Mill, situated on a flat hill of moderate height on the S. si of St. John's Harbor. This mark will lead through the channel, and to the Eastward the Bannister Bank; and when Boon Old Mill is in one with Hodge Hill, bearing E. S., the vessel will be to Southward of that bank, and the course may be shaped to p a cable's length to leeward of the Sister, and thence haul in to the anchorage.

N. W. Channel. N. W. CHANNEL.—Should the wind be scant, or no pilot on board, it will be bei to continue the course to the Westward of the Diamond Channel, strictly observing t directions above, until Mount Thomas comes in line with Fort Barrington bearing S. E., which mark will lead to leeward of the Diamond and Bannister banks, and to t Western edge of the Warrington. This is also a long mark; the mount is well defin being a dark massive peaked hill, but the fort lying low under it, is not so easily ma out; be therefore sure of bearing, and take care to keep Thibou Mill open the Northward of Boon Old Mill, which is without vanes, until the leading mark com on.

In beating in, when standing toward Sandy Island, do not shut Wood's Mill in w Dry Hill Mill until within the cay. When standing toward the W. side of the Warrin ton, do not approach nearer than to bring the Hawk's Bill Rock in one with the inn most of the Five Islands: the rock in one with the outer island leads half a cabl length from it. When between the Great Sister and the Warrington, in standing towa the N. side of the latter, Scott Hill should not be opened to the Southward of the ki until within both it and the Middle Ground.

When standing to the Northeastward toward Bannister Bank, Drew Hill should n be shut in with the Great Sister, until the vessel is to the Southward of the bank, or Bo Old Mill is in one with Hodge Hill. The mill cannot be mistaken, as it is the only o on this part of the shore, and is without vanes; the latter is a conspicuous small rou hill, one hundred and fifty-four feet high, on the N. E. point of the island; there is a markable tree or large bush on the summit, which is the lookout station of the pilots.

Having passed within the Middle Ground—which will be known when Mount Thom comes open to the Eastward of the Pillar Rock S. by W., which is very remarkable vessel may anchor in seven fathoms between it and the Great Sister, taking care not go farther toward the shore than to bring Mount Thomas in line with the W. end Loblolly Beach, the third sandy beach to the Eastward of Goat Hill, nor to the Sou ward so as to have Scott Hill in sight to the Northward of the kirk. The anchorage exposed to Westerly winds, which, however, seldom occur; nevertheless, when they and are at the same time accompanied by rollers, it becomes dangerous, and accide have happened on such occasions; but safety is secured by timely precaution, for t holding ground, being clay and mud, is most excellent, and full warning is given bef a shift of wind in that direction. In the hurricane season it is, of course, not safe, when the rollers set in a vessel labors heavily.

S. W. or Sandy Island Channel. S. W. OR SANDY ISLAND CHANNEL.—Vessels bound to St. John's Harbor fr the Southward will find the Sandy Island Channel the most convenient to enter, if t are of too great a draught to take the inner passage. This channel must be approach with the utmost care and attention to the lead, in order to avoid the dangerous sho on the W. side of Antigua.

Having neared Old Fort Point, the S. W. end of Antigua, so far as to bring the le

mark on which clears the River Reef, viz., the governor's house on Dow Hill in t to the Southward of Old Road Bluff; or, if running from the Eastward, and hav- passed to leeward of the mark for the bar, be cautious not to bring Morris' old mill ne with Goat Hill at Cade Bay bearing E., until sufficiently far to the Westward as ave opened out the Hawk's Bill in sight to the Westward of the Five Islands, N. N. The vessel may then be hauled up N., which will lead about half a mile outside the als; taking care, however, not to bring Sandy Island to bear to the Northward of by E., or to come within the depth of ten fathoms, until abreast of the Hurst Shoals, Maiden Island, in Five-Island Harbor, is in one with Pelican Rock, when she may r into the channel, which is one mile and a fourth wide.

n standing to the Northward toward Sandy Island, take care not to open the N. flag- f of Fort James of Goat Hill E. ¼ N., a very close mark, as it leads within one cable a half of the reef in four fathoms; and in approaching Hurst Shoals on the port , do not shut the Camel Tree in with the ship-stern, bearing E. N. E. ¼ N., or bring le Hill in line with the Hawk's Bill. The Camel Tree stands on the slope of the thernmost of the Pope's Head hills, the summit of which forms a small saddle. ing passed to the Eastward of Sandy Island, there is no danger until the Warring- Bank is approached, when the directions must be followed already given for the W. Channel. If intending to anchor off the bar, or to enter the harbor, a vessel may so by the West Channel.

W. Channel.

HE WEST CHANNEL, into St. John's Harbor, lies between Warrington Bank and t Hill, and is nearly three fourths of a mile wide. In beating up this channel, it be known when the vessel is near the Warrington by the Hawk's Bill coming on the innermost of the Five Islands; and in standing toward it and the Middle und, do not go nearer than to bring Drew Hill in sight to the Southward of Fort nes Bluff (a close mark). The shore side is steep and bold to. If intending to take temporary anchorage off the bar, do not go farther in than to bring Table Hill just n to the Westward of Pillar Rock; and with Drew Hill just open of Fort James, re is good holding ground in six fathoms.

s the wind always blows directly out of St. John's Harbor, it can only be entered er the guidance of a pilot. To leave it is easy enough, and having weighed, run out h the S. gable of the Westernmost large store in the city (which has a red roof, and agstaff near it on the jetty) in one with the centre of the cathedral, E. by S., and en Yepton House comes open of Loblolly Point S. S. E., the vessel will be outside the , and the course may be shaped through the West Channel, or to the anchorage in the d. In the latter case, in passing within the Middle Ground, keep Mount Thomas n to the Eastward of Pillar Rock, S. by W., to avoid that bank, and Table Hill open he Westward of that Rock, to avoid the shoal ground Northward of the bar.

essels bound to the Eastward to load at Parham will gain something by passing through the Diamond Channel, but they must be able to lay through.

North Coast of Antigua.

HE NORTH COAST OF ANTIGUA from Fort James, at the entrance to St. John's rbor, trends N. N. E. two and a fourth miles to Wetherell Point, the W. side of which ns a remarkable perpendicular dark cliff one hundred feet high; the intervening ce is low and swampy; a mile to the Eastward of the point there is a remark- white cliff. The shore is here more elevated, and an irregular group of hills extends he S. E. for two miles; Mount Pleasant, four hundred and fifty-six feet high, is the iest, and is distinguished by its flattened summit. On the S. W. end of the range re is a hill crowned with a clump of trees, called the Pope's Head, three hundred sixty-six feet high.

rom Boon Point, the extreme Northern end of the island, the shore turns abruptly he Eastward, and forms a bight, which terminates about three miles distant, at Hodge nt. This part of the shore is low and rocky, and skirted by sunken shoals, and there nly one spot, at nearly three fourths of a mile to the Westward of Hodge Point, and ed Port Royal Bay, where boats can effect a landing with safety; the hill just within point becomes a useful object in the navigation of this extremely dangerous neigh- hood.

rom Hodge Point the coast takes a S. E. direction for two and a half miles to Byham nt, on which there is a small fort and flagstaff. The shore is low and foul, and a can only find landing under High Point—a remarkable cliff forty feet high—and he S. side of the fort. From the fort the shore becomes deeply indented, and forms deep bights, the Southernmost of which is Parham Harbor.

Parham Harbor.

ARHAM HARBOR is capable of admitting vessels drawing thirteen feet, but the chan- to it are so exceedingly narrow and intricate, that the few ships which load here ive their cargoes in the North Sound or Roads. The town of Parham stands on the e at the S. E. corner of the bight, under a wooded hill one hundred and sixty-five high, on the W. side of which is the church, a conspicuous object from the offing. ham was at one period the seat of government, and is still of some importance, being place of transit for the greater part of the commerce of this end of Antigua.

The Eastern side of the harbor is protected by a low, irregular, swampy ne of land half a mile in length, which terminates at North Sound Point, in a hill sixt feet high. From the E. side of the neck numerous small islets, rocks, and reefs, swee all round to the N. W., enclosing a large basin of water, completely sheltered, calle the North Sound.

Great Bird Island. GREAT BIRD ISLAND is the most remarkable of the islets which enclose Nor Sound, and a valuable object to the pilots. It lies on the outer edge of the reef, o mile and a half E. N. E. of North Sound Point, and is of irregular form, its W. side ver low, but its E. side is a narrow strip of black barren rock, three cables long, in a N. an S. direction, the sides of which rise perpendicularly from the sea to the height of o hundred and ten feet, and may be seen from a long distance, the N. end particularly, it forms a bold headland. The N. E. point of the dangerous reef and coral ledge, whic extends hence all along the N. side of Antigua as far as the Diamond Bank, bears fro the bluff N. by W. one mile and a half.

Three-fathom Bank. THREE-FATHOM BANK lies N. E. a mile from Bird Island Reef—which alwa breaks—and nearly two miles N. by E. of Great Bird Island Bluff. It is about thre fourths of a mile in length, N. N. E. and S. S. W., and three cables broad, with a dep of from three and a half to four and a half fathoms on it, over coral and white sa with irregular soundings around.

Four-fathom Bank. FOUR-FATHOM BANK lies N. E. a mile and a fourth from Three-fathom Ban and N. N. E. three miles from Great Bird Island Bluff. It is composed of small d tached rocky heads, lying nearly on a straight line N. W. and S. E., for three fourths a mile, having a depth of four and a half and four and three fourths fathoms, and which there is generally a heavy sea. In beating up to the Eastward, do not attem to pass to the Southward of these banks before the hill at the E. end of Green Isla bears S. ½ E.

Bird Island Channel. BIRD ISLAND CHANNEL.—The entrance to this channel, which leads into Nor Sound, lies a mile to the Northward of Great Bird Island, and the few vessels whi visit the sound enter this way; but it is so exceedingly dangerous to approach, narr and intricate, though deep enough for any ship, that no safe directions can be given, a it can only be navigated by the most expert and experienced pilots. As the wind blo continually in, the passage out of the sound must be taken through a narrow chan between Maid and Long islands, in which there is a depth of fourteen feet, but it quires to be buoyed beforehand.

Long Island. LONG ISLAND protects the N. side of North Sound and the E. side of Parham Sou It is very irregular in shape, nearly a mile in length from E. to W., and three four of a mile broad at its W. end, decreasing in width toward the E., where it termina in a point. The shores are low, but on its S. W. end there are some trees forty f high. At a cable's length to the Northward of the N. W. point lies Moor Island, a sm rocky island eight feet in height; and at half a mile to the Eastward of Long Island Little Bird Island, of similar character, but only twenty feet high; both are useful jects in navigating the channels through the reefs.

Parham Sound. PARHAM SOUND is about three fourths of a mile in extent from E. to W., and h a mile from N. to S. It is capable of receiving a few vessels of large draught, is w sheltered, has good holding ground, and not exposed to the action of rollers. The Y Piece Shoals, which are composed of detached coral patches, extend to the distance nearly a mile from the W. end of Long Island, and shelter the anchorage fr the N. E.

Directions. Parham Sound may be approached from several points between N. E. and N. W. thro narrow openings in the Kettle Bottom Shoals. The leading marks for them are gi on the chart, but they are far too dangerous for a stranger to navigate, and it is onl well-experienced pilot that can attempt to make use of them. The largest and generally used is the Horse Channel, nearly four cables' wide, which lies between Harney and the Horseshoe shoals: it, has, however, the disadvantage of being to leew of the anchorage; for if the trade-wind should be to the Southward of E., a vessel not fetch clear of the Prickly Pear, a small rocky islet partially wooded, about fif feet high, lying N. E. by N., four cables' length from Hodge Point.

The leading mark through Horse Channel is Thibou's mill just in sight to the E ward of Hodge Hill, S. by W., which leads close to the Westward of Horseshoe Sh In approaching it either from the Eastward or Westward, a good offing must be k in the former case do not bring Great Bird Island to bear to the Eastward of S. E. fore the leading mark comes on. As the vessel draws in upon the mark, the N. en Great Bird will be seen coming on with Little Bird Island, which line leads over th side of the Horseshoe Shoal. Before it comes on, the discolored water will be seen f aloft, which will enable a vessel to pass close to the shoal by the eye, and being pared, to luff close up round it.

In standing toward Prickly Pear, do not open Moor Island to the Northward of highest part of Great Bird Island; and on the opposite tack to the N. E., take care no

t Little Bird in with Great Bird Island, or to bring Fort Byham flagstaff in one with mall table hill of moderate height, with a peak at its E. end, situated a little to the thward of Parham, and bearing S. by E. ½ E. from the fort. This latter mark ds also through a very narrow cut to windward of the Horseshoe, but it is difficult be made out. Vessels drawing seventeen feet should not anchor farther in to the thward than to bring Martin's and Bizzard's mills in one. The former stands on shore a little to the Southward of High Point, the latter on the upper ridge of hills ve it.

Vessels leaving Parham Sound for St. John's will find it greatly to their advantage pass within the shoals through Boon Channel, which is quite straight and clear, and rly three fourths of a mile broad in its narrowest part, except at its E. end, where ween the N. W. point of Prickly Pear Ledge and Silver Rock, it is little more than urth of a mile across. Run out of the sound, with Fort Byham a little open to the tward of the peaked hill before described until Moor Island comes in one with the hest part of Great Bird Island S. E. by E. ½ E. Steer upon this line until Thibou's l is in one with Hodge Hill, whence a W. ¾ S. course will lead to abreast of the Sis- and the directions given for the Diamond Channel must then be followed, taking e not to haul to the Southward before Fort James comes open to the Westward of Sisters.

Guano and Belfast Bays.

GUANO AND BELFAST BAYS.—Between Guano Island, which shelters the S. E. e of Parham North Sound, and Indian Town Point, which lies E. S. E. two and three rths miles from Byham Point, the E. end of that island, the shore becomes exceeding- irregular, and forms two deep bights, Guano Bay to the N., and Belfast Bay to the S. th are well sheltered by the reefs to the Eastward, and of sufficient depth for vessels large draught; but the channels are far too intricate for them to navigate, particular- as the prevailing winds, which are here accompanied by a heavy short sea, make even ear approach to this part of Antigua very hazardous. They are frequented by dro- ers, which are sometimes exposed to accidents and long delays, as they cannot beat except under favorable circumstances. There is a boat communication between the s and North Sound, through the Narrows at the W. end of Guano Island.

Nonsuch Bay.

NONSUCH BAY.—Between Indian Town Point and Man-of-War Point at the E. end Antigua, the shore again forms a deep bight to the Westward, called Nonsuch Bay ich is so completely protected by reefs nearly dry as to be a secure harbor, with a pth of from five to eight fathoms; but is equally difficult to navigate as those just de- ibed, and quite closed against sailing vessels of large draught.

Man-of-War Point is a bold rocky headland, one hundred and seventy feet high, and ep to, but in general the sea rolls in so heavily that it should not be rounded within e distance of a mile: and great caution should be observed when approaching Green and either from the Northward or the Southward.

Tides.

There is a rise and fall of tide at the Island of Antigua, sometimes amounting to two t, but generally less, and so uncertain in its periods as to be of little use to navigation. o regular tidal stream can be detected.

Current.

The current is equally variable in its movements, and the oldest pilots can give no rtain accounts of either its strength or direction. During the period of the survey of se islands, between November and May, little or no current was met with between tigua and Barbuda, although this is the period when the trade wind blows strongest. June it has been found running strong to the Westward, on the S. side of Antigua, en at the same time there was little or none on the N. side, and an eddy stream close shore.

Barbuda.

BARBUDA.—This island is thirteen and a half miles long, from N. W. to S. E, and ven and a half miles broad, and contains about five hundred inhabitants, who are un- r the government of Antigua. It is but partially cultivated, being chiefly appropria- d to the rearing of cattle, sheep, horses, and deer; indeed it may be termed the stock m of Antigua, which it also supplies with corn, yams, sweet potatoes, lime, and wood. rt harnesses and saddlery are also manufactured on the island from the skin of the er, which are bred almost solely for that purpose.

The N., S., and W. sides of the island are low, sandy, and scantily wooded, with noth- g remarkable on them whatever, except on the S. side, where, about two miles from e S. W. point, there is an old martello tower in a ruinous state near the beach, and a tle to the Eastward of it a remarkable clump of trees, which are useful objects in ap- oaching this side.

From Spanish Point, the S. E. end of Barbuda, the N. side of which is a white cliff, rty-five feet high, the Eastern shore of the island begins to rise, and about midway, r the distance of two miles, it is composed of bold perpendicular cliffs two hundred et in height, and is the highest part of the island. On this side, a dry broken coral ge skirts the shore within half a mile, upon which the sea breaks with great violence; d it is so steep that there is no bottom with ninety fathoms a mile and a half outside it.

A reef extends to the distance of nearly a mile and a half from the Northern shore o Barbuda, and is also so steep, that the depth is thirty fathoms within a mile of it; the extreme N. point of the reef, however, always shows itself. At the N. W. end of the island the ledge is composed of detached coral heads which extend out in that direction two and a half miles, and do not break: here, however, the soundings give warning of approach, and a vessel in the night-time, when passing the W. side of the island, should not come within the depth of ten fathoms.

The W. side of Barbuda is formed by a low narrow sand-ridge, scantily wooded, at the back of which is an extensive lagoon, carrying from five to twelve feet water. The entrance to it lies a short distance to the Eastward of Billy Point at the N. W. end of the island, but it is obstructed by a bar of mud, on which there are only two and a half feet water.

The S. side of Barbuda is by far the most dangerous and must be approached with extreme caution, for the lead is of little use; indeed, in the night-time it should be avoided if possible altogether. From Spanish Well Point a line of detached shoals extends nearly seven miles in a S. W. direction. The Palaster Reef is nearly dry and always seen, but the other shoals have a depth of from eight to sixteen feet on them, and never break. Under favorable circumstances, however, the discolored water on them may be seen a fourth of a mile off. The Westernmost shoals bear from River Fort (the old martello tower just noticed) S. six miles from Palmetto Point S. by E. $\frac{3}{4}$ E. and from the little hill on Spanish Point S. W. by W. $\frac{1}{4}$ W.; but the two latter objects are so far off, and so low, as to make it difficult to obtain a correct bearing of them from the deck.

Water. There are wells and large ponds of water in Barbuda, but it is brackish, and only fit for the animals; the inhabitants use what is caught in tanks. With this exception it is a place where most useful supplies may be obtained, and at very moderate prices.

Anchorage. There is good anchorage on the W. side of Barbuda, with the prevailing winds, with Cedar Tree Point N. by E., and Palmetto Point, the S. W. extreme of the island, S. E. by S., where the depth is six fathoms at about three miles off shore. Small vessels may approach much closer abreast Tuson Rock, which is two feet above water, and lies a short distance from the shore.

There is also excellent anchorage on the S. side of the island, to the Westward and under the lee of the shoals which shelter it with the wind as far to the Southward as S. E. The best position for communicating with the shore will be found at about half a mile from the island, with the River Fort bearing N. by E. and Palmetto Point N. W. by W. $\frac{1}{2}$ W. Be careful, however, when standing in, not to bring the fort to the Northward of N. by E., until quite certain that the vessel is to the Northward of the shoals.

Both this and the anchorage on the W. side of the island are exposed to the rollers which prevail between the months of November and May; but as they take the vessel in the stern she is eased of the strain on her cable, and rides far more comfortably than if at most of the anchorages about Antigua. At this period, however, landing is attended with great difficulty and risk, for should the boat be thrown ashore broadside on, the next wave would inevitably destroy her. From a short distance to the Westward of the River Fort, as far as the S. E. end of the island, the beach is skirted by small coral heads with deep water between, through which the way must be picked to the landing; the clearest spot will be found abreast the fort.

Directions. Vessels bound from Europe to the islands to leeward, Jamaica, Belize, and the Gulf of Mexico, will find it to their advantage to run through the channel between Antigua and Guadaloupe, which is thirty miles wide; chiefly, because there is generally much less current here than farther N. or S. It will be better, however, in doing so, to keep the Antigua shore on board, and to sight the island on the parallel of lat. 70° N., taking care to observe the directions already given before making Barbados. Vessels sometimes pass between Antigua and Barbuda; this may be done without much risk in the daytime but by no means in the night: for the soundings are so irregular and alarming, that in running down it would be difficult to tell at that period whether to haul to the Northward or Southward.

Those bound to Europe from the neighboring islands to the Southward, generally pass close to leeward of Antigua. This navigation, however, requires great caution, and particular attention to the lead, taking care not to come within the depth of ten or twelve fathoms; and to endeavor by all means to pass the island in daylight.

THE LEEWARD LESSER ANTILLES—AVES TO SOMBRERO.

Aves. **AVES (BIRDS) is a small sandy cay, about three fourths of a mile in circuit and twelve feet in height. Various positions have been assigned to it, but from recent careful observation made for that purpose, it is found to be in lat. 15° 42′ N. and long. 63° 37′ 45″ W.; the longitude depending upon Fort Christian, St. Thomas, which is co**

dered to be in 64° 55′ 40.5″ W.* The cay is foul to the distance of a cable's length a all sides but the W., where there is anchorage and landing; but care must be taken pick out a sandy spot, which may be done easily by the eye. It appears to lie on a nk of soundings, of considerable extent, of which, however, we have no correct parculars. During the egg season it is visited by fishermen from St. Eustatius, who have ected a low, rough stone wall, about three feet high, to protect themselves from the eather.

A reef, upon which the sea generally breaks, extends some distance from the N. W. d of Aves; and about two miles S. of the S. E. end H. M. S. Mariner, in 1856, passed er a shoal, upon which there was apparently a depth of five fathoms; she anchored f the S. W. side of the island, in six fathoms over sand and rock, at a cable's length om the shore.

The island is of volcanic origin, and its lofty, rugged, inaccessible acclivities are othed with wood to their summits. We have no correct estimate of its height, as it s not yet been accurately surveyed, but it may be seen at the distance of forty-five iles when unclouded. Its shape is nearly oval, nine miles long, N. N. W. and S. S. E., d five miles broad; and all its shores are bold, steep, and free of danger. Its E. and W. sides are precipitous and barren, but its S. E. and W. sides slope gradually to e sea, and are highly cultivated.

Water. The only anchorage around Montserrat lies off the town of Plymouth, near the S. W. oint of the island; it is, however, seldom visited by any but droghers, which convey ost of the produce to Antigua. Indeed, the heavy surf, which almost continually rolls the beach, makes landing extremely difficult and hazardous, except by the native oats, called cobbles, which are managed with great dexterity. Small vessels find an chorage to the northward of Plymouth, in Old Road and Kers Bay.

Anchorage. There is an excellent spring of water at Old Road, and in a case of emergency it ight be obtained by rafting the casks, but as this is attended with great risk to the ats, it would be far better to hire the cobbles for the purpose.

Lights. When the mails are expected at Montserrat two fixed lights are exhibited from a staff the beach, in front of the town of Plymouth.

Directions. If intending to anchor off the town of Plymouth, approach the shore boldly within a rth of a mile, and anchor with the S. West point of Montserrat S. E. by E., Fort Bargton E. by N., and the town N. E. by N., half a mile distant, where the depth will be fathoms. Be prepared, however, to weigh the moment the weather indicates the proach of a change of wind or tornado, which frequently occurs during the hurricane ason. Fort Barrington stands on a cliff about one hundred feet high, at the S. E. end the town.

Redondo. REDONDO, lying N. N. W. seven miles from Montserrat, is a small, barren, rocky, inhabited islet, and its round summit, which reaches the height of six hundred feet, eeldom clouded. Off its S. E. end there is a small, remarkable, detached rock, called Pinnacle. The islet has not yet been accurately examined, but it appears to lie on Western edge of an extensive bank of soundings, which reaches at least eight miles by W. of it, where there is a depth of forty-four fathoms, and at a distance of three iles in the same direction thirty-five fathoms. The Colombian Navigator states that shoal, with only four and a half fathoms on it, is said to exist ten miles to the Westrd of the islet, but this is probably the S. end of the Nevis Bank, which bears W. ¾ eight and three fourth miles from it, and on which there are from eight to twelve thoms.

Nevis. NEVIS is a lofty, volcanic island, in the shape of an egg, seven miles long from N. to and five and three fourth miles broad.

The peak, with its crater, rises from the centre of the island to the height of about ree thousand five hundred feet, but it is seldom visible; there are, however, several er elevations, which, being almost always unclouded, become most useful landmarks. the S. side of the island, Saddle Hill, about fourteen hundred feet high, may be dily made out from its features, except from the E. S. E. and W. N. W., when the mmocks are in one; the hill, however, from these points is equally conspicuous. On E. side there are two remarkable, wooded peaks, standing on the fork of the moun-, about two thousand three hundred feet high. On the N. side Hurricane Hill is own, being large and massive and terminating in a peak, and having at its base a all, detached, rounded hill, which forms a prominent bluff at the extreme N. end of island, nearly three hundred feet high, called Windy Hill. With the exception of s point and the base of Saddle Hill, the shores are very low, and rise gradually to the erior, the plains and slopes being highly cultivated. Charles Town, the capital of

* Remarks by Lieut. G. B. Lawrence, R. N., 1850. It has recently been discovered that the surface omposed of a bed of guano, and we therefore may expect that, ere long, nothing will be visible but reef.

the island, is situated on the W. side, and has in front of it an excellent anchorage wit the prevailing winds, although an open roadstead.

Bank

Nevis, with St. Christopher and St. Eustatius, may be said to form another distinc group, as they are found to be on a bank of soundings of their own, detached entirel from the adjacent islands, or at least by channels of a greater depth than two hundre fathoms.* From the S. side of Nevis the bank extends S. E. ½ E ten and a half mile and terminates abruptly in seventeen fathoms, W. ¾ N. eight and three fourths mile from Redonda, and it is here two and a half miles broad, gradually increasing in d mensions as it approaches the island. From the S. end of the bank a remarkable cor ledge, about a mile in breadth, extends along its S. W. edge for a distance of five mile and carries from nine to ten fathoms, with deeper water within. From the E. and W sides of the island soundings extend to the distance of one mile and a half. At its N end it is only separated from St. Christopher by an intricate channel, called the Na rows. Except on the N. W. side, between Fort Charles and Cades Bay, the shore fringed with a coral reef, and should not be approached within three fourths of a mil or the depth of ten fathoms.

Water.

Several springs flow from the sides of the mountain, but in the dry season the mo of them are lost before reaching the shore. Jones River, which disembogues a sho distance to the Eastward of the village of Newcastle, at the N. E. end of Nevis, is considerable stream, but not of sufficient strength to turn a mill. Nelson Spring (called from his having made use of it when stationed here) falls into a pond on the side of the island, near the beach, a little to the Eastward of the Lowland Church, b the water is soft, and not used by the inhabitants except in case of need. On the Weste side of the mountain a thermal mineral spring takes its rise, which is conveyed throu an excellent bath-house, about one mile and a half to the Westward of Charles Tow When first let into the bath its temperature is about 110°, and just before it enters t sea, near Fort Charles, it is about 90°.

Directions.

In approaching the anchorage off Charles Town from the Southward the lead m be quickly hove, particularly in the night, to avoid coming within ten fathoms. In t daytime, having rounded the S. end of Nevis, by keeping St. Eustatius open to the We ward of Brimstone Hill at St. Christopher, it will lead clear of the reef on the Weste side, but, unfortunately, St. Eustatius is generally in the clouds. A vessel will, ho ever, always steer clear by opening out Frigate Bay Hill, at the S. end of St. Christ pher, clear of the main body of that island, having it to appear as almost separa from it, which it very nearly is. When Booby Island, a remarkable, small, conic rocky islet, one hundred and twenty-three feet high, in the Narrows between Nevis a St. Christopher, comes out of the N. side of Nevis, haul in upon this mark, which w lead just outside the ledge off Fort Charles, and to an anchorage in about four a half fathoms abreast the flagstaff in the town.

Monkey Shoals.

MONKEY SHOALS.—Vessels of heavy draught approaching the anchorage Charles Town from the N. W. must avoid the Monkey Shoals, which are the only da gers on this side of Nevis, and lie N. W. ½ N. four and a half miles from Fort Charl and S. W. ½ S. two miles from the Nag's Head, the S. W. end of St. Christopher.

These shoals form two small banks of coral and sand on which there are four fatho water; they lie on the edge of soundings, and occupy a space about half a mile lo N. N. E. and S. S. W., and two cables broad, and the discolored water over them m be seen at some distance from aloft. Paradise mill, at Nevis, in one with the old m on Tower Hill—which latter stands well up on the side of the mountain—leads close the Southward of them; Cades Bay mill (the Northwesternmost on the shore) in with Spring Mill Hill, which stands conspicuously on the ridge which connects Hu cane Hill with the mountain, leads to the Northward; the town staff at Charles Tow one with Prospect Hill mill, which stands on the top of the Western ridge of low hi leads to the Eastward; and the same staff in one with Stony Grove, which is the near mill to the Southward of the town, leads to the Westward of them. From the bod the shoals St. Eustatius is seen in one with Brimstone Hill, and Mosquito Bluff just c over the low land to the Northward of the Scotch Bonnet at St. Christopher. soundings around are very irregular.

Narrows.

THE NARROWS is the name given to the channel between Windy Hill on N and Scotch Bonnet Head on St. Christopher. It is two miles wide, and navigable f the Eastward for sailing vessels of eighteen feet draught; but from the Westw against the prevailing winds, it can be only used safely by hand droghers, with assistance of a pilot, or good local knowledge; for no good leading marks can be gi and the dangers are numerous.

Anchorage.

There is excellent anchorage in the Narrows, in six fathoms, over good hol

* It may be remarked that this peculiar and valuable feature has only recently been discov during the progress of the survey of these islands, now in operation. The direction for Nevis and Christopher are by Capt. E. Barnett, R. N.

ound, with Mosquito Bluff just open of Scotch Bonnet Head, and Newcastle Point evis) just open of Windy Hill.

Directions.

The channel for vessels drawing eighteen feet, lies between Booby Island and St. ristopher, and N. W. of the Cow Rocks, a small cluster only three or four feet above e sea, lying nearly midway in the channel. The Eastern entrance is, however, obructed by a dangerous bar of coral, which extends from the N. E. side of Nevis to the ntre of the same side of St. Christopher, skirting the shore at the distance of from one two miles; it breaks in several places, and should be approached most cautiously as e soundings give no warning.

The N. end of the shallow ground of the above bar lies about a mile from the E. end St. Christopher. Vessels may pass in either to the Northward or Southward of it. to the Northward, bring the highest of the cocoanut-trees at the Swansea estate on evis, in one with Mosquito Bluff, and run on this line until Booby Island bears S. S. when steer for that island, passing it within two cables' length to the Westward. e former, however, is a doubtful mark, owing to the liability of the cocoa-nut trees to cay, and it will therefore be safer to pass to the Southward of the S. end of the shalw ground of the bar. For this purpose, keep an offing of at least three or four miles, til Nag's Head (a remarkable peaked hill, which forms the S. end of St. Christopher) mes in one with Mosquito Bluff, equally conspicuous, being a small perpendicular iff ninety feet high, lying at the base of the lofty hills forming the S. E. end of the and. Run in on this line, and when Lowland Church is just open to the Eastward of oby Island, a vessel will be on the bar between the shoals, in twenty-eight feet water. aving arrived thus far, and crossed the bar, run direct for Booby Island: pass two bles' length to the Westward of it, and thence steer so as to pass to the Northward of e Cow Rocks, at about the same distance; within, or to the Westward of them there no danger to fear. Lowland Church, just open to the Westward of Booby Island, ll also lead over the bar in five and three fourths fathoms water.

By referring to the plan of the Narrows, it will be seen, that by placing a buoy on end of the ledge which extends to the Westward of the Scotch Bonnet head, and other on the N. end of the inner ledge, to the Westward of the Cow Rocks, the chan- might be freely navigated by vessels of the heaviest draught.

There is also a narrow channel for droghers, called the South Channel, between Nevis d the S. end of the bar, by bringing Briscoe's old mill on St. Christopher in one with e Southern side of Booby Island, but from this direction the mill is not easily made t.

St. Christopher.

ST. CHRISTOPHER.—Like Nevis, this island is of volcanic origin, the very remark- e peak of Mount Misery (generally in the clouds) rising to the height of upward of r thousand feet. It is eighteen miles in length, from N. W. to S. E., its general dition, but it is so irregular in form as to vary considerably in width, although its res are almost straight; it therefore possesses no harbor and but indifferent roadds, quite unsafe in the hurricane season. About four miles from its S. end, at Frig- Bay, it is nearly divided into two parts by a low neck of sand, not a fourth of a mile oad, and, consequently, at only a short distance it appears as two islands, and at a ater distance from the Eastward or Westward the irregular hills at the S. E. end l appear as several detached islets.

The N. W. end of the island is about five miles broad, and the centre part is occupied a vast rugged mountain ridge, its lofty summit terminating in Mount Misery; at its e, on almost all sides, will be seen extensive and remarkable table lands, richly cultied, making the island one of the most picturesque in the West Indies. At the S. E. of the ridge, at the back of the town of Basse-Terre, is a striking elevation called nkey Hill, its rounded woody summit being upward of thirteen hundred feet high, at the foot of the Western side of the mountain, close to the shore is Brimstone Hill, ally conspicuous, upward of seven hundred feet high, and easily distinguished by extensive fortifications and signal staff which crown its summit.

The S. E. end of the island, although much less elevated, has some very remarkable ls, which, as before observed, are extremely useful when navigating between the nds; as they are always visible. St. Anthony Peaks are two massive hills which m the extreme S. E. end, the loftiest being a little upward of eleven hundred feet h. The Nag's Head, a conical hill terminating in a small peak at the S. point of the nd, six hundred and forty-seven feet high, and the Sugarloaf which is situated mid- y between the above, six hundred and sixteen feet high, are all well-defined objects. e valleys which separate them are so low that from a distance, in certain positions, y appear as small islets.

The N. E. and S. W. sides of the island lie within half a mile of the edge of sound s; the former is skirted by a reef which, in places, affords temporary shelter for ts and droghers. The bank which connects this island to St. Eustatius is from four ix miles broad, with a depth of from fifteen to twenty-five fathoms, over coral, sand, rock.

Basse-Terre. BASSE-TERRE, the capital of St. Christopher, is situated on the S. W. side of t island, on the shore of a sandy bay nearly one mile and a half long, and about half mile deep. The best anchorage will be found off the centre of the town in eight or ni fathoms, with the flagstaff off the Old Fort at the W. end of the bay, bearing W. by No directions are necessary, for there is no danger whatever, but vessels of lar draught, when approaching it from Charles Town (Nevis) must be careful to avoid t Monkey Shoals.

A shallow bar skirts the front of the beach, at the distance of half a cable's leng and causes a heavy surf to break on the shore, especially when the rollers prevail: lan ing, therefore, at this period, is not only difficult but sometimes dangerous, and bo should always anchor off, and back in to the shore. A wharf has been erected facilitate the landing.

Light. A fixed red light is shown from a small wooden tower thirty-seven feet high, on t beach, fronting the town of Basse-Terre; but it is scarcely visible beyond the distan of four or five miles. When bearing N. by W. ½ W. it leads to the anchorage. It stated that the light is to be removed about sixty yards to the Westward of its prese position.

Old Road. OLD ROAD lies about five miles to the Westward of Basse-Terre, and two and half miles to the Eastward of Brimstone Hill. A little to the Eastward of the tow there is a temporary anchorage of nine or ten fathoms water, stony ground, within cable's length of the shore, abreast a rivulet of excellent water. This was former the general watering place, but the wharf having fallen into decay, the heavy surf e poses boats to so much risk, that vessels now prefer obtaining it at Basse-Terre, whe however, it has to be purchased.

There is also a similar anchorage a little to the Northward of the small fort, at t foot of Brimstone Hill, with the flagstaff on the hill bearing E. ½ N. and the church ½ E.; a convenient spot for steamers to land troops or supplies.

Caution. Neither of the above anchorages should be taken up by a sailing vessel, except in case of great emergency, for the wind under the high land is so baffling and uncert as to make it no easy matter to get away from the shore; and in passing to leeward the island it will be prudent not to come within the distance of three miles, until t vessel has passed to the Southward of the high land, to avoid being becalmed or e posed to the violent gusts which rush down unexpectedly through the ravines, a which she should be well prepared to meet.

In rounding the N. end of St. Christopher in the night, to the Westward great ca tion must be observed not to come within the depth of fifteen fathoms. Sandy Point foul to the distance of half a mile, and very low; and being backed by high land a estimated distance from it will be exceedingly doubtful.

In passing between St. Christopher and St. Eustatius, without the wind is well the Northward of E., it will always be better to give the former a wide berth, in ord to keep the breeze. A vessel will seldom meet with any adverse current here, and e will have no difficulty in beating up to Basse-Terre.

Deep Bay. DEEP BAY, at the N. end of St. Christopher, affords safe anchorage to droghe being protected by a reef nearly dry, extending about three fourths of a mile from t shore, with shallow ground a short distance outside it; this part of the island, therefo should not be approached within the distance of two miles.

St. Eustatius. ST. EUSTATIUS, called more commonly by the islanders Statia, is a lofty volca island, four and a fourth miles in length, from N. W. to S. E., and from one to two mi in breadth, the S. E. end being the broadest.

This island, when viewed at a distance from the N. E. or S. W., appears as two d tinct islands. The Northern part is broken up into rugged hills, from five hundred nine hundred feet high, which terminate abruptly on the shore, in a transverse dir tion across the island; the Southern portion is occupied by the volcanic mountain, t summit of which reaches the height of nineteen hundred and fifty feet, but is seld visible; its sides slope gradually down to the sea, and would be very remarkable their extreme regularity of outline, were they not broken by a bold white cliff on S. side, called the White Wall, nine hundred feet high. The valley between is hig cultivated.

Orange Town. ORANGE TOWN, the only town in St. Eustatius, is situated on the W. or lee side the island, partly on the beach and partly on the cliff which overlooks it, at the he of about one hundred and thirty feet; the former called the Lower, the latter the per town, communicate by a steep road cut out of the cliff. Fort Orange stands o cliff in front of the town, facing the sea; and on other commanding positions, especi on Signal Hill, are the ruins of former works and batteries. The cliffs, on which Upper Town stands are composed of terras, a white argillaceous earth, which is found be an excellent cement, either for exposure to the atmosphere or for subaqueous wo The only safe landing place is on the beach under the town, and here the surf is heavy that the boat must be veered in from an anchor with a long scope of cable.

re are two springs at Orange Town, one close to the beach in the Lower Town, *Water.*
e water is not good, and the inhabitants use what is caught in tanks during the
season.

e approach to the anchorage off Orange Town is quite safe, and it may be taken up *Anchorage.*
y time during either night or day. The wind scarcely ever varies to the North-
of N. E. or to the Southward of E., except in the hurricane season, and the only
r to be avoided is a rock nearly awash, lying one cable and a half from the shore,
en the White Wall and the town.

e best anchorage will be found at three and a half cables' length from the shore,
he church and Round Hill in one E. by N. ½ N., and the S. W. extreme of the
in one with Brimstone Hill (St. Christopher) S. E. ½ E., in ten fathoms sand.

e Northern part of St. Eustatius is bold, and may be rounded within a cable's
h: but the breakers extend from the S. E. side to the distance of two cables' length,
coming from either quarter it will be better to keep half a mile from the shore,
oid the baffling winds under the high land.

e edge of the bank lies close to the S. side of the island, one mile and a half from
side, two miles and a half from the N. E. side, and two miles from the W. side,
there is a depth of from twelve to fifteen fathoms, gradually deepening to the
There are a few rocky spots which should be avoided, but generally the bottom
dy, and good holding ground.

BA is a small but remarkable island, rising upward of twenty-eight hundred feet *Saba.*
ndicularly from the sea, but its summit is generally in the clouds. It is nearly
in form, two and three fourths miles in diameter, and bold and steep to. The line
e hundred fathoms soundings is about half a mile from its W. side, and only three
s' length from its E. side. This island is a mass of rugged mountains, with deep
precipitous ravines, through and over which are only footpaths from house to
.

e principal village is situated in what the inhabitants call the Bottom, a small val-
ine hundred and sixty feet above the sea, and is only visible when Ladder Point,
W. point of the island, bears N. by W. The only commerce is in poultry and
ables, particularly sweet potatoes, which are raised in great abundance, and ex-
d to the neighboring islands. The islanders speak the English language, and are
lent ship-builders, and their boats and small craft being famed all over the Wind-
Islands, their model is generally adopted.

e principal landing place, called the Southside Landing, is situated about four ca- *Landing.*
length to the Eastward of Ladder Point, and is merely a little rocky cove on the
at the foot of a deep ravine, through which a pathway leads up to the village.

ere is another landing about three fourths of a mile to the Northward of the point,
Ladder Landing, from its being at the foot of a pathway traced out of the rugged
nice, which rises almost perpendicularly out of the sea.

general a heavy surf breaks all along the shore, and renders landing extremely
lt and often dangerous.

landing may be effected with the prevailing winds, when moderate, about one third
mile to the Southward of Torrens Point, the N. W. extreme of Saba. This is the
ipal boat-building spot. There is a well near it, but the water, although drink- *Water.*
is not good, the inhabitants chiefly depending on rain-water, caught in tanks. Ves-
might obtain a supply from the well, but it would be attended with very great dif-
y and risk. Firewood can be purchased, but it is requisite to bespeak it, and agree
ve it brought down to one of the landings.

Ladder Point, among the boulders close to the water's edge, there is a thermal
ral spring, of sufficient temperature, it is said, to boil an egg; but it is so small that
only to be found by digging away the loose earth and sand around it.

ere are two positions off Saba Island where anchorage may be obtained, but neither *Anchorage.*
em is safe for large sailing vessels, from the difficulty of getting away from under
igh land. One is off the Southside Landing; but it is, however, only fit for small
and-aft rigged vessels or steamers, that can be easily handled. The other is situ-
between Ladder Landing and Torrens Point. The only difficulty that will be found
is in having to contend with the uncertain and baffling winds which are sure to
, except the wind outside is as far to the Northward as N. E. by N., which only
ens occasionally during the winter months.

ould necessity compel a sailing vessel to take this anchorage, it had better be ap- *Directions.*
hed from the Northward. After rounding the Diamond Rock (which is a most re-
able, small, barren, rocky islet, lying off Torrens Point, rising perpendicularly from
a to the height of eighty feet, and very bold, within a cable's length), keep the luff,
pproach the anchorage under easy sail. When the N. point of Saba is shut in with
ens Point, and just before the Pilot Rock (which is five feet above the water, and
etween the Diamond and Torrens Point) and the outer part of Torrens Point come
ith the Western peak on the Island of St. Martin, bearing N. N. E., a vessel may

anchor in twelve or fifteen fathoms, sandy ground, about two cables' length off sho The bank here is very steep, and it will be prudent to run a kedge with a stout hawa out to the Westward, to prevent the vessel from swinging in-shore by the eddy ga from the mountain, and it will be found convenient to haul her off by when getting u der way.

There is a clear deep channel between the Diamond and Torrens Point, and it may taken from the Eastward, provided the wind is not to the Eastward of E. N. E. In th case, keep the Diamond close aboard, to avoid a small rock awash just outside the Pil As nothing, however, is to be gained by taking this channel, it will be better to pass the Westward, outside of the Diamond.

Tides. There is no perceptible tide at Saba Island, but sometimes a feeble Southerly stre sets along the Western shore.

Saba Bank. SABA BANK forms nearly a parallelogram, its longest sides lying E. N. E. and S. W. about thirty-two miles, and its shortest N. N. W. and S. S. E. about twenty mil Its nearest part lies about two and three fourths miles from the S. W. part of Saba I and. Although not entirely a new discovery, its recent minute examination has add quite a new feature to the present charts, that will tend to remove the alarm which navigators felt when passing to the Southward of the island.* The E. end of the ba bears S. by E. twelve miles from Saba, and the N. end W. by N. eight miles.

The Eastern edge of the Saba Bank is fringed with a remarkable narrow ledge of ing coral, sand, and rock, which is nearly thirty miles in length, and varies in dep from six and a half to ten fathoms; when on this part the bottom is distinctly seen. commences about S. W. four miles from Ladder Point (Saba Island) and trends the S. S. E. eleven miles, with a breadth of from one and a half to two and a half miles then turns to the S. S. W. for eight miles and is from one to two miles broad, and ter nates W. by S. twelve miles from this, where it is merely a ridge of nine fathoms, half a mile broad. To the Westward, or within this ledge, with the exception of a small coral patches of nine and ten fathoms toward the Southern edge, the bottom clear white coral sand, with a depth of from twelve to fifteen and twenty fathoms, gra ally increasing to the edge, but terminating abruptly in thirty fathoms.

On the Northern edge of the bank there is excellent fishing ground, but the Saba fi ermen have frequently found the barracouta caught here, and on the bank between Christopher and St. Eustatius, poisonous.

Tides. There appears to be no tide on the Saba Bank, and very little current was obser during the survey, which was made in the winter months.

St. Bartholomew. ST. BARTHOLOMEW (generally called St. Barts), with St. Martin, Anguila, and I Island, may be described as another distinct group, lying upon the Western edge o separate flat bank of soundings of considerable extent, composed chiefly of shells, g and white sand, with a little coral and crust.† From St. Bartholomew the bank exte out to the E. S. E. twenty-seven miles, where it terminates in a small-tongue or spit, arated from the main bank by a remarkable narrow vein of ocean water, about tw miles from the E. or tip end; and this end lies only twelve miles to the Westward of Antigua Bank. E. of the island the edge of the bank lies fourteen miles off, to the E. eight miles, and to the S. W. six miles.

From Scrub Island at the N. E. end of Anguila, this bank of soundings extends twe five miles to the Eastward, and terminates in a point; thence the edge runs almos a straight line to the W. by N., until it reaches within three and a half miles N. of E. end of the island; it then turns abruptly to the N. N. W., forming a deep bight f distance of fifteen miles, and ends in a tongue three miles broad, on the parallel of 18° 33′ N., only three miles to the Southward of the latitude of Sombrero, and twe three miles E. by S. of that island.

This island may be recognized from the others in its neighborhood by three rema ble hills near its E. ends, of nearly the same elevation, and forming a triangle; there when seen at a distance, on the bearings of S. S. W., W. by S., and N. W. by W. on the opposite points, they appear as only two hills. The Easternmost hill is hundred and ninety-two feet high, and more peaked than the others, the Southern hill eight hundred aud sixty feet, and the Northernmost eight hundred and twenty feet, and the latter is distinguished by being more rounded. The N. and E. sides o island are fringed by a coral reef to a short distance from the shore, which al shows itself; and off these sides are several small rocky islets, which it will be n sary to describe, as they interfere with vessels navigating the channels, especially on the S. side of the island.

* In all the present directories a shoal of three fathoms is said to exist about four miles S. of but nothing of the kind was found during the surveys of Lieut. G. B. Lawrence, R. N., in 182 thoroughly explored this neighborhood.

† The term crust has been given to a peculiar sounding found in almost all parts of this sea; pears to be a very small, thin, flat marine plant, of somewhat circular outline, with corrugated incrusted with hard lime, having something the appearance of a white flat stone.

Coco.

OCO, the Southernmost of the islets off the S. E. side of St. Bartholomew, lies S., t half a mile from the bold high bluff which forms the E. side of Grande Saline Bay. a narrow, rugged, rocky islet, slightly wooded on its summit, about a fourth of a in length from N. to S., and has a small rock nearly connected to its N. end; the is steep to on all sides, particularly at its S. end, but it is not advisable to pass in- e of it.

The Rouges.

HE ROUGES, or Little Turtle Rocks, are two very small rocky heads lying close her at three fourths of a mile to the Eastward of Coco Island. They are only three ur feet above the level of the sea, and although bold and steep to, are dangerous to ls passing St. Bartholomew in the night, as they lie S. by W. nearly a mile and a from its E. end. In the daytime they are easily seen by the violent surf breaking them, but as the soundings are so deep around and the lead giving no warning, it always be better to pass to the S. E. of them.

The Tortue.

HE TORTUE is a small, flat-topped, rocky islet, lying a fourth of a mile from the point of St. Bartholomew, to which it is connected by a ledge of rocks, dry in s. At a fourth of a mile to the N. E. of the islet are the Grenadiers, a small rocky e, only two or three feet above the level of the sea, on which the sea breaks heavily; steep to on the N. E. side.

Toc Vers.

OC VERS is a small, pointed rocky islet, lying about a mile and a half from the hern shore of St. Bartholomew, and is the Northern and outermost of those we are ribing. When seen from the E. or W., its N. point resembles a lofty pillar, stand- close by the side of the perpendicular cliff, which is about one hundred and twenty high, and very remarkable. It is steep to on its N. and E. sides.

Frégate and Goat Islands.

REGATE and GOAT ISLANDS, or Bon-Homme, are two islands of considerable size elevation, clothed with grass and low brushwood, and readily distinguished. The r is separated from the N. W. end of St. Bartholomew by a clear channel a fourth mile wide, but the sea is generally so heavy that it should not be attempted except case of necessity.

Sugarloaf.

HE SUGARLOAF, lying near the S. W. side of St. Bartholomew, is a remarkable l, barren, rocky islet, having the exact form its name imports when seen from any ction, and although similar in appearance to the Grouper Rock, its position and ter elevation readily point it out. It lies nearly W. a mile and a half from Gustaf, is an excellent guide to strangers for finding the entrance of that harbor, which from tance is not easily made out. It is one hundred and eighty feet high, bold and steep xcept on the N. side, whence a narrow ledge of dry and sunken rocks extends two es' length out in that direction; at its extremity there are two small rocks about four out of the water, bold and steep to outside.

Gustaf Harbor.

USTAF HARBOR.—Gustaf or Gustavia is situated on the S. W. side of St. Bar- omew, a mile and a half to the N. W. of Nègres Point, the S. extreme of the island, is the seat of government, and a free port. The only portion of it, however, that be called a harbor is the inner part or little arm of the sea, named the Carénage, h runs in to the S. E., and on the shores of which the town is built; but it will only t vessels of five or six feet draught. The outer part is a commodious and safe an- age with the prevailing winds, for a few vessels drawing not over seventeen feet, but g exposed to the S. and W. it is not secure in the hurricane season. Vessels of lar- draught will find good temporary anchorage under the S. W. side of the island, be- n the Syndare islets and the W. end.

Carénage.

e Carénage is nearly half a mile long, two hundred and twenty yards wide at its end, and one hundred and thirty yards at the narrowest part of the entrance. It unded on its S. W. side by a narrow rocky ridge, terminating at the entrance in a headland, one hundred and thirty-six feet high, on the summit of which is Fort Os- mounting four guns. On its N. E. side it is backed by a ridge of more lofty wooded two hundred and sixty feet high, terminating at the entrance in a precipitous ac- y, crowned by Fort Gustaf, one hundred and seventy feet high, which, overlooking ridge on the opposite side, serves to point out the locality of the harbor to a stranger ng from the Southward, for the town is quite out of sight.

Outer Harbor.

e Outer Harbor is confined to a square space of about three cables in extent, and be entered from the S. E., S., or W.

S. E. Channel.

e S. E. Channel lies between the shore and the Saintes, which are three small, low, ed, rocky islets, lying on a straight line N. N. W. and S. S. E. about three cables in h between the extreme points, and not quite that distance from the ridge which s the S. W. side of the Carénage. The two Southern islets are nearly connected by ledge of low rocks; the Northernmost and smallest lies nearly a cable's length to N. N. W., but there is no passage between. Outside they are bold and steep to, and sel's sides may almost be rubbed against the Northernmost, but from the middle a shallow ledge extends toward the bluff of Fort Oscar, leaving a channel not half le wide, and consequently only fit for steamers, having the assistance of a pilot; no advantage would be obtained commensurate with the risk.

S. Channel. The S. Channel lies between the Saintes and the Syndare Islets, which are two barr rugged islets, lying N. and S. of each other, and separated by a coral ledge, about half cable long. The Northern islet is ninety-eight feet high, and a ledge extends from its and E. sides to the distance of about a ship's length, and is easily seen by the discolor water. A ledge also runs out half a cable's length from the S. E. end of the Southe islet, and upon it are two small rocky islets; the outer one rises from the edge of t ledge, and is steep and bold to; and between it and the N. W. Sainte Islet is the S. cha nel, which is nearly a fourth of a mile wide.

W. Channel. The W. Channel, formed between the Syndare and the shore, is about three and a h cables wide, and the only danger in it is the shallow ground off the N. end of the Sy dare, before noticed.

Directions. Vessels bound to Gustaf from the Eastward, or intending to proceed to the Southwa of St. Bartholomew, should not bring the E. end of the island to bear N. before they ha opened out the Sugarloaf to the Southward of Nègres Point, to avoid the Rouges. W the prevailing wind the S. channel is the easiest to enter. In taking this channel fr whatever quarter, run the Saintes down close aboard from the Southward, under f commanding sail on the starboard tack, and haul sharp round the Northern Islet. Shou the wind be at E., if well manœuvred, the vessel may fetch into a berth. Should it to the Northward of E. it becomes so variable and unsteady, and rushes down with su violence that the greatest attention is requisite to keep the vessel well under comma to insure staying. If the Syndare is weathered, she may stand boldly toward the sho as far as is necessary to enable her to fetch into a berth, according to her draught. not, there is room to make a short tack to the Eastward, but a stranger without a pi had better avoid this risk by using the W. channel.

In taking the W. channel, if coming from the Eastward the vessel may pass eit outside the Sugarloaf, or between it and the Syndare Islets; if the latter route is tak haul close round the W. or outer side of the Baleine or Whale Rock, a small, danger rock, awash and steep to, lying nearly a fourth of a mile to the Westward of the Sy dares, and tack when necessary under the shore, which is free of danger. There i clear and deep channel between the Whale and the Syndare Islets, but the wind is uncertain that it will be better to pass outside. A pilot will be always at hand.

Grand Saline Bay. GRAND SALINE BAY, to the N. W. of Coco Island, affords temporary anchora for small vessels. Thence the S. W. side of St. Bartholomew is bold and steep to, a there is no danger but that just described.

Colombier Bay. COLOMBIER BAY, at the N. W. end of St. Bartholomew, also affords shelter a tolerable anchorage; and in the bight of St. Jean Bay, on the N. side of the isla there is a narrow cut through the reef which will admit coasters.

Channel between St. Bartholomew and St. Martin. CHANNEL BETWEEN ST. BARTHOLOMEW AND ST. MARTIN.—The Grou Rocks and Table Rock may be said to form the Eastern side of the main channel tween St. Bartholomew and St. Martin, and which is five miles across to the islets the E. side of St. Martin. It may be freely navigated by day, but in the night, soundings being so deep and regular up to the sides of the rocks, the lead will give warning, and it would be dangerous to attempt. The following are the islets on b sides of it:

Beef Barrel. BEEF BARREL is a small square black rock, only fourteen feet above the level of sea, lying W. one mile and a fourth from Colombier Point, the N. W. end of St. Bart omew, with a clear channel between. It is steep and bold to on all sides but the N. which is foul to the distance of a cable's length.

Boulanger or Ship Island. BOULANGER or SHIP ISLAND, lying N. a mile and a fourth from Colomb Point, is a small, barren, rugged, rocky islet, about one hundred and twenty feet hi rising abruptly from the sea on all sides. About two cables' length to the Eastward it will be seen a very remarkable pillared-shape rock, nearly of the same height, whi from its resemblance to a vessel under sail, is called the Sail Rock. They are bold steep to, and cannot be mistaken.

Fourche or Five Islands. FOURCHE or FIVE ISLANDS, is the largest and loftiest in the channel betw St. Bartholomew and St. Martin. It is elbow-shaped, the Northern arm three fourth a mile long from E. to W.; the Eastern arm half a mile from N. to S., and it is abo fourth of a mile broad. The latter name is given to it in consequence of its having small peaked hills, which at a certain distance have somewhat the appearance of b so many small islets. The two Western hills are three hundred and fifty feet high, others a little lower, therefore at a still farther distance they will be seen as two isla At the E. and also at the W. end, there is a small detached rock lying a short dist from the shore, with a ledge nearly dry between. About a cable's length to the W ward of the S. point there is also a dangerous small rock, which just shows itself ab water; with this exception it is steep and bold to.

Anchorage. There is anchorage off the S. W. side of La Fourche, where a vessel will ride ease and safety during the prevailing winds; but it will be prudent not to go farthe to the bight than about midway between the ends of the island, with the S. point b

E. by S.: closer in, the wind becomes so baffling and unsteady, that, in weighing, ing the right way cannot be depended on, and there is no room to manœuvre. A el, however, of large draught, in case of necessity, wishing to repair damages, may l in close under the Eastern arm, passing to the Westward of the little rock just iced. There is good landing in the sandy bay at the N. E. corner.

ABLE ROCK lies N. W. one mile and a fourth from Fourche Island, with a clear sage between. This is a small rocky islet, nearly barren, and when seen from the or S. has somewhat the appearance of a shoe, with the heel to the Westward, where about thirty feet high; it is clear all round, and may be approached on its W. side hin a fourth of a mile. *Table Rock.*

ROUPER ROCK is a rocky barren islet, almost circular in form, about two cables' gth in diameter, and very much resembles in appearance the Sugarloaf and the Molli- ay Rock. It rises abruptly on all sides, and terminates in a rounded summit, one dred and fifty feet above the level of the sea. A coral ledge of dry and sunken rocks nds to the distance of a cable's length from its S. side, leaving a narrow vein of deep er between it and the little Groupers; from all other quarters it may be approached hin half a mile; and the channel between it and Table Rock may be navigated ly. *Grouper Rock.*

ITTLE GROUPERS form a cluster of small, detached, black barren rocks, the thernmost lying S. S. W. half a mile from the Grouper. This and the Northernmost are about fifteen feet high; the intermediate ones are much lower. They are steep n all sides, except toward the Grouper, as noticed above. *Little Groupers.*

EN AND CHICKENS are the outermost rocks on the W. side of the channel, be- en St. Bartholomew and St. Martin, and lie E. by N. two miles from Blanche Point, S. E. extreme of St. Martin, and N. W. by W. ¾ W. five miles from Table Rock, are a cluster of small rocks, extending in a N. E. and S. W. direction nearly one th of a mile; the Southwesternmost is fifteen feet high, but the others are not more four or five feet, and they are steep to on all sides. *Hen and Chickens.*

UANO CAY lies E. N. E. ½ N. one mile and a half from Blanche Point, N. W. ½ N. e fourths of a mile from the Hen and Chickens, and nearly half a mile from the rest part of the shore. This is a small rocky islet rising almost abruptly from the o the height of one hundred feet, and is slightly wooded. It is bold to on its S. W. S. E. sides, but nearly half a mile to the N. E. of it there are two small rocks just e the surface of the sea, over which the surf breaks heavily. *Guano Cay.*

HE MOLLIBEDAY ROCK is similar in form and appearance to Guano Cay and e Sugarloaf, before noticed; and its rocky sides, partially wooded, rise abruptly e height of one hundred feet above the sea. It is foul on the S. E. side to the dis- e of half a mile; and E. S. E., a fourth of a mile from it, there is a small ledge of s a little above the surface of the water, which always show themselves by the kers. *Mollibeday Rock.*

here is a clear channel, three fourths of a mile wide, between the Mollibeday and the and Chickens, and also between it and Guano Cay; but they should only be used se of necessity, especially the latter, which is about half a mile wide.

T. MARTIN.—The general outline of this island may be said to form an equilateral gle, with its sides facing E S. W. and N. W., each about seven and a half miles in th; but it is deeply indented and cut into by bays and creeks, some of which afford anchorage. It contains an area of about thirty square miles, and possesses several able salt ponds, and the valleys and small plains are highly cultivated. *St. Martin.*

his island is of moderate elevation; the loftiest table ridge, which runs nearly ugh the centre of the island from N. to S., being thirteen hundred and sixty feet within twenty feet of the height of Antigua, and three hundred and seventy feet er than St. Bartholomew. Besides the table land, it may be recognized by several rkable and useful elevations. The Saddle, situated at the W. end of the island, ugh only three hundred and seventy-seven feet high, is a striking object when seen the N. of Dog Island. Morne de la Fortune, two hundred and ninety-three feet forms a bold promontory and conical peak on the E. side of Simson Lagoon. The hernmost bare rocky peak of the Western range of hills, nine hundred feet high, h, when seen from the N. W. and S. E., resembles a colossal face leaning backward, e S. W., and the little conical hill, on the summit of which will be seen Fort Willem, e W. side of Grande Bay, nearly seven hundred feet high, are all very remarkable. e W. end of the island terminates in a dangerous, low, sandy point. The N. E. s high and bold, and being separated from the main ridge by a deep, broad valley, seen at a distance from the W. N. W. or E. S. E. it has the appearance of a sepa- sland. The S. E. end is formed by a high bluff, faced by a remarkable perpendicu- hite cliff, from which it receives the name of Blanche or White Point.

ANDE or GREAT BAY, situated at the S. E. end of St. Martin, is the princi- nchorage in the Dutch quarter. On the low, narrow sand ridge at its head is situ- Philipsburg, the chief town and seat of government; and at the back of it is the *Grande or Great Bay.*

most valuable salt pond in the island. The Eastern side of the bay is a mile in leng and is formed by a lofty promontory, which terminates to the Southward of Blanc Point; the Western side is formed by a flat, narrow, rocky neck of land, one hundr and four feet high and one cable and a half long, connected to the main by a low sand ridge, which, with the line of shore to the Northward, makes this side nearly thr fourths of a mile long. On the extremity of the ridge stand the ruins of Fort Amst dam and the barracks. The entrance between the headlands is a mile wide, and qu free of danger.

About a fourth of a mile to the N. W. of Blanche Point is the head of a narrow sa bar, which sweeps round the E. and N. sides of the bay, at the distance of from a fou to half a mile from the shore, and carries a depth of from six to ten feet. Within there is a narrow deep vein of from twelve to fifteen feet water; and about a fourth a mile from the Western shore there is a cut in the bar, in which there is a depth eleven feet. A small vessel will find this an excellent anchorage; but it will requ the assistance of a pilot, as no marks can be given, and the opening shifts.

There is a similar cut at the E. end, but the wind under the high land is so uncert that it is unavailable to sailing vessels.

Directions. When approaching Grande Bay from the Eastward, round Blanche Point, at the d tance of a fourth of a mile, then haul up gradually into the bay, prepared to meet t eddy winds, and sudden gusts which rush off from the high lands to the N. E., and a chor in the centre of it, in a depth most convenient to the vessel's draught, noticing th within the depths of five fathoms the soundings decrease rather suddenly to three a half and three fathoms.

For vessels of moderate draught the best anchorage will be found with Blanche Po E. S. E., and the Governor's staff, which is near the E. end of the town, N. by E. in six fathoms, over good holding ground; but generally heavy rollers make the ridi here very uneasy, and cause a high surf on the beach.

In approaching the bay from the Southward, or in beating up to it from the W ward, great care must be taken to avoid the Proselyte Rock.

Proselyte or Man-of-War Rock. PROSELYTE OR MAN-OF-WAR ROCK.—This very dangerous rock has only t and a fourth fathoms on it, and seldom breaks in the strongest winds. It is not m than thirty-five yards in extent, and the marks for it are, Fort Willem, in one with ruin of the barracks on Amsterdam Point, bearing N.; Blanche Point N. E. dist nearly one mile and a half; and the governor's flagstaff in one with a remarkable ho on the lowest part of the ridge of hills to the N. E. of the town of Philipsburg, and cl to the highest conical peak on the E. side of Grande Bay, called Oosten Berg, bear N. N. E.; the latter, however, is a difficult mark to be made out by a stranger. The and S. W. sides of this rock lie just within the ten-fathom line, and a ledge of from to nine fathoms runs off to the distance of three fourths of a mile to the S. E. of it serves as a warning when approaching it from that quarter.

Caution. In standing in for Grande Bay from the Southward, to windward of Proselyte Ro do not bring Blanche Point to the Eastward of N., or open out the Oosten Berg conical peak before spoken of) to the Westward of the point, until within the rock the Grouper Rock comes on with the slope of the Easternmost heights of St. Barth mew. In working up in shore, from the Westward, when approaching the rock, do open the Grouper to the left or Northward of the highest hill at the E. end of St. tholomew. When leaving the anchorage, the governor's staff in one with the Oos Berg, will lead out clear to the Westward of the rock, and when the Grouper co open to the Northward of St. Bartholomew, the vessel may be hauled to the wind.

To the Westward of Amsterdam Point, the S. shore of St. Martin is composed small sandy bays, separated by bold woody heights, steep to, for the distance of two a fourth miles, where it terminates at Pelican Point, a low rocky point forming th end of Simson Bay. From this point a narrow ledge, on which there are from tw four fathoms water, extends out half a mile to the Southward, and about one cable a half to the N. W. of the point are the Pelican Rocks, three or four feet above the of the sea. Thence a low sandy shore sweeps round to the Westward, forming Si Bay.

Simson Bay. SIMSON BAY is a mile wide, and half a mile deep, and has temporary, but not anchorage in the centre of it, midway between the points in four and a half fat water. At the E. end of the bay there is generally a boat channel into the lagoon it is not always open. Thence to the W. end of the island, the shore is low bounded by sandy beaches, separated by low rocky and sandy cliffs.

Caution. Great care must be observed in rounding Terre-Basse Point, the W. extreme o Martin, in the night, for a shallow spit runs off W. S. W. three fourths of a mile fro and the soundings are so deep on its edge, that the lead will not be of much use; w almost a mile of the spit the depth is fifty fathoms. In the daytime the spit may be from aloft and rounded by the eye. If cloudy, keep Fourche Island open to the S ward of St. Martin, until Terre-Basse Point bears to the Southward of E. H

ied the spit, be careful not to haul up too suddenly or come within the depth of
fathoms, as this end of the island is foul to the distance of nearly a mile from the
between Plum Point and Marigot Bluff. In working up to Marigot Bay, keep
Anguila shore aboard until Marigot Bluff bears S.

ARIGOT BAY lies three and a half miles Eastward of the W. end of St. Martin, *Marigot*
between Marigot Bluff and Arago Point, is a mile and a half wide, and half a mile *Bay.*
with excellent anchorage, protected from all winds but the N. W.; it seldom, how-
blows strong from this quarter. The bay is exposed to the rollers, which some-
break on its S. W. side, at half a mile from shore, and send in a heavy dangerous
on the beach. The town of Marigot is situated at the E. end of the long sandy
h, forming the bottom of the bay, at the base of a hill, on which stands a small fort
nanding it. It is the chief settlement and port of entry of the French quarter.
nding is inconvenient at all times, and sometimes attended with risk, especially in
ight, on account of the numerous sunken rocks which skirt the shore; the best spot
be found at the extreme E. end of the beach, at the foot of the Fort Hill, and hav-
effected a landing, the boat had better lie off at a grapnel. To the Eastward of
d Hill, which cuts the beach in two nearly in the centre, and is very remarkable,
hore of the bay is skirted by a flat coral ledge.

HE MEDEE SHOAL is the only danger in Marigot Bay, and was recently discover- *Medée Shoal.*
a vessel named the Medée striking on it. This rocky shoal is nearly circular, and
le's length in diameter, having on its N. E. edge as little as fifteen feet, with from
ty to twenty-four feet on the S. W. of it. It lies W. by N. four cables' length from
o Point, and the channel between has from three and a half to four fathoms in it,
is always better to pass outside the shoal.

approaching Marigot Bay, from the Eastward, keep Saddle or Red Hill, on the N. *Directions.*
oint of St. Martin, in one with N. side of Marigot Bluff bearing S. W. ½ S. until
d Hill comes on with Morne Fortunée Peak S. ½ E.; then haul in, and anchor on
ne, or a little to windward of it, in four fathoms, with Marigot Bluff bearing W. by
Crole Rock just open Northward of the island; it is not advisable to go farther in.
beating into the bay from the Westward, it will be better to keep in the offing
this latter mark comes on, as the breeze will be found more steady. Red Hill in
ith the S. side of Marigot Bluff S. W. ½ W. will lead one cable and a half to the
ward of Medée shoal, and the fort in one with Mount Accords S. S. E. ¾ E. will
bout the same distance to the S. W. The mount is a very remarkable peak near
d of the long ridge which runs inland to the Southward of the town; there is a
er elevation on the outside of it, nearer to the sea, but it cannot well be mistaken.

OLE ROCK.—From Arago Point to the N. point of St. Martin, the shore is clear *Crole Rock.*
teep to, the soundings regular, and it may be approached to half a mile. The
remarkable object on this part of the coast is the Crole Rock, a small, barren, black,
islet, with a rounded summit, rising on its N. side one hundred and twenty feet
dicularly from the sea. It lies about a mile and three fourths to the Westward of
point of St. Martin, and two cables' length from an adjacent point almost equally
kable, from its terminating in a detached conical peak of somewhat greater eleva-
To the Southward of the rock there is a deep sandy bay, named Anse de la
e Case, which offers secure anchorage for droghers: in entering it they are guided
eye. From the head of this bay, an extensive low valley runs across to Baie
nt, in which there are several cultivated salt ponds.

North point of St. Martin is skirted by a reef, to the distance of two cables'
; but it always shows itself, and is steep to.

RIENT BAY lies on the E. side of St. Martin, at about two miles to the South- *D'Orient*
of the N. point, and its entrance, about half a mile wide, is between two small *Bay.*
surrounded by dry reefs. From Pinels, the Northern island, the reef extends off
distance of nearly half a mile. The bay is about a mile deep, and vessels some-
visit it with the assistance of a pilot: but, being exposed to the full force of the
wind and heavy sea, it is only secure for droghers or small fore-and-aft vessels,
will find shelter at both ends of it. From the Southern island the shore becomes
d dangerous as far to the Southward as abreast Guano Cay; nearly midway, how-
here is a small cut leading into a well-sheltered creek, called the Oyster Pond.

d into D'Orient Bay, St. Martin, you will see a small key (Green Key) on the *Directions.*
side of the entrance, on the North end of which there is a light-house, not used.
this key a berth of a short half mile, leaving Flat Island on your starboard
keeping on until you open the sand beach to the West of Flat Island, then steer
into the bay, the reefs are visible on the North and Eastern sides. The Chau-
e and other reefs have eighteen feet water on them; a good depth of water
ing six fathoms will be found throughout the entire harbor, and Green Key may
roached in safety from the North and West.

Anchorage. . Anchor in three fathoms water near in, opposite the salt heaps, and well under co of Green Key.

Oyster Pond. THE OYSTER POND carries a depth of ten feet, and small vessels lie up here in secur during the hurricane season. Although marks are given on the plan for entering channel, it is so tortuous, narrow, and intricate, that no directions would be of use, it can only be navigated by expert pilots, and then only under favorable circumstanc

Caution. In general the sea is so heavy on the E. side of St. Martin, that the shore should be approached by large vessels, within the line of adjacent islets, except in necessity.

Tintamarre. TINTAMARRE (called in the present directories Hat and Flat Island, from its pearance at a distance) is one mile and a half long, in a N. E. by E. and S. W. by direction, and half a mile broad, and lies about one mile and three fourths to the E ward of the N. point of St. Martin. It is uninhabited, but belongs to a resident at island. The N. side of this island is formed by a bold rocky cliff, topped with tr which, toward the E. end, rises almost perpendicular from the sea to the height of nin feet, and when seen from the Eastward is very remarkable; its S. and W. sides are and sandy. It is bordered on all sides but the W. with a coral reef, which exten fourth of a mile from the N. shore, and half a mile from the S., and terminates at distance at the S. W. point of the island. There is tolerable landing in the sandy at the W. end, and a small vessel will find temporary anchorage at about half a from this part of the shore in eight or nine fathoms.

Channel. THE CHANNEL between the reef off the S. W. end of Tintamarre and Pinels Isl Reef is three fourths of a mile wide, and carries from ten to twelve fathoms water; it should not be used except from absolute necessity, more particularly from the ra falling on the rock named the Spaniard, which lies in its Northern entrance.

Spaniard Rock. THE SPANIARD ROCK is a very small dangerous head of coral, just beneath surface, and over which the sea breaks heavily with strong winds, but in mode weather it does not show itself. It lies W. N. W. about a mile from the N. W. en Tintamarre, and E. by N. ½ N. one mile and a fourth from the N. point of St. Ma Fort Willem in one with the E. end of Pinels Island, S. S. W. ½ W., leads to the E ward; the S. W. point of Tintamarre in one with the first hollow in the high land the W. end of St. Bartholomew (a very indistinct and difficult mark), leads to the S. and the Crole Rock just open of the N. point of St. Martin leads to the Northw Vessels, therefore, whether running or beating through the Anguila channel, only to be careful when approaching this danger not to shut the Crole Rock in.

Anguila. ANGUILA.—This island received its name from the early Spanish navigators, its supposed tortuous figure resembling an eel; but in fact it lies nearly on a stra line in a N. E. by E. and S. W. by W. direction, with no indentation of any exten either of its shores. It is fourteen miles long, and the Eastern half is from two to t miles broad, but the Western portion tapers gradually away to a point. It has an of about thirty-five square miles.

The Eastern portion of the island is the most elevated, and in the neighborhoo Crocus Bay, near the centre of the island, it is two hundred and thirteen feet high it has no remarkable hills. The Western portion declines gradually, and at the e is only thirty feet high. The Southern side is generally much lower than the North and the whole of it, as far Westward as Rendezvous Bay, is fringed with a coral dry in many places, from one to two cables' length from the shore, and steep to. are several little cuts through it, which will admit boats of large size into good sh

Rendezvous Bay. RENDEZVOUS BAY, situated on the Southern shore of Anguila, nearly abrea Marigot Bay, affords good shelter to small vessels, and is a convenient spot for ob ing wood. In entering the bay avoid the end of the reef, which extends two ca length from Shaddock Point; this can be done by the eye from aloft.

The narrowest part of the channel, between Anguila and St. Martin, is bet Blowing Point, about a mile to the Eastward of Shaddock Point, and Crole Rock, w it is three and a fourth miles wide. Boats communicating between the two islands erally land at Blowing Point, whence there is a road to Road and Crocus bays.

Blowing Rock. BLOWING ROCK (so called from the sea forcing itself occasionally through an ture in the surface, resembling a whale blowing) is a small rocky islet about si above the level of the sea, lying S. E. by E. three fourths of a mile from the W. e Anguila; it is bold and steep to outside, but within it there is only a channel for

Anguilita. ANGUILITA, a small rocky cay, twenty feet high, and covered with brushwood a fourth of a mile W. S. W. of the W. end of Anguila, to which it is almost connec coral beads, leaving only a passage for boats. It is bold and steep to on its S. W.

S. Wager. SOUTH WAGER is a small barren rock, about twenty feet high, lying abou cables' length from the Northern shore of Anguila, at one mile and a fourth fro Western end, which is here formed of remarkable low cliffs. The rock comes co uously in sight after rounding Anguilita, and is steep to. From abreast of the Wager the shore to Mead Point, at the E. end of Long Bay, is clear, and may b proached freely. From Mead Point to Road Bay, two and a fourth miles distan coast is composed of remarkable perpendicular cliffs, one hundred and fifty feet hi

Dowling Shoals.

WLING SHOALS are about one mile and a half in extent from E. to W., and fourths a mile from N. to S. The Western shoal lies N. of Mead Point, and the nel between, which is about a mile wide, carries a depth of from seven to ten fath- small vessels leaving Road Bay may run through it, but in beating up from the ward it is better to keep outside the shoals. On the Northern edge of the shoals is a small rocky islet, named Dowling Island, four feet above the level of the sea, teep to to the N. W., but to the N. E. it is foul to the distance of a fourth of a mile. ly three fourths of a mile E. S. E. of the islet, on the Eastern edge of the shoals, lies all, low, sandy cay, called Sand Island, covered with brushwood to the height of six there is no safe channel between, and to the S. and S. E. it is foul to the distance of rth of a mile. Sand Island bears W. N. W. one mile and a fourth from Road Bay with a clear passage between.

Road Bay.

AD BAY is nearly a mile and a half deep, and affords excellent anchorage for vessels. On the low, narrow ridge of sand at the head of the bay there is a small ment, the inhabitants of which cultivate the extensive salt pond at the back of it. e is no danger in the bay; the bluff is steep to, and having rounded it, haul in, and e a berth as most convenient to the vessel's draught. With the bluff N. E. by N., epth is nineteen feet, and decreases gradually to the shore.

om Road Bay Bluff, the Northern shore of the island still continues bold and ed to the N. E. for two miles, to the little valley at the head of Crocus Bay, the wooded cliffs being here skirted by a sandy beach. Thence it turns suddenly to N. W. for a mile, and forms the E. side of Crocus Bay.

Crocus Bay.

OCUS BAY.—This part of the Northern shore of Anguilla is composed of most rkable perpendicular white cliffs, with wooded summits, which serve as an excel- guide when bearing up from the Westward. The N. end of the bay, named Flat Point, terminates in a curious, small, flat-topped rock; hence its name. The prin- settlement is in the S. E. corner of the bay, and the houses are scattered about the y and adjacent hills. The custom-house, with its flagstaff, stands on the S. side of ay, on the summit of a hill two hundred and thirteen feet high, the loftiest in the d. The best landing place is a little to the Northward of the road leading up the y, but there is always a heavy surf on the beach.

Supplies.

ck and firewood may be obtained in Crocus Bay, but no water. Yams are in abun- e, and probably the finest in this part of the West Indies; when sprinkled over with ashes, they have been known to keep good for four months.

Anchorage.

e best anchorage in Crocus Bay is with Flat Cap Point bearing N. N. E., and the m-house S. E. ½ E., in seven fathoms, white sand, and excellent holding ground. The s exposed to Westerly winds and the rollers; the former, however, seldom occur, generally give sufficient warning to enable a vessel to get under way in time; the frequently set in with great violence, and render the riding here anything but ant, and landing very difficult.

Bay Shoal.

Y SHOAL.—In the middle of Crocus Bay, and S. W. about three fourths of a mile Flat Cap Point, lies a coral patch of five fathoms, about two cables in extent, which d be avoided when anchoring. The marks for it are the Jewel (a small rock lying to the shore, half a mile to the Northeastward of Flat Cap Point), seen just open of point, and a remarkable large tamarind-tree on the N. side of the landing place, in ith a conspicuous white house, on the lowest part of the hill above the beach, E. ½ S.

Directions.

tranger, bound either to Crocus Bay or to Road Bay, without a pilot or good local ledge, if coming from the Northward, had better run to leeward of Dog Island, and up. If from the E. or S. E., run through the clear bold channel between Anguila t. Martin, haul round Anguilita, and act in the same way. There will be no diffi- in doing this; there is seldom any current; the water is smooth, and if overtaken ght, good anchorage will be found anywhere under the S. side of the cays and on the N. side of the channel, taking care, however, to avoid the Dowling Shoals. s, when leaving the bays, and bound to windward, with the assistance of a pilot, ake the Northern Channel.

Northern Channel.

RTHERN CHANNEL.—This opening is between the E. end of Seal Islands Reef lat Cap Point, and is two miles wide. Nearly, however, in the centre there is a rous narrow ledge, named Middle Bank, half a mile long N. E. by N. and S. W. on which the depth is from twenty to twenty-four feet. The bottom is distinctly n this bank, and, with the heavy sea which generally prevails here in the winter , it frequently breaks, and becomes dangerous, as no good marks can be given, al- h there is a clear channel on either side.

rks are given on the plan to pass to the Northward of the bank, but they can only use to those possessing a local knowledge of the place; its S. end lies about N. fourths of a mile from Flat Cap Point; and its N. end, E. S. E., about a mile from end of Seal Islands Reef. The S. side of the E. end of the Seal Islands Reef s in heavy weather, and is steep to, but foul ground extends out a fourth of a mile

from its N. E. side, and is extremely dangerous. In approaching from the Northwar with a view to enter this channel, its proximity will be gained by bringing the custo house in line with the Western peak on St. Martin, which mark will lead in about a mi to windward of the reefs.

Tides. A strong weather or Easterly current will sometimes be found in Crocus Bay, to whi a vessel will tend even in fresh winds; but there is no perceptible tide.

Shawl Rock. SHAWL ROCK.—At two miles to the Eastward of Flat Cap Point, the W. end of dry reef commences, which trends off two miles in a N. E. direction, and a mile out fr the shore; and at four miles from the point, and half a mile outside the main body the reef, there is a dangerous rock, named Shawl, which does not always break, and steep to. The shore thence continues foul to within a mile of Snake Point, the N. E. e of Anguila. In beating up, the vessel's safety will be insured when approaching th reef and rock by proper attention to the lead: for within a mile and a half of it the dep suddenly increases from fourteen and sixteen to twenty-two fathoms.

Within the reef, at the W. end, there is good shelter for a boat, and through a narr intricate opening near the E. end, droghers find an anchorage.

Scrub Island. SCRUB ISLAND (called by Spanish navigators Anguilita) is separated from Angu by a narrow channel of deep water, about a fourth of a mile wide; but it should not navigated, as its Western side is skirted by a reef, nearly dry, to the distance of cable's length, upon which a vessel might be thrown by the sudden flaws which come the lee side of all these islands.

This island lies on the same line of direction as Anguila, and is two miles long a half a mile broad; it is covered with brushwood and stunted trees, which at the W. e are about fifty feet above the level of the sea. The E. end is low, and from it extend narrow strip of low rocks to the distance of half a mile; they are eight or ten feet hi steep to, and in general the sea breaks violently over them: but in approaching th from the N. E., they are hidden under the high part of the island, and are exceedin dangerous, for the soundings are so deep (the depths being twenty-seven fathoms wi half a mile of them) that the lead will scarcely give warning.

Near the centre of the N. shore of Scrub Island there is a little hill of white sandsto which, when the sun shines on it, is very remarkable.

Little Scrub Island. LITTLE SCRUB ISLAND lies about three fourths of a mile to the Westward of above hill, and is equally conspicuous from the contrast in color, it being a barren, p cipitous black rock, forty feet high, steep and bold to. There is tolerable landing on beach, at the N. W. end of the island, and good shooting.

Dog Island. DOG ISLAND is the Northwesternmost of this group, and lies N. N. W. ¾ W. ei and a half miles from Anguilita, and W. by N. ½ N. ten and a half miles from Flat C Point. It is one mile and a half long E. and W., and in the centre three fourths of a m broad, and about eighty feet high: thence it tapers gradually away to points at its treme ends. It is covered with brushwood and grass, affording pasturage to an excel breed of horses and sheep, which are tended by two or three of the inhabitants of guila; there is, consequently, water to be found.

Bay Rock and W. Cay. BAY ROCK AND WEST CAY.—The E. end and S. side of Dog Island are bold steep to. At two cables' length from the centre of the Southern shore there is a rem able small black rock, named Bay Rock, only four feet above the sea, and nearly abr of it, just within the bluff rocky point which forms the S. extreme of the island, is landing place. The W. end of the island is formed by a high perpendicular cliff, from it a broken ledge of rocks extends out three fourths of a mile to the Westward, terminates at a small, low, rocky islet, called West Cay, six feet above the sea, and and steep to on its W. side.

Middle and E. Cays. MIDDLE AND EAST CAYS.—From West Cay the ledge of broken rocks conti to sweep round the N. side of the island to the E. end. Near the centre, at a four a mile from the shore, is Middle Cay, a remarkable, small, barren islet, its N. E. being a bold, perpendicular, black cliff, sixty feet high. It stands on the edge of ledge, and on the very brink of soundings; there is no bottom with a hundred fa line within a mile of it.

At a mile to the Eastward of Middle Cay, and similarly situated, is another small rocky islet, named East Cay, covered with brushwood, and equally steep to, on its N.

Caution. In the daytime West Cay may be passed within a fourth of a mile without fear, b the night it should be approached very guardedly, for the soundings are so deep a side it, that the lead will be of little use; within a mile of the cay the depth is from s teen to twenty fathoms.

Prickly Pear Cays. PRICKLY PEAR CAYS are two small islets lying E. and W. of each other separated by a small boat channel. The Western cay is a narrow rugged rock, fourths of a mile in length, covered with brushwood to the height of twenty-five upon which there is no landing. The Eastern Cay is a little lower, slightly wo with sandy shores, and is nearly a mile long, and a fourth of a mile broad; landing be effected here with care, in a little bight on the W. side.

DOG ISLAND CHANNEL.—Between Prickly Pear Cays and Dog Island there is a *Dog Island Channel.*
ar channel two and a half miles wide, with a depth in it of from nine to ten fathoms within half a mile of the Western Prickly Pear, when the soundings become so irregu- , that in strong winds, especially when accompanied by rollers, the sea tops and quently breaks. It will, therefore, be always better to pass to the Westward of Dog and, except with a free wind and smooth sea.

FLIRT ROCKS are two small rocky islets, lying about three fourths of a mile to *Flirt Rocks.*
Northward of the Prickly Pear Cays. The W. or largest islet is twenty feet high, other eight or ten feet. They are foul all around, but only to a short dist nce.

SEAL ISLANDS REEF commences a little to the Eastward of the Flirt Rocks, and *Seal Islands Reef.*
tinues unbroken to the Western side of the N. channel into Crocus Bay, already de- ibed, and is about five miles in length. On its N. side it is bold and steep to, and dan- ous to approach in the night, for the soundings are not sufficiently regular to en- e a vessel to come nearer than four miles: at this distance the depth is eighteen homs; within that from fourteen to sixteen fathoms close up to the reef. The S. side composed of detached shoals and coral heads, which extend three fourths of a mile m the main body of the reef. At a mile and a half to the Eastward of the Flirt ks are several low rocky islets, called the Sea Islands, about five or six feet above level of the sea.

NORTH WAGER is a small black square rock, about three feet high, lying on the S. *N. Wager.*
e of Seal Islands Reef, at three fourths of a mile to the Eastward of the Prickly Pear s. In beating up inside to Crocus Bay, it serves as a guide when approaching the f, and a vessel should not stand within or to the Northward of it.

the Southward of the North Wager, from Prickly Pear Cays to Crocus Bay, there *Anchorage.*
xcellent anchorage in nine or ten fathoms, over sandy bottom, and out of the influence he rollers.

Anguila and the last-described islands are so low in comparison with St. Martin, that *Caution.*
en approaching them from the Northward at night, from their being backed by the h lands of St. Martin, it is extremely difficult to estimate the distance from them; and attempting to do so frequent accidents have happened on the N. side of Anguila. t l now, however, be seen, from the recent surveys, that by proper attention to the , and to the means of obtaining the latitude already pointed out, such occurrences y be avoided.

SOMBRERO, the Northernmost island of the Lesser Antilles, is in lat. 18° 35′ 45″ N., *Sombrero.*
long. 63° 27′ 45″ W. It is three fourths of a mile long, N. N. E. and S. S. W., a ca- and a half broad, and at its N. end it is about twenty feet high: thence it ascends by distinct steps to the middle of the island, where it attains the height of thirty-seven . Its surface is a flat honeycombed rock, covered here and there with samphire, rse grass, and cactus. On the upper step there has been thrown up, by some violent on, several large masses of rock, about eight feet square, which, at a distance, have appearance of huts.

The sides of this island are precipitous and rocky, and quite inaccessible except at a ht bight on its W. side, a fourth of a mile from the S. end, and a short distance to Southward of a small rock awash, where under very favorable circumstances, by ching an opportunity, a person may jump on to a flat ledge of the cliff, and with some iculty ascend to the summit. It lies on a small bank of soundings, which extends to Eastward two and a half miles, with twenty-two fathoms on its edge; to the South- d a mile and a half with forty-seven fathoms at that distance; to the Westward a e and one fourth, with from fourteen to twenty-four fathoms; and to the Northward ile and a half with twenty-seven fathoms, coral crust. From the island the high land St. Martin is distinctly seen in clear weather, bearing S. E. ¾ S. forty miles. Dog Is- d bears from it S. E. by S. twenty-two miles, and the N. end of the Anguila bank E. S. twenty-three miles. In the months of March and April it is covered with sea- ds; and at this period it is visited by the fishermen of the neighboring islands, for the s.

At half a mile to the Westward of the N. end of Sombrero, there is temporary an- *Anchorage.*
rage with the prevailing winds, and smooth water in fourteen fathoms, over sandy om; to the Southward the ground is rocky.

At all the islands of this group, viz., St. Bartholomew, St. Martin, Anguila, and Dog *Tides.*
nd, there is a rise and fall of from one to two feet, but the periods are so irregular the exact time of high water cannot be correctly defined. The following observa- s made by Dr. Fahlberg, a resident of these islands for a long period, are valuable, no doubt give the best information on the subject:

About St. Bartholomew the flood at full and change runs S. E., and it is then gene- y high water at 10.30 P. M., while the sun is farthest to the N. of the equator; but es about two hours sooner in the succeeding months, until the sea gets farthest to S., when it is high water at 10.30 A. M., and it runs afterward in the same propor- back again. The winds, which are of long continuance, sometimes make a trifling

difference. The sea is always lowest at the time when the sun is farthest to the N., a the contrary."

During the recent surveys of these islands, which were conducted during the win season, between the months of November and March, by Captain E. Barnett, R. N., n ther tidal stream nor current was detected; except on one or two occasions, when anchor in Crocus Bay, on the N. side of Anguila, a strong Easterly or weather set w observed and on one occasion to the Eastward of St. Bartholomew, after a long peri of strong trade-wind, a Westerly set ran for a short time a mile an hour; but in gene no difficulty was found in beating up from one island to the other.

THE VIRGIN ISLANDS—ANEGADA TO CULEBRA, INCLUDING SANTA CRUZ OR ST. CROIX.

Virgin Islands.

THE VIRGIN ISLANDS.—The line of demarcation between the English and D ish islands runs from the N. between Little Tobago and Hanse-Lollik; thence the E. S E., midway in the channel between Thatch Island, Tortola, and St. John round the E. end of the latter, and thence to the S., through the centre of Flana Passage.

Aspect.

On making the Virgin Islands from the Northward, Virgin Gorda will be seen on extreme left, rising in a clear, well-defined peak nearly fourteen hundred feet high. A gada being only thirty feet above the sea, will not be seen more than five or six m from an elevation of ten feet. Next to Virgin Gorda, Tortola will appear the most c spicuous; Sage Mountain, the highest in the island, does not rise into a peak from t direction, but appears flattened and elongated: its height is about eighteen hund feet. Immediately to the right or to the Westward of it will be seen the rugged poin peaks of Jost Van Dyke, nearly eleven hundred feet high, and behind them the irregu small peaks rising from the table land of St. John's, and varying in elevation from eigh thirteen hundred feet. If on or near the meridian of 64° 50′ W., and about twenty m to the Northward of the island a separation will be observed between St. John's and Thomas, as the small cays which lie off and between them will not be above the horiz but the other islands, viz., Virgin Gorda, Tortola, Jost Van Dyke, and St. John's, appear as one large island, the prominent peaks on each being alone distinguishable

The island of St. Thomas may be recognized by having a large saddle on its cen formed by Signal Hill and West Mountain, the former fifteen hundred and the la fifteen hundred and fifty feet high; and the island is less rugged in outline than others. The saddle is equally conspicuous from the Southward. Culebra, from above meridian, will be only just in sight. Its hills are more rounded than the oth and much less elevated, being not more than six hundred and fifty feet high. He also, in clear weather, El Yunque, or Anvil Peak, thirty-five hundred feet high, on Sierra Luquillo, at the E. end of Puerto Rico, may be seen.

Tides.

The phenomena of the tides among the Virgin Islands, although of the highest imp ance to navigators, are extremely difficult of explanation; the following rule is given the fishermen, and in general it may be safely adopted: from the moon's rising u her meridian passage, the flood runs to the Southeastward or to windward; and the to her setting the ebb runs to the Northwestward or to leeward, and vice versa the lowest transit; hence there is a six hours' stream each way. This rule, howeve greatly interfered with in different localities, as will be seen hereafter; and by the f and direction of the wind.

It is observed that the Southern tide predominates during the summer months, from middle of June to the middle of August, and two tides have then been known to fo in succession, particularly if the wind has been Westerly; and on such occasions perpendicular rise was increased by two feet. Near the commencement of this rem able change the stream is observed to set for eight or ten days continually to the So ward with a force seldom surpassed, and is called by the fishermen St. John's tide, f its occurring near the day of that saint. For the remainder of the above period ebb, or Northerly stream, will run only for about one or two hours.

During the months of September, November, March, and April, the Northern prevails, and with considerable force, being assisted by the current. At this pe also, the highest water is generally in the morning, and there is only a half tide in evening; the reverse takes place during the summer months. The establishment high water at full and change appears to be about 9h., but it is liable to great u tainty, for sometimes it is as early as 7h. The rise and fall at springs is from a fo a foot and a half; but in the months of April and May the mean level of the sea i served to be a foot lower than at other periods, which agrees with the observatio Dr. Fahlberg. The duration of the stream (as before stated) is six hours each way, to which the stranger must pay strict attention, leaving the time of high water thing altogether of minor importance.

As already observed, the Northern stream is called the flood, and that coming from Southward the ebb; strictly, however, this may be an error, although not of much sequence; for the change of set takes place at about half-tide on the shore, and the and fall being so small, it is difficult to say to which set the term flood should be lied.

t happens, however, that the commencement of the flood stream takes place at full change, at about 6h., and as it runs for six hours and then changes to the ebb, by embering this establishment for the first beginning of the flood the turn of tide can course be calculated for any intermediate day during the lunation.

As 6h. happens to be nearly the time of the moon's rising at full and change, we have fisherman's rule explained.

VIRGIN BANK.—From the recent surveys, it will be seen that the extensive group the Virgin Islands lies on the Southern edge of a vast bank of soundings, stretching from Puerto Rico to the E. end of Anegada, and on the meridian of 64° 40′ W. as to the Northward as lat. 18° 51′ N., fourteen miles W. N. W. of the W. end of Anea, toward which the edge gradually approaches to within a mile and a half of the side of the island. From the above position it trends to the S. W. fifteen miles, en it assumes a more Westerly direction, and runs nearly on a straight line for the E. point of Puerto Rico. It will therefore be seen that there is rather more than ten es of soundings to the Northward of the cays on the N. side of St. Thomas, increas- to twenty-two miles on the same side of Tortola. *Virgin Bank.*

On the Southern side of the islands the edge of the bank lies only a mile and a fourth n Norman Island; thence it takes a S. W. direction to the meridian of the W. end of John's, when it trends to the Westward, passing about seven miles to the S. side of John's and St. Thomas, and two miles from Crab Island.

The soundings on the S. side of the islands differ in a remarkable manner from those the N. Here, the edge of the bank, bold and wall-sided, lies at the distance of only to seven miles from the cays, and close within it is a narrow ledge of coral, about a le wide, with a depth of from fifteen to seventeen fathoms, which continues unbroken n the Horseshoe Reef at Anegada, to Crab Island, having inshore of it from twenty- to thirty fathoms water.

The general depth of the N. side of the islands is from twenty-eight to thirty fathoms, al sand, with rocky patches from half a mile to four miles in extent, on which the ndings vary from six and a half to fifteen and twenty fathoms. These patches lie be- en the meridians of 64° 40′ and 64° 56′ W., and from two to five miles from the edge the bank.

WHALE BANK is the most Northern of these patches, and has a depth of nine oms, coral rock. From it Virgin Gorda Peak bears S. E. by E. ½ E. twenty-one a half miles; Sage Mountain (Tortola) S. by E. ½ E., sixteen miles; and Signal Hill Thomas) S. S. W. ¾ W., twenty-three miles. The shoalest part is not more than a le's length in diameter. Irregular soundings extend nearly four miles to the North- rd of it, varying from twelve to eighteen and twenty fathoms, and then into twenty- and twenty-nine fathoms. A mile to the Southward of the bank there are twenty- fathoms, and E. and W. of it rocky ground extends to about three miles. *Whale Bank.*

TURTLE HEAD is a small coral patch, not more than twenty or thirty fathoms wide, ng to the S. W. of the Whale, with as little as six and a half fathoms water on it. a fourth of a mile to the Northward a depth of twenty-five fathoms will be found, le to the Southward, uneven ground extends nearly a mile and a half, with sound- s of from twelve to eighteen fathoms. When on the head the W. end of Jost Van ke will be seen in one with the Westernmost hill on St. John's bearing S., Virgin rda Peak E. S. E. ¼ E., and Signal Hill S. S. W. ½ W. *Turtle Head.*

BARRACOUTA BANKS lie about two miles from the edge of soundings, and oc- y a space of one mile and a half in length, and half a mile in breadth. The shoalest t is at their N. W. end, where there are eleven fathoms, and when on the centre of patch the highest peak on Jost Van Dyke bears S. E. by E.. Signal Hill S. ½ W. Cricket Cay nearly S. W. by S. thirteen miles. At two miles to the S. E. of the ks foul ground extends five miles in an Easterly direction, with a depth of from lve to eighteen fathoms, and twenty-five to twenty-eight fathoms all around. *Barracouta Banks.*

KINGFISH BANKS are two coral patches, each about a mile long and half a mile e, with eight fathoms over them; they are about a mile apart with twenty-five fath- s between. When on the Northern bank the highest peak of Jost Van Dyke bears S. W. ¾ W. six and a fourth miles, Sage Mountain S. by E. ½ E., and Guano Cay Peak E. by E. ½ E. *Kingfish Banks.*

If we except two miles of rocky ground of eighteen fathoms, six miles N. W. of Crick- Cay, the above are the only off-lying banks on the N. side of the Virgin Islands be- en Anegada and Culebra.

ANEGADA, or DROWNED ISLAND, the most Northern and Eastern of the Vir- Islands, is included in the British portion, and has a population of four hundred per- *Anegada Island.*

sons whose chief employment is fishing and wrecking; the principal settlement is o the S. side, si and a half miles from the W. end. The immediate neighborhood of thi island is so dangerous that more accidents occur here than at any other of the windwar islands. This arises chiefly from its lowness, the strength and irregularity of the tide and currents in its immediate neighborhood, and its being the first land which vesse make for (imprudently) when bound from the Eastern shores of North America to S Thomas. American vessels are consequently the greatest sufferers.

In the daytime, however, with clear weather, the risk is not so great, as the mounta on Virgin Gorda serves as a beacon placed, as it were, to warn and guide mariners cle of its dangers. The island lies within a mile and a half of the edge of the Virgin Ban but the soundings are so deep up to it that the lead will be scarcely of any use. It nine and a fourth miles long, E. S. E. and W. N. W., and from one to two miles broad: a most uniformly about thirty feet high, and covered with brushwood, excepting in a fe spots which are cleared away for the cultivation of corn and vegetables. A large po tion of the interior is cut up by extensive salt water lagoons, hence its name.

Water. Fresh water may be obtained at Anegada by digging wells in the sand, particular near the beach at the W. end of the island, but the inhabitants prefer drinking the rai water caught in the natural cisterns formed in the rock.

Horseshoe Reef. HORSESHOE REEF.—The island of Anegada is skirted on its outer or Norther side by a narrow frontier reef to the distance of from a cable's length at its extreme point to a mile and a half from its E. end. Thence a most dangerous broken reef e tends S. E. by S. seven miles, upon which most of the accidents referred to occur. Th portion is called the Horseshoe Reef, and from its S. end detached coral heads and sha low ledges extend four and a half miles to the S. W. by S., where they terminate at th Herman Reefs, which generally break. At two miles W. S. W. from the Southeaster pitch of the Horseshoe Reef is a heap of dead white coral, three feet out of water, calle the White Horse. At two and a half miles to the Eastward of the pitch end there a thirty-four fathoms on the edge of the soundings, and within a mile of it there are t fathoms. Abreast the Herman Reefs the edge is little more than a mile distant, whi makes them still more dangerous. The S. end of this reef bears N. E. by E. ¾ E., fi and a half miles from Pajaros Point, the E. end of Virgin Gorda, and S. by E. ½ E. mi and a fourth miles from the E. point of Anegada.

Robert Reef. ROBERT REEF is a small rocky patch of four and a half fathoms, lying three and half miles within or to the Westward of the Herman. From it Pajaros Point bears by W. ½ W. four miles, and the Western Seal Dog is in one with Cockroach Cay (bo off the N. W. end of Virgin Gorda). S. W. by W. ¾ W. At one mile and a fourth to th N. E. of this reef there is also a small rocky head of four fathoms.

Hawk's Bill Bank. HAWK'S BILL BANK is a small rocky ledge, on which there are from three four and a half fathoms, lying about two miles to the N. N. W. of Robert Reef, with P jaros Point bearing S. All these patches should be avoided when anchoring under th lee of Horseshoe Reef. The water is, however, so clear that the bottom may be se distinctly in eight or nine fathoms.

The N. side reef terminates at the W. end of Anegada, about one cable and a ha from the shore, but the S. side of the island is foul to the distance of two miles. The

Anchorage. is good temporary anchorage off the W. end, in from five to six fathoms water, about mile distant. It will not be prudent, however, to remain here any time during th period of the rollers, which frequently occur from October to May: but it will be bet during this season to anchor well under the S. side of the island, if intending to rem the night.

The best anchorage will be found in six fathoms, with the W. end bearing N. by ¾ W. five and a half miles; the cocoa-nut trees at the settlement at Pearl Point N. by N., and the E. point E. N. E. E. Great care, however, must be taken not to ha up too suddenly after rounding the W. end, and not to come within the depth of five fa oms; great attention must be paid to the lead after passing within the ten-fathom line

The bank to the Westward of the meridian of Anegada is composed chiefly of fi sand and in light weather vessels may anchor on it with safety with a kedge or strea taking care, however, to avoid the rocky banks on the edge already described.

Rollers. The rollers, or ground swell, frequently occur from October to May, and contin sometimes three or four days. In general they set in after a prevalence of light E. S. E. winds. Between Tortola and Guano Island they have been seen to top and bre in nine fathoms, and on the S. W. side of Anegada, in four and a half fathoms, anch are sometimes lifted; it is consequently dangerous for sailing vessels to come too n any part of the Northern shores of the Virgin Islands, for they get up suddenly, and d ring their continuance the wind is too light to keep a vessel under command. They pear to have great influence on the bottom in loosening the sand, and in discoloring water for some miles to the Northward of the islands, as far as the edge of the ba In some places near the W. end of Anegada, where the bottom is composed of very fi sand, the formation of the banks is frequently changed.

IRGIN GORDA, sometimes called Peniston or Spanish Town, is the Easternmost he Virgin Islands, and is easily distinguished on making the land by its rising grad- y to a distant peak about fourteen hundred feet high, very nearly the same elevation ntigua and St. Martin. Its outline is so exceedingly irregular that it is somewhat ult to give a correct description of its shores. *Virgin Gorda.*

rom Pajaros Point on the E. to Mountain Point on the W., the N. side of the island e and a half miles long, and from the latter point to the S. point the Western shore e miles. The centre portion is about two miles square, and occupied by the im- se hill, the summit of which, named Virgin Peak, has been already described. nce the E. end of the island is a narrow strip of land, composed of irregular, rugged , terminating at Pajaros Point in a remarkable pinnacle rock one hundred and ty feet above the sea. The Southern portion is about a mile in breadth, more reg- in outline, from two hundred and fifty to four hundred and fifty feet high, and ly separated from the centre by a small isthmus about a cable's length across.

he most remarkable feature of Virgin Gorda is on its Western side, between Colison t and the S. end of the island. The Eastern side of this peninsula has been broken y some violent action of nature into immense granite blocks, which lie scattered t on the shore. The cays and islets to the Southward, as far as Round Rock, two s distant, are also composed of the same kind of rock, and the largest (which lies ly half a mile from the S. end of the island), from its having the appearance of a in ruins, is named Fallen Jerusalem. Many of these blocks are sixty and seventy square; some are merely confined in their places by the weight of others leaning hem; and many with deep rents and fissures in their sides appear ready to fall by ightest shock. In one or two places the sea finds its way through the crevices, forms beautiful, natural baths. It is also a curious circumstance that similar ite blocks are found scattered about on Reef Island, on the opposite side of Sir cis Drake Channel, and nowhere else.

he island of Virgin Corda is badly watered; there are two small wells at the S. end he beach in St. Thomas Bay, but they yield but little, and that not very good. There ne to be had in Gorda Sound. *Water.*

ECKER ISLAND.—On the N. side of Virgin Gorda there are several small, slightly ded cays and islets, the outer or northernmost of which is Necker Island, lying . by W. about two and a half miles from Pajaros Point. It is nearly half a mile N. and S., and about a fourth of a mile wide, and near its N. end it is one hun- and ten feet high; its S. E. side is low and sandy. Toward the N. it is bold and to, there being from six to ten fathoms water within one cable and a half, but on . and W. sides it is foul and dangerous to the distance of nearly half a mile. From side a broken reef extends to nearly a fourth of a mile, leaving a clear channel, d Virgin Sound, with nine fathoms in it, and a fourth of a mile wide between the n reef and the reefs from the islets to the Southward; but the channel can only be ated with safety by droghers. *Necker Island.*

HE INVISIBLES are two small, rocky heads, of only three feet water, which do always break. They lie E. by S. ¾ S. three fourths of a mile from the N. E. point ecker, and N. W. ½ W. from Pajaros Point: between them and the reef on the E. of Necker the depths are from four to eight fathoms, but on their N. and E. sides are from ten to eleven fathoms almost alongside, and to the distance of a mile off. *The Invisibles.*

USTATIA is a small islet, three and one fourth cables long from N. E. to S. W. and undred and seventy feet high, lying three fourths of a mile to the Southward of er, and nearly half a mile from the nearest part of Virgin Gorda. Its N. side is o the distance of a cable's length, and thence a broken reef extends on almost a ht line along the shore to Pajaros Point, under the lee of which, in Eustatia Sound, is a small, safe anchorage for droghers. The entrance is through a very small cut reef, half a mile to the Westward of the islet: but this part of Virgin Gorda d be avoided by strangers, as the ground is foul for some distance outside the cut. *Eustatia.*

ICKLY PEAR, the largest of these islets, is a mile long from N. W. to S. E., a fourth of a mile wide, and two hundred and thirty feet high. Its E. end is not a fourth of a mile from the nearest part of a small peninsula of Virgin Gorda, the space between is the Saba Rock, twenty-five feet high. From the W. end actus, a dry and broken reef, runs off one cable and a half in that direction. The e is bold, and between it and Necker there is good temporary anchorage in seven ht fathoms water in Virgin Sound, but take care to avoid the foul ground to the of the latter island. *Prickly Pear.*

SQUITO ISLAND, the highest of these islets, lies nearly a mile to the Westward ckly Pear, and is six and a half cables long, from N. E. to S. W., about a fourth of broad, and two hundred and fifty feet high. From its N. end small, detached, d rocks extend out one cable and a half, the outer one, Mosquito Rock, being y-four feet high. From it the Colquhoun Reef (dry in most places) extends to the about half a mile, and is bold and steep to outside. This reef, with Mosquito Island, the N.W. side, and Prickly Pear Islands and Cactus Reef the N. side of Gorda Sound. *Mosquito Island.*

Gorda or N. Sound.

GORDA or NORTH SOUND is an excellent and capacious harbor, one mile and three fourths long from E. to W., and three fourths broad, with an average depth of eleven fathoms over sand and mud; sheltered from all winds and protected from the rollers. A vessel may refit with great ease and convenience under the lee of Vixen Point, the S. end of Prickly Pear Island, and encamp the crew on the island if necessary. Biras Creek, at the S. E. corner of the sound, might be made available for heaving down, with very little trouble.

The entrance to the sound lies between the ends of the Cactus and Colquhoun reefs which are a fourth of a mile apart. From either side the depth gradually increases and about midway, or somewhat nearer the Western side, there is a very narrow vein running in a N. N. W. and S. S. E. direction, through which a depth of six fathoms may be carried. With a house at the E. end of Spanish Town, on the shore of Virgin Gorda, in one with a remarkable tree above it, bearing S. ¾ W., a vessel will carry in four and a half and five fathoms water, but this mark is far too unsafe for a stranger to trust to, and the eye will be a far better guide, as the ends of the reefs are easily seen from aloft. A vessel of large draught had better anchor a boat on the weather side of the channel, in the depth she wishes to carry in.

Directions.

Vessels coming from the Eastward intending to visit Gorda Sound, or with a view to passing out to the Westward of Anegada, or to enter Sir Francis Drake Channel by the Northern route, on their way to either of the ports to leeward, must approach Virgin Gorda with extreme caution, especially in the night, to avoid falling on Horseshoe Reef. In the daytime the peak of Virgin Gorda will be a guide, as it is seldom clouded and may be seen thirty miles off. In the night the latitude must be continually observed and if the weather is not sufficiently clear for that purpose, and the longitude uncertain do not by any means attempt to make the land, high as it is.

If coming from the Northward, the parallel of Anegada should on no account be passed in the night. If the island is made (or Virgin Gorda, which will be seen first) on a Southerly bearing, it will be better to run to the Westward of Anegada, and haul up for either of the passages most convenient; a vessel will always have a free wind for the purpose. It will be far safer to act thus than to attempt to pass to windward of Horseshoe Reef, which has hitherto been the cause of so many disasters. Vessels bound to St. Thomas are tempted to run this risk in order to save perhaps two days, by having to beat up on the S. side of the island; but the recent surveys and these directions will show that there is no necessity for running to leeward round the W. end of St. Thomas and that having passed the W. end of Anegada, most of the Northern channels may be freely and safely navigated without loss of time, and with the saving of much risk and anxiety.

Coming from to windward, bring Virgin Gorda on a W. ½ S. bearing, and run down on this course. When within seven or eight miles of Pajaros Point, Necker Island will come in sight, and may be boldly steered for, taking care not to bring it to Westward of W. ¾ N., in order to avoid the Herman Reefs. When Pajaros Point bears S. W., it will be necessary to haul up N. W. to avoid the Invisibles, off the E. end of Necker which are not seen until close upon them. Continue on this course until the land to the Westward (which will be the N. end of Guano Island, touching the right extreme of Jost Van Dyke) begins to open of Necker, bearing W. by S. ¼ S., when a vessel may boldly keep away to the Westward, in ten and eleven fathoms water. When abreast the spit of the Horseshoe Reef it may be distinctly seen from aloft, as it breaks in the finest weather; but the Herman Reefs only break with a swell or strong breeze, and the dry sand bore to the Northward of them, being only three feet out of water, scarcely visible at that distance. Pajaros Point may be rounded within two cables length.

If bound into Gorda Sound, having opened out the land as before directed, steer until the peak of Virgin Gorda bears S. S. W. ½ W., when haul in for the leading mark given above in the description of the sound. Having entered the channel, when abreast the S. E. end of Colquhoun Reef, a vessel must haul to the wind, and a berth must be chosen as most convenient, in the Eastern part of the sound.

Tides.

It is high water, full and change, in Gorda Sound at 8h. 30m., and the rise is about one foot and a half. The tides at the entrance of the sound, between the reefs, seldom run more than half a knot, and the flood sets toward Prickly Pear Island. Between Mosquito Island and Anguila Point the flood sets Eastward at the rate of one knot and one knot and a half. Between Pajaros Point and the Horseshoe Reef it seldom runs more than a knot, but its duration varies.

Western Roads.

WESTERN ROADS.—There are two excellent anchorages for vessels of any draught under the Western side of Virgin Gorda. The first is formed by an extensive bay between Mountain Point, the N. W. end of the island, and Colison Point, three miles S. W. ½ W. of it, and is partially protected to the N. W. by the Seal and Dog islands. It seldom, however, blows hard to the Westward of N. and the only thing to be prepared for is the ground swell in the winter months. At this season it will be better to anchor

n about thirteen fathoms water, midway between Great Dog and Virgin Gorda, a mile rom either; where with good ground tackling and a long scope of cable out there will e nothing to fear, as the rollers are seldom accompanied with much wind.

The Southern anchorage between Colison Point and Fallen Jerusalem, two and a half miles to the Southward of it, is the best, as, if necessary, vessels can weigh and run clear ut to the Westward with more ease than in the former. The holding ground is good t both places, and except at the period of the rollers, the water is always smooth. There is a small head of four and one fourth fathoms, lying W. four cables' length from Colison Point.

Directions. To gain the Western roads, either the Northern or Southern channels may be taken. The passages between the islets are all bold and free of danger, with the exception of hat between Scrub Island and the Dog Islands, in which lies the Tow Rock with fifteen eet water on it, and as it is only twenty yards in extent, it must be carefully approached. The Eastern point of Scrub Island and the Western extreme of Salt Island nearly touching, S. by W. ½ W., leads on it, and the right extreme or S. part of East Seal Dog on with he lowest part of Necker Island E. by N. ½ N. is a good cross mark to know its position hen coming from the Northward or the Southward. It lies a little more than a mile W. by N. ½ N. from the W. Dog, and the best direction to give, is to keep either Dog or Scrub Island close aboard, as they are bold and steep to.

Great, West, and George Dogs. THE GREAT, WEST, and GEORGE DOGS cannot be mistaken, being three small islets, and the nearest to Virgin Gorda; the two Eastern are two hundred and fifty and wo hundred and seventy feet high, and the Western one hundred and fifty feet. At two ables' length to the Westward of the George or Northern Dog is the Cockroach Rock.

Seal Dogs. SEAL DOGS are a cluster of three much smaller islets, lying close together, N. E. ½ , one mile and a half from George Dog, and W. by N. a mile from Mountain Point, ith clear channels on both sides. The Northernmost islet is only six feet high, the thers one hundred and seventy-four feet.

Scrub Island. SCRUB ISLAND, four hundred and fifty feet high, lies W. S. W. one mile and three urths from the West Dog, and is the Easternmost of the numerous small rocks and islets hich lie close off the E. end of Tortola, and which are only separated from each other y small intricate cuts from one to three cables wide.

Southern Channels. SOUTHERN CHANNELS.—Between the S. end of Virgin Gorda and the E. end of St. ohn's, fourteen miles distant, is a range of very remarkable, small, rugged, and most regularly shaped islets and rocks, the shores of which rise abruptly from the sea to the eight of from three hundred and fifty to five hundred and fifty feet. Between most of hem are deep and navigable passages leading into Sir Francis Drake Channel, simple nd easy of access in the daytime. In the smaller onês, however, a little precaution is ecessary to guard against the eddy tides and flaws of wind, when coming under the lee f the larger islands.

Round Rock Passage. ROUND ROCK PASSAGE is the first large opening to the Eastward, and by far the est for vessels coming from that direction, as it is easily recognized by the remarkable y a mile to the Northward of it, called Fallen Jerusalem. It also offers advantages to ailing vessels, on account of the small islands, which form the weather side, not obructing the regular breeze.

The passage lies between Round Rock and Ginger Island, and is about half a mile wide, ithout any danger in it whatever, and both points are bold and steep to. The tide sets rough, generally at the rate of a knot; the flood S. E.: the ebb N. W.

Ginger Island. GINGER ISLAND is five hundred feet high, and the channel between it and Cooper sland is three fourths of a mile wide. At the Southern entrance lies the Caravella, a ost remarkable small rock, one hundred and ten feet high, very bold and steep to; it ay be passed close on either side. Ginger Island, however, is so lofty, that a vessel is kely to be becalmed under it, and if the tide is strong, she will probably have some diffculty in getting through. In other respects, for instance, in a steamer, or with the wind owing right through, it is just as good as Round Rock passage.

Cooper Island. COOPER ISLAND is one and three fourths miles long, in a N. N. W. and S. S. E. direction, and at its S. end five hundred and thirty feet high. The passage between it and mall rock awash off the N. E. point of Salt Island, is not a fourth of a mile wide, and ould never be attempted by a sailing vessel.

Salt Island. SALT ISLAND, at its Northern part, is three hundred and eighty feet high, and the hannel between it and the Dead Chest, a small islet two hundred feet high, is one mile d a half wide. A mile or two thirds the way across from the island is the Blonde ock, a small head with twelve feet water on it, for which no marks can be given; hower, by keeping Salt Island aboard, within two cables' length there will be nothing to ar. The sea is generally smooth until well outside, and in light winds the anchor may dropped, if necessary, between the island and the rock.

The passage between the Dead Chest and Peter Island, is only about a fourth of a ile wide, but as it lies N. W. by W. and S. E. by E., with a good commanding breeze, may be freely taken from the Southward.

Peter Island. PETER ISLAND forms an elbow; the Eastern arm five hundred and forty feet high, and one mile and a half long; the Western four hundred and forty feet high, and two and a half miles long; which makes the passage between it and Norman Island (although a mile wide) so tortuous, that it is seldom taken. Besides, it is obstructed at the Southern end by the Carrot, a small shoal with ten feet water on it lying W. by S. ½ S. nearly half a mile from the Carrot Rock (eighty-four feet high) off the S. end of Peter Island. It had better, therefore, be avoided altogether. Peter Island and Salt Island are inhabited by fishermen.

Flanagan or Norman Passage. FLANAGAN or NORMAN PASSAGE is the Westernmost of the Southern channels, and in the narrowest part, between the Indian Rocks and Flanagan Island, it is a mile wide. This passage is the most difficult to enter from the Southeastward, on account of the St. Monica Rock, which lies right in the way. This rock is very small with only ten feet water on it, and seventeen fathoms close to, and lies S. S. W. ½ W. three fourths of a mile from the W. end of Norman Island, and S. S. E. ⅔ E. from Flanagan Island. Fort Charlotte, on Tortola, in one with the highest of the Indian Rocks, N. ¼ E. leads to the Eastward of it; and Bellevue, the highest hill on the E. end of Tortola in one with the Indian Rocks N. by E. ½ E., leads to the Westward.

The Indians are four remarkable small pinnacle rocks, fifty feet high, lying close together, about a cable's length to the Westward of a small islet, one hundred and eighty feet high, named Pelican Island, which lies half a mile from the N. W. point of Norman Island.

Directions. When approaching Flanagan Passage from the Eastward, the best way will be to haul close round the W. side of Norman Island, which may be done without fear within about one cable and a half.

In beating up or running down along the shore, by keeping Cooper and Ginger Island just open of Peter Island, a vessel will pass half a mile outside or to the Southward of the Monica Rock. It will also be avoided by keeping Buck Island, off the entrance of St. Thomas Harbor, well open of Ram Head, the S. extreme of St. John's; the Southern part of the island touching the outer extreme of the Head, leads over the shallowest part of the rock.

The Bight. THE BIGHT is a small inlet on the N. W. side of Norman Island, about three fourths of a mile deep, E. and W., and about a fourth of a mile broad in the narrowest part, and would be found a most convenient spot for any class of vessel to refit in, or even to heave down in case of necessity.

Directions. The shores on either side of the bight are steep to, and when beating in the only danger to be avoided is the Ringdove Rock, which lies about one cable and a half from the N. W. point of Norman Island. The mark to clear it is, Treasure Point the S. point of the entrance to the Bight, in one with the summit of the Western Hill. The wind, however, under the lee of the island will be found so exceedingly unsteady that it will be safer for large vessels to anchor at the entrance and warp in, if intending to remain any lengthened time. Although open to the Westward, the island of St. John prevents any sea from setting in, and the holding ground is excellent. The anchorage outside of Privateer Bay is also good, with the regular trade-wind.

The above leading mark leads also just clear of the Indians, and having passed them a vessel may proceed to the Westward for St. John's Channel, or haul to the wind in Sir Francis Drake Channel.

Water. There is no water on Norman Island, and firewood is scanty.

Sir Francis Drake Channel. SIR FRANCIS DRAKE CHANNEL.—This passage is bounded on the S. by the islands just described, and on the N. by the Tortola, and the small islets to the Eastward of it. The narrowest part is about two and a fourth miles wide, between the Blue which forms the S. end of Beef Island, and the N. point of Cooper Island.

Anchorages. There is anchorage anywhere in this channel to the Eastward of a line drawn between Buck Island, lying off the S. E. end of Tortola and Dead Chest. The bottom hard, being a thin bed of sand over coral, and therefore requires a good scope of cable but to the leeward or to the Westward of that line, the ground is cut up by rocky knolls.

With strong N. and N. E. winds an excellent anchorage will also be found on the S. W. side of Beef Island, under the lee of the bluff.

Great Harbor. GREAT HARBOR is a snug little bight, on the N. side of Peter Island, about half a mile deep and the same wide, and may be entered without the slightest difficulty at any time; the water is deep close up to the shore, and it has excellent holding ground. The harbor is open to the N. W., but Tortola protects it in that direction, and makes it quite smooth.

Little Harbor. LITTLE HARBOR, a short distance to leeward of Great Harbor, is of much the same character, but more confined and more open. There is no water on Peter Island.

Guano Island. GUANO ISLAND.—On the chart an anchorage is marked on the W. side of this island, off the N. E. point of Tortola, but it should by no means be taken up during

he period of the rollers, for on such occasions the sea will break here in eight or nine athoms.

In Sir Francis Drake Channel there is scarcely any stream, except close in shore, here small vessels may reap some advantage from it when beating to windward. *Tides.*

TORTOLA is the largest of the Virgin Islands, being ten miles in length in an E. .E. and W. S. W. direction, and on an average about three and a half miles in breadth, ith a very irregular outline. Like Virgin Gorda, it is mountainous, Mount Sage rising ear the centre of the island to the height of nearly eighteen hundred feet; and its ruged eminences rise on all sides almost abruptly from the shore. *Tortola.*

ROAD HARBOR, situated nearly in the middle of the S. side of Tortola, is the seat f government, and the only port of entry in the British portion of the Virgin Islands. eing completely exposed to the S E., it may be more properly described as a bay, ne mile and a fourth deep, three fourths of a mile wide, and surrounded by an amphiheatre of lofty hills, the spurs of which reach the edge of the shore; Mount Sage overooking it on the W., and Mount Bellevue on the E., the latter nearly thirteen hundred eet above the sea. *Road Harbor.*

The town stands on the Western shore of the road, and immediately above it is Fort harlotte, built on a spur of the main ridge, nine hundred and forty feet high, and at he foot of it, at the Western point of the bay, is Fort Burt, which, however, is only a reastwork. On the Eastern side, immediately opposite, and scattered along the shore, the village of Kingston. The forts which formerly stood on George and Charles (or hirley) points are now in ruins. The anchorage is so confined by the numerous shoals t its entrance, and within it, especially on the lee or Western side, that it is only adapted for sailing vessels of moderate draught; and it is very inconvenient, from the heavy well which prevails in the winter season.

There is an excellent spring at the cottage near Wickham Cay, in the N. W. corner f Road Harbor, but it does not yield abundantly, and the water is paid for at the rate f forty cents a puncheon. *Water.*

CAREENING COVE.—Under the lee of the reef at Fort Burt, on the Western oint of the entrance to Road Harbor, there is a small well-sheltered vein of deep ater, which affords a good careening place for coasters of about nine or ten feet raught. *Careening Cove.*

Vessels of large draught should not run into Road Harbor without a pilot, and should e careful, when standing in for this purpose, to keep the bluff well open to the Southard of Tortola. Indeed, outside this line irregular soundings will be met with and oral patches with only four and five fathoms on them, and deep water between them. he above mark leads just outside the Denmark Banks, the E. end of which lies nearly idway between Hog and Slaney points, the outer extremes of the harbor; there are om two to six and a half fathoms water on them, and no good cross-mark can be given. Within these banks, in the narrowest part of the entrance between Fort Burt and ingston, are the Scotch and Lark banks; the latter, which lies nearest to Fort Burt, nd two cables' length to the eastward of the dry reef off it, has only two and a half athoms water on it; the former lies three cables' length from the Eastern shore, and arries as little as two fathoms. No good or useful marks can be given for their edges. he channel into the harbor lies between them, and is three cables' wide. The cocoaut trees on Wickham Cay, at the N. W. corner of the harbor, in one with Todman eak, N. W. by W., leads into the harbor; this is, however, a difficult mark for strangers to make out, and the existence of the cocoa-nut trees is not certain. *Directions.*

Vessels bound to Road Harbor from the Northward had better pass round the W. end f Anegada, and haul up through the Scrub or Dog Island channels. If from the Eastward, they may pass either to the Northward of Virgin Gorda, or through Round Rock assage; and if coming from the Southward, through any of the openings to the Eastward of Peter Island.

Having entered Sir Francis Drake Channel, the deep indentation which forms Road arbor and the houses of the town will be readily distinguished. Bring the leading ark on, given above; run in under easy sail, and when Fort Burt bears W. by S. the essel will be just within the shoals, and may then round to and anchor in ten fathoms, ith Shirley Point bearing about N. E. two cables' length distant. Handy vessels of ght draught, or steamers, having brought Fort Burt on the above bearing, may haul o N. N. W., and proceed in so far as to bring the cocoa-nut trees on the S. E. end of Vickham Cay to bear W. by N., taking care to anchor inside, or to the Eastward of the ne of the outer part of Slaney Point, touching the right extreme of Flanagan Island. hey will here have room to weigh and avoid the Harbor Spit, which stretches out om the Westward into nearly the middle of the anchorage.

In leaving the harbor, if bound to the Northward, vessels will find little difficulty in eating up the Drake Channel, and so pass out through the Scrub Passage, especially they take the right time of inshore tide; or they may run to leeward through St. ohn's Channel.

If proceeding to the Southward they had better take the Flanagan Passage.

Tides. It is high water, full and change, in Road Harbor, at 8h. 30m., the springs rise one foot and a half, and the lowest tides are in April and May.

Sea Cow Bay. SEA COW BAY lies about a mile to the Westward of Road Harbor, and offers temporary anchorage to droghers.

Sopers Hole. SOPERS HOLE is a snug deep little basin formed by Little Thatch Island, the Frenchman's Cay, and the W. end of Tortola. It is a mile in length, and about a fourth in breadth, and in the centre there is a depth of twelve fathoms which generally decreases to six fathoms within half a cable's length of the shore, over sandy bottom. This might be found a convenient spot for one or two vessels to lay up during the hurricane season, by mooring them head and stern, well up in the bight between Frenchman's Cay and Tortola; the bottom here is muddy, and better holding ground than in the Hole.

Directions. There are two passages by which Sopers Hole may be entered; one between the point called the West end of Tortola, and Little Thatch Island, and the other between the latter island and Frenchman's Cay. If the first is taken, it should be approached by the Thatch Island cut upon the flood, which will shoot a vessel into it, taking care to give the W. point of Little Thatch Island a berth of a cable's length. If coming from the Eastward, the latter passage will be the best, as the vessel will have a leading wind, and can luff up close to the W. end of Frenchman's Cay, which is steep to, and shoot into the basin with either the flood or ebb.

In leaving the hole, pass out to the Northward, if more convenient through Thatch Island cut, which is a fourth of a mile wide; observe, however, that the W. end of Tortola is foul to the distance of a cable's length, but the E. point of Great Thatch Island on the opposite side of the channel, is bold, close home to the rocks. Great Thatch Island and is a mile and three fourths long, from E. to W., and rises into a peak six hundred and eighty feet high.

Thatch Island cut must not be attempted from the Northward against an ebb tide, as the eddies and stream cannot be overcome by a sailing vessel. With the flood, a vessel will have only to steer in through the middle of the channel. If bound into Sir Francis Drake Channel, and having rounded the W. end of Little Thatch, at a distance of a full cable's length, she may haul to the wind, and with the tide on the lee beam, she will be set through between St. John's and Tortola, at the rate of three or four knots. There is no danger on either shore. Like all other small narrow passes, a commanding breeze is required to navigate it freely; and a vessel must be prepared to meet the gusts and baffling winds which rush through the valleys of Tortola.

Cane Garden Bay. CANE GARDEN BAY is the only spot on the N. side of Tortola, where temporary anchorage for droghers may be found. Across its entrance is a bar of twelve feet water, inside of which there are three and four fathoms. In all other parts there is no shelter even for boats.

St. John's. ST JOHN'S is eight miles long, E. and W., but of irregular breadth. Its E. end, for the distance of three miles, is formed by a narrow neck of land, from a mile to only half a mile across; and from its inner end the coast turns sharp to the Southward, forming a deep bite, which terminates at Ram Head, a remarkable, bold headland, on which are two hummocks, the highest three hundred feet above the sea, and forms the S. point of the island; thence across to May Point on the N. side of the island is five miles broad. The Western portion is composed of irregular hills and peaks, the loftiest of which, called the Bordeaux Mountains, reaches the height of nearly thirteen hundred feet. The spurs from the heights terminate abruptly at all the projecting points, and, with the exception of a small spot at Coral Bay, nothing is seen but hill and dale.

Coral or Crawl Bay. CORAL or CRAWL BAY lies at the E. end of St. John's, at the bottom of the deep bight noticed above. The Eastern side is formed by a lofty promontory, which juts out two miles to the S. E. and terminates at Moor's Point, and thence to the nearest point of the shore to the Westward, it is one mile and a fourth wide, and open to the S. E. The shore within this is cut up into three smaller bays, and in these again are several little creeks. The Westernmost of the secondary bays is called Coral Harbor, the middle one Hurricane Hole, and the Eastern one Round Bay, which is immediately under the S. W. side of the promontory.

There is no town or village in the bay, and the forts which stood on the projecting bluffs, are all in ruins. The Moravian missionaries have a small establishment at Coral Harbor, whence good bridle paths traverse the island in all directions.

The bay is now seldom frequented by large ships, the produce of the neighboring estates being carried in droghers for shipment at Santa Cruz or St. Thomas.

Nearly midway between Moor's Point and Ram Head lies Buck or Duck Island, three cables long, half a cable broad, and eighty-four feet high. Between it and Sabbi Point to the N. W., there is a channel three and a half cables wide, and to the N. between it and Moor's Point, another, a mile broad, which is the best to enter the bay

At the head of Coral Bay there is a well of excellent water convenient to get at; ats may lie alongside the wharf in smooth water, and a good road enables the sks to be rolled up to it with little labor. Firewood is plentiful, but it is private operty. *Water.*

HURRICANE HOLE will perhaps be found the most safe and convenient anchorage Coral Bay, for should the wind blow strong in from the S. E.—which, however, sel- m happens—a vessel will be partially sheltered. The best berth for temporary pur- ses will be in eleven fathoms, with Turner's Point S. E ½ E., and Harbor Point W. by Should she be obliged to move, she will be in a good position for weighing to pro- ed outward, or for more security farther up the bay, or with a view to drop into one the creeks. *Hurricane Hole.*

ROUND BAY.—The anchorage in this bay is in thirteen fathoms, with Moor's Point S. E. ½ S., about three cables distant. For a short stay, with the wind in the usual arter, this is a convenient spot; but be prepared to move the moment the wind comes the Southward of E., before a sea sets in. *Round Bay.*

CORAL HARBOR.—The anchorage here is smooth, with the ordinary winds in the inter, the sea being broken by the Southern end of the promontory and Johnson's eef to windward; but being on a lee shore, and having a narrow entrance, only small re-and-aft vessels can work out safely. After luffing up under Turner's Point, the wind comes so baffling and uncertain, that a vessel will perhaps be obliged to anchor and arp, should she wish to go higher up, which can be easily effected. *Coral Harbor.*

WATER, OTTER, PRINCESS, and BORCK CREEKS, in Coral Bay, are snug places clearing out; the sandy points on the Southern shores of the two former are very nvenient for that purpose. In Water Creek a large vessel might heave down with fety, as there are from fifteen to twenty feet water, close home to the shore, and lie bored in perfect security during the hurricane months. Generally, in all these anchor- es, the ground under five fathoms is rocky, but in deeper water it is sand and mud, d fair holding ground. *Water, Otter, Princess, and Borck Creeks.*

There is no danger whatever in Coral Bay, but in approaching it take care to avoid e Eagle Shoal, which lies nearly a mile N. E. by E. ½ E. from the outer extreme of Ram ead, and three fourths of a mile S. ¾ W. from the E. end of Buck Island. The shoal nsists of two round patches of coral; the Easternmost is forty yards in diameter, with depth of only four feet on it; the Westernmost, with twelve feet, lies about half a ble's length from it, and is a little larger. Close up and all around them the sound- gs are six and seven fathoms, and half a cable's length to the Southward, thirteen thoms. To clear the patches to the Southward, keep Buck Island (off the S. side of Thomas) open of Ram Head; or do not bring the head to the Southward of W. until rner's Point, in the middle of Coral Bay, opens out clear to the Eastward of Buck or ck Island, or till the E. end of St. John's bears N. N. W., when a vessel may stand ldly in to either of the anchorages. *Directions.*

On leaving the bay with a commanding breeze, not to the Southward of E., a vessel ay run through the Sabbat Channel, between Sabbat Point and Buck Island, and to eward of Eagle Shoal. In doing so, however, be careful not to bring the Western mmock on Buck Island to the Westward of the Haulover in Round Bay, bearing N. E. ¾ E., which may be easily made out from aloft. Or, do not bring the same hum- ock to the Westward of Sage Mountain, the highest land in Tortola.

The flood and ebb set across the mouth of Coral Bay, the former to the S. W., the lat- r to the N. E., both at about the rate of three fourths of a knot an hour. In the bay ere is no stream, and the rise and fall scarcely ever exceed a foot at the springs. The me of high water, full and change, varies from 7h. to 9h., and at that period the flood mmences to run at about 6h. *Tides.*

GREAT and LITTLE LAMESHUR BAYS are situated on the S. side of St. John's, tween Carbrite and White points; the former affords good shelter for droghers in nine thoms, under the lee of Cabrite Point, at about two cables' length off the shore, with m Head shut in by the point. *Great and Little Lameshur Bays.*

REEF BAY, a little to the Westward of Lameshur Bays, may be known by a re- rkable white cliff, one hundred and thirty-five feet high; on the Eastern side it has good shelter, but there is a good boat harbor within the reef which skirts the shore. *Reef Bay.*

FISH BAY, to the Westward of Reef Bay, is only a cable wide between the reefs at entrance, but nearly four cables deep; within the bay the soundings gradually de- ease from four fathoms to the shore. *Fish Bay.*

RENDEZVOUS BAY, to the Westward of Dittless Point, is six cables wide, and five bles deep, with a depth of from five to six fathoms, quite free of danger, but open to Southward. *Rendezvous Bay.*

GREAT CRUZ BAY, at the S. W. end of St. John's, affords good shelter for droghers; s little more than a cable wide at the entrance, and about four cables deep. From ween the two bluffs at its entrance, the water gradually decreases from four to three thoms, and then suddenly to two fathoms. *Great Cruz Bay.*

Little Cruz Bay. LITTLE CRUZ BAY is a small cove at the Western extremity of St. John's, but only fit for coasters. There is a village on the shore, and a white building called the Fort. An excellent road leads thence to the upper parts of the island and Coral Bay.

Anchorage. To the Westward of Little Cruz Bay there is anchorage in eleven fathoms water, over sand and mud, with the fort bearing E. by S. ½ S., distant half a mile; the centre of the Two Brothers in one with the W. point of Grass Cay; and the dry rocks off the E. side of Meeren Cay in one with Dog Rock.

Directions. A vessel may approach this anchorage by the passage between Meeren Cay and St. John's, but it cannot be recommended to sailing vessels, on account of the baffling winds under the high land. The best mark to run through it from the Southward is Carvel Rock, off the E. end of Congo Cay, and the Western hummock on the W. end of Jost Van Dyke in one, bearing N. by E. The reef off Turner Bay, and the dry rocks off Meeren Cay, are bold and steep to; but care must be taken to guard against being set out of the course by the strong tide, that runs at the rate of two knots between the islands and the main, the flood to the Southward, the ebb to the Northward. The best way, however, will be to pass to leeward of Meeren Cay, and to stand on until the vessel can fetch the anchorage.

Leinster Bay. LEINSTER BAY is situated on the Northern shore of St. John's, abreast of Thatch Island Cut, and is about three fourths of a mile deep. At its E. end there is a small cay, called Watermelon, under which a vessel may anchor at about a cable's length from the shore. This cay is steep and bold to, and is separated from St. John's by a twelve-foot channel a cable wide. A vessel must shoot up under its W. side, and anchor midway between it and the beach to leeward, which is about two cables distant. The Western part of the bay is fringed with a coral ledge awash, easily seen from the deck.

There are several other small bays on the Northern side of St. John's, where small vessels may find temporary shelter, but being exposed to the rollers, they are not safe for the night. The cut between Whistling Cay and the main is clear, but not easily navigated on account of the baffling winds from the high land forming Mary Point.

St. Thomas. ST. THOMAS.—This island is twelve miles long, E. and W., one to three miles broad, and in its general features very much resembles St. John's. A lofty ridge runs through its whole length, declining somewhat gradually toward its W. end; its summits form a saddle fifteen hundred and fifty feet high, and large spurs branch off to the N. and S., and terminate abruptly on the shore. It is almost surrounded by small islands and cays, in general bold and steep to, with but very few hidden dangers to guard against.

Harbor. The harbor called St. Thomas is situated near the middle of the S. shore of the island, and, being a free port, has a larger commerce than any other in this part of the West Indies, and is annually visited by between two and three thousand vessels, of which four to five hundred are British. Its entrance at the narrowest part is a little more than two cables wide, whence it spreads out on either side into a basin, about three fourths of a mile in diameter, and being open to the Southward, it is at all times free of ingress and egress, with the prevailing trade-wind. Although of no great extent, it is so completely protected that merchant vessels of the largest class can lie alongside the wharves of the town in perfect security, except in the hurricane months. The anchorage for ships-of-the-line, however, is confined to a small space, just within the entrance, about two cables in extent.

There is a steam slip in the S. W. corner of the harbor, capable of heaving up a vessel of one thousand tons, provided she can be lightened to eight and a half feet forward, and eleven and a half feet aft. There is no foundry, or means of repairing steam apparatus, but shipwrights' work is well executed.*

* The following Table of Rates was established in 1847:

Size.	For the first day.	For each of the next five.	For each of the following five.	For every day after 11 days.
	s. d.	s. d.	d.	d.
Vessels up to 200 tons	2 1 per ton.	1 0½ per ton.	10 per ton.	7½ per ton.
" 200 to 300 "	2 6 "	1 0½ "	10 "	7½ "
" 300 to 400 "	2 11 "	0 10 "	8¾ "	7½ "
" 400 to 500 "	3 4 "	0 10 "	8¾ "	7½ "
" 500 to 600 "	3 9 "	0 10 "	8¾ "	7½ "
Above 600 by contract.				

The town, called Charlotte Amalia, is most picturesquely situated along the Northern shore of the harbor, and on the sides of three remarkable rounded spurs, which branch off to the Southward from the main mountain ridge.

The Westernmost spur is called French Hill, the highest house on which is one hundred and seventy feet above the sea. The centre one, Judge Berg's, is crowned by a large square residence, two hundred and eighty-four feet above the sea. On the Eastern spur, named Kiær, there is a remarkable stone tower two hundred and forty feet above the same level, and immediately beneath it is Christian's Fort and the Water Battery, which command the harbor. To the Eastward of the town another hill rises abruptly, from the shore, called the Frederiksberg, on the summit of which stands a large house by itself, with a tower near it two hundred and fifty feet above the harbor; and overlooking it, on the mountain ridge, is the country residence of Louisehoe. Thence to the Southward, a small deep valley, at the E. end of the basin, separates the spurs from the lofty ridge of hills that form the Eastern side of the entrance, and which terminates abruptly at Möhlenfels Point.

There are no wells or fountains in the town of Charlotte Amalia; but rainwater can be purchased from tanks brought alongside, at the rate of two dollars per ton. Firewood is scarce, but coal can generally be obtained for eight dollars per ton. *Water.*

A light-house, painted white, stands on Möhlenfels Point, and shows at ninety-five feet above the sea, a fixed white light, of about the third order, visible at twelve miles.* *Light.*

FRENCHMAN'S CAP.—When approaching St. Thomas Harbor from the Eastward, two small islands will be observed on the S. side of St. Thomas, named Frenchman's Cap, and Buck Island. Frenchman's Cap, or Bird Island, is the outer or Southernmost, and lies S. S. W. ½ W., four and a half miles from Dog Island, at the Eastern extreme of St. Thomas. It is a remarkable islet, a cable and a half long, a cable broad, and one hundred and ninety-five feet high, covered with long grass, and steep to. On the N. side there are five to nine fathoms water at two cables' length from the islet, and on the S. side twenty-four fathoms within a cable's length. *Frenchman's Cap.*

BUCK ISLAND is a small islet, about one hundred and twenty feet high, partially covered with brushwood, lying a mile and a half from the nearest part of St. Thomas, and S. E. ¾ S. three miles from the light-house. It is steep to close to its S. side. Off the W. end a shallow ledge extends to the distance of half a cable's length, and on the N. side the depth is five fathoms within the same distance. Good landing will be found in the little bay at the W. end. *Buck Island.*

PACKET ROCK is a small coral shoal about half a cable in extent, with a depth of only five feet on it, lying about a mile to the Northward of Buck Island, and half a mile from the nearest part of St. Thomas. The sea does not always break over it, and it cannot be seen until close to it. To the S. and W. it is bold close to; on the Eastern side the depth gradually increases to seven fathoms at three fourths of a cable's length from the rock. The ground inside the shoal is clear, with a depth of eight and nine fathoms, sand and rock, extending from Long Point as far down as Coculus Bay, two and a half cables' length S. of which bay there is a small head of only nine feet, but it is out of the line of track, and can be easily avoided. When on the Western end of the Packet Rock, the flagstaff on Möhlenfels Point and Contant Mill will be in one, bearing N. W. by W., and the remarkable needle-pointed rock at Patrick Point will touch the Southernmost house on the Northern saddle of Great St. James Island E. by N. ½ N. *Packet Rock.*

THE TRIANGLES are the outermost danger off the entrance of the harbor of St. Thomas, and lie nearly midway between Green Cay and Möhlenfels Point. They consist of three small rocks, forming a triangle; the Eastern rock uncovers three feet at low water, the Northern rock a foot, and the Southern and outer rock two feet, and this latter is nearly four cables' length from the shore, and steep to. The E. Gregerie Channel kept open, leads well clear to the S. W.; Banana Point (the N. end of Water Island), just open of Cowell Point (the S. W. point of the entrance to the harbor), bearing N. W. by W., leads close to the S. W. of them. *Triangles.*

POINT KNOLL is a small coral head with eighteen feet water over it, on which is placed a square red and white buoy, with a white ball on the top. It lies S. W. ¾ W. from the light-house, and seventy fathoms from the nearest part of Möhlenfels Point. The highest part of Rupert Rock, and Kiær Tower, in one, N. by W., leads over it. *Point Knoll.*

RHODE BANK lies N. by W. ½ W. a fourth of a mile from Point Knoll buoy, and consists of three small coral heads lying close to each other, with from fifteen to seven-teen feet water on them. At the distance of nearly half a cable's length N. of the bank there are from twenty-four to twenty-six feet water; three fourths of a cable's length to the S. W. twenty-four and twenty-seven feet; and within it twenty-seven feet, decreasing to the shore. When on the N. end, the highest part of Rupert Rock will be in one with the E. end of government-house, N. by W. ½ W., and the N. end of Revenge sand (Water *Rhode Bank.*

* At present this is a very indifferent light, and that it may be seen at this distance is doubtful. It is said that it is not visible more than seven or eight miles.

Island, just open of Cowell Point, W. S. W. ¼ W. Kiær tower in one with the Wester part of Rupert Rock N. by W., crosses the edge of the outer side in twenty-thre feet.

Rupert Rock. RUPERT ROCK is thirteen feet high, whitewashed, and cannot be mistaken. I lies about half a mile to the Northward of the light-house, and a fourth of a mile to th E. N. E. of Frederick Point, at the narrowest part of the channel into the harbor. A its base are some large boulders, which toward the W. become just covered with th water, and extend out to the distance of fifty yards. On their edge, in sixteen feet water is placed a square buoy, checkered red and white, with a white ball on the top twent feet high. On the S. they are steep to within thirty yards. On the E., between the and Havensight Point, there are only from twelve to fifteen feet water. Between th rock and Rhode Bank is the anchorage of the quarantine ground, in which the dept gradually decreases to the shore from five to three fathoms. The above are all the da gers on the Eastern side of the entrance.

Frederik Knolls. FREDERIK KNOLLS.—On the Western side of the entrance to St. Thomas harbo from Cowell Point (which may be known by the semaphore on the hill above it, tw hundred and seventy-seven feet high) to Frederik Point, the shore is steep to, withi half a cable's length. Off the latter point are two rocky heads named the Frederi Knolls. The Northern head, of sixteen feet water, lies N. E. by E. ¼ E. about half cable's length from the battery on the point; and the Southern head, of seventeen fee E. ¼ S. seventy yards from the point. No good mark can be given to avoid them, an they are the only dangers on this side.

Scorpion Rock. SCORPION ROCK lies immediately in the way of the entrance to the harbor, b tween the light-house and Cowell Point, and has only recently been discovered. It a small coral rock, not more than eighty feet long, and thirty feet wide, with two three heads higher than the rest, on which there are twenty feet water at the lowe springs in May; a white buoy is placed on it, with twenty marked on a vane. Abo half a cable's length to the Westward of the rock there are from twenty-six to twent eight feet water, and eighty yards to the Eastward from twenty-eight to thirty fe When on the shallowest part, the E. end of the roof of the highest house on French Hi will be seen just over Frederik Point bearing N. N. W. ¼ W. and Cowell Point ju clear of the S. end of Sand Bay (Water Island) W.

Kiær Shoal. KIÆR SHOAL, the only danger within St. Thomas Harbor, is a small patch of seve teen and a half feet water, composed of sand and dead coral, and would therefore n do much harm should a vessel happen to tail on it; close around the depth is twent one feet. The mark for the rock is the Eastern highest part of Gallows Hill in one wi Contant House W. by N. ¼ N.; and the telegraph on the S. W. angle of Christian's Fo in one with Kiær tower N. ¼ E. leads close to its N. E. side.

Anchorage. The best anchorage in St. Thomas Harbor for a ship-of-the-line or large frigate, a a good position for weighing, is with the highest part of Rupert Rock in one with t light-house, and Long Bay fairly open, in five and a half fathoms.

Caution. Care must, however, be taken to observe the port regulation, which forbids a ves anchoring in front of the fort, so as to mask it, or prevent it from taking a range of t whole entrance of the harbor. The sterns of vessels anchoring to the Eastward m consequently not be more westerly than to bring the flagstaff of the fort to bear N. W., and the bows of vessels anchoring on the Western side of the harbor not more Ea erly than to bring it N. by E. Merchant vessels discharging cargo lie off the town the Westward of the fort; those ready for sea, preparatory to sailing, warp into Lo Bay, to the Eastward of it.

Directions. Vessels approaching St Thomas Harbor from the Eastward, and intending to ta the channel between Buck Island and Packet Rock, should run down with the S. treme of Dog Island in one with Ram Head (St. John's) bearing E. ½ N., which mark w lead half a mile to the Southward of the Packet Rock and in mid-channel. Contin steering W. ½ S. with this mark on until Contant mill comes on with Cowell Point W. ¼ W., when the E. Gregerie Channel will come open; this latter line will lead j clear outside the Triangles. Take care, however, to keep the channel open, and wh Kiær tower is in one with the Western extreme of Rupert Rock N. by W., haul up a run in. Upon this line, which is the weather one, a vessel will not have less than twen two feet water, and will pass about twenty yards to leeward of Rhode Bank. With t tower open to the Westward, half the breadth of Rupert Rock, she will carry in thir two feet.

A vessel of heavier draught should stand on a little farther, until the Western treme end of the water battery is in one with the E. end of the Episcopalian church by W. ¼ W., on which mark she will carry in thirty-three feet water, and pass ab half a cable's length to the Eastward of the Scorpion, midway between it and Rho Bank, and the same distance to leeward of the buoy on Rupert Ledge. The water b tery might, however, be hidden by a vessel lying before it; in that case, bring the hi est part of Rupert Rock in one with the portico of the house on Frederiksberg N. ½

hich will lead half a cable's length to windward of the Scorpion, and when Green Cay just shut in by Möhlenfels Point, a course may be shaped for Rupert buoy.

Steamers entering from the Westward may go to leeward of the Scorpion Rock by eering in N., with Frederik battery and Kiær tower in one, until Cowell Point touches e S. end of Sand Bay (Water Island) bearing W., when they will be abreast the rock, d may then shape a mid-channel course, taking care to give Frederik Point a berth of cable's length.

At Night. At night there is no difficulty in entering St. Thomas Harbor, but in this case it will e better to pass outside Buck Island, between it and Frenchman's Cap, and having rought the light to bear N.—to avoid the Triangles—stand boldly in toward the enrance. The Rupert Rock, being whitewashed, will soon show itself.

When leaving the harbor, a vessel will generally have a leading wind, especially if e weighs before 9 A. M.; for, although there is no regular land wind, it frequently hapens that the breeze slackens and inclines a little seaward between sunset and the above our; and this is observed at all the lofty islands. Use the same leading marks to avoid e shoals in going out as in entering, and if the wind should happen to be to the Southard of E., she must run to leeward of the Scorpion; therefore, when, in steering out, Vater Island comes open of Cowell Point S. W. ½ W. keep away, taking care not to shut n the N. end of Long Bay beach with the W. end of Rupert Rock, until abreast the hoal, or Sand Bay opens out clear of Cowell Point, when the vessel may be hauled to e wind.

Tides. It is high water, full and change, in St. Thomas Harbor, between 7h. and 9h., and the ise seldom exceeds a foot at the springs. The mean level of the sea is a foot lower in pril and May than at other periods of the year.

Gregerie Channel. GREGERIE CHANNEL lies immediately to the Westward of St. Thomas Harbor, nd is formed by Water Island to the S., and the shore of St. Thomas, which sweeps ound it from the W., Northerly, to the E., making a complete elbow. The Eastern rm, named East Gregerie Channel, trends N. W. and S. E., and is quite free of danger, ith a depth of from six to seven fathoms. At its entrance, between Cowell Point and prat Point, it is nearly half a mile wide, and at the elbow or N. end, between Careen ill and Banana Point, a fourth of a mile. The S. W. arm, named West Gregerie Chanel, is about the same length, and a fourth of a mile wide, with a depth of from six to ne fathoms. At the head or elbow it opens out into a basin half a mile in diameter, ell sheltered, but obstructed in the centre by the Gregerie Bank and Sandy Point ock.

Gregerie Bank. GREGERIE BANK is a small patch of dead coral and sand, about eighty yards long d forty yards wide, and the least water on it is fifteen feet, which depth lies with Cowl Point just shut in by Banana Point, and Saba Island by Regis Point.

Sandy Point Rock. SANDY POINT ROCK is small, with only two feet water on it, and lies near the end the shallow sand spit which runs off a cable's length to the N. W. from Sandy Point. hen on the rock, Cowell battery will be seen just over Banana Point. The distance tween it and Gregerie Bank is a cable's length, and the channel between carries a pth of twenty-two feet. In the channel to the Northward of the Gregerie the depth is t less than twenty-seven feet at about half a cable's length from the bank.

Anchorage. Anchorage will be found anywhere in Gregerie Channel clear of the shoals. The fest and most convenient spots are in the elbow and S. W. arm, for a vessel will there more sheltered from the swell which rolls into the Eastern arm and will have a adier breeze and more room for weighing. A good berth will be found either to the E. or W. of the Gregerie Bank, with Kiær tower just over the Northern foot of Caen Hill.

Directions. Sailing vessels wishing to take up an anchorage in Gregerie Channel, had better enter om the Eastern arm and leave it by the Western. To sail through, run in boldly in id-channel, and when nearing Gregerie Bank, keep Cowell Point open of Banana Point, til Kiær tower begins to open to the Northward of Careen Hill; then, hard a starard, and steer down the centre of the Western arm, in which there are no dangers. is will lead about half a cable's length to the Northward of the Gregerie Bank, in enty-seven feet, but the turning of the elbow is so sharp that a vessel of large draught d better put a boat or a buoy on the shoal before weighing.

To take the channel between Gregerie Bank and Sandy Point Rock, when Kiær tower just open to the Southward of Careen Hill, bear up, and bring Regis Point and the S. int of Saba Island in one, S. W. by W. ¼ W., which will lead across the bar in not s than twenty-two feet water; but remember that the channel is not a cable wide, and sharp to turn that the greatest attention must be paid to the helm, and the sails should so reduced as to have the vessel only just under command.

Tides. The flood in Gregerie Channel sets through to the Eastward at the rate of about half knot at the springs; the ebb with the same force in the opposite direction.

Great Krum Bay. GREAT KRUM BAY is a small inlet running up between two lofty hills at the estern side of the entrance to the S. W. arm of Gregerie Channel. It is about four

cables deep and seventy fathoms wide in its narrowest part, with a vein of water in the centre, shallowing from forty to twenty feet. This bay is used as a convenient spot for breaking up vessels.

Mosquito Bay. MOSQUITO BAY lies close to the Westward of Great Krum Bay, and is about half a mile wide between Mosquito and Red points, half a mile deep, and open to the Southward. Off the latter point a narrow rocky ledge extends a good fourth of a mile to the S. by W., and on its extreme end is a small coral head, called Red Point Shoal, with only two feet water on it, and steep to. Within the bay the depth gradually decreases from five fathoms toward the shore, but with this dangerous ledge under the lee it is only safe for droghers.

Porpoise Rocks. PORPOISE ROCKS.—Three small rocks, just out of water, and connected by a shallow ledge, compose this group, which occupies a space of about a fourth of a mile from N. E. to S. W. They are steep to, and lie W. about two thirds of a mile from the S. W. end of Water Island, with a deep and clear channel between.

Water Island Anchorage. WATER ISLAND ANCHORAGE.—There is excellent anchorage under the W. side of Water Island for vessels of the largest draught. If intending to anchor here, run in about midway between the Porpoise Rocks and the island, and come to in nine fathoms, as soon as the town of St. Thomas is seen coming open to the Northward of the island; or with the S. extreme of the island S. E. by S., and the N. end of Drif Bay beach E. by N., distant half a mile.

S. W. Road. S. W. ROAD lies between Flat Cays and Perseverance Bay, and affords an excellent temporary anchorage with the wind as far to the Southward as E. S. E. A vessel may enter it either by the passage between Flat Cays and Red Point Shoal, by that between Saba Island and Flat Cays, or by passing to the Westward of the Dry Rock under Saba. The last two routes require no particular directions, being quite clear of danger. The rocks awash, lying nearly two cables' length to the Eastward of the S. point of the largest of the Flat Cays, almost always break; but to avoid Red Point Shoal, keep Flag Hill Peak (on the E side of the harbor of St. Thomas) open to the Southward of Mosquito Bay Point, until the S. points of Flat and Turtle Dove cays are in one S. W. ½ W., when haul up and anchor as most convenient. Mosquito Point and Flag Hill Peak in one, E. ¾ N., leads half a cable's length to the Southward of the Red Point Shoal in nine fathoms.

Water. A small mountain stream empties itself into the sea at the first little beach in Perseverance Bay, Westward of Black Point; it is, however, private property, and a small remuneration is expected for its use. The spring issues from the side of the hill, at a considerable elevation above the sea, and in dry weather will not yield more than four tons a day; but after rains thrice that quantity can easily be obtained by means of a hose, without removing the casks from the boat. The water has, at first, a disagreeable soft taste, but improves, and becomes excellent after being in the tanks about a fortnight.

Tides. In-shore there is scarcely any stream, but between Flat Cays and Saba Island the flood, during the springs, runs to the E. S. E., at the rate of three fourths of a knot, and the ebb in the opposite direction, with the same velocity.

Great North Side Bay. GREAT NORTH SIDE BAY is the only bight on the N. side of St. Thomas which requires to be noticed. It is one mile and a half deep and half a mile wide, and its Eastern side is formed by a long narrow tongue of land, which terminates to the N. W. at Picara Point, nearly midway between Hans Lollik and the Brass Islands; being however, open to the N. W., and consequently exposed to the rollers, it is only safe for droghers, and they will find good anchorage anywhere under the weather shore. In entering, care must be taken to avoid the Ornen Rock, which lies N. W. by W. ½ W., half a mile from Picara Point. By keeping Dutchman's Cap open between the two Brass Islands, a vessel will pass clear to the Northward of it.

St. James Bay. ST. JAMES BAY is formed between the E. end of St. Thomas and Great St. James Island, and contains excellent and secure anchorage (except in the hurricane season) being sheltered from all points but the S. W.

Directions. In entering St. James Bay, stand in boldly from the Southward, giving the Stragglers a berth of half a cable's length, and anchor in seven fathoms, with Fish Cay E. by N. N. and the S. extreme of the Stragglers S. S. E. ½ E., distant about three and a half cables' length. Should the wind happen to be well in from the Southward when leaving the bay, and the vessel cannot conveniently work out between Cow Rock and the Stragglers (which, however, may be done on the flood), she may run out between the Cow and Calf and Deck Point, in which channel there are irregular soundings of from five to nine fathoms. In this case the fort in Little Cruz Bay (St. John's)—which, being whitewashed and standing alone, is easily distinguished—should not be opened to the Northward of Great St. James; the fort in one with the N. W. point of that island will bear N. E. by E. ½ E.

The Sound. The sound is the name given to the space between St. Thomas and St. John's and a chain of small islands, from two to three hundred feet in height, which bounds it on the

N. side; forming an excellent roadstead, about two miles in extent from E. to W., and one mile and a half from N. to S., quite secure against rollers, and all winds except from the Southward, which only blow in the hurricane months. The tides in it, however, are so strong that, if intending to remain any time, it will be better to moor, to avoid a foul anchor.

THE BROTHERS are two small barren rocks, twenty feet high, lying in the middle of the sound. A ledge runs off gradually from their N. side, deepening to five fathoms at a distance of one cable and a fourth; they may be approached on their S. side to within half a cable's length. *The Brothers.*

The sound may be entered by the channels between the islands to the Northward, or by the Southern Channel between Dog Island, at the E. end of St. Thomas and St. John's, the entrance to which is about one mile and a half wide. There is no danger whatever in this channel, and a vessel can sail boldly in, keeping to the Westward of Meeren Cay, passing on either side of the Brothers, according to the set of the tide and direction of the wind, and anchoring as most convenient, to the Northward of them. Care must, however, be taken not to go to the Eastward of a line drawn between the W. end of Grass and the S. end of Meeren Cay, to avoid the reef off Turner Bay. It will be better to take this channel with the ebb, as it is a weather tide. *Directions.*

NORTHERN CHANNELS INTO THE SOUND.—The passages about to be described have hitherto been little known, except to coasters. It will be seen, however, that most of them, particularly the weather ones, are quite safe, and will be found of great advantage to vessels bound to St. Thomas from the Northward, and which sometimes take two days to beat up from the Culebra passage, the route generally pursued. Indeed, as already stated, it will be far safer for vessels bound hither from the Eastward, to pass to the Northward altogether of Anegada, and haul in through either of these channels, than to run the serious risk of passing either to the Eastward or Southward of the Horseshoe Reef. All that is necessary is to watch the latitude closely, and to take the channels with a commanding breeze, that will enable a vessel to master the tides. *Northern Channels.*

The Easternmost passage lies between Jost Van Dyke and Tortola, and presents no danger whatever; a vessel has only to steer boldly through in mid-channel, where the least water is nine fathoms.

JOST VAN DYKE ISLAND lies about three and a half miles from the N. W. side of Tortola. It is three and a half miles long, E. to W., one mile and a fourth broad, lofty and rugged, bold and steep to, and toward the E. end it rises to the height of one thousand and sixty feet. On the S. side are two small bays, called Great and Little Harbors; the former about half a mile deep, with from three to eight fathoms water in it; the latter, more snug, has six fathoms about one third of a mile within the entrance, but they are only fit anchorages for coasters. *Jost Van Dyke Island.*

LITTLE JOST VAN DYKE ISLAND is a mile in length, half a mile in breadth, three hundred and seventy feet high, and is separated from the E. end of the greater island by a shallow ledge a cable wide. Close to its E. end is a small islet named Green Cay, one hundred and ten feet high and one cable and a half long. S. of the cay there is a small dry rock. *Little Jost Van Dyke Island.*

SANDY CAY lies S. a mile from Green Cay, and three fourths of a mile from the E. end of Jost Van Dyke. Its E. end is sixty feet high, but to the Westward it terminates in a low sand spit, and both ends are foul to the distance of a cable's length. The channel between it and Jost Van Dyke is half a mile wide, but the Jost Van Dyke shore, which is steep to, must be kept aboard. Sandy Cay lies about two and a half miles to the Westward of Cane Garden Bay, in Tortola, and is the narrowest part of the Easternmost of the Northern Channels. *Sandy Cay.*

GREAT TOBAGO lies two miles to the Westward of Jost Van Dyke, and is three fourths of a mile long, N. and S., half a mile broad, and five hundred and forty feet high. A small rock awash, and steep to, lies half a cable's length from the N. point. The S. side of the island is fringed with coral to a short distance, but all elsewhere the shore is bold close home to the cliffs. At a fourth of a mile from the nearest part of the W. side there is a remarkable, small, barren, perpendicular rock, named Watson Rock, which is steep to, and terminates in a peak ninety feet high. *Great Tobago.*

THE MERCURIAS ROCK is the only danger in the channel between Jost Van Dyke and Great Tobago; it is small, bold, and steep to, and has seven feet water on it. From the rock the N. point of Great Tobago bears W. by N. ½ N., three fourths of a mile; the highest part of Caravelle Rock will be seen nearly on with the highest hill at the W. end of St. John's, S. by E. ½ E., and Sage Mountain nearly in line with the S. W. extreme of Jost Van Dyke E. by S. Between the rock and Great Tobago the depth is from seven to eight fathoms, and the same depth will be found for two thirds of a mile to the S. E. of it. In running through this channel the Jost Van Dyke shore must be kept aboard, which can be done without fear. *Mercurias Rock.*

LITTLE TOBAGO is a small islet lying W. S. W. about a mile from Great Tobago; *Little Tobago.*

it is nearly half a mile in length, a fourth of a mile in breadth, and two hundred and eighty feet high. There is a safe and clear channel between these islands, but as nothing would be gained it will be better to pass through either of the others: should it be necessary, however, to take it, keep a little to windward or to the Eastward of Little Tobago, taking the bearing of Watson Rock, to avoid the King Rock.

King Rock. THE KING ROCK lying awash on the S. side of Great Tobago, is small, but it may be seen half a mile off from a vessel's deck. It is bold and steep to within half a cable's length, and between it and Great Tobago the depth is six and seven fathoms. From the rock, the S. point of Little Tobago is in one with the N. extreme of the small, low rocks off the N. end of Little Hans-Lollik W. by S. Southerly, and Watson Rock bears N. N. W. ¼ W. half a mile.

Hans-Lollik. HANS-LOLLIK and LITTLE HANS-LOLLIK.—Hans-Lollik is a bold rocky islet, seven hundred and twenty feet high, one mile and a fourth long, N. N. W. and S. S. E., nearly three fourths of a mile broad, and lies three and a half miles to the S. W of Little Tobago. At two cables' length to the Northward of it, and connected by a coral ledge nearly dry, which also skirts the E. side of the greater island, is Little Hans-Lollik, half a mile long, nearly a fourth broad, and two hundred and twenty feet high; and a cable's length to the N. W. of it is another small, low, rocky islet. These islets are all bold and steep to on their W. sides, but to the Southward is the Hans-Lollik Rock.

Hans-Lollik Rock. HANS-LOLLIK ROCK, about a cable's length in diameter, lies S. E. by E. three and a half cables' length from the S. point of Hans-Lollik, with from three and a half to five fathoms in the channel between. This rock must be carefully avoided; it is, however, awash, and steep to on its S. side, and visible a mile off from a vessel's deck.

Directions. The channel between Hans-Lollik and Little Tobago is quite free of danger, but being so far to leeward of the Middle or Inner channels into the sound, a vessel will have to beat through, and this can only be accomplished with the flood tide. It will, therefore, be only useful as a lee channel to vessels running through Sir Francis Drake Channel to the Northward of St. John's, with the wind well to the Northward, or to those leaving the sound. Should the wind be so far to the Northward that they cannot fetch through, they may take the channel between St. Thomas and Hans-Lollik, which trends W. N. W. and E. S. E., and is a mile wide. In doing this be careful to avoid the Hans-Lollik Rock and the Ornen Rock. A vessel will pass to the Northward of the latter by keeping Dutchman's Cap open between the two Brass Islands, which lie off the N. side of St. Thomas.

Middle Channels. MIDDLE or INNER NORTH CHANNELS.—The weathermost and most convenient of these, after passing through either Jost Van Dyke, Tobago, or St. John's channels from the Eastward, lies between the Lovango and Durloe cays, and is about four cables wide. The Durloe Cays are three small islets near the N. W. point of St. John's, and cannot well be mistaken. The Lovango side is formed at the outer end by the Caravelle Rock—which lies two cables' length from the E. end of Congo Cay, close to the N. E. end of Lovango Cay—and the Blunder Rock awash, two cables' length from the E. end of the latter cay.

Directions. The largest vessel may take the Windward Passage, between the Lovango and Durloe cays, at any time of tide, if she can depend on keeping a four-knot breeze, for the stream runs at the rate of two and a half knots. The navigation is simple; in fact the eye will be a sufficient guide, for every danger will be seen. Should the wind fall light, she may anchor at a moment's warning; observing that under ten fathoms the ground is rocky, and although not sufficient to break an anchor, yet, should it blow heavy, it may come home.

Between the Caravelle, Johnson Reef, and the Durloe Cays, there is a strong race with the ebb running against the wind, which appears like broken water, and is apt to alarm a stranger, but there is nothing to fear. Through the Durloe Cays, and between them and Hog's Nest Point, there are deep and clear passages, but it will be better to pass between them and Lovango Cay. Having run to the Westward of the Durloe Cays, the most direct route will be between the Brothers and Meeren Cay, luffing up under the latter, if intending to haul to windward of Dog Island, or continuing on across the main channel, if the wind is free for the Current Passage.

Between Lovango and Mingo cays there is an eighteen-foot channel, but being narrow, and the tides in it strong, it is only safe for boats.

Middle Passage. MIDDLE PASSAGE, between Grass and Thatch (or Green) cays, is three cables wide, but being so far to leeward, it is more convenient for vessels running through the sound from the Southward. It may, however, be taken from the Northward with safety on the ebb, provided a vessel can lay up S. E.; and she may work through from this direction with the flood, being careful to avoid a small rock awash, lying W. by N. ½ N. eighty fathoms from the W. end of Grass Cay. This danger can easily be seen two cables' length off from aloft, the eye being the best guide, and as it lies on a line, with the Northern parts of Congo and Grass cays in one, bearing E. by N. ¾ N., in coming

om the Northward this will be a warning of approach; and in going through from e Southward when Congo is seen to the Northward of Grass Cay, the vessel may be auled to the wind.

Tides. In the Middle Passage the flood sets in from the Northward at the rate of about two nots at the springs, and takes a S. E. direction inside; the ebb runs in the opposite irection with the same strength.

Leeward Passage. LEEWARD PASSAGE is four cables wide, and lies between Thatch Cay and the N. ide of St. Thomas, and has no danger in it whatever. The flood sets through from the Vestward at the rate of from two to two and a half knots, and the ebb with the same elocity, in the opposite direction. Being likewise so far to leeward it is only safe for essels running through from the Eastward with a leading wind, which should not be the Northward of N. E. as they will be on a lee shore, and most probably have a heavy ea, on account of the tides. Should the wind be well to the Eastward of N. E., or to e Southward, with the flood they may haul up close round the W. point of Thatch sland, and go out to the Eastward of Hans-Lollik. If the leeward channel is taken, etween the latter and the Ornen Rock, keep the W. point of Thatch Island in one with hark Island S. E. by E., until clear of the Hans-Lollik Rock. Shark Island is a small ocky islet, forty feet high, lying near the shore at the E. end of St. Thomas.

Current Hole and Passage. CURRENT HOLE AND PASSAGE.—Current Passage lies between Current Hole oint, at the E. end of St. Thomas, and Great St. James Island, nearly two cables' ngth distant. The passage is divided nearly in the centre by Current Rock, fifteen et high, and between it and St. Thomas there are only nine feet water; but on the St. ames side a vessel will carry twenty-three feet through a small vein not quite half a able wide, and a cable long. The tides rush through the opening with such violence s to cause a strong race, and gives the name of Current Hole to the small bight beween it and Cabrita Point, the Eastern extreme of St. Thomas. The course through e channel is S. S. W. It is quite safe, and will be found useful to vessels running to e Southward through the sound, and cannot weather Dog Island. As soon as Curent Rock is passed steer S. S. W. ½ W., and pass between Cow Rock and the Stragers, off the S. W. point of Great St. James, all of which are bold, close to, and well oove water.

Tides. The flood sets through Current Passage to the Southward at the rate of at least ree knots, and the ebb with equal force to the Northward; and as it should be taken y a sailing vessel on the ebb, it is clear there must be a steady, commanding breeze to em it.

St. James Channel. ST. JAMES CHANNEL.—A depth of twenty feet may be carried through this cut etween Great and Little St. James, passing on either side of the Welk Rock, which es to the Eastward of the islands. The channel lies on the Great St. James side but is o circuitous as to be by no means safe. It should only be attempted by a sailing vessel om the Eastward, with the wind well aft, and against the ebb, to give time to alter the ourse, and then only in case of necessity. The eye will be the best guide.

Dog Island Cut. DOG ISLAND CUT is bridged across, over which there are only eighteen feet water, nd having a rock with but nine feet on the middle of it, it is too dangerous for a sailing essel to attempt its passage.

Brass Islands. BRASS ISLANDS are two small islets lying close off the N. side of St. Thomas, and bout three miles to the Westward of Hans-Lollik. They are each about three fourths f a mile long in a N. W. and S. E. direction, a fourth of a mile broad, and the Inner rass is two hundred and sixty feet, and the Outer Brass four hundred and thirty feet igh. Between the inner islet and St. Thomas there is a five-fathom channel, two cables ide; and between the two islets there is one of seven fathoms, three cables wide, but ey are only safe for coasters. The flood sets between them from the N. E. at the rate f about a knot; the ebb is scarcely perceptible. Under the Inner Brass there is a seure and well-sheltered anchorage for coasters in six or seven fathoms water, at about alf a mile from the shore, with the N. end of the islet N. by E.

Lizard Rock. LIZARD ROCK is a small rugged islet, fifteen feet high, bold and steep to on ll sides; it lies about three fourths of a mile to the Westward of the Inner Brass sland.

W. and Salt Cays. WEST and SALT CAYS are only separated from the W. end of St. Thomas by a mall boat channel. They are each about half a mile long, in a N. W. and S. E. direction, and lie close together; Salt Cay, the outer one, is two hundred and fifty feet high, old and steep to.

Dutchman's Cap. DUTCHMAN'S CAP, lying nearly a mile to the Northward of Salt Cay, is a remarkble small rocky islet, rising abruptly from the sea to a peak two hundred and seventy eet high, with deep water close around. About half a cable's length from its S. W. ide there is a small rock three feet out of water. Between it and Salt Cay the soundngs are from fourteen to eighteen fathoms.

Cockroach Island. COCKROACH ISLAND is a small rocky islet of irregular shape, with a flattish ummit, and bold perpendicular cliffs one hundred and fifty-five feet high. It is nearly

of the same size as Dutchman's Cap, and lies about a mile and a third to the Northward of it. The passage between is quite free of danger. On the N. side of the island the depth is twenty fathoms within a cable's length, and on the S. side ten fathoms within a cable and a half.

Cricket Rock. CRICKET ROCK lies E. N. E. ½ N. half a mile from Cockroach Island, and is the most Northern islet of the group in this direction. It is forty-five feet high, bold and steep to, and there is a clear channel between the two islets.

Savana Island. SAVANA ISLAND lies S. W. about a mile and a half from Salt Cay. It is nearly a mile in length, half a mile in breadth, and the highest part is two hundred and seventy feet above the sea. It is uninhabited, but used for breeding goats. On its W. side it is steep to; having sixteen fathoms a cable's length from the rocks. Some detached dry rocks extend nearly a cable's length from its S. point, with fifteen fathoms close to their outer edge; there are also some straggling rocks eight or ten feet high off the Eastern side, bold and steep to.

Turkey Cay. TURKEY CAY, lying in the middle of Savana Island Passage, is a small narrow islet, a cable and a half long, only from twenty to thirty yards broad, eighty feet high and surrounded by deep water. At about half a mile to the S. E. of the cay is the little islet named Salt Water Money Rock, ten feet high, also bold and steep to, with a clear channel between.

Nearly halfway across the passage between the N. end of Savana Island and the W. end of Salt Cay, there is a coral patch with only five fathoms water on it; but in all other parts of the passage the depths are from thirteen to sixteen fathoms.

Directions. The above openings may be safely navigated by sailing vessels; the only caution necessary being to guard against the tides, which in the Savana Passage run at the rate of three knots, and in the others about one knot. With the ordinary E. wind a vessel will scarcely be able to stem the ebb which sets to the N. W. in the passage; and it will be better, in beating up, to haul close around the S. end of Savana Island, and stand well to the Southward, so as to avoid the strength of the inshore tide. With the flood it will be an advantage to take this passage, as by keeping along shore, the whole of its strength will be gained, and smooth water. From the W. end of St. Thomas to Perseverance Bay the bank is quite clear, and the shore bold close home to the rocks.

Sail Rock. SAIL ROCK, so called from its resemblance to a vessel under sail, rises precipitously from the sea to the height of one hundred and twenty-five feet. It lies S. by W. ½ W. three and a fourth miles from Savana Island, and becomes a remarkable object from off the harbor of St. Thomas. It is about one hundred yards in diameter, quite barren, with a light grayish appearance, from its being the residence of birds at certain seasons. Nearly a cable's length to the W. S. W. of it there is a small rock nearly awash, and the only danger near it: on all sides it is bold and steep to.

Culebra. CULEBRA, or Passage Island,* so named from its lying in the main channel between St. Thomas and Puerto Rico, is about six miles in length from E. to W. but varies considerably in breadth, from its very irregular outline; at its E. end it is three miles broad, but to the Westward it terminates in a point. It is uninhabited, of moderate elevation, broken and rugged, thickly wooded, with scarcely a level spot on the surface, and near the centre rises to the height of six hundred and fifty feet. The Northern shore is bold and steep to, the twenty-fathom line running parallel to it at the distance of a mile and a half; and half a mile within it is a coral ledge of six and eight fathoms, which extends from N. E. cay to within a mile and a half of the N. W. point of Culebra, and within it the water deepens again to twelve and thirteen fathoms. On all other sides there are small islets and reefs which shelter good anchorages, and at the E. end there are two excellent harbors. Firewood may be cut on any part of the island, but there is no water.

N. E. Cay. N. E. CAY, lying about half a mile from the N. E. shore of Culebra, is oval-shaped, a mile and a fourth long E. S. E. and W. N. W., half a mile broad in the centre, three hundred and forty feet high, and thickly wooded. N., a cable and a half from the E. end, is a remarkable small rocky islet called Bird Cay, sixty feet high; and at a mile to the N. E. of this end lie the Shark and Whale rocks, two small rocky islets sixteen and ten feet high; S. E. four cables' length from these are the Palada Cays, which are also two small rocky islets, eighty and eighty-four feet high, and steep to.

Culebrita Island. CULEBRITA ISLAND lies to the S. E. of N. E. Cay and about the same distance off it from the shore. It is of very irregular shape; a mile in length from N. W. to S. E., about half a mile broad, two hundred and sixty feet high, and thickly wooded. From the S. end a reef, nearly dry, extends to the S. W. by S. for two and a half miles, and protects the Sound and Mangrove Harbor. At three cables' length from Pond Point (the N. W. end of the island) lies Davy Cay, a small rocky islet thirty feet high.

The Sound. THE SOUND.—Excellent anchorage will be found within the cays and island just

* This island is sometimes called *Carlit* and *Serpent*.

ribed, but the best lies toward their Southern end under the lee of the reef, in front reat Harbor, called the sound, a clear space a mile and a half in length, and half a e in breadth.

he best anchorage in the sound is with the extreme W. end of Davy Cay touching E end of Bird Cay N. by W. ½ W., and the S. end of Culebrita E. N. E., in ten or lve fathoms, sand. Here a vessel will be in a good position for weighing and will be ected by the reef to the Southward, which, although broken, is sufficiently compact reak the sea. *Anchorage.*

IDDLE GROUND.—At its Northern end, however, the sound is somewhat ob- cted in its approach by the Middle Ground, which lies S. by W. three and a half es' length from Pond Point, to which it is nearly connected by a ledge, on which depth varies from three to five fathoms; the shallowest part has only twelve feet, lies about two cables' length from the nearest part of Culebrita. From the twelve the W. end of Davy Cay and the E. end of Bird Cay are nearly in one N. by W. ½ and a small isolated rocky speck on the N. end of the beach, on the W. side of Cule- a, is nearly in one with the summit of the hill over Cape Passage (the N. E. point of ebrita), N. E. by E. The outer or N. W. head lies with the W. end of Davy Cay just ring Shark Rock N. ½ E., and three cables' length from the nearest part of Cule- a. *Middle Ground.*

EATHER CHANNELS.—To enter the sound from the N. E. there are three pas- s between Northeast Cay and Culebrita, called the Weather Channels. The most thern of these lies between the E. end of Northeast Cay and Davy Cay. From former cay a reef extends out a fourth of a mile, and from the latter a similar shal- ledge runs off nearly two cables' length, leaving a channel between, about one cable a half broad, with a depth of twenty-three feet. *Weather Channels.*

he Southern passage between Palada Cays and Culebrita is the most direct, but far difficult for a stranger, as no marks can be given. The safest lies between Shark and le rocks and Northeast Cay.

o take the latter passage, steer boldly down toward Northeast Cay, and, having ed the rocks, bring the Western extreme of Davy Cay to touch the extreme of the arkable bluff at the E. end of Culebra. Keep them in one, until the Southern sandy h of Northeast Cay comes on with the N. end of Scrub Cay—a small rock islet the N. side of Culebra, then bear away S. W. by W., and steer for the Dolphin d—a remarkable hill at the E. end of Culebra. When Sandy Point of Culebrita s out clear of Pond Point, haul up gradually for the bluff, and anchor as most con- ent. *Directions.*

is necessary to observe that the flood sets in from the N. between Northeast Cay and Palada Cays, at the rate of one knot and a half, and the ebb runs out with equal force e opposite direction. *Tides.*

EE CHANNEL, between Northeast Cay and Culebra, is half a mile wide, and has anger in it whatever until the Middle Ground is approached. The wind, however, nerally so unsteady under Northeast Cay, that without it is so far to the Northward enable a vessel to lay up E. S. E., it should not be entered except on the flood. The nd is quite clear, and the shore bold, until abreast of Duck Point, whence to the bluff fringed with reef to the distance of half a cable's length, distinctly seen from the . About a fourth of a mile to the Eastward of Duck Point there is a small coral h with a depth of twenty-eight feet on it. *Lee Channel.*

sailing in through the Lee Channel, keep midway between Northeast Cay and the h shore, until nearly abreast of Duck Point, when the Culebra side should be kept rd to avoid the Middle Ground. The bottom is distinctly seen when in a less depth ten fathoms, and the shoal ground may be avoided by the eye. *Directions.*

OUTH CHANNEL.—A vessel may leave the anchorage in the sound either ugh the Lee or the South Channel. The former is the best, as there is no er or difficulty in it whatever, except the Middle Ground, which may be easily ded. *South Channel.*

hen sailing out of the South Channel, after passing the bluff, border well toward Wa- ay, and pass it within a cable's length to avoid the Porghee Heads, which are awash e the outer reef, and become visible, if the atmosphere is clear, from abreast Man- e Harbor. When nearly abreast of Breeze Point, at the entrance of Great Harbor, E. extreme of Water Cay must be brought to touch the hummock on Culebrita, N. E. which mark will lead between the Yellow Shoal and the Reef Heads, which will asily seen if the sun does not shine directly over them. The hummock is a small hill, ninety-three feet high, on the N. E. point of Culebrita, somewhat of the shape gun quoin with the thick end to the Southward, and is readily distinguished. In the nel the depth will be from eight to thirteen fathoms, and perhaps a cast of five and f fathoms on a small knoll abreast Breeze Point. When the Southwest Cay comes of Soldier point, the S. end of Culebra, N. W. by W. ½ W. a vessel will be clear of hoals, and may haul to the wind. *Directions.*

Vessels will seldom have a leading wind into the sound through this channel: but a steamer it is a safe and easy entrance, by taking the precaution to bring the leadi mark on before the peak of the Southwest Cay is in one with Soldier Point.

Mangrove Harbor. MANGROVE HARBOR, on the S. E. side of Culebra, is a small but well-shelte bight, about three fourths of a mile deep, and a fourth of a mile broad, formed by bluff on the E. and Water and Battle Cays on the W. The entrance is one cable an half wide, between two bold reefs, and has a depth of seven and eight fathoms in which gradually decreases within to five fathoms, over sand and mud; the head of bight is shallow, but on the Eastern side there are three and four fathoms close to Mangroves.

Directions. In entering Mangrove Harbor, having rounded the bluff, steer in midway between reefs, which will be distinctly seen, and anchor as most convenient to the vessel's draug It may not, however, be so easy to get out, as the channel trends N. W. and S. E., by warping well up under the weather reef, close to the bluff, there will be room to c and lay out. The sea is broken by the outer reefs.

Basin. THE BASIN is a deep hole, three cables long and a cable broad, with twenty-f feet water in it, and communicates with the S. side of Mangrove Harbor by a nar opening, across which there is a ledge with a depth of fourteen feet. It is quite sh tered from all winds, and a most convenient spot for small vessels to lay up during hurricane season.

Great Harbor. GREAT HARBOR, at the S. E. end of Culebra, is one of the most secure basins in Windward Islands, being a perfect natural chamber or dock about a mile in length, in some parts half a mile in breadth, but of irregular shape, and with several sa creeks on its margin. The entrance is between two bold reefs, leaving a channel a ca wide, through the centre of which a vessel will carry thirty feet water, and within it and six fathoms. The great drawback, however, to this otherwise advantageous s is its being almost blocked up by four coral shoals, which lie in the fairway to entrance, and for which no good leading marks can be given. To a steamer they not so formidable, as she has only to steer along the reef between Soldier Point and entrance of the harbor on a N. N. E. course; giving the reef a berth of one cable a half, so as to avoid Yellow and Grouper shoals, and having passed them, to steer bol on through the centre of the channel.

Yellow Shoal, with only six feet of water on it, is the outermost, and lies E. by N. th fourths of a mile from Soldier Point, on the lee or W. side of the S. channel into sound. The Shrimp has twelve feet on it, and lies S. by W. a fourth of a mile fr Breeze Point; the Grouper, with eight feet on it, a fourth of a mile W. S. W. from Shrimp; and the Snapper with six feet on it, midway between Breeze Point and entrance.

Water. There is a large natural cistern in Great Harbor, in which rainwater may be fou but not good.

Directions. The best route for a sailing vessel bound into Great Harbor is to run through sound and the South Channel, and pass between the Grouper and the Shrimp sho with the wind abeam, which must be done with the eye alone, from aloft. In fact, navigation, in the absence of any marks, is far too intricate for a stranger without assistance of a pilot or good local knowledge. It would also be difficult for a sail vessel to get out of the channel without warping, and with the wind well to the No ward.

S. W. Anchorage. SOUTHWEST ANCHORAGE lies between Culebra and the Southwest Cay, an quite secure with the ordinary trade-winds. Southwest Cay is one mile and a fourth length from N. to S., and its wooded peak rises to the height of five hundred feet E. side of the cay is skirted by a coral ledge to the distance of a cable's length, and Culebra shore is also foul to the distance of half a cable.

The N. end of Southwest Cay is separated from Stream Point (Culebra) by a chan three and a half cables wide, having in the centre a coral ledge with twenty-six water on it, and six and seven fathoms on either side, but the tides in it are so str and the wind so baffling that it is scarcely safe for sailing vessels. At the springs flood runs through to the Southward at the rate of three knots, and the ebb with e violence to the Northward.

The anchorage is about one mile and a half in length, and from half to a mil breadth, and there is no difficulty whatever in approaching it from the Southward. best-sheltered spot will be found in thirteen fathoms, with Scorpion Point (which out low and terminates with a small pinnacle rock) bearing E. by S. distant three a half cables' length. If a vessel anchor to the Northward of this, she will find it in venient in weighing, from the baffling winds and strong tides, which will expose he the risk of being thrown on the S. end of the cay.

Good anchorage will also be found with Scorpoin Point bearing N. by E. nearly th fourths of a mile, where all is clear to leeward. Halfway across, between the cay the same point, there is a small coral patch of seven and a half fathoms, which sho be avoided when anchoring.

here is also good holding ground to the Westward of Southwest Cay in thirteen oms, with the West Sister in one with Fungy Bowt, N. by W. ¾ W., and the S. point outhwest Cay, E. by S. Indeed, a vessel cannot go wrong in choosing an anchor-on the lee side of Culebra, as there are no dangers whatever.

NUG BAY, on the W. side of Culebra, is a well-sheltered boat harbor; and in the cove N. of it there is good fishing with the seine. *Snug Bay.*

N. W. CHANNELS.—The passages between the N. W. end of Culebra, and the rocks islets to the Westward of it, are safe and simple to navigate, as all the dangers may en from the deck. *N. W. Channels.*

PILOT ROCK PASS, between the N. W. point of Culebra and Pilot Rock, is nearly a mile wide, and carries a depth of twelve fathoms. All that is to be done in tak-his channel is to avoid the reef, which will be seen running off one cable and a half nt from the point, and is steep to. Pilot Rock is barren, thirty feet high, one hun-yards in diameter, and bold and steep to. *Pilot Rock Pass.*

TWIN PASS, is formed by the Pilot Rock and the Twins, two small barren rocky about twenty feet high, lying close to each other, about three fourths of a mile to Westward of the Pilot. S. E. a fourth of a mile from the Twins will be seen a rock h, named High Breaker, steep to, and the best channel lies between it and the Pilot, ere will be generally a leading wind through either way. *Twin Pass.*

FUNGY BOWT CHANNEL.—Fungy Bowt lies W. N. W. ¼ W. three and a half s' length from the Twins, and is a remarkable, barren, round, whitish rock, one red and forty-five feet high, with rugged perpendicular sides. The channel is clear safe, but be careful of a small head which lies a cable's length to the Westward of Twins, and on which the depth is only six feet. *Fungy Bowt Channel.*

WASHER PASSAGE is between Fungy Bowt and the Washer, a small rock only feet out of water, lying N. W. by N. nearly three fourths of a mile from Fungy This channel is bold and clear, with a depth of fourteen and fifteen fathoms in A vessel may also pass to the Westward of the Washer, which is bold and steep to. ter passing to the Southward of Fungy Bowt, another chain of small islets will be rved lying to the W. N. W. of S. W. Cay. *Washer Passage.*

SISTERS.—The three islets nearest the S. W. Cay are the Sisters, which are all y of the same size, about thirty-five feet in height, and not more than a fourth of a apart; from a N. by W. direction they will appear but two. The Eastern islet three and a half cables' length from the N. W. point of S. W. Cay, with a clear nel between. *Sisters.*

CROSS CAY lies nearly one mile and a fourth to the Westward of the Sisters, and lf a mile in length, one hundred and thirty feet high, and covered with long grass bushes About midway in the channel between lies the Black Rock, a small islet, n feet high. *Cross Cay.*

CACTUS CAY, ninety-five feet high, is the Westernmost of this small chain of islets, lies N. W. by W. about three fourths of a mile from Cross Cay. At its S. end there remarkable pillar-shaped rock, seventy-five feet high. The channels to the West-of Cactus Bay have not yet been surveyed, but are noticed farther on. *Cactus Cay.*

e openings between this last chain of islets are all quite free of danger, and the eye be the guide, keeping in mid-channel; the rocks are bold and steep to. The best nels, however, for sailing vessels, are those to the Westward of the Sisters; for, r the high land of S. W. Cay, the wind is so variable, the channels between them rrow, and the tides so strong, tha they had better be avoided altogether. *Directions.*

rough all the above channels the flood sets in from the Northward at the rate of t a knot an hour for six hours, the ebb in like manner from the Southward. It is water, full and change, at 9h. The rise and fall seldom exceeds a foot, and, as be-stated, in April and May the mean level of the sea is generally a foot lower than her periods of the year. The remarks made on the tides in the passage between homas and St. John hold good here. *Tides.*

e flood coming in from the Northward sweeps round the bluff and over the reef to S. W. of Culebrita at the rate of about two knots at the springs; it there slackens ace, and meeting the stream setting down on the Western side of Culebra, it then ds to the Southward, toward the E. end of Bieques or Crab Island.

e ebb sets over the Culebrita Reef, taking the lee and weather channels out of the d, in a reverse direction, and much at the same rate.

the W. side of Culebra the stream of flood, having reached S. W. Cay, runs to the E. toward the E. end of Bieques.

THE GRAMPUS SHOALS are a group of small corals heads, rising from a bank of fathoms, and lying about four miles from the S. E. end of Culebra. The Southern on which there are twenty-four feet water, is only ten yards in diameter, and lies Soldier Point just on with the S. extreme of S. W. Cay, W. N. W. Nearly a mile E. ½ E. from this is a small cluster of heads with as little as twenty-one feet on these are the most Eastern, and lie S. by E. ½ E. four miles from Cape Passage. *Grampus Shoals.*

The innermost or Western knoll, of eighteen feet water, lies with Soldier Point W N. ¼ N. three and a fourth miles, and Reef Point, Culebrita, N. by E. ½ E. three mi

Between this Western knoll and Culebrita there is a clear navigable channel; b no safe directions can be given, it will be better for large vessels to pass to the So ward of the whole. For this purpose, do not open Signal Hill, on St. Thomas, to Northward of Sail Rock; and to pass clear to the Westward, keep the peak of S Cay on with Soldier Point N. W. by W.

Bieques or Crab Island. BIEQUES or CRAB ISLAND is eighteen miles long from E. to W. and from tw four miles broad. A ridge of small hills runs nearly its whole length along the mi of the island, and rises to a moderate height at Vaca Point, the S. W. extremity of island. The E. end of the island bears S. ¾ E. about eight miles from Soldier P Culebra; and Arenas Point, the N. W. extreme, bears S. E. ¾ S. five and a half m from the Western point of Bahia Honda, the nearest part of Puerto Rico. Bet Bieques and Culebra the soundings are regular, and the depth from twelve to six fathoms. The E. end of the island is low, bold, and steep to, and on the S. side the of soundings runs along at the distance of about one mile and a half.

Danes Bay. DANES BAY.—The S. side of Bieques, for the most part, is cut into by little s bays, and is free of danger. Danes Bay, the first of any consequence, is situated a two miles from the E. end. It is a little more than half a mile wide, about the depth, and carries from three to four fathoms over sandy bottom. Nearly abreast bay, about a fourth of a mile from the points are two small islets, which may be p on either side.

Sound or Settlement Bay. SOUND or SETTLEMENT BAY, the Westernmost of these indentations, is five miles to the Eastward of Vaca Point; it is about a mile in extent from N. W. E., and is defended by a small fort. In front of it are two small islets, called S and Water cays; the latter, which is the outermost, lies nearly a mile to the West of the S. E. point of the bay, and about half a mile from the shore. On the W. within a fourth of a mile of it, there is anchorage in from four to five fathoms.

Arenas Bank. ARENAS BANK.—From Vaca Point to Arenas Point the W. side of Bieques about N. W. by N. three miles. The edge of soundings is here about four miles di and the shore is bold and steep to as far as the S. end of the sandy beach which the N. W. extremity of the island. Here a spit of sand runs off to a point N. W. b three miles from Arenas Point, upon which are several spots of only ten feet w those at its extremity are covered with dark weeds, and not being sufficiently disco are very dangerous.

To avoid the N. end of this spit, do not open Cape Mala Pascua of Naranjo Po Puerto Rico, and when El Yunque or Anvil Peak is shut in with the hill on the ern headland of Bahia Honda N. W. by W., a vessel will be to the Eastward of it.

Anchorage. There is good anchorage under the W. side of Bieques in five fathoms, with A Point E. N. E., and the S. W. Point of the island about S. E. Toward the S. W. the bottom is rocky and the soundings irregular.

Water. A small rivulet disembogues at the S. end of the beach which forms the N. W tremity of Bieques, but near the shore it is brackish; a small supply of good w however, may be obtained by carrying breakers a short distance above the outlet, is attended with much labor.

Port Mula. PORT MULA.—From Arenas Point the Northern shore of Bieques trends E. b ½ N. eight miles, when it bends abruptly to the Northward for about half a mile, ing a small bay called Port Mula. At the mouth of a little stream on the S. side bay is the village of Isabella II., and about a mile inland from it is a hill called M Soldat. There is anchorage here for coasters in three fathoms, with the point bay E. N. E. about two cables' length distant, and in moderate weather large may anchor outside in five fathoms, with the point S. E., distant about half a mile.

Mula Shoals. MULA SHOALS.—The approach to Mula Bay, however, is obstructed by small dangerous shoals, nearly awash, lying about a mile and a half from the sho

Cabello Blanco, the Easternmost shoal, lies N. W. ½ W. nearly a mile and a half the point of the bay; the Corona, the next, lies W. S. W. a mile and a half from t bello Blanco, and N. W. by W. ½ W. from the point, with from five to seven fa between; and the Mosquito, the Easternmost, lies about half a mile W. S. W. Corona, and W. ½ N. three miles from the point of the bay. About half a mile Westward of this latter shoal there is a small patch of sixteen feet water, and a s one of the same depth S. ½ E. from the Cabello Blanco, and one W. by N. ½ N. on from the point of the bay.

Caution. A vessel beating up outside these shoals should not bring Arenas Point to the ward of S. W. by W.; Cape Mala Pascua to the Westward of S. W. by W. ¾ W the N. extreme of Bieques to the Eastward of E. ½ S. when approaching the C Blanco.

Cabello Colorado Point. CABELLO COLORADO POINT, the Northern extremity of Bieques, is rock steep to, and bears E. by N. nearly three miles from the point of Port Mula. The

o Point the shore trends E. ¾ S. about four miles; about midway, close to the land, s a little rock called Rouge (red); to the Westward of this rock the shore is foul, the Eastward it is bold and clear.

nearly half a mile from Diavolo Point, there is a small rocky patch nearly awash, the Cockroach Shoal.

LICAN HARBOR.—From Diavolo point to the E. end of Bieques the shore is lar. E., a mile from the point, and about a fourth of a mile from the shore, is n Cay, whence a broken reef runs parallel with the shore for a mile and a half; h it are several small cuts of twelve feet water, leading into snug anchorage for rs. *Pelican Harbor.*

NTA CRUZ or ST. CROIX ISLAND is nineteen miles long, in an E. N. E. and W. direction, but of irregular breadth. The S. side is nearly straight, and gen- low, particularly toward the W. end. Near the centre of the N. shore a deep s formed, at the bottom of which is situated the town of Christianstæd, the capital island, and seat of government of the Danish colonies. From the town to the op- shore of the island the distance is about two and a half miles across, and thence dth gradually decreases to the Eastward, and terminates in a bluff point, with a oaf elevation of moderate height just within it. The Western portion from the preserves a general breadth of five miles, and becomes more elevated on the N. Mount Eagle, the loftiest summit in the island, three and a half miles E. of Ham's is nearly twelve hundred feet high. Numerous small rivulets empty themselves y on the Southern shore, but most of them disappear in the dry season, and it is uently badly watered at that period, and what is obtained is not wholesome until d some time to purify. It is also scantily wooded, but highly cultivated, and its are most excellent. *Santa Cruz or St. Croix Island.*

E S. COAST of Santa Cruz is bordered with a dangerous broken coral reef, from end to within about three miles of the S. W. point and terminates here two miles re, with the signal staff on St. George's Hill bearing about N. The most danger- rt lies between this and Signal Hill, eight miles to the Eastward, where it runs off same distance. It generally breaks, but as the foul ground exists outside, it d be cautiously approached. There are several cuts through it, capable of admit- mall coasters into tolerable anchorage within. The soundings are from five to fathoms from a mile to a mile and a half to the Southward of the reef, and the of the bank is very abrupt. One of the best openings lies S. of the entrance of se Lagoon. At Great Pond Bay there is a narrow cut leading into safe anchor- r vessels of ten feet draught. *S. Coast.*

EDERICHSTÆD.—The W. end of Santa Cruz forms a bay about five miles in ex- and near the centre of its shores is the town of Frederichstæd. In front of it there d anchorage in from six to seven fathoms, with the fort bearing E. by S., and the point S. by W. ½ W. Foul ground extends a fourth of a mile from the N. point bay, and a mile from S. W. Point, the S. W. extreme of the island; and in round- e latter, a vessel must not haul in until the N. point bears N. by E. The edge of nk lies three miles to the S. W. of S. W. Point, and terminates abruptly at a nar- oral ledge of seven to nine fathoms. In the bay, the ledge is not more than half e from the shore, consequently, in the hurricane season the anchorage is unsafe. *Frederichstæd.*

white light is exhibited from the flagstaff of the fort at Frederichstæd, and is visi- a distance of four or five miles. *Light.*

the distance of half a mile to the S. W. of the S. W. point of Santa Cruz, the rocky terminates in the depth of two fathoms, and the soundings then suddenly increase en and ten fathoms. To the Eastward of this, as far as Long Point, there is tem- y anchorage in seven fathoms, but it should only be taken in case of necessity. le S. S. E. of Long Point is the W. end of the main reef which skirts the S. side of land. *S. W. Anchorage.*

RTH COAST.—The N. W. end of Santa Cruz is considerably elevated, and formed y of bold cliffs steep to. Between Ham's Bluff, which is very remarkable, and Salt Point, seven miles to the Eastward of it, the shore is skirted by a reef to the dis- of a cable's length; and soundings will be found about four cables' length outside t is, however, advisable not to approach this part of the coast too near, as a sudden f wind might place a vessel in danger. *N. Coast.*

LT RIVER POINT is rather low, and forms the N. extreme of Santa Cruz, and W. point of the bight of Christianstæd. A fourth of a mile N. of the point lies White Horse, a dangerous rock, which generally breaks; and between it and the there is a boat channel carrying a depth of two fathoms. A short distance to the ward of the point, through a narrow cut in the reef, is the entrance to a deep inlet Salt River, in which, however, there is only shelter for boats. *Salt River Point.*

m the above point the shore turns sharply to the S. E. for three miles to the har- Christianstæd.

RISTIANSTÆD HARBOR.—This anchorage is sheltered to the N. by reefs, *Christianstæd Harbor.*

which extend to the distance of two miles from the shore; but it is only capabl receiving a few vessels of seventeen feet draught; and the channels are so intricate no safe directions can be given for a stranger without the assistance of a pilot. A sel will have to warp out, and buoys are advantageously placed for that purpose. town occupies a space of half a square mile, on the slope of a hill of moderate vation.

Light. The entrance to the harbor is protected by Fort Louisa Augusta, from the flag of which there is exhibited a harbor light.

Pilots. The pilot station is on Protestant Cay, which lies close off the town and pilots ar all times quickly in attendance off the entrance, on seeing the usual signal.

N. Reefs. N. REEFS.—Nearly a mile N. of Fort Louisa Augusta is the Western extremit the Scotch Reef, which extends a mile and a half along the shore to the E. N. E., l ing a narrow channel between it and the main. The E. end of this reef terminates a N. of a small islet near the shore called Green Cay, on which are two small hillo From the latter this side of Santa Cruz is skirted by a reef all the way to the E. Within it there is snug anchorage for small craft, which find their way through a s cut N. of Coakley Bay mill, and warp up.

Buck or Goat Island. BUCK or GOAT ISLAND, three hundred and forty feet high, lies N. E. by E. four and a half miles from Fort Louisa Augusta, and W. N. W. three miles from th end of Santa Cruz. It is nearly a mile in length E. and W., half a mile in brea and is situated on the Southern edge of a dangerous coral bank which extends to Northward and to the Westward a mile, and to the Eastward a mile and a fourth. lies directly in the route to the harbor, and must therefore, be carefully approach For this purpose Ham's Bluff must be kept well open of Baron's Bluff, W. S. these bluffs in one will lead two cables' length outside the reef, in four fathoms. channel between the W. end of the reef and the N. E. end of Scotch Reef is a mile a half wide.

Anchorage. There is good anchorage in four fathoms to the S. W. of Buck Island, and it is ge rally chosen for vessels-of-war. The usual way of approaching it is from the No ward, round the W. end of the reef. The latter may be passed by the eye, or by bri ing the dwelling-house of Green Cay estate (on a mound near the shore) in one Sight mill S. by W. ¼ W. The mill stands on the centre ridge of hills—which is lower than elsewhere—and has neither head nor vanes. In running in upon this m however, the vessel will cross over twenty-seven or twenty-eight feet water, and deepen to seven fathoms. Soon after passing within the edge of the bank she may up for the anchorage, and anchor when the E. point of Buck Island comes open o sandy point on its S. side.

Buck Island Channel. BUCK ISLAND CHANNEL.—With good local knowledge a vessel may enter channel from the S. E., running in between the reefs and Santa Cruz, by keeping th extreme of Green Cay in line with Mount Eagle W. ½ S. The latter from this direc will appear the left of two hills apparently very nearly of the same height; the No ern one is Salt River Mound, situated near the shore two miles farther to the Eastw The least water will be six and a half fathoms on a separate bank; the depth gene being ten fathoms; but great care must be taken to keep the leading mark on until vessel is abreast of Buck Island, when she may haul to the Northward.

E. End Bank. E. END BANK.—An extensive bank of soundings, from three to five miles br stretches off E. N. E., nine and a half miles from Santa Cruz, and connects itself to Buck Island Reef on the N., and to the S. side bank at about a mile and a half the shore. On its extreme edge there is one of those remarkable wall-sided na coral ledges, already spoken of, which commencing about three miles to the E. N. Buck Island Reef, sweeping round in a convex form outward at the extreme E. end terminates S. two miles from the E. end of Santa Cruz; the Northern part is from a mile to a mile broad, and has a depth of from five and a half to seven and a fathoms on it; the Southern portion is scarcely more than half a cable broad, and from eight to ten fathoms on it, and in the space between there are from twelv seventeen fathoms.

The shoalest part of the Northern ledge bears E. by N. ½ N. nine miles from Island, and N. E. ½ E. eight miles from the E. end of Santa Cruz, and in heavy wea it breaks and becomes dangerous; it is therefore advisable, under such circumstanc coming from the Southward, not to approach the E. end within twelve miles, and to bear up before Buck Island bears W. S. W. Coakley Bay mill in a line with S Lang's observatory leads on the N. E. part of the ledge, but toward the Western tremity it runs a little to Northward of this mark. The dwelling-house, which is hundred feet to the Southward of the observatory, in one with Signal Hill flagstaff, over the Southern part of the ledge. The S. side of Buck Island in one with Be mill leads just outside the Northern edge.

Observatory. Major Lang's observatory stands on a hill, four hundred and forty feet high, abo mile E. S. E. of the city, and from numerous astronomical observations made by officer, its position is assumed to be in lat. 17° 44′ 32″ N., long. 64° 41′ 6″ W.

Vessels bound to Christianstæd generally approach it from the N. or N. E. quar- *Directions.*
s. In this case, having passed Buck Island—observing the precautions already
nted out to avoid the reef—haul in toward Green Cay. In standing toward the
otch Reef, take care to keep Baron's Bluff open of Salt River Point. Having
wn toward the reef, Fort Louisa Augusta will be seen at the N. E. end of the
n, and it must be brought in line with the first hill to the Eastward of a large
ch formed by two hills. Steer in on this line, S. by E., very carefully, and it will
d to the entrance of the channel, and outer buoys, which lie about two cables'
gth within it.

n arriving between the second red buoy on the left, and a black buoy on the right
d, alter course to the Westward, round the N. side of a dry sand-bank which will
seen ahead, passing between the two Southernmost of three black buoys. Thence
l up round the N. W. end of the middle shoal, and shape the course into the
p lane of water in the direction of the fort, taking up an anchorage as most con-
ient; observing that the vessel will have to moor. Vessels-of-war generally lie
ut a cable and a half N. E. of the N. E. point of Protestant Cay: merchant-vessels
farther up the lane. Those drawing only ten feet may lie alongside the jetty of the
n.

ASTERN CHANNEL.—Vessels of light draught may enter by the Eastern Chan- *Eastern*
which has a depth of thirteen feet in the centre, gradually increasing on either *Channel.*
.

n this case, after passing to the Westward of the red buoys, steer directly between
isa Augusta Point and the dry sand bank to the Westward of it. Continue on this
rse until the N. extreme of Protestant Cay comes in line with the S. E. end of Rich-
d House. Cross over on this mark, and having passed to the Northward of a small
k buoy, which is placed on the extremity of a bank stretching off from the E. side,
l in for the anchorage.

ichmond House is a large building, with a red roof, standing in grounds of a park-
appearance on the sloping land near the sea.

mall craft may also pass close to the Northward of Green Cay and S. of the Scotch
f, entering by the Southernmost red buoy.

lthough easy of access at almost all periods, it is difficult to get out of the harbor;
in the months of January and February, when the wind hangs to the Northward of
vessel may meet with considerable detention. With the usual trade-wind she
t warp up to the entrance, and, as before stated, buoys are conveniently placed for
purpose. Toward daylight it is generally calm, and she may be able to tow out,
sted sometimes by a light land air from the S.E., which will enable her to obtain
offing clear of the shoals before meeting the regular breeze.

will be evident that these directions are far too difficult for the guidance of a *Caution.*
nger, and they are consequently only intended to assist him with the plan, in case of
olute emergency.

here is no regular land breeze at Santa Cruz, but when the trade is light during the *Winds.*
it generally falls calm in the night. Northers, with the accompanying heavy ground
ll, do not appear to reach this island.

o perceptible tidal stream has been observed at Santa Cruz, but a rise and fall takes *Tides.*
e of from four to eight inches, according to the strength of the wind, which will
etimes raise it to eighteen inches. It is high water, full and change, at 7h. 30m.
ween this island and St. Thomas there is usually a slight Westerly current.

HE GREATER ANTILLES—PUERTO RICO AND THE MONA PASSAGE.

UERTO RICO, the smallest of the Greater Antilles, was discovered by Columbus, *Puerto Rico.*
493. The Spaniards from St. Domingo took possession of it in 1509, and it has re-
ned in their hands from that period. It is about ninety-three miles in length from
W., its greatest breadth is thirty-three miles, and its shores are but slightly in-
ed. A lofty, broken range of mountains takes its rise from the N. E. end of the
d, and runs through the centre as far as the neighborhood of Port Arecibo, where
rminates in a remarkable hill, called the Silla de Caballo (Horse Saddle). The most
ated summits lie toward the E. end, and eleven miles W. S. W. from San Juan Head
N. E. point of the island), El Yunque or Anvil Peak rises to the height of three
and five hundred feet, and is generally a very conspicuous and useful object.

ll the shores of this island are but imperfectly known, and San Juan, on the N. side,
e only secure port for large vessels during the hurricane season.

AST COAST OF PUERTO RICO.—Nine small rivers disembogue on the Eastern *E. Coast of*
of Puerto Rico, and there are several ports which are visited by small vessels for *Puerto Rico.*
ugar, which is largely cultivated at this end of the island. The information, how-
which we are about to give of these places is so scanty and imperfect that it

would be extremely hazardous for a stranger to venture to the Westward of either C bra or Bieques without a pilot, who may be obtained at St. Thomas, and sometime Bieques.

Puerto Fajardo. PUERTO FAJARDO, the first to the Southward of San Juan Head, and three a half miles from it, is situated between Cuava and Barrancas points, and carries a de of from sixteen to twenty-three feet; it is, however, scarcely more than a narrow ca sheltered from the E. by the small islets Obispo, Zancudo, and Ramos, and also a between the two latter, on which there are from six to twelve feet, and which in s parts breaks. In the reef there are two navigable cuts, through which a vessel carry twenty-three feet, but they should only be taken in case of necessity; the So ern one is the largest.

There are two entrances into Port Fajardo. The Southern one, with a dept eighteen feet in it, is quite clear, and lies between Barrancas Point and Ramos Is and with the wind to the Northward, it is the best to take on leaving the port. Northern entrance is between Cuava Point and Obispo Islet, and has from twenty-s to thirty-six feet water, in it, but it is obstructed nearly in the centre by a coral pa on which there are only six feet, which requires great care to avoid; still, altho narrow, it is the best by which to enter.

Approaching the port from the Eastward, between Culebra and Bieques, a vessel take either the channel between the Cordillera and the Palominos Islet; that betw the latter and the Largo Bank; or the one between the Largo Bank and the chai reefs called Piraguas or Lavanderas. The first appears to be the best, although the rowest, for all the dangers are seen; the depth varies from eight to twelve fathoms, it leads out to windward of the port, with the wind from the N. E. In the second are from seven to eleven fathoms, and in the third six to eight fathoms.

Cordillera. THE CORDILLERA appears to be the name given to the numerous small islets reefs which extend from the W. side of Culebra as far as St. Juan Head (and which been partly described in previous pages), and to terminate to the S. W. at the Ba Islets.

Palominos. THE PALOMINOS, lying S. E. three miles from St. Juan Head, is a small, nar woody islet, nearly a mile long from N. to S., and of moderate elevation. It is sk by a reef on the S. and W. sides to the distance of half a mile, and anchorage wi found about a mile from its Western shore in six or seven fathoms water.

Largo Bank. LARGO BANK, which forms the S. side of the second or middle channel to Fajardo, is nearly on the parallel of Ramos Islet, and about one mile and a half to Eastward of it, with a clear channel between of seven fathoms water. The bank is mile and a half in length from N. to S., but very narrow and steep to. In some there are thirteen feet on it, but it frequently breaks.

Great and Little Pinero. GREAT and LITTLE PINERO are two small, low, wooded islets, lying betw Medio-mundo and Pinero points, the Eastern extreme of Puerto Rico, which is also and woody. The largest islet is skirted by a reef on the W. side, which, toward N. end, becomes connected to Medio-mundo Point by a bar, on which there are more than thirteen feet water, and the channel is only fit for boats. Between this a reef, which also skirts the shore between the above points, a narrow bight or cu sac is formed, at the bottom of which small vessels will find anchorage in three and fourths fathoms, sheltered by the islets to the Eastward, but open to the S. and Little Pinero is nearly connected to Great Pinero by a ledge on which there are thir feet water.

Lavanderas. THE LAVANDERAS are two small, shallow, rocky banks, which break. They lie N. E. by E. direction, one about a mile, the other nearly two and a fourth mile nearly the same bearing from the N. point of Little Pinero; they are steep to, and fathoms will be found close alongside them.

Piraguas. THE PIRAGUAS, to the Eastward of Lavanderas, are two small, rocky islet moderate elevation, about one mile and a third apart, and may be seen at some dist The Easternmost islet lies E. by N. ½ N about four miles from Little Pinero. They steep to, with a clear channel between them of not less than five fathoms. The La deras and the Piraguas lie on the S. side of the S. channel to Port Fajardo.

Directions. *Directions for the N. or Palominos Channel.*—A vessel bound to Port Fajardo, having passed to the Southward of Culebra, should bring the S. point of Southwest and Soldier Point (the S. end of Culebra) in one; and having run to the Westwa Palominos upon this mark, should bring the N. end of that islet on with either of above points, and continue on this course until the depth is six fathoms, about a fo of a mile from Cuava Point. Thence haul to the Southward, skirting the shore at a that distance, and when Obispo Islet bears E., anchor in from sixteen to twenty water. This route will lead to the Northward, and afterward to the Westward, of six-foot patch in the middle of the channel before mentioned; if wishing to pass to Southward of it, having rounded Palominos, steer so as to pass near Obispo, kee the peak El Yunque (the Anvil) bearing nearly W. by S. ½ S., or the N. point of Pa mos E. by N.

HE CHINCHORO are two dangerous banks, which often break, and lie, one a mile the other two and a half miles, S. ½ W. from the Eastern Piraguas. On the North- bank, which is of small extent, there are thirteen feet water, with five fathoms all nd. The Southern one, which is nearly half a mile long from N. to S. and three ths of a mile broad, has only five feet water on it, and is equally bold and steep to. essel may go between them, or between the Northern one and the Piraguas, but it be better to pass to the Southward of both. Mount Hoieste (Saddle ?), at St. mas, in one with Soldier Point, Culebra E. by N. ¼ N., will lead about a fourth of a e from the S. end of the Southern bank; it will then be prudent to keep Soldier nt a little open to the Northward of the mount, or to bring it to bear E. by N. ¾ N., ch will lead clear of all dangers between Bieques Island and the S. E. end of Puerto o. *Chinchoro.*

AHIA HONDA.—This bay is situated a little to the Westward of the S. point of lca Island, and is about a mile in extent, and open to the Southward; it is protected eefs which contract the channel from about a fourth to the breadth of a mile. The tern side of the bay terminates to the Southward in a low sharp point, named Puelca; W. side in a bold headland, crowned by a little hill; near the latter a dry rock will een on the reef, and of the former the Cabras, two small flat islets, covered with hwood. The reef, which bars the entrance, skirts also the interior of the bay, and e of the patches within have only thirteen feet water on them, but these and the reef easily seen. The river Aguas-Claras disembogues at the N. E. corner of the bay. *Bahia Honda.*

o enter Bahia Honda, having brought Puelca Point to bear about N. by W. ¼ W., r toward it, and the eye from aloft will be the best guide to lead a vessel up to, and ugh the reef, and she may anchor in from five to eight fathoms between the patches. anchorage, however, is so confined that large vessels had better lie outside the reef, he entrance, in six or eight fathoms. *Directions.*

LGODON BAY.—From the W. point of Bahia Aonda to Lima Point, four miles dis- , the shore recedes into a deep bight, in the middle of which, near the shore, is a little t, hamed Algodon, of moderate elevation. *Algodon Bay.*

IMA BANK is a flat rocky ledge, with only three feet water on it, about two cables ength from E. to W. It lies about E. ¾ S. two miles from Lima Point, and S. E. ¼ S. n Algodon Islet, and should be very cautiously approached in proceeding toward t Naguabo. E. by S. three fourths of a mile from Lima Point there is another small l lying on the S. end of the foul ground, which extends thence right across the bay Algodon Point. *Lima Bank.*

UERTO NAGUABO and HUMACAO are situated in the bay formed by Lima Point he N. E. and Icacos Point (which may be known by having near it a small rocky t to the S. W. The former port lies toward the middle, the latter near the S. end of bay. The towns of both are a short distance in the interior, on the borders of the rs which give them their names. About a mile to the Northward of the mouth of Humacao, and a short distance from the shore, lie the Morillos, two rocky islets; and wo miles farther to the N. E. is Santiago Islet, which is of moderate height, and from S. E. side a reef extends out in that direction more than a mile, and in some parts it is rly dry. These ports are said to be easy of access, although exposed to the trade- ds; but we have no further information respecting them. If bound to either, or to se which follow, from the Eastward, it will be better to pass to the Northward or thward of Bieques Island; the latter route, however, will be the best. *Puerto Naguabo and Humacao.*

UERTO JABUCOA lies to the Southward of Humacao, between Guellanos Point ich is a little to the Southward of Icacos) and Yeguas Point, and very nearly abreast W. end of Bieques Island; but we have no information about it. *Puerto Jabucoa.*

UERTO MAUNABO is formed by Cape Mala Pascua (the S. E. end of Puerto Rico) the S., and Tuna Point to the N. The town is situated some miles in the interior, on borders of the river which empties itself into the port. *Puerto Maunabo.*

UERTO PATILLAS lies six miles to the Westward of Cape Mala Pascua, in the ht between Viento and Figura points, which latter separates it from Guayama. *Puerto Patillas.*

he above ports are said to be well sheltered from N. E. to S. E., and in leaving them ch time will be saved by passing out through the channels already described, instead running to leeward round the W. end of Puerto Rico. *Directions.*

or this purpose, having beaten up to the entrance of the channel between Bieques Cape Mala Pascua, when standing toward the outer Lima bank, the W. point of ia Honda must not be brought to the Eastward of N. E. by N. When approaching N. end of the Arenas Reef, in standing to the Southward do not open out Cape Mala cua of Naranjo Point. When El Yunque, or Anvil Peak, is shut in with the hill on W. point of Bahia Honda a vessel will be to the Eastward of the Arenas Reef, and Southern boards may be prolonged. Do not, however, bring Cape Mala Pascua to Westward of S. W. by W. ¾ W., which will avoid the Mosquito, Corona, and Caballo nco banks, which lie off the N. shore of Bieques, in the neighborhood of Port Mula, sometimes break.

In standing to the Northward, go no farther than to bring Mount Hoieste (Saddle ?) a St. Thomas in one with Soldier Point (Culebra) E. by N. ½ N. until the vessel is to windward of the S. end of the Chinchoro Bank, which lies with the S. point of Palominos, in one with the Westernmost Piraguas. When the latter is in one with Zancudo Islet, N W. ½ W., she will be to the Eastward of the Chinchora Bank, and without the narrowest and most dangerous part of this channel, and may then work to windward without fear.

When sufficiently far to the Eastward, a vessel may pass out through the channel between the Barriles and Hermanos islets, which is two miles wide, and N. N. E. four and a half miles from the Easternmost Piraguas; or perhaps better, between Icacos, Cucaracha (the Westernmost of the Cordillera), and San Juan Head, according as the wind may be to the Northward or Southward of E. The last being the Westernmost, she may proceed through it as soon as she has rounded the E. end of the Piraguas, which, however must be given a wide berth, whichever channel may be adopted. Some of these channels have already been described.

With the wind from the N. E. a vessel may beat through in a day and a half, and with it to the S. E., may run through in half a day.

With a pilot it may be accomplished in much less time, as follows: After having rounded the N. point of Arenas Reef, steer to the Northward, so as to pass between the Western Lavanderas and the Little Pinero, or between the Lavanderas, which always break. Run round either the N. or S. end of Largo Bank, and thence round the W. end of Palominos, and through the channel by San Juan Head; but to do this the wind should be to the Southward of E. In passing between the Little Pinero and the Western Lavanderas, bring the outer extremity of San Juan Head on a N. by W. ½ W. bearing, which course will lead to the Westward of Largo Bank, and close up to the head.*

These directions, however imperfect, will serve to point out the most prominent dangers, and at the same time warn strangers not to get entangled among them without the assistance of a pilot.

Tides. The tides on the Eastern coast of Puerto Rico, run with great strength to the N. E. seven hours, and to the S. E. five hours.

N. Coast of Puerto Rico. THE NORTH COAST OF PUERTO RICO is rugged and uneven, and toward the E. end of the island of considerable elevation; it runs in nearly a straight line E. and W. and between San Juan Head (the Northeastern extreme of the island) and Port San Juan presents no shelter whatever. This shore, however, is very imperfectly known, but it appears to be skirted by a reef, enclosing numerous small cays and islets, over which the sea breaks most violently, and it should not be approached within the distance of three miles.†

Puerto de San Juan. PUERTO DE SAN JUAN lies about twenty-six miles to the Westward of San Juan Head, and is formed on the N. side by the Morro Island, two and a half miles long E. and W., and half a mile broad, which is separated at its S. E. end from the main land by a narrow boat channel, and connected to it by a bridge at the E. end. The city, which is the capital of the island, and strongly fortified, is situated on the steep slope of the S. W. side of the Morro, and is almost hid from the sea by the rocky ridge which forms the Northern shore.

Toward the E. and S. the harbor is sheltered by the low swampy land of Puerto Rico and on the W. by the Cabras or Goat Islands, and the shallow banks which connect them to the shore. The Cabras consist of four small islets and two small detached rocks close off their E. end, the nearest of which lies four cables' length to the Westward of the Morrow Point, at the entrance of the harbor. On the Southernmost islet, called Cayuelo, which is the nearest to Puerto Rico, and nearly a fourth of a mile from the largest islet, there is a fourth which commands the entrance. Between the Morro and the Cabras the channel into the port is barred, and with strong Northerly winds it breaks and becomes dangerous, although it carries a depth of from four and a half to five and half fathoms.

The W. side of Morro Island is foul to the distance of a cable's length. The buoy on the outer extreme end of this ledge, called the St. Helena Shoal, lies in fifteen feet water with the Western extremity of the ditch of the Morro in one with the only watch tower in sight on the S. side of the Morro. The channel is here little more than a cable and a half wide. Within this the edge of the Western bank sweeps round forming a deep bight called Port San Juan, which terminates in a sharp point at the Tablas Shoal. The marks for this shoal are, the angle of the guard-house of St. Ann's battery

* The Spanish Chart of this island, published in 1842, places a dangerous shoal called the Bajo Desbridor, nearly midway between Little Pinero and the Chinchoro, and S. a mile and one fourth from the Western Lavanderas.

† A small rock, with fourteen feet over it, and five and six fathoms around, is said to exist about twenty miles to the Eastward of Port San Juan, and three miles off shore.

which is situated on the bluff to the Southward of the Morro, in one with the above watch-tower.

Vessels intending to make a short stay will find this the most convenient anchorage, and the best berth will be found nearly abreast St. John's Gate, in five fathoms, between the Tablazo and St. Augustine shoals. The latter is a small point of the above ledge, lying nearly W. of St. John's Gate, and a little more than a cable's length from the nearest part of the shore. The buoy on the edge lies with the S. angle of St. Ann's battery in one with the watch-tower in the Morro, and the N. E. angle of Canuelo Islet in one with the S. end of the island close under Salinas Point.

A low, dry sand-bank, named the Puntilla, extends out a fourth of a mile to the Southward from the S. W. end of the walls of the city, and beyond that again, a shallow spit, named Puntilla Shoal, nearly two cables' length in the same direction, and terminates at the extreme end of the shallow ground on the E. side of the channel, which, between this and the Tablazo Shoal, is only about a cable and a half wide, with a depth of from three and a half to seven fathoms in it, the weather side being the boldest. The S. extreme of the Puntilla Shoal lies with the watch turret of the powder magazine next St. Ann's battery in one with the watch-tower on the S. side of the Morro, and the magazine of St. Jeronimo, at the E. end of the Morro Island, a little open to the Northward of Punta Larga.

To the Eastward of these sand-spits is what may be called the inner port, which carries a depth of from four to five fathoms, and is quite secure against all winds.*

"The inner channel is marked on either side by posts, with small white tin flags on them, denoting the depth of water; in standing in, those marked with black figures are to be left on the port hand, those in red figures on the starboard hand. Coals may be obtained, but they are expensive, and must be brought off in boats."†

Nearly S. S. E. from the mouth of the harbor, and in an E. and W. direction, are two ranges of small, uneven, wooded hills, of moderate elevation, separated by a small, low plain. At the foot of the highest hill on the Eastern range there is a plantation, the cultivated grounds occupying a portion of the Northern face. The summit of the Western range is almost flat, and hence is called the Maseti or Little Table, and is easily distinguished from the surrounding heights. On the Western extremity there is a white rock, which becomes visible on rounding the Morro.

Light. The light-house at the N. W. end of the Morro Island exhibits a brilliant flash light for eight seconds every two minutes. The light is elevated one hundred and seventy-four feet above the level of the sea, and is visible at fifteen miles.

Directions. The entrance to Port San Juan may be readily distinguished by the Morro castle and light-house, at the N. W. end of the Morro Island. In approaching the port from the Eastward, with the usual trade-wind, run down the N. side of the island at the distance of about three miles, until Salinas Point comes a little open to the Northward of Great Cabras Island. Steer in on this line until Little Table Hill is in line with the Morro Point, when haul in toward Fort Canuelo. When the highest hill on the Eastern range, described above, comes in one with the Morro Point; or (if the former cannot be made out) the flagstaff comes in one with the Northernmost watch-turret of the two on the N. W. battery (which is the lowest in the Morro castle) haul in for the Little Table.

Having rounded the buoy on the St. Helena Spit, and opened the S. end of the island which lies close under Salinas Point, to the Southward of Fort Canuelo, the vessel may be anchored as convenient, in the outer port, in five fathoms, abreast St. John's Gate. The Morro Point may be passed to the N. W. within half a cable's length, and if the buoys are in existence on the St. Helena and St. Augustine shoals, there will not be much difficulty or risk in following these directions so far; but a pilot will be absolutely necessary if wishing to proceed into the inner port.

With the wind from the Southward, having passed the Morro, shoot as far in as possible, and anchor, towing or warping up when the wind falls.

With the wind stronger from the Northward, the bar frequently breaks, and becomes dangerous on account of the difficulty of managing the steerage, and great caution and attention to the marks will be necessary. Moor with open hawse to the N. W., in the outer, and to the N. E. in the inner port.

Tides. It is high water, full and change, in Port San Juan, at 8h. 2m., and the rise and fall is about one foot and a half.

Tortuguero. TORTUGUERO is a small town, on the shore, about twenty miles to the Westward of Port San Juan; but this part of the coast, as far as Arecibo, should not be approached within three miles.

Arecibo. ARECIBO is a small reef harbor of considerable commercial importance, lying about

* Vice-Admiral Zahrtmann, of the Danish navy, states that the depth of the inner harbor has considerably diminished since the Spanish survey of 1793, and that ships-of-the-line and frigates cannot proceed farther in than the outer port.

† Remarks by Mr. F. Wise, Master, R. N., H. M. S. *Medea*, 1856.

twelve miles to the Westward of Tortuguero, but in the winter season it is only safe fo droghers and small vessels that can get inside the reef. At that period, vessels of larg draught will find anchorage on the bank, about two miles off shore; but they will rid heavily, and must be prepared to slip the moment the wind threatens to veer to th Northward or Westward. In the months of April, May, June, and July, they may ven ture farther in, and anchor under the reef in from three and a half to four fathoms.

The town stands on the Western side of the bay, and is protected by a circular fort t the Eastward of it; and about a mile to windward of the town a tower and signal-pos will be seen on a steep hill. Near the centre of the reef is the cut or channel for smal vessels; and at the E. end, between it and the cliff, there is a passage for boats.

Water. There is a rivulet of excellent water, deep enough to admit launches, at the N. E. en of the bay, near the town of Arecibo.

N. W. Coast of Puerto Rico. N. W. COAST OF PUERTO RICO.—From Arecibo to Point Peña Agujereada (o Pierced Rock), twenty-four miles to the Westward of it, the Northern coast of Puert Rico is flat, low, and sandy. It there takes a S. W. direction for a mile, and is forme of bold, rocky cliffs, which terminate at Bruquen Point, the N. W. end of the islan From this point the coast curves outward to the S. W. for about a mile, and again b comes low and sandy as far as Point Peñas Blancas (Whitestone Point). Bruquen Poi may be rounded within a mile, where the depth will be from twenty to twenty-five fat oms; but from the latter point a reef stretches off to that distance, and must be cautiou ly approached.

Aguadilla Bay. AGUADILLA BAY is the name given to the extensive bight formed between poin Peñas Blancas and San Francisco, about eight miles to the S. W. of it. There is no da ger in it whatever, except the sand-bars at the entrance of the rivulets on the Souther side of the bay, which extend off two cables' length; the whole shore is sandy, and skir ed by a narrow ledge of soundings about a fourth of a mile in breadth, and very stee The town of San Carlos, about two miles to the Southward of Point Peñas Blancas, situated on the shore and borders of a stream of excellent water, which runs through th centre of it.

Supplies. Aguadilla Bay is frequently visited, as it is an excellent place for water and all kin of refreshments.

Anchorage. Anchorage may be taken up anywhere in front of the town of San Carlos at from o to three cables' length from the shore; at the former distance, the depth will be abo four fathoms, and at the latter fifteen fathoms. The most convenient berth for larg vessels will be found, with a large house, just beyond the three-gun battery at the end of the town, bearing N. E. ½ E., the church E. ½ S., and the N. point of the bay by W., in eighteen fathoms, over good holding ground.

Directions. The only danger to be avoided, when standing for the anchorage in Aguadilla B from the Northward, is the Peñas Blancas ledge. Coming from the Southward, pa between Desecheo Island and Jigüero Point, and, in beating up, care must be taken keep that point—which is the W. extreme of Puerto Rico—to the Eastward of N. by to avoid the foul ground which extends from it as far as the S. W. end of the island.

In taking up an outer berth, be careful to see that the vessel is in soundings, and n to bring up too short, to avoid dragging off the bank, which is very steep to. In t winter season, when strong N. W. and N. winds occur, it will be advisable to quit t anchorage the moment a change threatens, and appearances generally give sufficie warning for that purpose. At this period, even with strong N. E. winds, a heavy, unea swell rolls into the bay, and sends a high surf on the beach.

Rincon Bay. RINCON BAY.—The coast, at one mile and a fourth to the S. S. E. of San Francis Point, curves in to the Eastward, and forms this small bay, which lies between Jigüe Point on the N. and Cadena Point, which bear from each other N. E. by N. and S. E. S., distant three and a half miles. It is well-sheltered from the usual trade-winds, b the ground is foul, and offers no good anchorage.

Añasco Bay. AÑASCO BAY is situated immediately to the S. E. of the former, between it and A garrobo Point, distant six miles. The river Añasco empties itself into the bay, and thrown up a shallow bar before it, which extends about half a mile from the shore; o side this there is a well-sheltered anchorage, with the prevailing winds, for vessels of largest draught.

Mayagüez Bay. MAYAGÜEZ BAY lies between Algarrobo and Guanajivo points, and is nearly fo miles wide, and a mile and a half deep. Within this line the depth toward the North part gradually decreases from ten to four fathoms toward the shore, but without it entrance is so blocked up with shoals that it is difficult for any but small, handy vess to work their way through without the assistance of a pilot.

From Algarrobo Point (which may be known by a house with a red roof, built up high piles on the hill, just above the point) the coast of the bay trends to the S. E. fo mile and a fourth, and terminates at the Puntilla or Little Algarrobo Point, in a lo sandy point, on which there is a sugar factory, with a chimney and some blue buildi around it. The shore between is foul to the distance of three cables' length, and S.

third of a mile from Algarrobo Point lies the bank of that name, which at the outer art is nearly dry and steep to.

About a third of a mile to the Southward of the Puntilla, at the bottom of the bay, is e entrance of the river Mayagüez, in which small droghers lay up for the hurricane eason; and before it is the best anchorage, sheltered from N. W., round N. and E., to W., and good holding ground. Thence the low line of shore bends round to the S. W., nd becomes shallow for some distance off, and N. one mile and a half from Guanajivo oint a spit runs off nearly a mile from the shore.

To the Eastward of the bay the land becomes elevated, and E. S. E. ½ E., about nine iles from the Puntilla, and a little to the Northward of the paps or hummocks of Cer- Gordo, there is a remarkable peak called the Cerro Montuoso, which is distinguished y its summit being crowned with two large trees, that give it the appearance of a ouble peak, and is a useful object from the offing. The village of Mayagüez is situated early a mile to the E. S. E. of the entrance of the river.

Tache du Large.

TACHE DU LARGE, or outer spot, called also Las Manchas, is the Northern and ntermost of the shoals at the entrance of the Mayagüez bight, and lies W. by N. ½ N. wo and a half miles from Algarrabo Point. It is about half a mile in extent, in a N. W. and S. S. E. direction, and carries a depth of from two and a half to four and half fathoms, and sometimes breaks. The dark discolored water may be seen at a ttle distance.

Inner Tache.

INNER TACHE, or spot, lies three fourths of a mile to the S. E. of the Tache du arge; W. ¼ N. one mile and three fourths from Algarrobo Point and N. by W. from uanajivo Point. It is half a mile in extent from N. W. to S. E. with two and a fourth three fathoms on it. Between it and the Algarrobo Reef there is an inner channel, a ile wide, with seven fathoms on it.

Allart Shoal.

ALLART SHOAL lies about two miles to the Southward of the Tache du Large and s fourteen feet water on it (some authorities say eight feet). It is about three fourths a mile in extent, N. and S., and nearly half a mile broad. The N. W. extreme bears from the Puntilla fort; N. by W. ½ W. from Guanajivo Point; and S. W. by W. ½ . two miles from Algarrobo Point. The passage between it and the Inner Tache is lled the main channel, and has irregular soundings of from four to five fathoms.

Rodriguez Bank.

RODRIGUEZ BANK.—The Northern edge of this shoal is about one mile and a lf to the Southward of the Allart, just without the line of the bay, and N. by W. one ile and a half from Guanajivo Point. It is about half a mile in extent from N. to S. d dry in several places. Between it and Guanajivo Point there appears to be a depth four and a half fathoms, gradually decreasing to the shore. Between the Rodriguez d the Allart there is a bar with thirteen to sixteen feet water on it.

Pierre Blanche.

PIERRE BLANCHE (white rock) is a small patch, nearly dry, lying just within the llart and Rodriguez shoals, W. by S. ½ S. from Puntilla Fort, and obstructs the pas- ge between these banks.

Directions.

If the wind will allow a vessel to lay in or out through the main channel into Maya- üez Cay, between the Allart and the Inner Tache, the best mark will be to bring the eak of Montuoso in line with the custom-house, bearing E. by S. ½ S. The latter ands on the edge of the shore, and is the Southernmost of four large houses, distin- uished from those around by having flat roofs; they are, however, so close together at a vessel will not go wrong by running with either of them in one with the peak. he custom-house may also be used in line with the village church, which has two tur- ts. Either of these marks will lead up to the anchorage off the town, into the depth ost convenient. The church in line with the peak will lead over the bar of the river twelve feet water.

In beating in a vessel may stand toward the Inner Tache until the custom-house and urch are in one, but to the Southward she must tack before the peak of Montuoso omes in line with the church, until she is within the bar. When the land to the South- ard of Guanajiva Point is shut in with that point bearing S., she will be to the East- ard of the outer banks. In coming from the Northward the channel may be taken etween the Tache du Large (or las Manchas) and the Algarrobo Bank. In this case ke care not to haul in round Algarrobo Point until the peak of Montuoso opens S. of e chimneys of Vico's sugar-house, which is white, and a conspicuous object near the ore, N. of the Puntilla battery.

There is said to be good anchorage for large vessels outside, to the Westward of the oals, but it should be taken with very great caution, as we have no satisfactory ac- unt of the neighborhood.

H. M. steam-vessel *Medea* anchored in this bay in five fathoms, with Guanajivo Point S. W. ¼ W., Algarrobo Point N. N. W. ¾ W., and Montuoso Peak E. ¾ S.; the church hich is a remarkable building, with a tower on each end, being a little to the South- ard of the peak. In running into the bay the church was kept on an E. by S. bearing til abreast of Algarrobo Point, when the peak was steered for E. ¾ S., which led to e anchorage. Water was obtained from the river, and there is an excellent market r poultry, fruit, &c.

Tides. The rise and fall in Mayagüez Bay is from two to three feet, but the periods are i regular.

Puerto Real de Cabo Roxo. PUERTO REAL DE CABO ROXO, situated S. ½ W., about five and a half mile from Mayagüez Bay, is almost a circular basin three fourths of a mile in diameter wit a depth in the centre of sixteen feet. The channel, which is very narrow, carries eightee feet water, and lies near the S. part of the entrance. From the N. point an extensiv reef runs off, which after skirting Cayo Fanduco, terminates at Varas Point.

Boqueron Bay. BOUQUERON BAY lies S. by W. ¾ W. two and a half miles from Puerto Real, be tween Guanaquilla and Melones points. The bay is two and a half miles wide, but be ing obstructed by numerous shoals both within and without, it affords no safe anchor age; indeed, it will be seen from the following description that the shoals off this en of Puerto Rico, between Mayagüez and Cape Roxo (the S. W. end of Puerto Rico), ar so numerous and so imperfectly known as to render it not only difficult but dangero to approach either of the above places.

Negro Shoal. NEGRO SHOAL is of small extent, and almost always breaks. It lies three and half miles from the nearest part of the shore, with Guanajivo Point E. by N. ½ N., an Jiguero Point N. ¾ W.

Las Coronas. LAS CORONAS are sand-banks which just cover and sometimes break. They li to the Southward of Negro Shoal, with Guanajivo Point bearing N. E. by N., and Jigue ro Point N. ½ W.

Media-Luna. MEDIA-LUNA is another shoal said to lie outside Las Coronas, at five miles fro the land, and is described as a reef nearly three fourths of a mile long from N. to S about a fourth of a mile broad, and always breaks. From its N. end Guanajivo Poi bears N. E. by E., and Jiguero Point N. Half a mile E. N. E. of it are three d rocks, over which the sea breaks, but the existence of both rocks and reefs is very muc doubted.*

Guanaquilla Shoal. GUANAQUILLA SHOAL is a rocky ledge about three cables in extent, with a dept on it of three fathoms, lying about two miles to the Westward of Guanaquilla Poi with Guanajivo Point bearing N. by E. ¾ E., and Jiguero Point N. ¾ W.†

Gallardo. THE GALLARDO, lying W. almost six and a half miles from Melones Point is als a rocky shoal of three fathoms, about three cables in extent, from which Desech Island bears N. by W. ¾ W.; Monte de Atalaya N. by E. ¾ E. and the S. extreme of th Morillos E. S. E. The latter are some remarkable little hills near Cape Roxo, the S W. end of Puerto Rico. Monte de Atalaya bears S. E. by E. from Jiguero Point an is situated near the shore at the N. end of Anasco Bay, and is the highest and Northern most of the two peaks at the W. end of the range. It is very remarkable and do not alter its appearance when seen even from off the S. end of Desecho Island.

Cape Roxo. CAPE ROXO, the S. W. point of Puerto Rico, slopes down from a double-peaked hil to a bold headland, and when first seen from the Eastward or Westward has the appear ance of two islets lying under high land; when made from the Southward two remark able projecting cliffs will be observed to the Eastward of it. A good fishing-bank o clear white sand and coral, called the White Grounds, extends eight or nine miles fro the cape, on which the depths are from six to fifteen fathoms; the edge is very stee to, and the bottom is visible in twelve or thirteen fathoms.

S. Coast of Puerto Rico. THE S. COAST OF PUERTO RICO is generally foul, and should be very guarded approached; for, as already observed, we possess very little correct information respec ing it. It appears, however, that in some parts soundings extend to a considerable di tance from the shore, and the lead should, therefore, be well attended. In running dow it is advisable not to come within four or five miles of the land. From the offing th side of the island appears lofty, but the shore is generally low and bounded by ma groves. No less than sixteen small rivers empty themselves into the sea from this shor but few are capable of admitting even boats. There are many small harbors and a chorages under the reefs, known to the fishermen and droghers, and one or two capab of receiving vessels of a large draught. The first of these, proceeding Eastward fro Cape Roxo, is Port Guanica.

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* Capt. J. V. Baker, R. N., who commanded H. M. S. *Arachne* in 1834, states that "the bank call Media-Luna has certainly no existence as laid down; by our bearings we were not a fourth of a mi from this reef, but could see neither rocks, nor broken water, nor any appearance of danger, and had s fathoms water. We were a great deal on this bank of soundings, always keeping a good lookout, a the lead going in from nine to six fathoms, but we never discovered any danger; had those mention in the present directories been correctly laid down, we must have seen them, when approaching—as several times did—very near their imaginary positions. On one particular spot, Cape Roxo, bearin S. E. By E. eight or nine miles, we always found a cross and heavy swell in eighteen and twen fathoms; this may arise from irregularity of ground, but it was certainly very singular, as the wa around it was smooth. The bottom may be seen in ten and twelve fathoms. The outer edge of t bank bears S. by E. ½ E. from Desecher, and is very steep."

† The Spanish chart of the island before referred to shows no shoal ground in this position, b places a bank called Las Coronas four miles N. W. by W. from Guanaquilla Point, with Guanaj Point N. E. ½ N. and Puerto Real E. by S.

PUERTO DE GUANICA.—This port, or rather inlet—fit for vessels of all sizes and the best harbor on this side of the island—lies about fifteen miles to the Eastward of Cape Roxo, and is about one mile and a half long, N. W. and S. E., and a fourth of a mile wide, with a depth of three and a half fathoms water at its inner end, and four and three fourths fathoms at its Eastern, over a sandy bottom. Its entrance, which is formed between two bold headlands, Meseta Point on the E. and Pescadores Point on the W., a little more than a cable wide and is situated toward the N. W. end of a large bay formed between Brea Point, a bold and rocky cliff, and Picua Point, three miles to the Eastward of it. *Puerto de Guanica.*

Close off Picua Point are two small islets, called Cana and Cana Gorda. Between them and Meseta Point, an unbroken, semi-circular reef sweeps round outward to the distance of three fourths of a mile from the shore, and without this, four cables' length off, there is a detached, narrow, rocky ledge three cables long, in a N. and S. direction, and carrying a depth of only twelve feet water. The S. end of this ledge lies S. S. E., a mile from Meseta Point, and on a line between the points of the bay, with the S. end of Cana Gorda E. by N. The Western shore between Pescadores and Brea points recedes into a deep bight, which is blocked up by a reef extending across from the former to within a fourth of a mile of the latter, and is steep to.

Approaching Port Guanica from the Eastward, run down outside the reefs until Meseta Point is brought in one with the Western pap of Cerro Gorda, which may be easily recognized. This mark will lead in close alongside to the Westward of the outer ledge in ten fathoms. The point on with the Eastern pap will lead more in mid-channel, and when Cana Gorda bears E. ½ N. a vessel may steer for the centre of the channel into the harbor. Run boldly through between the entrance points, and take up the most convenient berth within, where there is nothing in the way, and the S. W. shore will be found the boldest; but observe that the farther a berth is chosen to the Eastward the easier will it be to sail out. In beating up from the Westward, Brea Point may be approached without fear, but be cautious of the reef in front of the Western bight. *Directions.*

PUERTO PONCE is fifteen miles to the Eastward of Guanica, and seven miles N. W. of Muertos Island. Its entrance, which is open to the Southward, will be found by the village coming in sight, and a small fort which stands on the beach a little to the Westward of it; but we can give no particulars of its capacity. The shore is here very low, and bounded by mangroves and cocoanut trees, which hide the town until abreast of it. Three fourths of a mile from the fort a small sandy cay will be seen, covered with brushwood, and with breakers off its E. end. There appears to be no other danger near it, but the water is discolored for two or three miles to the Southward, with irregular soundings as far out as the parallel of Muertos Island, and S. of the bay as little as three fathoms water will be met with. *Puerto Ponce.*

Coming from the Eastward, having rounded the small cay off the S. W. end of Muertos at about a mile and a half, a N. W. ½ N. or N. W. by N. course will lead off Port Ponce, with regular soundings on a sandy bottom. A vessel must pass to the Eastward of the cay above mentioned, near the fort. If it blows fresh, the reef which is passed on the starboard hand will appear to break right across the entrance, but as it is approached it will be seen that it does not reach far from the shore. Pass the breakers within two cables' length, and keep the Southern shore of the harbor on board. *Directions.*

The following are remarks by Mr. C. F. Cooper, Master of H. M. S. *Brilliant*, which ship visited this port in 1856: "The harbor of Ponce is snug and safe, but difficult of approach, even with a local pilot on board, and great caution must be used, especially if the vessel draws much water.

"On going in with a pilot, the *Brilliant* crossed a bank of four fathoms; and on running out with the same pilot, she slightly grazed the ground, having three and a half fathoms on one side and four fathoms on the other, with the centre of the town bearing N. by W.; Cabullon Island W. by N. and Muertos Island S. E. by E. This bank is almost two and a half miles from the shore, but there are five fathoms much farther out. In running for the harbor, the town was kept open of the point bearing N. by E., and no soundings were obtained till within half a mile of the point, when the vessel hove to for the pilot; and it was standing out again, prior to bearing up for the anchorage, that the four fathoms was obtained; I therefore think that the town should be kept N. by E., but certainly not to the Westward of N."

MUERTOS or DEAD CHEST ISLAND lies nearly midway off the Southern side of Puerto Rico, four miles from the shore, and thirty-six miles from Cape Roxo. It takes its name from its N. end having the appearance, at a certain distance from the Eastward or Westward, of a coffin, or more properly a gun quoin, with its thick end to the S., which is of considerable elevation. The centre part of the island is low and sandy, and the S. end terminates in a lofty, rocky peak, which, at certain distances, has the appearance of a separate islet. It is nearly connected to Puerto Rico, by a reef, which commences at the N. E. end of the island, and in general breaks heavily. This reef appears also to skirt the E. and S. sides, and from the latter it stretches off half a mile. *Muertos or Dead Chest Island.*

At three miles E. N. E. from Muertos Island are two cays named Berberia, and i their neighborhood are many dangerous banks, very imperfectly known. With the i land bearing W. three or four miles, the depth is six fathoms. From the hills whi water is seen a considerable distance to the Eastward; the lead must, therefore, be wa attended. About a cable's length from the S. W. end of the island, and connected to i by a dry reef, there is a small flat cay called the Hammock, which should not be round ed within the distance of a mile and a half.

Wood and Water. Firewood is to be obtained on Muertos Island, and water will be found by diggin wells in the sand beaches a little above high-water mark. There is also good fishin and plenty of turtles at the proper season.

Anchorage. The Western side of Muertos Island is free of danger, and affords good anchorage i from seven to twelve fathoms water. A good berth may be taken with the S. E. end the Hammock S. W., the same cay S. by E., and the N. W. point of Muertos in one wit the Northern hill E., in eight fathoms at about half a mile from the shore. Off the lo land of the island the soundings are regular, but to the Northward of it the depth i much greater, being seventeen fathoms close to the shore. Anchorage will also be foun with the W. end of the Hammock S. by E. ½ E., distance a mile and a half, and the N end of Muertos N. E. ½ E.

Boca Chica. BOCA CHICA.—This small trading place is situated N. four and a half miles fro Muertos Island, and it is said there is no danger in approaching it. The soundin gradually decrease from seven to four fathoms as the Puerto Rico shore is approache and the lead must be the guide.

Puerto de las Salinas de Coamo. PUERTO DE LAS SALINAS DE COAMO is a safe reef harbor, about fourteen mil to the Eastward of Muertos Island, which is in sight from it. Its entrance may be know by several small cays lying off the shore, and a guard-house, which will be seen wh running down from outside them. The channel lies between the outer or Westernmo cay, which is about four miles to the Southward of the guard-house, and a reef, a mi and a half to the Westward of it, which always breaks. At nine miles to the Westwa of the reef are two more small cays, one of them appearing double.*

Water. There is a good watering place in Port Salinas de Coamo, on the shore near a lagoo about half a mile to the Westward of the guard-house.

Directions. Discolored water extends off a considerable distance from the cays off Port Salinas d Coamo, and three miles off the depth is twelve fathoms, which will decrease to sev fathoms as the shore is approached. Having rounded the Western cay at the entran within a cable's length, steer boldly in between the Eastern cays and the reef, towa the guard-house, and anchor in four or five fathoms, with the latter bearing N. ½ about a mile distant. In leaving the anchorage, if bound to the Westward, stand w out to the Southward, into an offing of two or three miles from the cays, or until Mu tos Island is to the Northward of W., before keeping away.

Guayama. GUAYAMA, although merely an open roadstead, is secure with the ordinary win and much frequented. The anchorage possesses excellent holding ground, and is pr tected to the Eastward against the trade-winds by a reef three miles in length, which e tends three or four miles from the shore. It lies about twelve miles to the Westwa of Cape Mala Pascua, and may be recognized from an offing outside the reef by a guar house on the shore, which bears about N. by E. from the W. end of the reef; and a win mill on a hill a mile to the Westward of it. To the Eastward of the reef, between it a the cape, the depth is from ten to seven fathoms at two or three miles from the sho and thirteen fathoms within a mile outside to the Southward of it. As the anchorage approached, the soundings become very irregular, varying from five to eight fathom until within the reef, when they gradually decrease as the shore is neared; the le must therefore be well attended.

Directions. When approaching Guayama Roadstead from the Eastward—or, indeed, if bound either of the ports on this side of the island from that quarter, Cape Mala Pascua shou be given a berth of four miles, and when it bears to the Eastward of N., the Guayam Reef will generally come in sight from aloft. Shape the course to pass well outsi paying attention to the lead, and when the guard-house bears N. by E., haul in towa it, under the W. end of the reef, and steer boldly in. The best anchorage will be fou in four fathoms, about a mile from the shore, with the guard-house on the same bearin and the W. end of the reef S. by E. In leaving the bay, if bound Westerly, steer o S. S. W.; but a good offing must be obtained before bearing up, in order to avoid t cays and reefs to the Westward.

Arroya. ARROYA.—When off Crab Island, the S. E. point of Puerto Rico, Cape Mala Pasc can be plainly seen, bearing about W. by N. The land rises abruptly from the wate edge to the height of several hundred feet, and forms a high semi-circular bluff. Fro

* These are most probably the Berberia Cays, before noticed, but the direction given in the pres directories, to leave them to windward when running in, must be an error.

point to the harbor of Arroya, the course is nearly W., nine miles distant. A reef nds nearly the whole distance, lying from two to three miles off shore, and on most s of it the sea constantly breaks. When the S. E. point bears N. five or six miles ant, steer W. ½ S. nine miles, which will bring you up to the harbor of Arroya; and n the custom-house, which is a large square building of a yellowish white color, rs N. by W., steer in for it, and anchor within three fourths of a mile of the shore, custom-house bearing N. This harbor is much exposed, and there is a constant roll ea setting into it from the S. E. Lying at anchor in this harbor, the following bear- were taken:

Eastern point of breakers	S. E. three miles.
Western " "	S. W. four and a half miles.
Eastern point of land	E. S. E. two miles.
Western " "	S. W. by W. ½ W. six miles.
Custom-house	N. three fourths of a mile.

Winds.

he winds around Puerto Rico appear to be of the same character as those met with he Virgin Islands. There is no regular land breeze to take advantage of, although usual trade-wind generally slackens during the night in the immediate vicinity of shore. Under the W. end the wind in the daytime will incline inward. In the ter months N. and N. W. winds sometimes occur, and blow hard; and in the summer g calms and light S. E. airs will prevail, with terrific squalls and heavy rains, espe- ly on the S. side. From the absence of any remarks on the rollers, we may con- le that they are at least not so heavy or so dangerous as at the Virgin Islands.

Currents.

n the N. side of Puerto Rico, the current is said to incline generally to the S. W. oward the shore, and to run with greater velocity in the winter than in the summer ths. On the S. side, its course is generally W., but its movements are here uncer- . Some navigators state that at the full and change of the moon a strong weatherly will occasionally be found, especially if light winds or northers have prevailed near e periods, and consequently gives great assistance to vessels beating to windward. he summer months it will incline to the N. W. toward the shore, and round the W. end into the Mona Passage with great force. This is probably owing to the great y of water thrown out in this direction, at this period, from the great rivers of Terra- a.

The Mona Passage.

HE MONA PASSAGE, between Puerto Rico and Hayti, is about sixty-six miles e, and receives its name from two small islands named Mona (ape) and Monito (little key), which lie nearly midway across on the S. side, between Cape Roxo and Saona nd.

Mona.

ONA, the largest of these islands, is nine miles long in a N. E. and S. W. direction, from two and a half to three miles broad. Its sides are formed of white perpen- ular cliffs about one hundred and twenty feet high; its summit is nearly flat, covered h brushwood and grass, and may be seen eighteen miles off. The S. W. end is some- at lower than the other part; and from the base of the cliff a low sandy spit, also ered with stunted wood, extends off some distance, and forms this end of the island. hoal runs one cable and a half off this point; and in rounding it, at the distance one fourth of a mile a vessel will have eight fathoms, and she should not come within t depth. The S. side is also foul to some distance, and the depth is seventeen fathoms one mile and a half from the shore.

The Eastern and Northern parts of the island are said to be clear and steep to, but information is very imperfect. The N. W. end terminates in a bold headland, and, en on a N. ½ E. or S. ½ W. bearing, there will be seen near it a lofty perpendicular k, having the appearance of a sail, with Monito open to the Westward of it. From bluff the Western shore is skirted by a broken reef, dry in places, to the distance of cable and a half,* through which a boat may, with some difficulty, pick its way he landing. The best opening will be found with the S. W. end of the cliff bearing S. E.

Water.

A little to the right of the landing on Mona Island, there is a pathway leading to the ering place under the Southern cliffs, and here also firewood will be found.

Anchorage.

The best anchorage will be found in the bay between the N. W. and S. W. points of a Island, with the latter point bearing S. ½ W. one mile and a half, the former N. ¾ N., the S. W. end of the cliff E. S. E., and Monito N. ¼ E., in seven or eight fath- . The soundings here are regular, with a sandy and grassy bottom, and the depth our fathoms close to the edge of the reef; but the ground to the Northward of this ocky and foul.

Directions.

o approaching the anchorage of Mona Island from the Southward—having rounded ledge off the S. W. point, as directed above, and brought it to bear E.—haul up,

* Some authorities say three cables.

and if the vessel cannot fetch in, stand freely to the Northward; but on the South board take care not to bring the S. W. point to the Westward of S. by W., to avoid reef which skirts the shore.

Monito. Monito lies about two and a half miles to the N. N. W. of Mona, with a clear chan between them. This little islet is only about two cables long and a cable broad, and sides are composed of steep inaccessible cliffs, but much lower than those of Mona. is quite barren, and inhabited by numerous flocks of sea-birds. At a distance its su mit has the appearance of a shoemaker's last.

Tides. It is high water, full and change, at Mona Island at 6h, 15m., and the rise is ab two feet. The flood sets N. by E. and the ebb S. by W., at the rate of half a knot.

Desecheo or Zacheo. DESECHEO or ZACHEO, the other island in this passage, lies N. E. by E. ab thirty miles and in sight from Mona, and W. ½ N. eleven and a half miles from Jigu point, the W. extreme of Puerto Rico. The island is about a mile in circumferen and almost entirely composed of remarkable lofty wooded hills which may be seen the distance of thirty-six miles. The few dangers which lie close to the shore alw show themselves, and are steep to. When seen from the S. W. the S. side appears v precipitous; but from the Northward it appears more lengthened out, and it will found a very useful object in navigating the Western side of Puerto Rico. There is anchorage under it.

Bank in Mona Passage. MONA PASSAGE.—There is a bank of four fathoms in the Mona Passage, from the island of Desecheo bears N. ¼ W. nineteen miles distant; Point Jigureo N. N. E., distant twenty-one miles; Point Aquila E. S. E., distant fifteen miles; it is fif miles from the nearest land of Puerto Rico. It was discovered by Capt. W. M. Wal U. S. steamer *De Soto*.

Directions. The Mona passage is very frequently chosen by vessels proceeding from North Am ica to the ports on the Spanish main, and the islands to leeward of it; and by th from Europe bound to Jamaica, or the ports on the S. side of Hayti and Cuba; es cially in the winter season, when the wind hangs to the Northward of E. In s cases the voyage from North America will be somewhat lengthened; but the seem which it offers fully compensates for the great risk incurred in the shorter route thro the Bahama channels. Vessels from Europe must be careful not to pass to the Sou ward of lat. 19° N. until they are well assured of being to the Westward of Aneg It has been stated that there is no danger to be feared in the Mona Passage; we m however, caution the navigator not to be too eager to keep away, and to give Saona and, which is low and foul, a berth of at least four miles. He must also be very wa ful of the violent squalls which assail this opening, particularly in the summer, w they assume the character of tornadoes, and oblige the sail to be reduced quickly bare poles; appearances, however, generally give sufficient warning.

It will always be more prudent to keep the Puerto Rico side aboard, where a ve will be less influenced by current and tidal stream. This, however, requires extr caution, for, as we have shown, the W. side of this island is imperfectly known, evidently very dangerous.

Current and Tidal Streams. The current is generally strong in the Mona Passage, and sometimes runs at the r of a knot to the N. and N. W. The tidal streams also run with great velocity, part larly on the Hayti shore to the Southward of Cape Engaño, where, in May, they h been known to run three and a half knots an hour; the flood to the S. W. for nine ho and the ebb three hours to the N. E. At some periods the duration is directly oppo and at others they run the usual time of six hours each way. This great irregula is probably the cause of the accidents which sometimes occur in this neighborhood.

THE GREATER ANTILLES—HAYTI OR SANTO DOMINGO.

Hayti, or Santo Domingo. HAYTI, OR SANTO DOMINGO.—The form of this island is very irregular, an shores are in many parts deeply indented, particularly at the E. and W. ends. extreme length from E. to W. is about three hundred and fifty miles, and its extr breadth, which is nearly in the middle between Alta Vela and Cape Isabella, about hundred and fifty miles; but for some distance, its E. end is not over forty miles ac and its W. end from fifteen to twenty-five miles. It is exceedingly lofty, the Cib great range of irregular mountains, which occupy the middle portion of the island, ing near the centre, at the peak of Yague, seven thousand four hundred and fifty fe

Saona Island. SAONA ISLAND.—The S. E. end of Hayti may be said to terminate at the Islan Saona, for the space between it and the opposite shore is so obstructed by reef and banks, as to leave only a passage through for boats. Saona Island is covered with tr and on a W. N. W. direction, is about sixteen miles in length, and five miles wide a broadest part. The N. E. point is composed of bold, rocky cliffs, of moderate elevat but its S. E. point is low, and from it a dangerous ledge stretches off in that direct to the distance of nearly three miles; it breaks within a mile of the shore, and bey that distance the depths are four and five fathoms. Soundings of from seven to fathoms extend out four or five miles from the S. side of the island.

here is a good anchorage about three miles to the Westward of the S. E. point of na, in front of a sandy beach, called Bahia Cabello; be careful, however, to avoid a gerous shoal lying about two miles to the Southward of the bay, where the sandy ch ends, and the shore becomes rocky, on which there are only six feet of water, and reaks in heavy weather; and also another shoal a fourth of a mile N. W. of it, with n nine to eighteen feet, and deep water between them. The W. end of the island lso foul, and a reef extends from it to the N. W., toward Pamilla Point, which ld be cautiously approached in beating up from the Westward; there is a passage een it and the point for boats. *Anchorage.*

Water and wood may be obtained at the above anchorage. *Water and Wood.*

ATALINA.—N. W. ½ W., five and a half miles from the N. E. end of Saona, is the e island Catalina, from which a dangerous horseshoe reef extends toward Saona, ugh which, in a cut near the latter, a depth of six fathoms may be carried into a tered anchorage, with Catalina bearing N. by E. The N. shore of Saona is bold il the reef is approached; but the sea rolls in so heavily, and the currents run round end of the island with such force and uncertainty, that this bight had better be ided altogether, and the island not approached within four or five miles. Catalina lso nearly connected to Hayti by a similar reef, extending off from Granchora nt, leaving a channel near the islet, but too dangerous for a stranger to attempt. *Catalina.*

AST COAST OF HAYTI.—From Cape Falso, which lies N. W. about five miles a the N. E. point of Saona, the shore of Hayti trends to the Northward for three s, and is formed of remarkable limestone cliffs, from one hundred and fifty to two dred and twenty feet high; it then turns abruptly to the E. S. E., as far as Espada nt, six miles distant. *E. Coast of Hayti.*

IVER HUMA or HIGUEY is situated at the bottom of the bight formed between e Falso and Espada Point. There are generally eight and a half or nine feet water he bar, and twelve feet within. To the Eastward of the entrance, off the sandy ch of Playeta, there is an exposed anchorage in twelve fathoms. *River Huma or Higuey.*

ood water may be obtained by ascending the river Yuma in a small boat, as far as Embarcadero, or embarking place for mahogany. *Water.*

APE ENGANO.—From Espada Point, the coast trends N. N. E. fourteen miles to e Engano, the extreme E. end of Hayti. Espada Point is a remarkable bold cliff of erate height; the cape terminates in a long low point. The land rises a short dis- e from the cape into two small hills, which, when seen on a W. by S. bearing about teen miles distant, have the appearance of a wedge. In clear weather, this end he island may be seen from Puerto Rico.* *Cape Engano.*

HITE GROUNDS.—Soundings are said to extend some distance from this part of coast of Hayti, on a bottom of white sand, which discolors the water, and from this umstance it, and many others of a similar character off different parts of the coast, ive the name of Placenas Blancos or White Grounds. They are not, however, al- s composed of clear sand, for in many parts small sharp-pointed rocks protrude nselves, and are not easily seen. *White Grounds.*

his part of the island is rich in mahogany, and between the point and the cape are ral small sandy bays, whence it is shipped; but the shore being skirted by a ken reef, and completely exposed, they are not only difficult of access, but danger- to approach, even in the fine weather months.

mall vessels drawing six feet water, and ship's launches, may find their way through ral cuts, into tolerable shelter for landing within the reef; but large vessels are ged to anchor a mile or more outside, and accidents frequently occur. In the winter son, communication with the shore is sometimes impossible for weeks, and vessels are asionally obliged to leave, without being able to take on board any cargo at all. best sheltered spot appears to be off the river Yuma. *Anchorage.*

HE COAST from Cape Engaño to Cape Rafael trends nearly in a straight line to N. W. for forty miles. This space also abounds in mahogany, and is very similar character to that described, except that the broken reef which skirts it appears xtend to a greater distance off shore. There are several openings which admit ghers to shelter off the loading beaches, but being entirely exposed to the N. E., the horage on the bank outside is only safe for large vessels in those months when the e-wind veers to the Southward of E., and then it requires good, and plenty of spare and tackle. *Coast.*

APE RAFAEL.—The extreme of this cape is rather low, but about two miles in- d, and to the Southward of it, there is a remarkable isolated conical hill, of con- rable elevation, called Mount Redonda or Round Hill, which, at a certain distance n the N. W. and S. E., has the appearance of a detached island. *Cape Rafael.*

ABEZA DE TORO is the first landing-place to the N. W. of Cape Engaño. There *Cabeza de Toro.*

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e native pilots call Cape Engaño, of the present charts, Punta Espada, and the latter Cape Rafael.

are two cuts in the reef of it, and in the leeward one, called La Naybe, a depth of ten twelve feet may be carried through. Large vessels anchor outside the reef in ten twelve fathoms, over a bottom of sand and rock.

Babaro. BABARO, about six miles from the above, is considered a somewhat safer anchora as the reef lies close to the shore, and the sea is smoother. The anchorage for la vessels is in ten or twelve fathoms, from a mile to a mile and a half from the land. T beach is sandy, and the loading may be effected with rapidity when there is no Nor easterly wind or heavy ground swell.

Los Ranchitos. LOS RANCHITOS, at nine miles beyond Babaro, has two small openings before but with only four or five feet water in them, and the best anchorage is about two mi off shore.

Arena Gorda. ARENA GORDA, about two miles to the Westward of Los Ranchitos, has th passages through the reef, and a vessel drawing five feet can safely pass to the anch age within. Vessels of large draught lie in ten to twelve fathoms at about two m from the shore.

Macao. MACAO, nearly midway between Cape Engaño and Rafael, is a small bay about miles wide and a mile deep. It is protected on the North by a reef, which connects self to two remarkable small rocky islets, high out of the water, which are good la marks for the place. The Eastern or windward one, called Cabezote Barlovento, close off Macao Point, leaving a boat channel between; the other, Cabezote Sotaven or El Infiernito, lies about half a mile from the shore, and to the Eastward of the trance to the river Amamuya, before which there is an extensive oyster bank. Th is also a boat channel close to leeward of the Barlovento, and the anchorage is al half a mile to the Northward of the reef.

Anchorage. There is no opening or safe anchorage between Macao and Cape Rafael.

Gulf of Samaná. GULF OF SAMANA.—From Cape Rafael the shore turns abruptly to the W ward, and runs almost straight in that direction for forty miles; it then bends sl round to the Northward for ten miles, and then to the Eastward for nearly thirty mi forming the great bay or gulf of Samaná, which terminates at the extremity of latter shore in the bold promontory of that name, twenty-one miles N. W. by W. from Cape Rafael.

Port Jicaco. PORT JICACO, or English Harbor, lies about eleven miles to the Westward of C Rafael, and its entrance is pointed out by a remarkable rock near it, which may be s six miles off, and which also directs to the channels Barlovento and Sotavento. To in, bring a lofty double-peaked mountain inland, to bear S. by W. Keep the hummo (the rock ?) between the peaks, and anchor in five and a half or six fathoms water, w in the reef, and about half a mile from the shore. Great precaution is necessary, an stranger should not run to leeward of the cape without a pilot.

Banistre Reef. BANISTRE REEF.—From Jicaco Point the leeward part of Samaná Gulf is c pletely sheltered by a dangerous impassable barrier reef, which sweeps outward i N. W. direction, as far as the Levantados or Banistre Cays, leaving a channel into gulf between them and the N. shore about a mile in breadth. From the cays the sweeps round irregularly to the S. W., and connects itself again to the shore near C rados Point, eighteen miles to the Westward of Jicaco. The interior of this great b is said to afford ample space and secure anchorage for ships of the largest class, this is all that is at present known about it. The principal places visited by sm vessels on the Southern shore, are Savana de la Mar, and the bay of San Lorenz Perlas.

River Yuma. THE RIVER YUMA, the most considerable stream at this end of Hayti, flows the Western end of the gulf of Samaná, and drains the great plain of La Vega; but b ing only four or five feet of water on the bar, it is only navigable for boats, which ascend to within a short distance of Cotuy, a town about forty miles in the interior.

Samaná Peninsula. SAMANA PENINSULA.—The E. end of the peninsula terminates at Cape Sam which forms a bold double white cliff of moderate elevation—the upper rising a sh distance within the summit of the lower—about a mile in extent from N. to S., and s to. At about three miles to the Westward of the cape, between Balandras Head Grapin Point, and Cape Cabron, the peninsula is ten miles across, and this is abou general breadth, from N. to S. In the old charts it appears that Samaná was at period an island, and separated from the main shore by a channel of sufficient dept enable small vessels to convey the commerce of the gulf to the Northern ports for s ment; but it is now quite filled up.

The shore of the peninsula, between Cape Samaná and Cape Cabron, which bear W. and S. E. from each other, distant four and a half miles apart, forms a deep bigh which are several small cays skirted by a reef. The latter cape is also a cliff form a bold perpendicular headland, and five miles to the S. W. of it the hills terminate remarkable peak nearly two thousand feet high. To the Southward of Cape Sam the rocky shore takes a S. W. direction for eight and a half miles to Balandras He the latter is a remarkable red cliff lying at the foot of Mount Diablo, which, at one

a half from the shore, rises to a peak thirteen hundred feet high. About half a to the N. E. of the head, at the S. end of a small sandy bay, there is a remarkable with three large fissures, and between it and the Head, at a cable's length from the re, lies a small rocky isle called Grapin Cay. A small reef breaks at a short dis- e off the extremity of Cape Samaná, but the shore just described is clear and steep until abreast of Balandras Head, when the depth decreases suddenly to six and a fathoms a mile off, and the soundings become very irregular. From Balandras d, the coast turns sharp to the Westward, and at a mile and a half beyond it is ao Point, a low bluff on which there is a battery of five guns, that protects the en- ce into the gulf; foul ground extends about a cable's length from the point. At a and a half farther to the Westward is Viñas Point, on which there are some huts, a little to the Eastward of it two small cays, the largest called Bonome Island.

ANISTRE CAYS.—Immediately abreast of the S. shore of Samana Peninsula, and ut a mile distant from it, are the Lavantados, or Banistre Cays, which, as already ob- ed, lie on the S. side of the only ship-channel into the gulf. Banistre Cay, the lar- , is half a mile long, in an E. and W. direction, and nearly a fourth of a mile broad, hundred and fifty feet high, and thickly wooded. About a cable's length to the East- d of it is Chinchilline Cay, which is a small low rock; and at about two cables' th to the Northward of it is Pascaul Cay, which is a small round islet, steep to on . side. At a fourth of a mile to the N W. of the latter is a small ledge called Jean t Reef, on which there are three and three fourths fathoms, and between it and the osite shore the channel is about half a mile wide, with very irregular soundings, ing suddenly from six to twelve fathoms. *Banistre Cays.*

HIQUITO BIGHT.—From Viñas Point the shore trends to the N. W. for a mile, ing the Carenero Chiquito Bight. In the centre of the bight lie the Chiquito reefs, ch extend out nearly three fourths of a mile from the shore, and are steep to and y seen. There is anchorage under Viñas Point between it and the reef, and also in W. end of the bight, which is protected by the reef. The channel in the latter lies eward of the reef, between it and a ledge which runs off from Carenero Cay, but it narrow that large vessels must tow or warp in. *Chiquito Bight.*

LARA BAY lies immediately Westward of Chiquito Bight, between Lirio and Gordo ts, which are half a mile apart. The former point is steep to within a cable's length, good anchorage a fourth of a mile to leeward of it in from ten to twelve fathoms. latter point lies five and a fourth miles to the Westward of Balandras Head. *Clara Bay.*

AMANA BAY, or Port Santa Barbara, is an inlet a mile and a half long E. to W., a fourth to half a mile wide. The N. shore of the bay is formed of irregular hills, ch rise a short distance from it to a considerable elevation. The head of the bay is and swampy, and the S. side is sheltered by a reef, and several cays, and dry rocks, ch extend a mile and a half to the Eastward from Escondido Point. *Samaná Bay.*

rom Paloma or Tropezon, the Easternmost of these cays, a shallow ledge runs off and a half cables' length to the S. E. and its extreme end bears S. S. W. ½ W. a d of a mile from Gorda Point leaving the entrance of the channel, between it and point, only a fourth of a mile wide. In the centre of the channel, N. of the cay, e is a small bank of four fathoms, with a narrow channel on either side. To the thward of this bank a vessel will carry a depth of five fathoms, and to the South- d seven fathoms, and the channel from the edge of the reef to the shoal ground the N. shore is here not more than a cable and a half broad.

arther in, off the N. side of Carenero, the largest of the three cays on the S. side of bay, a narrow ledge of three fathoms runs off a cable and a half, and is steep to, and ast of this in Aguada Bight there is good anchorage. At a cable and a half from W. end of the bight, and nearly in mid-channel, lies a small coral head nearly awash, ed Gomère Rock, with deep water on either side, and between it and the head of bay is the inner anchorage, which carries a depth of from four to five fathoms, and cure in all winds. The town of Santa Barbara de Samaná stands at the inner end he bay, at the base and on the sides of some small hills which are almost hidden the Eastward by a bold headland, on the summit of which there is a small fort and staff; on the ridge at the back of it there is another small fort, which together com- d the anchorages.

here is a convenient watering place in Aguada Bight, on the N. shore of Samaná and another at a small stream a little to the Westward of Cacao Point. *Water.*

amaná Bay is so narrow that it can only be entered with the sea breeze, and left with land wind; these changes are generally to be depended upon, except in the winter ths, when strong N. E. winds blow continually for some period. *Directions.*

ALANDRAS POINT.—There is a fixed light two hundred and thirty-five feet above sea on this point. It is suspended on a mast on the N. side of the entrance to the f of Samaná, lat 19° 11′ 48″ N. long. 69° 13′ 52″ W. *Balandras Point Light.*

aving rounded Balandras Head, steer along shore, keeping it at the distance of ut half a mile, and taking care not to shut the head in with Cacao Point, until past

the Chiquito reef. Then haul up for Gorda Point, taking care not to bring this po to the Eastward of N., before the Eastern hill of Carenero Cay, which is moderat high, comes just open to the Northward of Paloma Cay W. N. W., to avoid the le to the S. E. of the latter. In the absence of a pilot, the eye must be the guide, an the sun is high and astern of the vessels, the shoals may be seen from aloft.

Having passed Gorda Point, the deepest water will be found on the S. side of channel on the edge of the reef, until abreast of the W. end of Paloma, when haul in W. ½ N. toward Aguada Bight to avoid the shoal off Carenero. When the W. end that cay bears S. W. ½ W., bear away to the Westward for the inner anchorage. K the Southern side again aboard to clear the small coral head (Gomère Rock) off the fo and when the fort bears N. anchor as most convenient.

In leaving Samaná Bay, should the sea-breeze overtake the vessel before she is cl of the Levantados, be careful when to the Eastward of them, and standing to the So ward, not to bring Banistre Cay to the Northward of W. until abreast Balandras H to avoid the Banistre Reef. It may be here observed, that the soundings everywh are so irregular, and the tides so strong, that with the flood it may be found neces to anchor under the W. side of the Levantados, or under the Northern shore, if the w be to the Northward of E., to wait for the ebb.

Tides. It is high water, full and change, in Samaná Bay at 9h. 30m.

N. Coast of Hayti. NORTH COAST OF HAYTI.—Between Cape Cabron and Jackson Point which at the W. end of Samaná Peninsula, the N. coast of Hayti trends W. S. W. twenty- miles, and then turns almost suddenly to the Northward to Cape Viejo Francés, th miles distant.

Between the two former points there are several small bays and beaches, whence favorable weather, mahogany is shipped in droghers, but there is no safe anchorage large vessels.

Ecossaise Bay is called a port from its affording temporary anchorage under a ca front of it; but it is not secure. The Western shore of this great bight is totally ba and uninhabited, and affords no shelter whatever.

Cape Viejo Francés. CAPE VIEJO FRANCES, or Old Cape Francais, is bold, steep, and lofty, and is ible thirty miles off. A short distance to the Southward of it there is a remarkable l mountain, which may be seen at the distance of forty-five miles, and from off Cape G ron it has the appearance of a detached island. As it is approached, the hill wil seen to slope gradually down to the cape. A very similar ridge branches off to Eastward, and when within a few miles of the shore its termination may be mista for the true cape; the extreme pitch of the true cape, however, is rather low, and th are some rocks and foul ground near it. A little to the Westward of it lies a small in which there is anchorage for droghers.

Cape Roca bears W. ½ N. nine miles from Cape Viejo Francés, and between the coast is low, steep, and thickly wooded, and being foul, should not be approa within three miles. From Cape Roca the shore bends in to the Southward for six m forming a bay skirted by a reef. Macaris Point, twelve miles farther on, is high steep to. There appear to be several spots in this neighborhood, which afford porary anchorage, but we are unable to point out their exact locality. To the W ward of the point is St. Jacques or Santiago Bay, which is inhabited, but seldom ited.

Puerto de Plata. PUERTO DE PLATA lies fifty-one miles to the Westward of Cape Viejo Fran and although confined in space, is a place of some importance, and the port of entry vessels trading on this part of the shore. The harbor is a semi-circular basin, a half a mile in extent, with a low sandy shore. On its Eastern point there is a small sixty-five feet high, and a fort to the Southward of it is the town, which contains a three hundred houses. About two and a half miles inland, a remarkable flat-pe mountain called Isabella de Torres, rises to the height of twenty-three hundred and is an excellent guide for the port; it has a large white spot on it, and at four or miles to the Westward of it there are a few small sugarloaf peaks. The channel i tween the reefs outside, which skirt the shore at the distance of from a fourth to h mile, and are steep to.

Water. Two small streams empty themselves at the head of Puerto de Plata, and in the r season cause a strong outset; and at this period the river St. Mark is open for b and is the best watering place. In the dry season the Eastern rivulet would be the convenient; but the water casks must then be rolled up about a fourth of a mile rafted off. Wood will be found on the Western shore.

Winds. In the winter at Puerto de Plata the sea breeze sets in strong from the E. N. E. a 9 A. M. and continues until near sunset, when a moderate land wind comes off from S. E. It is remarked that northers, which are the only insecure winds, seldom home into the port.

Directions. When running in from Puerto de Plata, bring the fort in line with the W. end o peak of Isabella de Torres bearing S. by W. ½ W., and continue on this course u

l rock just outside the Western reef, lying N. about half a mile from the Western t of the entrance, bears N. W., or a little before, so as to give time for the vessel to er her helm to S. W. This latter course will lead in through the channel, which tle more than a cable wide, and the eye will perhaps be the best guide. The dings in the channel are regular, but just within the point it shoals very suddenly, there are only twelve feet at a fourth of a mile from the bottom of the harbor; els of large draught must, therefore, be prepared to anchor immediately under the ern point in about five fathoms.

is high water, full and change, in Puerte de Plata at 7h. 30m., and the rise and *Tides.* s about three feet; but there is no perceptible tidal stream. The current outside generally to the Westward, inclining toward the shore.

e reef skirts the coast for some miles to the Westward of the port, but within a t distance of Algarrobo (Caroube or Carouge) Point, the land may be approached in a mile, but there is no anchorage.

LGARROBO POINT is a lofty, bold headland, readily distinguished, lying fifty- *Algarrobo* miles to the Westward of Cape Viejo Francés. Thence the coast line trends to *Point.* N. W. by W. thirteen and a half miles to Cape Isabélica, the N. extreme of ti.

APE ISABELICA.—From off Algarrobo, Cape Isabélica will have the appearance *Cape* low, thickly-wooded island, with some remarkable palm-trees on its N. end; a *Isabélica.* reef runs off from it about a cable's length. A short distance to the Eastward e Cape is Port Caballos, a reef harbor, reported to be more commodious than ta de Plata; and near it again there is an anchorage called Soufle.

ABELICA BAY.—The shore from Cape Isabélica turns abruptly to the South- *Isabélica* for six miles, and then to the Westward; and the head of this bight or bay is cel- *Bay.* ed as being the spot where Columbus established the first colony in the West In- Nothing, however, remains to point out the exact locality but the ruins of a pillar, almost hid among the bushes near the beach. The bay is open to N. and winds, but good holding ground will be found in five fathoms, mud and sand, the N. point bearing N. E. distant about one mile and a half. Small vessels will helter farther in shore, as far round as N. N. W., with the entrance to the river ng S. E.; but the soundings are very irregular, and there is a reef and some sunken in the anchorage.

od water may be obtained from the river in Isabélica Bay, and wood and live stock *Water.* neighborhood.

by S., seven miles from the head of Isabélica Bay, is Rucía, Roca, or Rogue Point, *Anchorage.* under which there is said to be an anchorage in twelve fathoms, sheltered by the ff it as far round as N. N. W. About three miles to the Westward of Rucía Point small cay Arenas, which lies on the reef at about one mile and a half from the Under it there is also said to be anchorage in five or six fathoms; but all this f the shore, as far as La Granja, or the Grange, is uninhabited, dangerous, little n, and had better be avoided altogether.

NTA DE LA GRANJA is a bold headland, about a mile in length, and forms *Punta de la* xtremity of the small peninsula of Monte Cristi. It lies W. by S. thirty miles *Granja.* Cape Isabélica, and is readily distinguished by a remarkable hill near the shore, hundred feet high. Its flattened summit has the appearance of the roof of a barn ange, and being seen long before the land in its neighborhood, will be found a l object to vessels beating up from the Westward. To the Eastward of the head- he shore recedes to the S. E., forming a deep bight nearly two miles broad, and ile and a half deep, between it and Fregáta Point, called Jicaquito Bay, which is ted to afford good anchorage, protected by a reef extending off from the latter The head of the bay is low and swampy, and there is said to be a water com- cation between it and Monte Cristi.*

ONTE CRISTI BANK.—From Cape Isabélica an extensive bank of soundings runs *Monte Cristi* the Westward as far as twelve miles N. W. of the Grange, when it sweeps round *Bank.* S. W. for about four miles, and connects itself to the Westernmost of the Seven ers at Manzanillo Point. This is one of the White Grounds before alluded to in 587, on which the water is discolored. The depth is generally very uneven, and ottom variable. On the edge it is chiefly coral and coarse sand, and about two within it is soft mud. On the meridian of the Grange the edge is about six miles t; and as the shore is approached irregular casts will be obtained from twenty to thoms.

NCS DE LA GRANGE, or Hautfonds, are two small patches near the edge of *Bancs de la* e Cristi Bank. The innermost, which bears N. N. E. ½ E. six miles from the *Grange.*

* R. H. Schomburgh states, from information he had received, that there appears to be a canal depth of from two to four fathoms, and a rise and fall of tide of three feet.

Grange, is about a fourth of a mile in extent, and is reported to have as little as twen three feet water on it, with from twelve to twenty-five fathoms around.* The other about a mile N. N. W. of this, close to the edge of the bank, and N. by W. ½ W. and a half miles from the Grange. It is very similar in extent to the former, and a depth of six fathoms. When on this patch the two small islets of Monte Cristi will open of each other, clear of the W. end of the Grange, and the Westernmost bearing W. ¼ W.

Monte Cristi Shoal. MONTE CRISTI SHOAL lies on the same parallel with the above, and W. ab nine miles from them, with the Grange bearing S. E. ½ E. eight miles; and the West edge of the bank three miles distant. It is about a fourth of a mile long, in a N. E. S. W. direction, and half a mile broad, and composed of detached small pointed ro upon a white sand-bank, with as little as two and three fourths fathoms on them, from four to seven fathoms between the heads. On the edge there are from twenty-n to twenty-five fathoms, coarse sand. From the shoalest spot, the E. end of a remarka clump of trees will be seen open to the S. W. of Monte Cristi, and between it and the bearing S. E., and the highest part of Cape Hayti S. W. by W.†

Anchorage. MONTE CRISTI ANCHORAGE.—From the Grange the coast takes first a South and then a Westerly direction as far as Yuna or Sable Point, about seven miles S. W the above. In the bight is the anchorage and town of Monte Cristi, which is overloo by a remarkable hill, crowned by Fort Francisco, situated about a mile from shore, and at the extremity of the great mountain ridge which extends hence along shore to Cape Viejo Francés. When seen from the N. N. W., the summit of the has the appearance of a saddle with several white spots on its declivities. Ther also a small fort on the shore to the Westward of this, and two others between it the Grange. The river Yaque formerly discharged itself a short distance to the S. of the village, and supplied it with water, but it has changed its course within present century, and now flows into Manzanillo Bay, about ten miles farther to Southward.‡

Monte Cristi Cays. MONTE CRISTI CAYS are two small islets to the S. W. of the Grange. The n est to the point—which is the smallest of the two—is called Moine or Frayle, and about four cables' length from the shore; the other, called Chevies or Cabras, lies about three cables' length from the point, and is semicircular in form, six hundred y in diameter, and thirty feet high.§ Between them and the shore the depths are five, and two and a half fathoms.

Anchorage. Anchorage will be found in Monte Cristi Bay at three cables' length to the So ward of the Cabras Islet, in six, seven, and eight fathoms, well sheltered; but be caut of a shoal which is said to extend W. by S. a mile from the islet, and observe that depth decreases rapidly at some distance from the main shore.‖

Seven Brothers. THE SEVEN BROTHERS form a group of small low cays lying on a shallow of the bank to the Westward of the Grange, occupying a space of about seven mile and W., and five miles N. and S. The Northern edge of the bank is said to be t miles to the Southward of the Monte Cristi shoal, and a navigable channel half a wide is reported to exist between them and the shore. The Northernmost cay b W. ¼ S., nine miles S. from the Grange, and Sandy Cay lies two and a half miles far to the W. S. W. The most of them are covered with low mangroves, but Grand M the largest and the second from the Eastward, is distinguished by lofty trees.

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* Captain R. Owen, R. N., states that "with three boats sounding we could not find less than fathoms." In the Columbian Navigator, vol. ii., 1848, p. 33, it is stated that from this shoal a gr trees near Monte Cristi bears S. E., but this is doubtless meant to be a bearing from the Monte shoal. It is also stated that the *Torbay* lost her rudder here in 1788, and the *Ville de Paris* stra it in 1781.

Of the accident to the *Ville de Paris*, we can give no account, as she was at that period in the F service, and the recent French directory of 1855 makes no mention of it whatever. The fo ing is the brief account of the day's proceedings of the *Torbay*, extracted from her official dated January 10, 1783: "Lost sight of the fleet; the ship struck upon a reef of rocks and c away the rudder from the sternpost. At half-past nine the ship got off. At five joined the the Captain went on board the Admiral to report the ship. Employed getting out prov and making a machine to steer the ship. Bearing and distance at noon, Monte Cristi S. E. seven or eight leagues. 11th January: ship making much water." It appears afterward although she was temporarily repaired at Jamaica, on her way to Halifax, she was obliged to some of her guns overboard, with seven feet water in the hold. This is all the official informati record.

† Captain R. Owen, R. N., examined this shoal very minutely, and found not less than fathoms; but he observes, "The summits of the rocks are sharp and difficult to be hit b lead."

‡ From a recent sketch by Sir R. H. Schomburgk.

§ See French Directory, 1855, vol. i., p. 156. Sir R. H. Schomburgk placed only one islet o Grange, about four cables' length off shore; but our information of this neighborhood is exceed imperfect and contradictory.

‖ Capt. R. Owen, R. N., anchored W. half a mile from the cay in seven fathoms, mud.

;e will be found under the Eastern islet named Petit Mont, and the South- *Anchorage.*
ıed Tororu; the latter lies near the edge of the bank, which is very steep to,
W. about four or five miles from Manzanillo Point.

ANILLO BAY is formed by the head of the bight to the Southward of the *Manzanillo*
and between Manzanillo or Jicaco Point* and the Southern shore, it is three *Bay.*
de. The land on all sides of the bay is low and bounded by mangroves, and on
nd S. sides the shore is steep to, having twenty fathoms within three fourths of
of it, and in the middle of the bay no bottom.

:e is no danger in Manzanillo Bay, and on the E. side of Manzanillo Point there *Anchorage.*
:xcellent, well-sheltered anchorage in from seven to ten fathoms, within half a
of the shore.

ıe river Tapion empties itself into the E. side of Manzanillo Bay, the Yaque into the *Water.*
corner, and the Dajabon into the S. side. Good water will be found in either, but
will have to proceed six miles up the latter, in the dry season, before it is good for
king.

he Dajabon is the present N. W. boundary between Hayti and the Dominican re-
lic.

anzanillo Bay may be entered by the route outside the Monte Cristi Shoal, and to *Directions.*
Westward of the Brothers, or by the channel within them; the latter, however, can
be safely navigated in daylight. In the former case take care to avoid the Monte
i and Hautfond shoals, and keep well clear of the edge of the bank (coming from
Eastward), until the Grange is brought to the Eastward of S. E. ½ E. To take the
channel, after having passing within the Hautfonds, and neared the Grange, steer
e Westward, and when Yuma Point bears S., haul in toward it until Petit Mont,
Eastern Brother, bears W., when alter course to S. W. Pass to the Eastward of
ru, the Southern cay, and when it bears N. N. E. haul up for Manzanillo Point and
into the anchorage. In this channel the depths are six and seven fathoms, and the
ing-ground good, should a vessel be obliged to anchor for the night.

om the S. E. corner of the bay the coast takes a Westerly direction eight miles, and
nues low to the entrance of Fort-Dauphin Bay.

ORT DE FORT-DAUPHIN (Delphin or Bahiaja, *Sp.*) is the most secure landlocked *Port de Fort*
in Hayti, and has depth for vessels of the largest draught, with excellent holding *Dauphin.*
nd. The channel into the bay is about a mile long, but so narrow and tortuous,
a sailing vessel will find great difficulty in getting through it inward, without the
is well to the Northward of E., and she can only quit with a commanding land
ze. The entrance is not more than one cable and a half wide, but it increases within
lf a mile. Both sides are fringed with a reef to a short distance, and the turnings
o sharp that there is scarcely time for a vessel to answer her helm.

rections would be useless for entering this bay, as the eye can alone guide the ves-
n mid-channel, which is all that is required. There is no room for working or
ning, should she be forced to anchor. The interior of the bay is three miles long,
d W., and a mile broad, and free from shoals, except to the Eastward of the town,
h stands on the Southern shore facing the entrance. Near the middle of the bay is
all islet named Boyau, which is foul to the distance of a cable's length on its N. E.

The most convenient anchorage will be found in twelve fathoms water, between
-Dauphin, which is built at the N. end of the town, and the islet. There is a good
ening spot on the Northern shore, a little to the Eastward of the inner end of the
nel.

short distance to the Westward of this bay commences the great reef, which sweeps
ard toward Cape Hayti, and protects the E. side of that harbor.

is high water, full and change, in Port de Fort-Dauphin at 7h.; springs rise five *Tides.*
a half feet; neaps three and a half feet.

ARACOL BAY lies between Jacquezi Point, which is nine miles to the Westward *Caracol Bay.*
ort-Dauphin and Caracol Point, and is nearly four miles wide, but its interior is so
ow as to be only fit for droghers, which find their way into it either by the channel
in the reef, or through a narrow, intricate cut to the N. E. of Caracol Point.

bout six miles to the Westward of Caracol is the bay and town of Lamonade, before
h there is also anchorage for droghers, and a deep cut in a N. W. and S. E. direc-
through the reef. Thence the shore still trends to the Westward for three miles,
then turns suddenly to the Northward along the Eastern side of the great promon-
of Cape Hayti.

APE HAYTI HARBOR, or Guarico, formerly Cape Francais, and afterward Cape *Cape Hayti*
ri, is protected on the E. by sand-banks, or White Grounds, and extensive reefs, *Harbor.*
h generally break, leaving it open only to the N.; but in this direction the anchor-
s well sheltered by a shoal in the centre and outer part of the harbor. The South-

* R. H. Schomburgk states that "Manzanillo or Jicaco Point of former charts disappeared in the quake of May, 1842, but that the anchorage to the W. (E.?) of it has suffered no change.

ern shore is low and swampy, and bounded by a sandy beach. At the E. end of t beach stands the small village of Petite Anse, and about midway between the villa and the Western shore is a small woody hillock, on which is a ruin of a fort. The riv Haut du Cap empties itself into the S. W. corner of the harbor, but the water is not s ficiently good for drinking until two or three miles within the entrance. The town a stands at this end of the harbor, on a small plain three fourths of a mile in extent, at t base of the lofty, irregular range, called Haut du Cap, which rise abruptly from the sh at Picolet Point (the N. E. extreme of the promontory of Cape Hayti), and about a m to the Westward of the town they reach the height of over two thousand three hund feet.

About one cable and a half to the N. W. of Picolet Point, and close to the shore, th is a remarkable, small, barren, black rock, which may be recognized at the distance about three miles; a fort, with white walls, stands on the extremity of the point, ab fifty or sixty feet above the level of the sea. At half a mile to the Southward of the po is Fort Joseph, which is overlooked by a hill nine hundred and sixty feet high, detach from the main ridge, and crowned by the lookout house and signal posts. A fourth o mile within Fort Joseph there is another small battery, and half a mile farther in at t N. end of the town are two forts at the water's edge, which command the anchorage. I tween these two latter forts are the remains of the Tour d'Estaing.

Water. Near the end of the innermost fort is the watering jetty, where the casks may be fill in the boat; in the dry season, however, water is sometimes scarce, and it must be sou in the river. The reservoir also supplies the town, and consequently during the day it will run very slowly, but after ten P. M. several boats may be filled rapidly at a tim it is necessary, however, to obtain permission of the governor before the usual time turning the water off.

Le Grand-Mouton. LE GRAND-MOUTON, the shoal which shelters the anchorage in the harbor fr the N. and obstructs the passage in, is four cables long in a N. and S. direction, and t cables broad. Its N. end, which generally breaks, lies E. by S. a fourth of a mile fr Fort St. Joseph, with a clear, deep channel between, but being so far to leeward, is s dom used by sailing vessels. About a cable's length to the Eastward of the S. end th is a small detached, shallow head, bold to, on which there is a beacon.

Le Petit-Mouton. LE PETIT-MOUTON, which generally shows itself, lies S. E. by E. three and a h cables' length from Grand Mouton beacon, and near the edge of the Eastern reefs.

La Trompeuse. LA TROMPEUSE is a small shoal, lying in an awkward position near the middle the bay, S. nearly half a mile from the above beacon, and E. nearly three fourths o mile from the Tour d'Estaing; it is generally buoyed.

Directions. When approaching Cape Hayti harbor from the Westward, give the shore a berth a mile at least until Picolet Point bears S., in order to avoid some coral banks, on wh there are from three and a half to four and a half fathoms water, and probably less, they have not yet been accurately examined, and which cause a heavy roll of the s If coming from the Eastward, and having passed the Monte Cristi Shoal, keep a W erly course until the highest part of the Haut du Cap hills bears S. W., when haul toward them. Having sighted Fort Picolet, bring it to bear S. S. W., and steer for and when Cape Hayti, the extreme N. point of the promontory, bears W., the vessel w be abreast the N. end of the Eastern reefs, and may then haul up under their lee, obse ing that the channel between the reef and Fort Picolet is only four cables wide.

In standing in toward Picolet Point, three remarkable peaked hills, of considera elevation, and near each other, will be seen at a good distance inland, to the Southw of the Haut du Cap, and a little open to the Eastward of it; and on one of them, cal the Bishop's Cap, the extensive ruins of a large castle and citadel. This hill in one w the small woody hillock before mentioned, near the beach at the bottom of the bay, be ing S. by W., will also lead in close to leeward of the reef. In approaching the Gra Mouton, be careful not to shut the barren rock which lies to the N. W. of Picolet Po in with that point, until the vessel is abreast of the N. end of that bank, or the lock comes in one with Fort Joseph bearing W., when keep away for the beacon off the S end of the Mouton.

Having passed to the Eastward of this beacon, within half a cable's length, or brou the N. E. corner of Point aux Dames pier in one with the centre of the gable of a yell house just above it, steer toward the watering jetty, taking care not to bring Fort Pi let to the Eastward of N. When within the Trompeuse, anchor as most convenient, not within the above line of bearing. As a vessel may have to haul up as high as S. she must wait until the sea breeze has set well in, and strangers had better not atte to enter without a pilot, who is generally at hand. A sailing vessel will have to w for the land wind to carry her out; and as the sea breeze in the winter months so times prevails during the night, she may be exposed to some detention.

Tides. It is high water, full and change, in Cape Hayti Harbor at 6h., and the rise is ab three feet.

PORT FRANCAIS is situated five miles to the Westward of Picolet Point, and is erely a small bay open to the Northward; there is, however, excellent temporary chorage with the prevailing winds in the S. E. part of the bay, about two cables' ngth to the S. S. E. of St. Honoré Point, in from eight to ten fathoms, clay and sand, ith the fort bearing E. S. E. St. Honoré Point forms the E. side of the entrance, and careful to avoid a reef which extends from it a cable's length to the N. W. *Port Francais.*

From St. Honoré Point the shore recedes to the Southward and Westward, forming a ep bight, as far as Marigot Point, nine miles to the Westward. The front is skirted an impassable mass of reefs and cays upon a white ground, which commences at the end of Port Francais, and takes a westerly direction for five miles to Philipot Cay, e largest of the islets, when it becomes broken, and leaves small openings leading into e harbor of Acul.

ACUL HARBOR.—This place appears to be a well-sheltered inlet, four miles in ngth from N. to S., but varies from a fourth to a mile in breadth. It has sufficient pth for vessels of the largest draught, and its shores are in some parts so bold as to ord safe places for careening. The channels, however, through the reef, are so narw that they are not easily accessible to large sailing vessels, and if the objects and oals are not clearly visible they should not be attempted.* *Acul Harbor*

There are three channels by which a vessel can enter this harbor. The Eastern or ande-Passe lies between Sable Islet on the E. and Rat Islet on the W., and is only a ble wide. The former islet, a small, low, sandy cay, lies about a mile and a half to e N. E. of the entrance of the harbor, and the same distance to the Eastward of Philit Cay. The latter—a small, low, wooded islet—lies about a mile to the W. S. W. of ndy Cay, and little more than a fourth of a mile from the S. E. end of Philipot Cay.

Water is difficult to obtain in Acul Harbor; the best place is at a small stream beeen Trois-Maries and Morne Rouge points. *Water.*

In approaching the Grande-Passe into Acul Harbor, be careful to keep an offing of at st three miles, until Rat Islet bears S. by W. ½ W., and at this distance Trois-Maries int, the E. side of the entrance, will be easily recognized, and within it a low point the W. side, in the interior of the bay, named Bélie Point, on which there is a rerkable clump of trees. These two points in one, with slight deviations so as to preve the depth of nine to ten fathoms, will lead nearly in mid-channel; on either side re are white sand-banks, with four fathoms on their edge. After passing Rat Islet, channel opens out, all the dangers are visible, and good temporary anchorage will found outside the entrance to the harbor, with this islet bearing N. W. *Directions.*

If intending to enter the inlet, give Trois-Maries Point a berth of at least three les' length, to avoid a bank, on which there is very little water, and having near its en a small islet named Bayou. Thence shape the course in mid-channel, taking e to avoid another shoal W. S. W. of Trois-Maries Point. Having passed this, the sel will be within the outer basin, and may anchor under the Eastern shore in nine oms. To enter the inner basin she must haul up, and pass Morne Rouge (Red Hill) hin half a cable's length, to clear a shoal which extends off from Bélie Point, and ing rounded that bluff, haul into the small bay called Lombard or Carénage and hor in from four to five and a half fathoms. The inner end of the inlet is so studded h shoals that it would not be prudent to advance farther in without the assistance a pilot.

MIDDLE CHANNEL.—To take this passage into Acul Harbor, it is necessary that wind should be well to the Northward, as the vessel will have to lie up S. E. and re is no room to work. As before, a wide offing must be kept, until Rat Islet bears y E. ½ E. Haul in on this course, which will lead to the Eastward of the reef which s off from Philipot Cay, and about a cable's length to the S. W. of some reefs, easily , which lie about three fourths of a mile to the Northward of Rat Island. Then l up to the S. E. in order to weather the reef which extends off to the Eastward of islet, and having passed it shape the course for the outer anchorage or entrance to harbor. The only advantage in this channel is, that all the reefs are seen,† but be pared to anchor in a moment. *Middle Channel.*

WESTERN or LIMBE CHANNEL takes its name from a small round islet, close to E. side of Marigot Point, which forms the W. side of the entrance, the E. side being nded by Philipot Cay. This is the largest and best channel, as there is room to k in it. When approaching this channel, it is also necessary to keep well outside banks until Icague Point or Grand Boucaut bears S. by E. ½ E., then haul up S. S. E. *Western or Limbe Channel.*

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*The only description and directions we can find for this place are taken from the "Derrotero de las Islas," which will be seen to differ in several points from the plan; the latter, however, appears to tle more than a rough sketch.

†The admiralty plan marks this channel to the Westward of Rat Islet, between it and Philipot Cay, makes the former barely open of the latter, on the bearing of S. by E. ½ E., the course said to in.

½ E., or toward Morne Rouge, before mentioned. Icague Point is the W. point of the entrance to the inlet, and being a steep, bold, rocky bluff, and the only elevated spot to the S. E of Morne Marigot, may be readily distinguished.

Before arriving on the parallel of Rat Islet, a vessel will pass to the Southward the extensive reef which skirts the S. W. side of Philipot Cay, on the edge of which there are from three to six fathoms; and will pass to the Northward a second reef, to the Southward of the above, equally steep to. Three other reefs will then be seen to the S. W. of Rat Islet; the best channel is between the two Northeasternmost, in which the depth is from seven to twelve fathoms, and for this purpose haul up S. E. ½ E. toward Trois Marine Point; if the channel is taken between the middle and Southwesternmost, the former must be passed at the distance of one or two cables' length, and the W. part of Morne Rouge must be kept a little open to the Eastward of Icague Point. Having passed within these, a vessel may anchor as before directed, or proceed into the inlet. Should she be forced to tack in this channel, she may stand boldly toward the reefs, which break on either side, and are steep to, having from three to five fathoms on their edges.

Marigot Point. MARIGOT POINT is about two miles to the Westward of Morne Marigot, and on either side of it are small bays of the same name, of which we have no correct description. Close off the point there is a small round islet, which becomes a useful object in this neighborhood.

Chouchoux Bay. CHOUCHOUX BAY lies two miles to the Westward of Marigot Point, and there is good temporary anchorage just within the Eastern point in five and a half or six fathoms. All that is to be done in entering the bay is to round this point close to in five fathoms, and shoot the vessel into a berth, for she will lose the wind within it, however hard it may blow outside. A short distance beyond this, and separated from it by Bail du Bœuf Point, is the small bay of Salt River, in which there is shelter for droghers.

Fond-la-Grange FOND-LA-GRANGE is the name of a bay, about half a mile wide, lying four miles to the Westward of Chouchoux. Palmiste Point, its Western end, is known by a chain of dangerous reefs, which extend almost as far as Icague Point, four miles distant, and a mile and a half from the shore. There is good anchorage here, and shelter for vessels of the largest draught. The shore is so steep that, within a cable's length of it the depth is five and a half fathoms. The E. point is bold and steep to, and having rounded it, anchor as most convenient, in the middle of the bay.

From Chouchoux the coast takes a N. W. by W. direction for about eighteen miles, where it terminates at Carénage Point, the N. extreme of this part of the island, and the E. point of Port Paix, and is very apt to be taken for Icague Point, which is eight miles from it. The shore between them is very bold, with the exception of a small reef, about a mile in length, which runs off nearly a fourth of a mile from the shore, at about five miles from Carénage Point.

Port Paix. PORT PAIX is merely a small bay, not more than half a mile wide, and scarcely a fourth of a mile deep; it affords, however, well-sheltered anchorage, being protected on the N. by Tortuga Island, and is only open from N. W. to W. The town is situated on the Eastern shore, and is protected by two small forts. The land behind is lofty, with a small but remarkable sugarloaf hummock, sloping to the Westward. From Pert Point, on which stands the battery to the N. of the village, the shore is skirted by a reef to the distance of three cables' length, with twelve fathoms on its edge.

Directions. In entering Port Paix (which should be done under easy sail), bring the village to bear S. E., and keep in mid-channel between the forts, anchoring directly the depth is less than twenty fathoms; this will be just within the line of the forts, at about two cables' length from the village, and a little to the Northward of it. The holding ground is excellent, and the vessel will shoot into about twelve fathoms, mud and sand. Small vessels, wishing to ride farther in, must be careful to avoid a small rock, which lies about half a cable's length from the shore, in front of the town.

Tortuga Island. TORTUGA ISLAND is twenty-four miles long, in a W. N. W. and E. S. E. direction and six miles broad; its centre is moderately elevated; its extremes are low. The N. side is formed of perpendicular inaccessible cliffs, steep to; the greater part of the Southern shore is skirted by shallow white grounds and reefs, which within them in some places afford shelter to droghers. The only good anchorage is on this side, in Tiburon Baja Road, which lies four and a half miles from Portugal Point, the E. end of the island; it is, however, only fit for vessels drawing fourteen or sixteen feet, as the bottom is very irregular, and varies in depth from three to six fathoms.

Directions. To enter this anchorage, bring the village to bear N. W., and by steering this course with the assistance of the eye, it will lead through the narrow cuts in the reefs, which will be seen breaking on either side. The best berth will be found with the village in the above bearing, in about six fathoms, sandy bottom. Large vessels may anchor on the white ground outside the reefs, about a mile to leeward of the town. There is said to be anchorage under the W. end of the island.

TORTUGA CHANNEL.—Portugal Point bears N. eight miles from Icague Point, ut between Carénage Point and the S. side of Tortuga the channel is little more than our miles across, when it again opens out to the Westward to about the same width as bove. In the daytime vessels may beat through without fear, as the reefs are distinctly een, but it would be dangerous to attempt it in the night. If bound to windward, they ay obtain great advantage by taking this channel; for there is a strong Easterly set, hich is seldom checked, except by a Southerly wind, which does not often occur. In oing this, however, they must not approach either shore within a mile, in order to void the eddy stream. Should the current be found setting to the Westward it will e better to keep well to the Northward, and not approach Tortuga within eighteen or wenty-one miles. *Tortuga Channel.*

MOUSTIQUE BAY lies W. S. W. ten miles from Port Paix, and the shore between bold, scarped and steep to. It is about four cables in extent, the bottom irregular and ocky, and between the points at the entrance there is no bottom with thirty-five fathms. On the W. side of the bay there is a small islet, and to the S. E. of the islet there a rock. The best anchorage will be found nearly on the parallel of this rock, in the iddle of the bay, in from twenty to twenty-five fathoms, but be certain before coming that the vessel is in soundings. *Moustique Bay.*

PORT A L'ECU is four and a half miles to leeward of Moustique Bay, and the shore etween is more lofty and very steep. This is a better anchorage than the above, but e entrance is much narrower on account of a reef which skirts the E. side, and extends f two cables length from the point, with seven fathoms on its edge and two fathoms ithin. *Port a l'Ecu.*

When entering Port à l'Ecu, it will be necessary to give the above point a berth, and en haul to the wind into the bay, and anchor with a remarkable house on the South- n shore, bearing S. S. W. in seven and a half fathoms, sandy bottom. On the W. side e bottom is mud—good holding ground. *Directions.*

JUAN RABEL BAY, situated six miles to the Westward of Port à l'Ecu, offers still etter anchorage, and is easy of access. Juan Rabel Point is low and bushy, and stands ominently out to the Northward; the shore in the neighborhood is diversified by bold ocky cliffs and sandy beaches, and the interior becomes mountainous, and broken into stinct ridges. A remarkable peak, resembling the ruins of a castle, rises S. W. ¾ S. om the bay, and about two miles inland. About a mile to the Southward of the point ere is a small village, and near it a river; and to the left of the village a high white iff and long sandy beach. The E. side is skirted by a reef steep to, and may be ap- oached without fear; the depth is eight fathoms close to the edge. *Juan Rabel Bay.*

Vessels of large draught had better anchor about two cables' length within the reef, from ten to thirteen fathoms. They may proceed farther into the bight, but it will better not to shut in the two points on the E. side, as within that line the soundings minish suddenly and rapidly, and the bottom becomes foul. *Directions.*

When two or three miles to the N. W. of Juan Rabel Point, and with the half of Tor- ga open of the point, soundings will be obtained in fifty-eight fathoms, and beyond it ghty fathoms, muddy bottom.

From Juan Rabel Point the coast trends to the W. S. W. for ten miles, to Cape St. icolas, and is composed of low rocky cliffs, steep to. It affords no shelter, and has ceived the name of the Iron Coast.

The current in the offing, about six miles from the shore, generally takes a N. E. di- ction, but within that distance it inclines toward the land. *Current.*

ST. NICOLAS BAY is an estuary or inlet formed on the N. side by a low flat penin- la at the N. W. end of Hayti, which is connected to the main by a narrow low isthmus, the head or inner part of it. From the appearance of this low table land, at a dis- nce, the bay is more generally known by the name of the Mole. The outer part of e bay, between the Mole Point and Cape St. Nicolas, which lies S. of it, is a mile and half broad, and thence to the town, at the entrance to the Carénage, it is two and one urth miles deep. In this outer part the depth is so great, and the shores so bold, that ere is no safe anchorage. *St. Nicolas Bay.*

From the sandy point on which the town is situated, the shores on either side of the y turn rather suddenly to the N. N. E., forming the inner port or Carénage, which is mile and three fourths in length; at its entrance abreast the town, it is half a mile ross, but toward the inner part, it is not more than from two to three cables' length. ere vessels of the largest draught may lie up, clear out, or careen with the greatest se and safety. It is, however, close and confined, and in the hurricane or rainy sea- ns, would probable be found unhealthy.

The watering place in St. Nicolas Bay is at a little stream which runs through the wa and disembogues on the inside of the sandy point. The beech is steep to, so that e casks may be filled in a large boat with great ease and rapidity, without landing em; it will be better, however, to water in the night, for in the daytime it is occupied the washerwomen. Fresh stock has to be procured from the interior. *Water.*

Directions. A vessel will have to work into St. Nicolas Bay, but although the shores are steep to, it will be advisable not to approach the S. side too close, as the sea breeze generally blows strong from the N. E. by N. in variable gusts, and she might miss stays. The most convenient temporary anchorage will be found in from seven to ten fathoms, at about two cables' length from the Northern shore, with Fort St. George, which stands in front of the town, bearing S. S. E., and the magazine to the N. E. of the town E. ½ S. The soundings are extremely irregular and foul, and a vessel will not be on the bank until Fort George bears S. E. by E.

If wishing to proceed farther in, do so without fear, but keep the town shore aboard, and a good berth will be found with Fort George S. W., the magazine N. E. by E., and a guard-house close to the E. side of the town S. ½ E. If intending to enter the Carénage it will be better to wait until the sea breeze lulls, and then warp or tow in: in the winter this will not take place until toward 8 P. M. The land wind generally comes off from the S. E., and blows moderately until about 6 A. M., when there is a calm for about two hours before the trade wind comes down. If bound out to the Northward and Eastward, it will be better to weigh with the last of the sea breeze.

Cape Locos. CAPE LOCOS (Cap à Foux) bears S. W. four and a half miles from Cape St. Nicolas and near its extremity lies a small rock resembling an islet. A short distance to the Southward there is also a remarkable white cliff, called the Upper White Horses. Thence to Perle Point (seven and a half miles to the Southward) the features of the shore are bold perpendicular cliffs steep to. The interior rises abruptly into a lofty ridge of mountains, two thousand feet high, only four miles from the shore, under which vessels are frequently delayed by calms. The current sets strong round the point to the Northward, but six miles in the offing it will generally be found running to the W. and W. S. W.

From Perle Point the shore sweeps round to the S. E. for ten miles, and terminates at a remarkable white rocky bluff with a flat mound on its summit, called the Platform. About three miles to the N. W. of it there is another similar cliff, called the Lower White Horses.

Anchorage. Anchorage will be found in eight and a half fathoms close to the shore to the Westward of Perle Point, in a sandy bay where there is a small village, with the entrance to a small rivulet bearing N. N. E., and the Southernmost Point E. by S. The bank does not extend more than two cables' length from the shore, and is so steep that the first cast will be ten fathoms; but a vessel had better shoot into the depth above, as the edge is foul. In the rainy season it is a good watering place.

Hène Bay. HENE BAY.—From the Platform the shore takes an Easterly direction for seven miles, to a remarkable white cliff at the base of the high land. Thence it trends N. by E. for two miles to Hène Bay, on the W. side of which a lofty mountain rises from the shore to the height of seventeen hundred feet. There is anchorage here, but not to be recommended.

From Hène Bay the coast runs S. E. by E. nearly two miles, and then E. ½ S. for three and a half miles to Paradis Point, on the E. side of which there is a small bay open to the S. E.

Port Piment. PORT PIMENT.—The shore from Paradis Point takes a slight curve inward until near a remarkable mound on the low savanna land, at the back of the small bay called Port Piment, which lies E. ¼ S. seven and a half miles from Paradis Point. There is also anchorage here in a case of necessity, and the shore is bold and steep to, all the way from the Platform.

From Piment the shore trends S. E. by E. ½ E. for seven miles, to a prominent bluff rocky point called Corridon, whence to Pierre Point its direction is S. E. ¾ E., nine miles.

Anchorage. There is an extensive bank of soundings off the bight between these two points, in which a vessel may anchor in seventeen fathoms, clean ground, with Corridon Point bearing N. W. ¼ N., and Pierre Point E.

Pierre Point. PIERRE POINT is a lofty, rocky headland, overlooked by a mountain of the same name. A third of a mile S. W. by S. from it there is a bank with a depth of two and a half fathoms; and nearly a mile S. by W. from the point, there is another, with three and a half and four and a half fathoms on it. They are of small extent, and between them the soundings are fourteen and fifteen fathoms. A grove of trees, called Bois Bayahondes, standing to the Westward of the town of Gonaïves, in one with Point Blanche des Gonaïves, will lead between them; and when Pierre Point bears N., steer E. S. E. round the reefs which extend a cable and a half from Point Verte des Gonaïves, the point of the bay.

Winds. On the W. coast of Hayti the sea breeze, in settled weather, generally sets in from the Westward at about 11 A. M., and continues until 7 P. M. The land wind comes off from the S. E., and in the rainy season it frequently rushes down from the highlands with the violence of a tornado, with little or no warning, and everything must be in readiness to shorten all sail in an instant. These gusts generally extend to the distance of two

three leagues from the shore; sometimes, however, in the hurricane months they will reach the middle of the channel between Hayti, Cuba, and Jamaica.

GONAIVES BAY lies forty miles to the Eastward of the Platform, and although open to the Westward, is a safe and good anchorage, especially for vessels of light draught, which can proceed into Hospital Bay, or the inner Harbor, where they will lie landlocked in three and a half fathoms. The entrance, between Verreur Point on the S. and the nearest part of the Northern shore, is nearly a mile across, and the only danger of importance is a shallow ledge which extends off about two cables' length from Verreur Point, and which can be avoided by the eye in clear weather. This point is the extreme N. end of a small low peninsula (or rather island, for it is separated from the main by a channel for canoes at high water), which forms the W. side of the inner harbor. The town stands on the Eastern shore, in front of the entrance, and is protected by Fort Castries, which is on the summit of a small hill of moderate elevation, on the N. side of the bay. *Gonaïves Bay.*

In entering Gonaïves Bay with the sea breeze, a vessel may pass either to the Northward or Southward of the shoals off Pierre Point. In the latter case, which will be the best, bring Fort Castries in line with a remarkable vertical notch or cut in a mountain, called Biénac, to the Northward of the town, bearing E. N. E. This mark will lead close to the Southward, and to within about half a mile of Blanche Point; thence steer in mid-channel toward the town. The soundings are very regular, decreasing gradually as the shore is approached, and the anchorage may be chosen according to the vessel's draught. The best berth for vessels of large draught will be found in seven fathoms, with Fort Castries bearing N., and the centre of the town E. by N. Small vessels may go so far in as to bring the fort N. N. W. *Directions.*

If a vessel has to beat into Gonaïves Bay, she must not stand farther to the Southward than to keep the notch in the hill open to the Northward of the Montague Chatelay, a large lofty mountain near the former. In leaving the bay, keep the notch open until St. Mark Point opens out two or three degrees to the Westward of Morne Diable Point, in order to avoid the reef which skirts the shore nearly as far as the latter point; Morne Diable from this position will appear as an island.

It is high water, full and change, at Gonaïves Bay at 8h., and the rise and fall is about foot. *Tides.*

Between the S. side of the peninsula of Verreur Point and Halle Point, is the Bay of Tortue, about one mile and a half in extent. Its entrance, however, is blocked up by a reef which extends a short distance outside of it.

From Gonaïves the shore takes a Southerly direction, continuing very low to within a mile of Morne Diable Point, when it becomes a little elevated, and forms a flat wooded table land, called the Devil's Table, which, as stated above, appears at a certain distance like an island. The extremity is a steep rocky cliff, about fifty feet high. At the bottom of the bay, North of the cliff of Morne Diable Point, is the river Artibonite.

ARTIBONITE RIVER.—The entrance to this river is nearly dry at low water; at high tide boats may proceed five or six miles up, and obtain a good supply of water, but there is no wood at hand. *Artibonite River.*

To anchor before Artibonite River, having brought Morne Diable Point to bear S. about three miles, a few small houses will be seen near the shore: bring them on an E. S. E. bearing, and when within about two miles of them the vessel will come upon a detached bank, upon which she may anchor in from twenty to six fathoms. The lead, however, must be well attended for the bank is very steep, and if she gets within that distance, no bottom will be found, until about half a mile from the shore, when she will come suddenly into five fathoms. On the S. side of the entrance to the river there is a remarkable small cavern, but this place is seldom visited. *Directions.*

ST. MARK BAY.—From Morne Diable Point the shore takes a S. E. direction for eighteen miles, and then turns somewhat suddenly to the S. W. for the same distance to St. Mark Point, forming the bay or bight of that name, at the bottom of which is the town and anchorage. St. Mark Point is a broad round headland about three miles wide, steep to, and bears S. ½ W. ten miles from Morne Diable Point; from this line the depth of the bight is about seven miles. At four miles to the N. W. of the town there is a remarkable chalky cliff. The shores on both sides are so steep that a depth of from thirteen to nineteen fathoms will be found within two or three cables' length. The N. side is skirted by a reef within nearly that distance of the shore, as far as the river Guêpes, three fourths of a mile N. of the town; and the S. side is almost equally foul. From the shore the land rises to a considerable elevation, and the locality of the bay is pointed out from the offing by a remarkable mountain called Morne au Diable, which rises to the height of over five thousand feet, thirty miles E. by S. from the town. Temporary anchorage will be found off either the N. or S. end of the town, in eighteen fathoms, at about two cables from the shore. *St. Mark Bay.*

From St. Mark Point the coast trends into another bight, about two miles deep, as far as Montrou Point, which is low and bushy, and bears from the above S. E. ¼ E. eight miles.

Arcadins. THE ARCADINS are three small low bushy islets half a mile apart and the neare is about three miles from the shore. On their E. side they are bold and steep to, b the soundings are very variable; near them the bottom is hard, but as the shore is a proached it becomes soft and muddy. To the Northward of the Eastern islet, there is coral bank of four and a half fathoms, which extends off a mile, and to the Westward the islets the ground is also foul to that distance. To the S. E. of them there is also bank of rocky heads on White Ground, called the Arcadin Reefs, running two miles a N. W. and S. E. direction.

The N. end of this bank lies E. two miles from the Southern islet, and has as little ten feet water on it. A vessel may go either to the Eastward or Westward of it; if the Eastward she must pass Vases Point within a little less than a mile, and when the parallel of that point she will be clear of the S. end; if the Western side be take bring the W. end of Trou du Forban Point to bear N., and steering S., keep it on th line until abreast of the S. end of the shoal. This course will also lead clear of a d tached coral bank of seven fathoms, lying N. by E. ¾ E. two miles from the Northe islet. This latter islet is also foul to the distance of a cable's length to the N. N. W Anchorage will be found in eleven or twelve fathoms, with the smallest islet S. W. b W. about a mile distant; but the shoals just described are so steep to and imperfect known that a stranger bound into the bight of Port-au-Prince had better pass to t Westward of the islets altogether.

The shore from Montrou Point continues its S. E. direction as far as the village of A cahais, eighteen miles distant, and it may be approached within a mile, if intending pass inside the Arcadins; be careful, however, to avoid foul ground between Trou Forban Point and Vases Point, and which extends out about one mile and a fourth the Westward of the latter.

Arcahais. ARCAHAIS.—The village of Arcahais is about eight miles to the Eastward of t Arcadins, and there is anchorage in fifteen fathoms at half a mile off shore, with the v lage bearing N. W. by W. To the E. S. E. of the village of Boucassin, which is situat some miles to the S. E. of Arcahais, there is a small islet named Carnero or Sheep's Co It lies so close to the shore, however, as not to be easily recognized; it is bold to, a should always be left to the Eastward.

Marais Road. MARAIS ROAD.—At six miles to the Southward of Carnero Islet is the road of Fo or Marais, in which there is good anchorage near the shore. Thence commences an e tensive low plain, enclosed by lofty mountains, called the Cul-de-Sac, which extends fro the Grande-Rivière as far to the Southward as the city of Port-au-Prince.

Gonave Island. GONAVE ISLAND fronts the bight of Port-au-Prince, and is thirty miles long in E. S. E. and W. N. W. direction, seven or eight miles broad, and of considerable elev tion. When seen from the N. W., two remarkable hills present themselves, and the hig est called the Table from its flat summit, rises toward the S. E. end of the island to t height of two thousand five hundred feet. The W. side of the island is a rather lo iron-bound shore, bold and steep to, having fifteen to eighteen fathoms within a cable length.

Gonave is connected to the main at its S. E. end by a bank of very irregular soun ings, varying from six to nineteen fathoms, coral rock and sand. The Northern ed passes about two miles outside the Arcadins; the Western edge takes almost a straig direction to Léogane Point, thirteen miles to the S. E. The Northern side of the isla forms with the opposite shore, the channel of St. Mark, which at its narrowest part, b tween Galet's Point and Montrou Point, is eight miles wide; and it is about the sa distance across to the Arcadins.

N. and N. E. Coasts. N. AND N. E. COASTS.—The N. coast of Gonave, from Lataniers Point to Bo homme Pitre Point, is foul to the distance of a cable, where the depth is from three five fathoms. From the latter point to the little island of La Marc, the reef extends little farther out, from half to three fourths of a mile, leaving between it and the sho an anchorage for droghers; between the points, and about five miles from La Marc, Gros Islet. From La Marc to Galet's Point, the N. E. end of the island, the shore clear; but from this point, which is low, to Grosse Point, the N. E. side of the island skirted by a broken reef to the distance of more than a mile.

Anchorages. Within the reef there is a depth of four and five fathoms, white sandy bottom, and s eral openings fit for vessels of nine or ten feet draught. The best of these openings w be found in front of the fishermen's huts, and the best anchorages, off the bays, Gale Trou (or Cove), Constantine, and Piron, just within the edge of the reef, and about eig fathoms from the shore.

S. E. Coast. S. E. COAST.—The E. end of Gonave Island from Grosse Point to Fantasque Po is bold and forms Grande Bay. The latter point, which is the S. E. extreme of Gona is a very conspicuous white bluff cliff, and the land forms a small peninsula two miles extent N. and S., and one mile E. and W.

Not far to the Eastward of the bluff is a small islet called Petite-Gonave, which foul on its N. side for two cables' length. To the E. S. E. of the islet there

o an extensive bank, which runs off from it to the distance of four and a half miles, d on which will be seen two small cays, called Sable and Frégate le Croissant. There channel between the bank and Petite-Gonave, and also between the latter and Fanque Point; but the current is so strong and variable, that it would be dangerous to empt either without a leading wind.

Small vessels will find an anchorage under the W. end of Petite-Gonave, and it had ter be entered from the Southward. *Anchorage.*

The only spot where vessels of large draught can anchor safely is in the Anse du rc, which is on the W. side of the peninsula, between Fantasque and Sable points: entrance, however, is so beset with dangerous rocky shoals, not easily seen, that it uires the assistance of a pilot.

S. W. COAST.—From Sable Point to Retours Point, the coast of Gonave is bold and ep to, but from the latter to the S. W. end of the island it is skirted by detached reefs, d becomes dangerous. Small vessels, however, with the help of a pilot, will find their y through into anchorage off a place called Baleines. Here there are from fifteen to hteen fathoms on the edge of the reefs, which extend from three fourths to one and ee fourths miles from the shore. A remarkable white spot may be observed at about rteen miles from the W. end of the island. *S. W. Coast.*

Good water may be obtained at about five miles to the Eastward of the N. W. point Gonave. *Water.*

PORT-AU-PRINCE.—The bay of Port-au-Prince is situated between Cul-de-Sac int on the N. and Lamentin Point on the W.; both are low and woody, and the for- r lies N. E. five and a half miles from the latter. The city, which is the capital of yti, or the Western division of the island, stands at the bottom of the deep bight, on Northern declivity of a fork of the great mountain ridge, called Camp des Fourmis, ich runs through this end of the island from E. to W. *Port-au-Prince.*

he city is protected toward the E. by Fort Alexander, which is built on a hill three dred and seventy feet above the level of the sea, and is a remarkable object, having gnal-staff and a yard on it. Near the N. end of the city there is a small secure basin, ed the Inner Harbor, about six cables wide, with a depth of four fathoms, and capa- of containing a few vessels moored head and stern. On its Northern side lies a all cay called Fort Islet, on which is a small water battery built of red brick, which, h other works along the shore, commands the anchorage. Fort Bizothon, the Westmost defence, is a low, square building standing close to the shore, about two miles m the city.

he watering place at Port-au-Prince is at a small stream a little to the Eastward of t Bizothon; the shore, however, is so foul that the boats will have to anchor off the gle beach and the casks rafted. The best time to water is at early dawn and even- when the pool is not occupied by the washerwomen. *Water.*

PELICAN CAYS.—The bay of Port-au-Prince is almost blocked up to the North- d by numerous shoals and small islets which protect the anchorage. The outerst islets named Pelican Cays, lie N. W. five miles from Fort Alexander, N. E. by N. ee and a half miles from Lamentin Point, and two and a fourth miles from the near- part of the Eastern shore. They consist of five small low sandy and mangrove s occupying a space of about three fourths of a mile in a N. E. and S. W. direction. their N. side they may be approached within half a mile. To the E. S. E. foul und extends out nearly two miles, to within three fourths of a mile of the shore, to the S. W. full two miles. About one mile and a fourth to the Southward of the s there is a detached rocky shoal, half a mile in length from N. to S. on which there small cay, named Sand Cay, lying N. W. by W. three and three fourths miles from t Alexander.* *Pelican Cays.*

HE INGINAC SHOALS, which lie about a mile to the S. E. of the Sand Cay, are rocky banks nearly dry, three fourths of a mile in extent N. and S., and nearly con- ted to the low cays on the N. side of the Inner Harbor of Port-au-Prince. *Inginac Shoals.*

he channel for large vessels into the Outer Roads and harbor of Port-au-Prince lies ween the S. W. end of the shoals just described and the main; and in the narrowest t, between Sand Cay and Tor Point, it is one mile and a half wide. The soundings ughout it are very irregular, varying from four to twenty fathoms; the ground in y parts foul, and the Southern shore is skirted by a rocky ledge to the distance of cable and a half. *Directions.*

essels coming from the Northward through the St. Mark Channel, and being abreast atron Point, may choose either the inside or outside channel of the Arcadins. Most ectories advise the former, which leads farther to windward, with the land wind; from what has been said before of the present imperfect knowledge of this route,

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The sand bore marked on the chart as Sand Cay is under water, but on a clear day both it and the nac Shoals can be easily seen.—*Remarks by Mr. F. Wise, Master of H. M. S. Medea*, 1855.

it will be prudent for strangers to take the outside channel between the Arcadins a Gonave.

Outside Channel. OUTSIDE CHANNEL.—The sea breeze in this channel, in the daytime general blows from W. N. W., and is therefore a free wind. When near Montrou Point, shou the atmosphere be clear, Prince's Peak, a remarkable mountain about ten miles to t Southward of the city, and five thousand feet high, will probably be sighted. The pe on a S. E. ½ E. bearing, will lead clear to the Westward of the Arcadins, and up Lamentin Point, about twenty miles distant. There is a fixed light fifty-two feet hig on this point. When Fort Alexander comes open to the Southward of Fort Isle, E. E. ¾ E., a vessel will be to the Southward of the Pelican Banks, and may haul up in the Outer Roads.

Light.

The best anchorage in the roads will be found with Fort Alexander E. ½ S., Fo Bizothon S. S. W. ¾ W., and Fort Islet E. by N. distant three fourths of a mile, twelve fathoms, mud and sand. A more convenient berth for watering would be wi Fort Alexander E. by N. ½ N., and Fort Bizothon S. by W., in about thirteen fathom clear ground; but be very careful to see the vessel is not on a rocky bottom. In t centre of the roads there is a small coral patch of four fathoms, lying with Fort Bi thon S. by W. ½ W., and Fort Islet E. by N. ½ N.; Lamentin Point just shut in wi Tor Point, will place a vessel close to the Southward of it. The shallow patches m be seen in clear weather.

In leaving this anchorage, if bound to the Northward, it would be better to wei about midnight with the land wind, which will most probably take a vessel up to t Arcadins by daylight, and through the St. Mark Channel before the sea breeze sets which is generally between 10 A. M. and noon. In the winter season the land wind w sometimes blow a double-reefed topsail breeze, with heavy squalls, for several days, a we have already called the attention of the navigator, in page 598, to the violent tor does which he will meet with here in the hurricane months. Should the land wind before the vessel is clear of the Arcadins, she had better anchor under them, and w till it comes off again about 8 or 9 P. M.

Rochelois Bank. ROCHELOIS BANK.—If bound to the Westward for Port-au-Prince, or in beati up from that quarter through the Gonave Channel, great caution is required in approa ing a rocky bank, named the Rochelois, which is about five miles long, E. and W., th broad, and lies S. by E. ½ E. about eighteen miles from the W. end of Gonave, and th miles from the nearest part of the island. Its Southern edge is about six miles from shore of Hayti, and on the meridian of a remarkable isolated mountain, two thous six hundred feet high, rising nine miles to the Westward of Miragoane, and three mi from the shore. Near the centre of the bank are three small, low, dry docks, called Firogues; and half a mile N. N. W. of them there is a small patch of two fathoms, a another of the same depth at three cables' length to the N. The soundings on the ot parts are very irregular, varying from four to eight fathoms, and the bank is steep to

Léogane. LEOGANE.—From Lamentin Point the coast takes a Westerly direction for miles; it then bends round to the S. W. for three miles to the town and river of L gane, and is foul all the way to the distance of a fourth of a mile from the shore the entrance to this river there is anchorage in from eight to thirteen fathoms, and edge of the bank is about a mile to the Westward. A bank with from six to thirt fathoms on it lies N. W. by N. three miles from Léogane Point, and it will be prud to avoid it in navigating the Gonave Channel.

From Léogane the coast trends to the S. S. W. for six miles, and then resumes Westerly direction.

Grand-Goave Bay. GRAND-GOAVE BAY lies about four miles from the bottom of this bight, bu affords no good shelter. A short distance to the Eastward of it there is a little is and the town will be seen on the left bank of a small river.

Gonave Channel. GONAVE CHANNEL.—About seven and a half miles N. ¼ W. from Grand-Goa with the E. end of Gonave Island N. by W. ½ W., and the extreme of the land No ward of the town of Léogane, E. ½ N. is a shoal with ten fathoms over it, E. and about one mile and a half in extent.

Petit-Goave Bay. PETIT-GOAVE BAY is separated from Grand-Goave by a large bluff headl crowned by a hill named Tapion du Petit-Goave. Near the Eastern shore is a sm sandy islet, called Anglais, or Poules, from which a bank extends off nearly half a to the N. W. The bay is open to the Northward, and the soundings are very irregu but anchorage will be found in six or eight fathoms, with the islet bearing N. or N. E., and the village E. S. E., at about two cables' length from either. Be careful, h ever to avoid a small patch of two fathoms lying to the Westward of the islet. Anto Point, which terminates the W. end of the bay, is foul to the distance of two cables the Westward.

Carénage. CARENAGE.—At the W. end of Petit-Goave bay there is a well-sheltered and inlet four miles long, and half a mile broad, called the Carénage, or Port de l'A which is defended by Fort Royal.

IRAGOANE BAY lies W. by N. about twelve miles from Petit-Goave, and nearly way between, there is a remarkable clear spot on the side of a mountain, presenting appearance of a narrow scorched grass-field. The bay is three and a half miles long, two and a half deep, and protected on the N. by a reef almost dry, through which e is only one navigable cut, a cable wide, which requires the help of a pilot to navi- e. The anchorage is just within the reef, about a fourth of a mile N. W. by N. of fort. There is also a snug spot in the S. W. part of the bay, between two islets and main, with seven and eight fathoms in it, but it is very narrow. *Miragoane Bay.*

spring of excellent water will be found in a cove at one mile and a fourth to the tward of Miragoane; the cove carries a depth of four and five fathoms, but a bar of lve feet runs across its entrance. *Water.*

OCHELOIS.—The village of Rochelois is situated near the base of the lofty peak of agoane, and about three and a half miles from Frégate or Black Isle, a small cay in reef near the W. end of Miragoane Bay. *Rochelois.*

ETITE RIVIERE.—At four and a half miles from Rochelois, are the fort and village Petite Rivière; two and a fourth miles to the Westward of this is a remarkable sandy and one and a half miles farther on is the Petite Rivière. Thence, for a space of miles, the shore is composed of black perpendicular cliffs, about twenty feet high. ut two miles to the Westward of the river is the village of Anse à Veau; and nine es beyond this is another village called Petit Trou, which is a mile to the Eastward he entrance to Baradaires. All this part of the shore is bold and steep to, and rds no shelter. *Petite Rivière.*

ARADAIRES BAY is about four miles wide N. and S., seven miles deep, and open he Eastward. The Northern side is formed by the narrow peninsula of Marsouin, ch is steep and bold to. At the entrance, on the S. E. side of the bay, near Picolet t or Roitelets, are several small cays, from which a reef stretches across to within ly half a mile of the Bec-à-Marsouin—the E. end of the peninsula—leaving a small nel along its S. side, deep enough for vessels of the greatest draught, but it requires assistance of a pilot for the anchorage is encumbered with many shoals. *Baradaires Bay.*

AIMITES BAY.—The entrance to this extensive basin lies between Fantasque Point, n and a half miles from the E. end of the peninsula of Marsouin, and the Island of nde-Caïmites, and is about a mile in breadth. The channel, although deep enough vessels of the largest draught close under the island, is very narrow, owing to a low bank which extends off a mile to the N. W. from Fantasque Point, and another k a mile to the Westward of this, on which there are only ten feet water. *Caïmites Bay.*

he Island of Grande-Caïmites is five miles long W. N. W. and E. S. E., two and a half es broad, five hundred feet high and thickly wooded. About half a mile to the stward of it is the Petite-Caïmites, a small islet a mile and a half long, and three rths of a mile broad, with a channel between for small vessels. From the latter islet xtensive reef sweeps outward to the S. W., and connects itself to the shore about en miles to the Westward of Fantasque Point, and completely shelters the bay from Northward. On it will be seen numerous small rocks and wooded islets, called es au Bois.

arge vessels may anchor close under the S. W. side of the Grande-Caïmites, and the y direction to be given is, to keep that island close aboard; but a pilot is necessary; indeed, neither this nor Baradaires Bay should be entered by vessels of large ught, except in a case of necessity. Small vessels may proceed farther in, and an- r close off the shore; but they must not haul in round the banks to the Westward of tasque Point before the W. end of the Grande-Caïmites bears N. The town is situ- d at the W. end of the bay. *Anchorage.*

EREMIE is an open roadstead about nine miles to the Westward of the Grande- mites. The edge of soundings lies about three fourths of a mile from the shore, and the bank before the town the depth is from three to six fathoms; but being exposed he full force of the N. E. wind, in strong breezes it breaks, and the anchorage, con- uently, is not safe. The village is protected by a fort on the N. point of the bay, and E. three and a half miles from it there is a range of remarkable cliffs, four miles in ent. A small river empties itself into the sea at half a mile to the S. E. of the age. *Jérémie.*

IVER SALEE.—At seven miles to the Westward of Jérémie is the Point and River lée, the Northern extreme of this part of Hayti. Thence the shore takes a W. by S. ection for twelve miles to Seringue Point, which is a bold, prominent headland. In place are the two small bays and villages of Bonbon and Clerc, where boats will shelter, but the shore is bold and steep to. *River Salée.*

rom the above point the shore trends S. W. by W. ½ W. two and a half miles to e Dame-Marie, and is foul to the distance of three fourths of a mile; but the cape o bold that N. of it there is no bottom with one hundred and twenty fathoms line e to.

APE DAME-MARIE or DONA MARIA is the N. W. extreme of the loug, narrow *Cape Dame-Marie.*

peninsula or neck of land forming the W. end of Hayti, which, between it and u Tiburon, is twenty miles broad. This shore is skirted by an extensive bank of soundi commencing at these points, and sweeping off to the Westward to the distance of ei miles, abreast of Irois Point. The edge is very abrupt: the depth is generally un twenty fathoms, decreasing gradually as the coast is approached; and the water is clear that the sandy bottom may be easily seen when the weather is unclouded.

The bank of soundings which borders this cape appears to extend as far Westw as nine miles; at this distance, with the cape E. by N. ⅓ N., there are nine and a h fathoms, and thence in a N. E by E. direction for about twelve miles, or until the c bears S. by W. ⅝ W., about five miles, the same depth will be found, when the wa begins to deepen.

Cape Dame-Marie is rather low, and on its extremity there is a small hill. At a n and a half to the Westward of it the depths are from fourteen to seventeen fathoms, seven to eight fathoms within a mile. From the cape the shore bends in to the So ward, forming a slight bay, three and a half miles in extent, as far as the village of Da Marie. A short distance to the Southward of the cape there is a similar project called the False Cape, and between them a reef skirts the shore to the distance of a ca and a half. A short distance within this, in the N. E. corner of the bay, is the Ri Petite; and at three fourths of a mile to the S. E. of it is a remarkable perpendic white cliff, called the Twelve Apostles or Ministers' Point. Near the entrance of river, on the summit of a hill, there is a small battery.

Anchorage. Good clear anchorage will be found almost everywhere in the bay just described, w the prevailing wind, which, under the land, is generally from E. S. E. to N. E. The m convenient berth, if intending to water at the Petite River, is in five fathoms, at hal mile W. N. W. of the battery. At a mile from the shore the depth is from four to fathoms, and at two miles seven to nine fathoms. A vessel may also anchor in seven a half fathoms, with the cape bearing N. N. E. ½ E., Irois Point S. by E., and the Bal Rock S. by W.

Les Baleines or Whale Rocks. LES BALEINES or WHALE ROCKS is a small rocky cluster, rising just above surface, from a white bank of four fathoms, about a cable in extent. They bear S. by ½ W. seven and a half miles from Cape Dame-Marie, N. by W. a mile and a half fr Boury Point, and lie about half a mile from the shore, with a clear five-and-a-half-fa om channel between. About a cable's length outside them the soundings are eleven, and seven fathoms, hard bottom.

Boury Point. BOURY POINT is a remarkable bluff brown cliff, with a small rock over it awash, and should not be approached within two cables' length. S. by W. four an half miles from this point, is Irois Point, the Western extreme of Hayti.

Irois Point. IROIS POINT may be readily distinguished by a small detached hill on its extrem which, at a certain distance, has the appearance of an islet. Between these points shore is slightly indented, forming two bays, separated by a bold bluff about a mil the N. E. of Irois Point.

Anse de Nault. ANSE DE NAULT, the Northernmost of these bays, affords very good anchor Near its S. E. end is the small islet St. Pierre, and a short distance within Boury P is the town, overlooked by lofty mountains, one of which terminates in a remarkable p Not far from the S. end of the town may be seen a little rounded height, rising abru from a cliff on the shore, and crowned by a fort. The shore is quite clear, the sound

Anchorage. regular, and the most convenient anchorage for vessels of light draught is in about fathoms, with the peak in line with the tower of the church in the village E. N. E. Large vessels generally anchor to the S. W. of St. Pierre.

From Irois Point the shore again forms a slight bay as far as Figuier's Point, S. S ¾ E., distant three and three fourths miles. In the N. E. part of it there is a small lage, and off the S. end of the village a black rock. The shore is bold and steep to, a vessel may anchor N. W. of the rock, in nine or ten fathoms, shelly ground; or to Southward of it, in eight or nine fathoms, sand and mud, N. N. W. of a small humm toward the middle of the bay. This anchorage, however, is exposed to the Southw and the heavy swell which rolls in makes riding extremely uneasy, and landing very ficult.

Cape Tiburon. CAPE TIBURON.—A short distance to the Southward of Figuier's Point is casses Point. The shore is slightly indented, and between these headlands the dep five and a half and seven fathoms. A little to the Southward of the latter is Cape Fous or Fools. When seen at a distance, these three capes appear to form a mas lofty promontory, rising abruptly from the shore to the height of about seven hun feet, and then gradually ascending to the rounded summit of a mountain nearly t thousand feet high, about a mile from the shore, which receives the general name of C Tiburon, the S. W. end of Hayti Thence a great range of mountains, called La H or Grande Anse, extends far into the interior, and at about eight miles to the East a lofty peak reaches the height of over four thousand feet.

Tiburon Bay. TIBURON BAY.—From Cape Fous or Tiburon, the shore takes an E. S. E. direc

mile and a half to a bluff rocky point, where it trends E. ½ S. two miles, and then sharply to the S. S. W. three fourths of a mile to Burgos Point, forming the bay tiburon. The latter point is low and rocky, and foul to the distance of upward of a e's length.

Anchorage.

e best anchorage in Tiburon Bay is in four or five fathoms, with Burgos Point S. E., and Cape Tiburon W. N. W. There are four and four and a half fathoms within ble's length of the shore all around the bay, and on the N. shore six and seven fath- stiff clay, within half a cable's length. The edge of soundings is about three hs of a mile to the Southward of Cape Tiburon, and half a mile outside the shore of bay.

Water.

ere is a village at the head of Tiburon Bay, overlooked by a small battery, near h is a little river, convenient for watering. The casks may be either landed and d over a narrow neck of land to the stream, or they may be filled in the boats by ets.

S. Coast of Hayti.

OUTH COAST OF HAYTI.—From Burgos Point the shore of Hayti trends E. S. E. and a half miles to Aigrette's Point, which is low and rounding, and has near it a l mound and white cliff. Off here are some reefs on white ground, which partially at low water and extend out a mile and a half from the land. Thence, for four s to the N. E. by E., the shore is composed of a dark shingle beach, which termi- s at a conspicuous high cliff, overlooked by the lofty peak just mentioned. The of soundings lies about two miles out, with seven to thirteen fathoms within it, and orary exposed anchorage may be found here.

Port Piment.

ORT PIMENT.—The coast from the above cliff takes an E. S. E. direction for thir- miles, to two other remarkable white cliffs; and four miles from the former there small town, on a prominent point, and a small bay to the Westward of it, called Piment. A vessel may anchor a mile W. S. W. of it in seven fathoms. At three s to the Eastward there is a remarkable red cliff, one hundred and fifty feet high. een this and the two white cliffs are three small villages.

Port Salut.

ORT SALUT.—From the two cliffs the line of coast takes a S. E. direction ten miles ort Salut; between them are two more small villages. There is also a town at Port t, and to the N. W. of it a white cliff, under which there is anchorage for small els. About two miles to the N. W. of it there is a dry sand bore half a mile from shore, and a mile off shore from the village there is said to be a coral shoal of twelve

Gravois Point Bight.

RAVOIS POINT BIGHT.—From Port Salut the shore trends S. by E. ½ E. five s to Gravois Point, which is thickly wooded to the height of about sixty feet above ea. It is very steep to, having a depth of forty-eight fathoms within one third of a The coast of this deep bight—which, in a direct line N. W. by W. ½ W., be- n Gravois and Burgos points, is thirty-five miles in extent—although possessing derable features, is very imperfectly known; as already stated, exposed anchorage be obtained off many parts, but it had better be avoided—except for some tempo- purpose.

Abacou Point.

BACOU POINT.—From Gravois Point the shore takes an Easterly direction for miles, and then turns to the N. E. for one mile and a half, rounding off and forming cou Point, which is low and skirted by a reef to the distance of nearly a mile. Al- gh the shore is low, the land rises a short distance from it to a considerable height. edge of soundings is about half a mile from the shore, and takes an Easterly direc- to within that distance of the S. side of the Isle of Vache.

Isle of Vache.

LE OF VACHE is eight and one fourth miles long in a W. by N. and E. by S. di- on, and Diamant Point, its S. W. end, lies E. ½ N. six miles from Abacou Point. Its ern part is low, thickly wooded, and about a mile wide; the Western portion is four s wide, and composed of small detached hills about one hundred feet high, partially ed of wood, and at the distance of nine or twelve miles they have the appearance veral small islets. The S. shore runs nearly straight, and is skirted by a reef to the nce of a cable's length, steep to.*

the E. side of the N. W. point of the island is the small bay called Feret, in which is shelter for small vessels having a pilot or good local knowledge and good ing and fishing will be found here. The N. side of the island is skirted by numer- hoals and small low cays to the distance of about six miles. At one mile and a from the N. W. point of the island there is said to be a sandbank with three and fathoms on it.

Water or Grosse Cay.

ATER or GROSSE CAY, the Northernmost of the above cays, is covered with a

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dmiral Mackellar states that a reef extends not less than two miles from the S. W. point, and t will be cleared by keeping Abacou Point bearing W.; but on the present charts this bearing ead within a mile of the point. This part of the coast of Hayti appears never to have been accu- y examined, and it is difficult to reconcile the brief and important information of the various rities quoted in the most recent publications.

grove of large trees; it is bold to, and some distance to the Northward of it there good anchorage in from thirteen to thirty fathoms, but the soundings are irregular.

Tolle. TOLLE, the Easternmost cay, lies N. N. W. three and a half miles from the E. end the Isle of Vache, to which it is connected by a reef on White Ground, which exte off some distance from the point. W. ½ N. one and three fourths miles from Tolle C there are two more small islets on the N. W. part of the bank. Within the cays, and tween the reefs and coral heads, there are navigable veins of deep water known to pilots, and which afford anchorage to small vessels.

Anchorage. The Western shore of the Isle of Vache is said to be free of danger, and to afford chorage anywhere to the Southward of the N. W. end at about three fourths of a m off shore. The soundings are very irregular, but the bottom is easily seen; in the m dle of the channel, between it and Abacou Point, the depth is fifteen fathoms.

Aux Cayes Bay. AUX CAYES BAY.—From Abacou Point the coast bends round seven or eight m to the N. N. W. to the entrance of the river Acul. It then takes a N. E. direction about seven miles to the city of Aux Cayes, the cathedral of which bears N. N. W. ½ five and a half miles from the N. W. point of the Isle of Vache. All this part of coast is very low, but backed at a short distance by lofty mountains. Nearly mid between the city and the river Acul is the village of Torbee; and about one m and a half from the city is the village of Vieux Bourg, on which is the road of Chate dun.

The N. E. end of this great bight may be said to terminate at three remarkable w cliffs at the extremity of the mound, which separates two deep ravines on the W. sid Caballon Bay, about three miles to the N. E. of the city, and six miles N. of the N end of the Isle of Vache. About midway between the cliffs and the city is a small called Compagnie.

White Ground. WHITE GROUND.—An extensive shallow bank of white ground, upon which th are two dry heads, extends off from abreast the city of Aux Cayes to nearly half toward the Isle of Vache, and along the shore to the S. W., nearly as far as Tor leaving a narrow space within, in which there is good anchorage for small vessels the ordinary winds. Off the city there is a depth of only thirteen feet, and vessel sixteen or seventeen feet draught have to proceed to Chateaudun Road.

Winds. The winds in Aux Cayes Bay are pretty regular. The land wind comes off from N. W., and veers round gradually to the N. E. until about noon, when the sea breeze in from the S. E., and veers to S. toward evening.

Directions. The best way to approach either of the anchorages in Aux Cayes Bay, is through Western channel between Abacou Point and the Isle of Vache. In taking this chan run down the S. and W. sides of the Isle of Vache within the distance of about a m After rounding the S. W. point—which requires great caution—take care not to c into less than four and a half fathoms until abreast the N. W. point. When the h mock and cliffs of Caballon are sighted, steer for them about N. by E., which will between the White Ground and the Isle of Vache Bank.

If a vessel cannot enter the inner anchorage off the city, on account of her draug when Caballon cliffs bear about N. W. ½ W., she may haul up and anchor to the So ward of them, or farther in, under Compagnie Isle, with Tourterelle Point battery at E. end of the city bearing W. Observe, however, that at half a mile to the S. E. of points of the cliffs there is a shoal of six feet, with eight fathoms within it, and the ve will ride here exposed to the S. and S. E.

As a vessel must have a pilot to enter the inner anchorage, the channel through reef being only about one hundred and twenty yards wide, the usual signal had better made as soon as possible. In this route the depth will be from three and a half to and a half fathoms, irregular soundings, and the bottom will be visible until the de is six and seven fathoms, when it is lost sight of, and the tinge of the water become light green.

If the anchorage in the Chateaudun Road is preferred, having brought the N. point of the Isle of Vache to bear S. E. by E. ½ E. about a mile distant, steer W. by ½ N., which course will lead up to within a short distance to the Southward of the lage of Torbec. Be careful to keep the N. W. point of Vache on the above bearing, order to avoid a small shoal lying in the very centre of the bight, with the N. W. p E. ¾ S., Abacou Point S., and the centre of the city N. by E.* The above course lead about a mile to the Northward of the shoal, with soundings of from five to e fathoms. When within about two miles of Torbec, the white flag on the beacon, at S. W. end of the main reef, will be sighted, which must be left to the Eastward,† having brought it to bear about S., haul up to the N. E. along shore, keeping in f

* The position of this shoal is taken from the manuscript plan of Admiral Mackellar, who appe have sounded the whole of this bight most minutely. It is marked with the usual small cross dens very shallow water, with from four to seven fathoms within half a mile of it.

† The existence of this beacon is doubtful.

to five fathoms water, and anchor in six fathoms, muddy bottom, on the meridian or tle to the Eastward of the village of Vieux Bourg.

hould a vessel have to beat out of the bight, she will find the Western shore to the hward of the Cayes River free from danger, and will have a depth of from seven to fathoms within three fourths of a mile of it.

OOS SHOAL or LEIGHTON ROCK.—This danger, reported to break, and upon ch a vessel is said to have struck in 1834, was placed in the old charts S. by E. ¾ E. nty miles from the E. end of the Isle of Vache; but from the report of Mr. Leighton, ter of the *Samuel*, who saw it in 1847, it would appear to bear S. S. E. ¾ E. thirty s from that point; it may be, however, that two shoals exist in this neighborhood, they consequently appear as such in the present charts. *Loos Shoal, or Leighton Rock.*

ABALLON BAY lies between the three cliffs and Isle du Carénage, and about e miles to the Eastward of Aux Cayes. The shoal has already been noticed which be avoided to the S. E. of the cliffs, and nearly in the centre of the entrance of there is another shoal nearly dry. The W. side of the bay is steep and rocky, and best anchorage will be found on the E. side, close up under the mangrove trees, re the depth of five fathoms will be found almost touching the shore, and the Isle du énage will shelter to the S. E. *Caballon Bay.*

LAMAND or FLAMINGO BAY adjoins Caballon Bay, and is nothing more than rrow inlet, two and a half miles in length in a N. E. by N. and S. W. by S. direc- and nearly half a mile in breadth. The S. side of the Isle du Carénage is foul to distance of three cables' length, and the E. side of the entrance from Toulan Point e inner point, a mile to the Northward of it, should not be approached within a e's length. The inner point is also foul on its N. side, and between it and the op- te shore the channel is not more than one fourth of a mile wide. Within this the h gradually decreases from four and a half to two fathoms, toward the head of the and the inner part is so well sheltered that small vessels moor in it during the icane season. *Flamand or Flamingo Bay.*

RAND BAIE DE MELLA or MESTE lies a mile to the Eastward of Flamand and is three fourths of a mile wide in the narrowest part and two miles deep. ough open to the Southward, the holding ground is good, and it is capable of re- ng vessels of the heaviest draught, there being five and six fathoms water at its in- part. Nearly in front of the entrance, however, and about a mile from the shore, is Mella or Meste Bank. *Grande Bai de Mella or Meste.*

ESTE BANK is a narrow ridge running E. and W. two miles. The E. end lies S. e Magazine Cays, which lie close to the shore to the Eastward of the entrance of de Bay, between Boyet Point and the entrance to Petite Bay de Meste. The W. lies S. of St. Rom Point, at the W. side of the entrance to Grande Bay. There is water between it and the cays, but it will be better to pass outside and haul in r the W. end, and keep St. Rom Point aboard in entering the bay. *Meste Bank*

ETITE BAIE DE MESTE lies about two miles to the Eastward of the Grande and is merely a small inlet, about a fourth of a mile wide and a mile deep. Al- gh open to the Southward, it has good holding ground in from four to six fathoms, the shores appear to be quite bold. *Petite Baie de Meste.*

T. LOUIS BAY, about one mile and a fourth to the Eastward of the above, is about mile and a half wide at the entrance, and affords excellent anchorage. It is open e S., but to the S. E. it is protected by some small cays. The two outermost and st of these cays, called Moustique and Orange, lie about a mile from the shore in an d W. direction, and are three fourths of a mile apart. On the W. end of Orange are two remarkable hillocks, forty and eighty feet high, which are seen from Aux just clear of the intermediate points; the Eastern extreme of the Isle of Vache s from them S. ½ W. Within them are the small cays, Frégate or Rat and Teig- e, and close to the shore, at three fourths of a mile to the Eastward of Bonite Point, islet named Henri. The town of St. Louis stands in the N. E. corner of the bay, about half a mile S. W. of it, and N., two and a half miles from the W. end of Orange there is a small rock, on which is Fort St. Louis; and about a fourth of a mile to N. W. of St. Louis, on a low point, is Fort Compagnie. *St. Louis Bay.*

e entrance to St. Louis Bay lies to the Westward of Orange Cay, between it and al Point, one mile and a fourth distant. In running in borrow toward the shore, ng to the Eastward a small, dry sand-bank, lying nearly in mid-channel off Pascal t. Having passed within this haul into the bay, and anchor in seven fathoms about cables' length to the Westward of Fort St. Louis; or a vessel may pass between ort and the main to an inshore berth off the town, according to her draught. In channel the depths are four and five fathoms. Should the E. side of the bay be rred to anchor on, be careful to avoid a small patch of two and a half fathoms, half a mile S. E. by S. from Fort St. Louis. In a case of necessity the mariner may his way into the bay from the Eastward by passing in to the Eastward and North- of Moustique Cay; close on the N. side of Rat Islet, which lies off the N. E. end *Directions.*

of Orange Cay; and between it and Teigneuse Cay. This channel, however, is r narrow, and there are many shoals between Rat Islet and Bonite Point, at the E. side the entrance to the bay.

The S. sides of Moustique and Orange Cays are steep to, and there are from sevent to twenty fathoms within half a mile of them.

Ramier or Pigeon Cay. RAMIER or PIGEON CAY lies about two miles E by N. from Moustique Cay, a although very narrow, is about three fourths of a mile long, E. and W. There is a markable, barren, white hill on it; and on its S. side three sand-cliffs, twenty-five f high. A small cay, steep to, lies a fourth of a mile from its W. end, but there is passage between them. A bank, on the centre of which there are only three fathom lies S. S. E. ½ E. one mile and a half from Ramier Cay.

Regalo Cay. REGALO CAY, lying a mile E. S. E. of Ramier Cay, is a small, bushy islet, s rounded by a sand-bank to the distance of about a cable's length.

Anguille Cay. ANGUILLE CAY.—A mile N. of Regalo Cay, and the same distance N. E. by from Ramier, is a small islet just above the level of the sea, called Anguille or Cay.

Grosse or Aquin Cay. GROSSE or AQUIN CAY, the largest of the group, lies a mile to the Eastward Anguille Cay, and is two miles long from E. to W., and from half to a mile in brea its N. side is very irregular. It may be recognized by two remarkable white hills, f three hundred to five hundred feet high, and four white cliffs on its Southern shore. is bold and steep to on all sides.

Diamond Rock. DIAMOND ROCK is a small, white, rocky islet lying half a mile to the Eastward Grosse Cay, nearly in the middle of the Eastern channel into Aquin Bay, and a three cables' length to the Westward of Morne Rouge Point. The rock is bold on sides but the N., whence a narrow ledge runs off half a mile to the N. N. W.

Morne Rouge Point. MORNE ROUGE POINT is of considerable elevation, and at some distance off pears a bold head-land, but as it is approached it becomes known by three remark white hummocks near its extremity. The mountains near it rise to the height of a one thousand feet. In a small bay on the E. side of the point a small rock will be s called the Little Diamond.

Aquin Bay. AQUIN BAY.—The group of cays just described occupy a space of eight miles f Cape St. George, abreast of Moustique Cay, to Morne Rouge Point, and lie from on three miles from the shore, which they pretty well shelter. The Western portion of extensive bight is called English Bay. Aquin Bay is the name given to the Eastern tion, in which vessels of light draught will find security against any wind.

There are clear channels leading into the bight between most of the cays just scribed. That to the Eastward of the Diamond Rock carries a depth of four and a fathoms, but it is very narrow, and the wind baffles under Morne Rouge Point, and apt to throw a vessel on the Diamond ledge. On the W. side of the Diamond a ve will carry five and a half fathoms through, and have much more room. The cha between Grosse and Anguille cays is very good, as the former cay is bold to. That tween Anguille and Ramier cays is also deep and clear; but as a vessel must pas the Westward of Regalle, and the shoal to the Southward of Ramier is in the wa had better be avoided.

The opening between Ramier and Cape St. George is also free of danger, but be ful to avoid the Ramier Shoal above mentioned. The best channel for large vessel between Grosse and Anguille cays, but whichever is adopted the best anchorage wil found on the N. side of Grosse Cay, in from four to six fathoms, observing that abr of the cay an extensive bank extends out from the Hayti shore to the distance of ha mile, at the W. end of which there is a small cay called Trompeuse.

The soundings outside the cays are very irregular, and they should be given a ber three miles during the night.

Iron Coast. IRON COAST.—It may also be remarked that all the projecting points and head on this part of the island of Hayti are bold and steep to. The white hummocks re bling chalk hills are very remarkable; the Easternmost, and most elevated, called Hummocks of Aquin, form Morne Rouge Point, and cannot be mistaken. From the is point the shore takes an E. by S. direction for thirty-six miles to Cape Bayaneta, and comes so straight, bold, and steep to, as to receive the name of the Iron Coast. It aff no shelter whatever against the sea breeze, and the edge of soundings is within ha mile of the coast. About six miles to the Westward of Cape Bayaneta, there are s high cliffs, and near them a small, rocky islet.

Cape Bayaneta. CAPE BAYANETA may be readily distinguished by the white hillocks which o look the cliffs that form the shore, and is the S. point of a small bay of that name, a bottom of which there is a little village. The bay is quite exposed to the E., but u very favorable circumstances a temporary anchorage may be taken in twenty fath upon a narrow ridge of sandy soundings off the S. end of the beach.

From this bay to Cape Jacmel the shore trends E. ¾ N. ten miles; there are sev small bays between, but no shelter whatever.

CMEL HARBOR lies between Cape Jacmel and Cape Maréchaux, which are the oints of the entrance, and bear N. N. E. ½ E. and S. S. W. ½ W. from each other, t two miles apart; it is two miles deep and open to the S. E. The latter cape is , flat strip of table land, about one mile and a half in extent, terminating in a bold about one hundred feet high, and steep to. Within half a cable's length of it, there bottom with one hundred and fifty fathoms. *Jacmel Harbor.*

town of Jacmel stands in the N. E. corner of the harbor, on the E. side of the Gauche, which forces itself through several openings in the sandy beach forming ad of the harbor. On the Western side of the harbor are two remarkable white and on the Southern one there is a small fort. In the centre of the harbor no n will be found with eighty fathoms, and the narrow strip of soundings which the shore to the distance of from a fourth to half a mile, is steep to. A fourth of e to the Southward of the town a shallow, rocky flat runs off nearly half a

ere is a light-house on the innermost white cliff in the harbor of Jacmel containing te fixed light. Bound into the harbor get the light to bear W. by N. ½ N., and r it until it bears West, then steer E. N. E. until you get into the anchorage. *Light-house*

watering place in Jacmel Harbor is on its Western side, near a brown spot in the etween the two cliffs. Wood is not easily obtained. *Water.*

m an offing to the Eastward the locality of Jacmel Harbor is pointed out by a notch in the mountain range, which overtops the less elevated ridge of hills on ore near Cape Maréchaux. Should the notch be obscured, which is frequently se, it may be known by a remarkable point to the Eastward of Maréchaux near is a white rock named Belle-roche. Having passed Cape Maréchaux within a fourth of a mile, the harbor will open out, when haul gradually in, taking care bring the Western cliff to the Southward of W. until the anchoring mark comes avoid the Eastern ledge. A pilot may be obtained after considerable delay, but vices are scarcely necessary. *Directions.*

best anchorage will be found to the Westward of this flat, with the wharf and a ff in the town in one bearing N. N. E., but the edge of the bank is here so abrupt ere will scarcely be time for a second cast of the lead; shoot in, therefore, cau- under easy sail, and be prepared to anchor the moment soundings are obtained. eavy swell generally rolls into the harbor, and with light winds great caution is te to avoid being becalmed. With the land wind this may be avoided by keep- valley open. The breezes are generally very regular.

RNE ROUGE.—From Cape Maréchaux the coast takes nearly an E. direction for een miles to Morne Rouge, which may be recognized by two hummocks, and some hite cliffs four miles in extent, having at their W. end a square red cliff; six miles Westward of it is the village of Marigot, and beyond that are several small creeks ch small droghers find temporary but exposed anchorage. The shore is all along p, and in some places foul, that with light baffling winds, which are generally ac- ied by a heavy swell, sailing vessels had better give it a wide berth. The edge bank lies about a mile and a fourth from the shore; the depths are nineteen and fathoms, coral crust, a mile distant and three fathoms closer to the beach. Four astward of the cliff soundings extend off three miles from the land. *Morne Rouge.*

LE TROU is a small bay with a village on its shore, lying about seventeen and a iles to the Eastward of Morne Rouge. To the Westward of the bay, for three is a range of white cliffs from five hundred to seven hundred feet high, backed by range of mountains, running E. and W., which attain the height of nearly nine nd feet, about N. N. W. of Sale Trou. Small vessels may anchor close in shore in fathoms. A little to the Eastward of the anchorage there is a small islet called eur. For a distance of five miles to the Eastward the coast is formed by a range te cliffs, rising from a shingle beach two hundred and fifty feet. *Sale Trou.*

SES-A-PITRE.—From Sale Trou the shore trends to the S. E., and about nine rom it is the Anses-à-Pitre, situated to the Southward of a considerable stream of me, the entrance to which is easily recognized. Not far to the Westward of the e there is a remarkable triangular white cliff, two hundred and twenty feet high; a mile to the S. E. of the cliff lies a small ledge of dry rocks.* A vessel may before the low land or plain, or to the Southward of the mouth of the river. undings gradually diminish from twenty to three fathoms close to the shore. is no danger whatever in the way, and the anchorage is well sheltered from the e river marks the S. W. boundary between the French and Spanish possessions. *Anses-à-Pitre.*

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tain Richard Owen, R. N., states, "Sale Trou is twelve miles to the Northwestward of what we ed to be the River Pedernales (Pitre?), but we could not make it out distinctly from the ship. the N. W. of the entrance, there is a remarkable range of reddish cliffs about three miles in ex- he river is nine miles to the N. W. by N. of Cape Roxo."

The land in this vicinity is white and chalky, Between Sale Trou and the river are small bays of Bœuf, Grands-Gosiers, Cochon, Raccroc, and Pièges.

Anchorage. From Anses-à-Pitre the coast continues its S. E. direction for twelve miles to C Roxo. In this space are the two bays, Trou-à-Jacob and Roubelle, in both of w good anchorage will be found with the prevailing winds. The latter lies just to Northward of the cape.

Sans-Fond Bay. SANS-FOND BAY.—From Cape Roxo, Cape Lopez bears S. by E. seven and a miles. The low shore between, backed by land of moderate elevation, forms a deep which from the great depth of water, receives the name of Sans-fond, and is co quently seldom visited.*

Cape Roxo. CAPE ROXO is a rocky cliff about forty feet high. The bank of soundings ext a mile off to the Westward of it, with from ten to twenty fathoms. There is anchor in from five to eight fathoms, coral sand, N. N. W. two and a half miles from the c and the edge of soundings is here three and a half miles from the shore, but its con is very serpentine. Farther to the Northward it is six miles off shore, with a grad decreasing depth of from twenty-five to nine fathoms; it then contracts its distance ruptly, and runs N. to within a mile and three fourths of the white cliff, not far to Westward of the River Pitre.

Cape Falso. CAPE FALSO, or AGUJAS POINT, bears S. ½ W. eight miles, from Cape L From the latter the shore trends to the S. S. E. ½ E. to the head of Anse-à-Thoma Agujas Bay, which is about a mile in extent, and terminates to the Southward rocky cliff E. N. E. a mile and three fourths of Cape Falso. This latter headland bold perpendicular cliff one hundred and thirty-five feet high, and the land in th cinity is moderately elevated and level. There is said to be very good anchorage in bay.

Little Cape Mongon. CAPE MONGON.—From Cape Falso the coast takes about an E. S. E. directio eighteen miles, and there terminates at Little Cape Mongon, or Beata Point, th extreme of Hayti. This part of the shore presents a white rocky abrupt plateau, a forty feet high, in which are large gaps and crevices. On the point there is a s hillock.

Current. On the N. side of the great bight between Cape Falso and Jacmel, the current frequently been found setting strong to the Eastward, and consequently of great ad tage to vessels bound to windward, but to the Southward of Cape Falso the directio generally strong to the Westward.

Beata Island. BEATA ISLAND.—The N. point of this island bears W. by N. four miles from ata Point, and S. E. ¾ E. thirteen miles from Cape Falso. It is about five miles long N. to S., two miles broad, mostly covered with brushwood, and from fifty to eighty high. The Southern part is the most elevated; the N. end terminates in a long point and not far from it there is a solitary hut. The W. side trends about N by E., and is bold and steep to. Off some parts of this side there is no bottom with one dred and thirty-six fathoms of line at three fourths of a mile from the shore; an others a depth of twenty fathoms, nearly a mile distant. From the S. W. point a stretches off some distance in that direction, and there are only four fathoms at cables' length off. The E. side is very steep, but the N. and N. E. sides are conne to Beata Point by a shallow white bank on which the greatest depth is reported three fathoms. N. by E. of the island there is a breaker.

Anchorage. Good anchorage will be found in from seven to nine fathoms water, at about h mile from the Western shore of Beata Island, with the N. point of the island E. N. E., Alta Vela S. W. by S.; Cape Falso N. W. ¼ W.; and Frailes Rock W. ¼ N. anchorage is exposed to the W., but the trade wind here invariably blows home.

Friar's Rock. LOS FRAILES or FRIAR'S ROCK lies N. by W. ¾ W. nine and one fourth from Alta Vela, W. ten miles from the N. end of Beata, and S. ¼ E. eight and one fo miles from Cape Falso. It is about half a cable in extent, and thirty feet high, a a distance has the appearance of a cluster of sharp-peaked rugged rocks, with tops (the effect of bird's dung), hence the name. It is steep to, having seventeen oms a cable's length off. The current in the vicinity generally sets strong to the ward.

Alta Vela. ALTA VELA (the high sail) lies S. W. ½ W. six and one fourth miles from the

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* In the French Directory, 1855, from which this description is chiefly taken, it is stated that sketch we possess shews a depth of from eight to three fathoms."

Captain Owen, R. N., observes that the "Relative positions of the points in the vicinity answer to the descriptions generally given of them;" but all this part of the Southern coast is fectly known, and the best accounts are brief and unsatisfactory.

He also remarks, "Cape Falso or Lopez bears N. (true) eight and one fourth miles from the Rock, and is one hundred and twenty-five feet high. The land to the Southward of the Cape tre S. E. Cape Roxo bears N. ½ E. eight miles from Cape Falso; the coast between forms two deep separated by a prominent point which bears N. E. three miles from Cape Falso." This desc nearly agrees with the present chart.

of Beata. This island is three fourths of a mile long in a N. E. by E. and S. W. 7. direction, and half a mile wide, and is almost entirely composed of a remarkable haped hill, the summit of which is five hundred feet above the sea. Three fourths of e from the N. side there is a small, low, flat, black rock; and a coral bank of sound- varying from fifteen to eighteen fathoms, stretches off a mile from the S. E. side. hores are rocky, but may be approached with safety. Vessels bound either E. or will find the hill a most valuable point of departure.*

ATA CHANNELS.—The channel between Alta Vela and Beata is quite clear, but l be prudent to keep outside all. The channel between Beata and Beata Point is able for steamers; but they must be of light draught, for, as we have said above, is a depth of only three fathoms, and the swell is generally very heavy. *Beata Channels.*

navigate the inner channel between Beata Island and Beata Point from the West- steer S. E. by E. from Cape Falso, keeping it and another point to the Eastward nearly in one. As Beata Island is approached, the sudden change in the color of ater will show distinctly the bank running off from both shores; when steer in mid- nel. The eye will be the best guide, as all the shoals are easily seen from aloft. abreast of Beata Point the water will darken and deepen, and the effects of the rly swell will be felt. *Directions.*

PE MONGON.—From Little Cape Mongon or Beata Point the shore trends to the and at the distance of eight miles terminates in a bold promontory of considerable ion called Great Cape Mongon, which at the distance of fifteen or eighteen miles he appearance of an island. In the interior will be seen the lofty mountains of uco, which rise to the height of twenty-four hundred feet. *Great Cape Mongon.*

TIT TROU, or AGUJERO CHICO, is situated about twelve miles to the N. E. of Cape Mongon. This anchorage is somewhat protected by a reef three miles in , through which are two openings, one toward the E., the other near the W. end. ormer, called the windward or reef passage, is about two cables wide; but there veral detached rocky heads in it, and on one as little as ten and a half feet, with water between. In the latter, called the lower or lee channel, there are eighteen wenty feet. The anchorage within, however, is so studded with coral heads, that is scarcely a berth to be found where a vessel will swing clear with seventy ns of chain out; and no vessel should enter it, drawing more than ten and a half The depth gradually increases from the shore, but at the distance of a mile and a here are only three fathoms. *Petit Trou.*

s extremely difficult to enter this anchorage, and without a pilot attended with erable danger. The vessel must be put under small, yet commanding sail, and piloted by the eye from the end of the bowsprit. The helm must be well at- d. *Directions.*

streams at Petit Trou run with some force. During the increase of the moon et regularly twelve hours each way, the ebb to the E., and the flood to the W., rate of about a knot an hour. On the decrease there is no ebb at all, and locity increases to one and a fourth knots. The rise and fall is about three *Tides.*

sea breeze at Petit Trou sets in from the N. E. at about 2 A. M., and continues to rom that quarter until 8 P. M., when it veers to E. and E. by S. until near mid- there is consequently little or no land wind. *Winds.*

IVA, NEYRA, or JULIANA BAY, is an extensive bight, formed between Martin Garcia and Truxillo, or Avarena, at the N. W. end of the great bight of It is about ten miles wide, and the same distance deep, and open to the S. E. ountain of Martin Garcia becomes here a remarkable object and good guide. The Neiva empties itself into the bottom of the bay, about ten miles W. ½ S. from Garcia Point; but the bar is only passable to boats. *Neiva, Neyra, or Juliana Bay.*

ut a mile within Martin Garcia Point, off the Rancho del Cura, there is a well- red anchorage in five fathoms, with the prevailing winds, at about two cables' from the shore, and midway between some red and white cliffs. *Anchorage.*

RAHONA HARBOR.—W. S. W. from the red cliffs is a reef harbor called Ba- , which requires the assistance of a pilot, and is by no means a desirable place ge vessels. The reef is bold and very steep to; there is no bottom with one hun- nd twenty fathoms at four cables' length off, and it shoals suddenly to five fath- nd soon after to ten feet. When within two miles of it, the village will be seen, bove it two ridges of hills, one overtopping the other, and on each of them a or hummock W. S. W. of the village. *Barahona Harbor.*

enter Barahona harbor, run in with the above hummocks in one; and having d the weather reef in four or five fathoms, anchor in seven or eight fathoms, with *Directions.*

position of Alta Vela was accurately determined by Capt. Owen, R. N., who places the sum- the hill in lat. 17° 28′ 50″ N, and long. 71° 39′ 44″ W. The longitude depends upon the flag- Fort Charles, Port Royal, Jamaica, being 76° 51′ 10″ W.

a small islet bearing W.; or with a remarkable palm-tree in the square of the villa in one with the Northern gable of the largest house in the square; or with the g that leads into the yard of the house bearing W. S. W. ¼ W. There are several ot openings fit for small vessels, which may ride closer in shore; but they must be care to avoid some sunken rocks called the Fishing Rocks, which will be under their lee the Northward of the village.

Bight of Ocoa. BIGHT OF OCOA.—Other parts of this great bight appear to be skirted by ree and soundings extend from some places one mile and a half from the shore; but heavy swell which rolls in renders it very dangerous to approach. From Martin G cia Point the coast bends in to the N. E., and then round to S. E. and S. to Sali Point, forming what may be called the bight of Ocoa. The latter point bears from former E. ½ S. about eighteen miles, and measured from this line the bight is two miles deep. In it are several good anchorages.

Puerto Viejo de Azua. PUERTO VIEJO DE AZUA is the first anchorage in the bight of Ocoa from Westward, and is situated a short distance to the Northward of Martin Gracia Po but has only twelve to fifteen feet water at its entrance. Small vessels of that draug however, will lie here quite landlocked and secure. The entrance is very narrow, a reef extends off from the N. point. Large vessels may ride outside in favora weather, in from nine to three fathoms; but the anchorage is entirely exposed to sea breeze.

Puerto Escondido, or Hidden Harbor. PUERTO ESCONDIDO or HIDDEN HARBOR* is about fifteen miles to the N. of Salinas Point. The entrance is about half a mile wide. On the N. side it is fou the distance of a cable's length, but on the S. side the depths are four and a half to fathoms within half a cable's length of the shore. Half a mile within the entra and in the centre of the channel, there is a rocky shelf, two cables in length from to S., and one cable in breadth.

Directions. In entering Port Escondido it will be better to keep the Southern shore aboard, wi two cables' length, to avoid the rocky shelf mentioned above, and large vessels sho anchor about a third of a mile within the entrance; a fourth of a mile within this depth decreases to two and a half fathoms. They may also anchor in four or five fa oms to the Northward of the shoal, about three cables' from the entrance; this anchorage is more exposed than the other. Small vessels drawing thirteen fourteen feet may proceed farther in, and will find a secure harbor, sheltered from winds.

Ocoa Bay. OCOA BAY, formerly called Port Hermosa, lies in the N. E. corner of the bight Ocoa, about ten miles to the Northward of Salinas Point. This part of the shore ing in a general direction N. and S., the anchorages are well sheltered from the u strong trade-wind.

Water. There is a watering place a little to the Northward of Ocoa Point.

Directions. The anchorage in Ocoa Bay lies off the entrance of the river, but is confined narrow ledge of sand with rocky patches, very steep to, and so close to the shore th cable must be carried to the nearest palm-tree abreast, near the centre of the river N. side of it will be best), to check the vessel against the land wind which comes from the Westward. The anchorage should not be approached before the sea breez established, and preparation must be made to meet sudden and violent gusts rushing the land, after passing the S. point of the bay.

Puerto de la Caldera. PUERTO DE LA CALDERA lies about two miles to the N. E. of Salinas Po and the outer anchorage is convenient and safe for vessels of the largest draught. entrance is about half a mile wide; but the channel into what is called the port is more than a cable's length across, between reefs which extend off from either s There are six and seven fathoms in it, but the interior is so studded with rocky he that, without good local knowledge or the assistance of a pilot, it will be extrem difficult to thread the way into the proper anchorage.

Directions. In approaching Port Caldera from the Southward, pass Salinas Point within cables' length, and preserve this distance until the vessel has rounded Ranchos Po which is skirted to the distance of a cable's length, by a bank with only nine water on it, when haul in to within a cable's length of the shore, and anchor in e fathoms water about that distance to the Northward of Caldera Point. Should wind be so scant as to oblige the vessel to tack, do not approach the Northern sh within the depth of seven or nine fathoms.

Vessels of eighteen feet draught may lie just within the entrance, with Caldera P N. N. W. ½ W. distant two and a half cables' length; but the interior is so unhea that it will be better to lie outside. Good anchorage will be found with Salinas P

* The description of Escondido is taken from the present directories. Sir R. H. Schomburgk tions only two very indifferent anchorages in this neighborhood, named Caracoles and Azua or T gero; the latter is the port of Azua. It is probable that Escondido is his Puerto Viejo de Azua desc above.

W. and Caldera Point from E. by N. to E. S. E. about three cables' length from the e. Strangers wishing to proceed into the inner anchorage had better wait until the ze slackens, and warp in, finding out the channel in the meantime. The water is so r that the bottom is seen in six fathoms.

ISAO ANCHORAGE.—From Salinas Point the coast takes an Easterly direction hirty-six miles to Nisao Point, which is low, and descends to the sea by a gentle e; a tower may be observed on the extremity. The shore is generally bold and o to, and the soundings, which are found off some parts to the distance of two or e miles, afford a temporary anchorage for vessels visiting the coast for wood. The anchorage is at about nine miles to the Westward of Nisao Point off Savan, three ur miles to the Westward of Catalina Point, in five or six fathoms, with that point ing E. S. E. Be careful, however, to avoid a shoal with only twelve feet on it, ly- bout a mile to the Southward of the point. *Nisao Anchorage.*

IVER NISAO.—To the Eastward of Catalina Point, between it and Palenque t, the shore forms a deep bight, in which is Port Viejo and the river Nisao. There chorage off the latter in from seven to nine fathoms, about one mile and a half or miles from the entrance; but small vessels may go as close in as four fathoms. bar is almost impassable even to boats, on account of the rapidity of the stream, landing is very difficult, as the sea breaks violently some distance from the shore. tides run also with great velocity. *River Nisao.*

ere is a small village near the shore, and the water of the river is fresh about one h of a mile within the mouth. *Water.*

JERTO VIEJO is about four miles to the Westward of the river, and a vessel may or here in seven fathoms at one mile and a half from the shore. *Puerto Viejo.*

NTO DOMINGO BAY.—From Nisao Point the coast turns rather abruptly to N. N. E. for eighteen miles, and then to the E. for about the same distance to Cau- Point, forming the bay of Santo Domingo, which is twenty-five miles wide, and ten deep. *Santo Domingo Bay.*

JERTO PALENQUE is situated about three miles to the Northward of Nisao , and affords sheltered anchorage in four fathoms, gravelly bottom, but is very ed. The shore is so bold that there are three fathoms close to the beach; but be ous to avoid a reef which extends to the S. E. and N. W. from the weather point. uthern breeze prevents a sailing vessel leaving this anchorage; but there is no lty with the usual trade-wind. *Puerto Palenque.*

VER NAJALLO.—This river empties itself into a bight about a mile in extent, here is exposed anchorage at about three fourths of a mile from the land. *River Najallo.*

VER NIGUA lies a short distance to the Northward of the river Najallo, and the edge of the bank lies so close to the shore as only to afford temporary anchor- nder ordinary circumstances. In strong breezes the current rushing into Santo ngo Bay will cause the sea to rise thirteen to fifteen feet above the ordinary level. e is a small village near the entrance of the river, and the water is fresh about ourth of a mile above the mouth, but is not considered good, and the place is very lthy. *River Nigua.*

VER JAINA is at the head of Santo Domingo Bay, and affords no shelter what- rom the heavy swell that rolls in. *River Jaina.*

NTO DOMINGO HARBOR lies W. N. W. fifteen miles from Caucedo Point, at ntrance of the river Ozamo, which is barred and impassable for vessels drawing than thirteen feet water, although there are eighteen or nineteen feet within, almost side the banks of the stream, to a distance of more than three miles from the . Its locality is readily found by the city, which is built at the entrance, on the bank of the river. An extensive savannah lies to the Westward of it, enclosed by phitheatre of hills. The city is surrounded by a wall, and defended by a fort at ntrance of the river, and several other outworks and bastions. *Santo Domingo Harbor.*

e outer part of the entrance, between Torrecilla Point and the city, is about half e wide. This point is foul to the S. W. for a cable's length, and the shoal ground s in heavy weather.* The outer part of the bar commences about a cable's length Northward of the point, and takes a direction toward the light-house. The small of anchoring ground for large vessels extends off about a mile from the shore, and y steep to, and for the first few casts the soundings are irregular.

xed light is exhibited from the bastion of Fort San José, which bears S. W. six red and seventeen yards from the signal tower at the S. E. corner of the city, at trance of the river; it is elevated one hundred and thirteen feet above high water, visible at nine miles.† *Light.*

. E. Jones, master of H. M. S. *Termagent*, sounded round this point in January, 1857. He found athoms water within twenty yards of it, and states that it can be approached without fear.

e lantern is placed on the top of small iron pillars, and exhibits a fixed light of a red color, at ninety-eight feet above the sea, visible in clear weather twelve or fourteen miles.—*Remarks by* Wise, *Master H. M. S. Medea.*

Directions. In approaching the anchorage off Santo Domingo, it will be requisite to keep the l quickly hove, as the bank is steep to. The discolored water from the river may be s some distance from the land. The best holding ground for large vessels will be fo in eight fathoms, sand and mud, with the few houses on the E. side of the river Oz open of the city, and Torrecilla Point N. E. by E.; with the houses shut in, the bot becomes rocky. Small vessels, drawing thirteen feet, should not enter the river w out a pilot; however, in case of necessity, they may cross the bar by bringing a sq white house, on the Eastern bank, open twice its breadth of the signal Tower P Run in on this mark until within about two cables' length of the point, then steer f low, sandy point on the E. side of the river, which must be passed within a few ya to avoid a small rock off the opposite shore. Inside this anchor as most convenient.

As already observed, the outer anchoring ground is narrow, and should be approac very cautiously, under easy sail, giving the E. point a berth of about two cables' len Being exposed from S. S. E. ½ E. to S. W. by W., the sea breeze sends in a heavy, un swell, and in the hurricane season it is by no means a safe anchorage. H. M. S. M in 1855, stood in for this anchorage with the signal tower at the S. E. corner of the bearing N., and anchored with it on that bearing and Torrecilla Point N. E. ½ E eight fathoms, black sand and mud, good holding ground.

Tides. The stream out of the river Ozamo runs with great velocity. The rise and fall of is seldom more than twenty inches, and the time of high water is uncertain.

The shore of this part of Hayti to the Eastward of Torrecilla Point, is almost tirely composed of rock. There is scarcely a sandy beach to be seen, and the sea erally breaks against it with great violence.

La Caleta. LA CALETA is a small bay close to the Eastward of Caucedo Point, where te rary anchorage will be found in from three to seven fathoms, sheltered as far roun S. E. Near the point there is an embarcadero, or embarking place for mahogany vessels are obliged to load under sail.

Andres Bay. ANDRES BAY is formed between Caucedo and Magdelana points. The outer of this bay is not safe, but off Agua del Roy, in the inner or Eastern part, about miles from Magdelana Point, there is good anchorage off the beach in five fathoms heavy swell rolls in, but a vessel will lie sheltered as far round as S. E. There other spot in the bay, called Playa de Andres, where wood is also shipped; but th chorage is outside a reef three miles from the shore, through which there is a ch of nine feet. This place is famed for the prodigious number of pigeons which visit May and October, when they may be killed with sticks.

Guayacanes. GUAYACANES is an open roadstead, about eighteen miles to the Eastward of Domingo, and the anchorage is about a mile from the shore, in eight or nine fa over good holding ground. The beach is skirted by a reef, through which there small opening for boats to the landing in front of the settlement. Between th Andres there is also a similar exposed anchorage off the village of Juan d'Olio.

River Macoris. RIVER MACORIS.—The entrance to the river is nine miles to the Eastw Guayacanes, and the river is capable of admitting vessels of ten feet draught. Th trance between the S. passage point and Tibiz Point to the Westward of it, is abou a mile wide; but nearly in front of it there is a small cay called Isleta, with a r its N. E. end, which contracts the channel between it and the first point to abou cable and a half. An extensive mud flat runs off from the Western side, and the ch consequently lies close along under the Eastern shore; be careful, however, to a small, rocky head, on which there are only six feet, called Edward Shoal, whic between the N. and S. passage points, at about half a cable's length from the f The mark for it is the second cocoanut tree near the commandant's house in the vi on the E. bank, in one with N. passage point; the cocoanut trees must, therefo kept just open after passing the Isleta Reef, until the vessel is within the shoal haul in and anchor, in eleven feet, just within the N. point. The river can only with the land wind.

Water. The water in Macoris river becomes fit for use at about two miles within th trance.

Tides. The rise and fall of tide in Macoris River is about two feet.

River Soco. RIVER SOCO.—The entrance is about six miles to the Eastward of the M and although one of the largest streams on this part of the coast, the bar will on mit the passage of a boat. A vessel may anchor in five fathoms at three miles the shore, with the entrance bearing N. by E., or N. N. E., but she will be com exposed to the full force of the trade-wind.

River Cumayazo. RIVER CUMAYAZO.—The entrance is nearly abreast the W. end of Catalina I and is said to be of sufficient width and depth to admit vessels of considerabl The anchorage for those drawing more than eighteeen feet is in four fathoms, abo cable and a half within the entrance, a little to the Southward of the smallest coves on the left or Eastern bank, and near a small, dry rock. The channel in river for droghers of six or eight feet draught lies close under the right bank, and

ascend as far as the rock of San Pedro, about one mile and three fourths from the h. Higher up there are three islands, beyond which the river becomes very narrow, nly navigable for boats, which can get up to the embarcadero of San Juan, two above San Pedro.

Water. e water in the Cumayazo becomes good for use a little higher up, where the river into a basin called Agua Dulce, but boats cannot approach it nearer than a cable's th.

Santa Catalina. NTA CATALINA is a small, low island, lying about two miles from the shore, be- the rivers Cumayazo and Romano, and twelve miles to the Westward of Saona d. The channel between it and the main may be safely navigated by vessels of the est draught, but they must keep the Haytien side aboard, to avoid a reef, which rally breaks, off the N. W. end of the island. There is anchorage near the bay at W. end in three and a half fathoms.

River Romana. VER ROMANA.—The entrance to this river lies about three miles to the Eastward talina, and may be known by the village, which will be seen on the hills on the bank, one hundred and eighty feet above the level of the sea. The river forces its between perpendicular limestone cliffs, and at its entrance, from shore to shore, it quite a cable wide; it is, however, capable of receiving vessels of large draught, s considered one of the best sheltered ports on this side of Hayti. The only danger avoided is a small rock, with six feet water on it, lying about seventy yards to the of the lee or Western point. A little to the Eastward of the entrance the shore is ly skirted by a reef, which is seen.

Water. ats frequently get as far up the Romana river as the embarcaderos, and to the rap- or water. There are no difficulties until coming to a little island where a shelf of runs across, over which there are only two and a half feet, and but one foot near apid, during its mean level. The river falls over the shelf, so that the boat may st lie under it, and water very conveniently without landing the casks.

Directions. e entrance to Romana river being so narrow, it can only be navigated with the sea and breezes. As the entrance is approached two prominent points within will be seen ther side of the river; the Western point about half a mile, the Eastern three fourths the entrance. When in one they lean on the rock just described; they must, there- be kept just open of each other, bearing N. by W. ½ W. Run in on this line, and g entered the river, keep the lee or Western shore aboard, and when near two rocks, a little to the Southward of the inner point named above, a vessel may an- in five fathoms, with the Northernmost of two small rocks, just within the entrance e Eastern bank, in one with the outer E. point. The vessel must be steadied with a er to the rocks off the Western bank, and if necessary, with another to a rock on side of the river.

all vessels, drawing ten or eleven feet, will find better shelter just round the point, hey must take care not to go far beyond it, as off the inner Eastern point there is a ith only six feet water on it. With the assistance of a pilot, however, they may ed only two miles above the entrance.

River Quiabon. VER QUIABON.—The anchorage off this river, which lies a little to windward of omana is an open roadstead, but with excellent holding ground. The best berth be found in nine fathoms, with Las Minas Point in one with Aguela Point, the E. of the bay of Romana, and two cocoanut trees on the shore, in front of the largest e in the village, bearing N. The depth gradually decreases, and there are three ms within three cables' length of the shore. The ground to the Eastward of the e mark is rocky, and there is said to be a shoal of thirteen feet water in that direc- The mouth of the river is barred and sometimes dry; its depth depends upon the ets and the strength of the stream, but it seldom exceeds three feet.

Water. ats can sometimes ascend up the Quiabon, as far as the village of Gato, the port of the river Higuey, situated on the left bank, about five miles from the entrance. e rainy season the water will be found good about two miles above the bar.

Tides. e rise and fall of tide in the Quiabon river is about two feet.

Las Minas. S MINAS.—At half a mile to the Westward of the river Quiabon is the loading called Las Minas; and a little farther to leeward there are two others, named El ado and Caleton; the latter is a little to the Eastward of Romana Bay. Off the r there is anchorage for droghers.

Bayahibe. AYAHIBE is a good anchorage about two and a half miles to the E. S. E. of Punta vento, at the Eastern entrance of the Quiabon. A vessel may anchor in six or seven ms, at about a mile from the shore, where she will lie well sheltered from the S. E. aona Island and Palmillas Point.

Pilots. ssels intending to visit any of the anchorages just described, or those on the East- ide of Hayti, generally obtain a pilot at Santo Domingo, which is the port of entry l these places.

GREATER ANTILLES—JAMAICA, WITH THE CAYS AND BANKS ADJACENT.

Navassa Island. NAVASSA ISLAND, lying W. ½ N. twenty-eight miles from Cape Tiburon, and W. by W. ¾ W. thirty-three miles from Cape Dame-Marie, is two miles long in a N. and S. E. direction, one mile wide, and nearly of a uniform height of one hundred eighty-five feet. The shores are surrounded by bold perpendicular white cliffs, fr fifteen to twenty feet high, except the Western portion of the N. side of the island (wh there is an indifferent landing in calm weather on the rocks which are only a few high) and one spot on the S. W. side, which is sloping. With the exception of the W. extreme, which is a prominent bluff, a narrow ridge or rocky step, about fifteen high above the cliffs and a cable broad, extends all round the island. The summi clothed with stunted palm-trees and cactus, and is inhabited by guanas, and numer flocks of sea-birds.

This island appears to rise from a small bank of soundings from one third to ha mile broad. On the N. and E. sides the bottom is rocky and the depth from eightee thirty-eight fathoms. On the W. side the ground is fine sand, and anchorage wil found when the usual trade-wind blows, in sixteen fathoms, with the N. W. bluff b ing N. or N. by E., and the S. E. point E. S. E., about half a mile off shore. From extreme N. W. end of the island a coral ledge of four and a half fathoms extends cable's length.*

Formigas Bank. FORMIGAS BANK, lies W. ¼ N. forty-five miles from Navassa, and N. N. E. forty-three miles from Morant Point light-house, and when on its centre the fall in high land of Jamaica will be seen to the Northward of Plaintain Garden River, bea S. W. ½ S. The bank is eight miles long, in a N. E. by N. and S. W. by S. direction about two and a half miles broad, and near its edge there is a narrow vein of sand from nine to eighteen fathoms, steep to; but the body of the bank is rocky, with a eral depth of from five to seven fathoms. About two miles from the N. E. end, an mile from the Eastern edge, there is a small patch of only two and a half fathoms to the Westward of it another of three fathoms with three and a half and four fath around them. With strong breezes the position of the bank may be recognized by heavy swell which rolls over it.

Morant Cays. THE MORANT CAYS are a group of four small islets from seven to nine feet forming a crescent convex to the S. E., and occupying a space of about five miles. T lie about S. S. E. thirty-three miles from Morant Point, and are named N. E. Cay, Sa Cay, Savanna, S. E. or Bird Cay, and Seal or S. W. Cay. They are partially clo with low bushes, and on the N. E. Cay are some cocoanut trees; they appear to lie bank which extends a considerable distance to the Eastward of them. With the bo the cays bearing S. W. four miles the soundings are eighteen fathoms stony ground m with fine red speckled gravel; and on a S. S. W. ½ W. bearing six miles, the dep twenty-three fathoms and a similar bottom. The E. side of the group is skirted to distance by a dangerous reef, and from this quarter they should not be approached in two and a half miles.

Anchorage. There is anchorage under the lee of the Morant Cays, but be careful in approac the N. E. Cay, as a reef runs off half a mile to the N. W. of it and breaks, and a led from three to three and a half fathoms extends nearly two miles to the Westward standing for the anchorage from the Northward, do not round this danger until the S Cay bears S. by E., and when the N. extreme of the reef bears E. by N. a vessel haul up. The S. W. Cay bearing S., will lead over the end of the ledge in four fath The latter may be approached by the lead, and a vessel may stand into five or fathoms. The best shelter will be found with the S. W. Cay bearing S. or S. by and Savanna Cay S. E., in five or six fathoms; be careful, however, to drop the an in a clear sandy spot, which can easily be done, as the bottom is visible.

Directions. In standing in for the E. end of Jamaica from the S. E., Yallah's Hill which b from the Morant Cays N. W. ½ W. forty-five miles, will be a useful guide in clear we er; and in working up the Northward of the cays, the N. E. end of Jamaica kept of Morant Point will lead to windward of them.

Caution. The current at the Morant Cays is generally so strong to the Westward that no should run the risk of crossing their parallel in the night-time.

Tides. The rise and fall at the Morant Cays is about two feet, but the tide is influenced by the wind than by the moon.

Banks. Several reports are recorded of soundings between Hayti and Jamaica. H. M. *Renard*, in 1805, sounded in eighteen fathoms for five miles on an Easterly course, bank considered to be sixteen miles in length, in lat. 17° 44′ N., and N. E. twenty-

* The present directories notice a bank between this island and Cape Tiburon, but it is most bly the W. extreme of that which extends from the W. end of Hayti.

les from the Morant Cays. Captain Livingston states that he obtained bottom in ghteen and nineteen fathoms, about E. N. E. fifty miles from the cays, in long 75° 12′ . More recent soundings of sixteen fathoms have been reported in lat. 17° 45′ and g. 74° 30′, and also in lat. 17° 13′ and long. 74° 58′, but all these statements require nfirmation, especially as some ships have tried for soundings on most of these spots thout success: and as it will be seen that most of the positions lie nearly on the route the outward bound to Jamaica, the navigator is invited to give any information that y tend to verify these reports.

Jamaica.

JAMAICA.—The length of this island from E. to W. is about one hundred and thirty les, and its extreme breadth, which is near the centre of the island, between Portland d St. Ann's Bay, is forty-five miles. From this line it somewhat gradually diminishes the E. and W., and terminates in sharp well-defined points.

The island is generally of great altitude, and the Blue Mountains, which occupy the stern portion, rise to the height of over seven thousand feet, but the most elevated aks are seldom visible. The Northern shore is pretty regular in its features, free danger, and in most parts steep to; but the S. side, particularly near the middle, is eply indented, and fringed with low cays and reefs which must be very cautiously proached.

Morant Point.

MORANT POINT.—The E. end of Jamaica is formed by a narrow strip of very low oded land, extending out about three and a half miles from the S. E. foot of the Blue untains. It is about two and a half miles broad at the inner end, and thence gradu- y diminishes to Morant Point, which is sharp and well defined when seen from the N. d S., and about fifty feet high. In approaching the point from the Eastward, its posi- n is first recognized by the iron light-house, ninety-six feet high and painted white, nding about a fourth of a mile from its extremity. The point is skirted by a reef ich generally breaks to the distance of nearly a mile from the shore; and as the land not more than twenty feet high, should the weather be thick or the light obscured, the eatest caution must be observed when nearing this end of the island.

Light-house

The light-house on Morant Point, exhibits at one hundred and fifteen feet above the , a white light which revolves every minute. The light is visible from a vessel be- een the bearings of S. E. by S. (round Southerly and Westerly) and N. E. by E., and clear weather may be seen fifteen miles off.

Directions.

In approaching Jamaica from the Eastward we must again draw the attention of the vigator to the advice given as to observing the stars for latitude morning and evening, ich should be diligently practised here, after losing sight of Alta Vela, until the light Morant Point, or Yallah's Hill, is sighted. The hill is situated twenty-three miles to Westward of the Point and cannot be easily mistaken, being a remarkable mountain thousand four hundred feet high, rising abruptly on its N. side from the valley be- een it and the Blue Mountain range, and falling with a long gradual slope to the sea the S. side, and its rounded summit is seldom clouded.

Approaching from the N. E. through the windward channel, the Blue mountain mass generally come first in sight, and strangers are apt to keep away too soon, and fall- in with the land to leeward, may not be able to weather the point when discovered, so meet with delay. It is therefore advisable to keep well to windward until on the rallel of the light-house, or Yallah's Hill is brought to bear W. ½ N. particularly as current generally sets strong to the Westward.

S. Coast of Jamaica.

THE SOUTH COAST OF JAMAICA trends S. S. W. ¾ W. one mile and a half from rant Point, and then takes a W. S. W. direction for nine miles to Port Morant; a reef rts it all the way to the distance of from a half to a mile from the shore, with a nar- w ridge of deep soundings outside it.

Port Morant.

PORT MORANT is a small secure bight a mile wide and a mile and a half deep m N. to S., open from the latter quarter, with a depth of six and seven fathoms; the rance points, however, are bordered by reefs, in which are several dry rocks and all cays, leaving the channel only one cable and a half wide. Being surrounded by ls of moderate height the opening may be readily distinguished, and when brought bear N. a house will be seen on the heights near the shore at the head of the harbor beneath it a remarkable red cliff with a small fort on the summit.

Directions.

n entering Port Morant haul in between the reefs keeping the above house in line h the E. end of the red cliff, and anchor as most convenient, in six fathoms, on the ding mark, with Fort Pero—which stands on the E. side of the entrance—from S. E. S. to S. E. by E. The vessel will then be inside the harbor shoal, a small sandy oll of two fathoms, lying nearly in the centre of the port, W. N. W. of Fort Pero, with the house open to the Westward of the battery on the red cliff. Do not at- pt to enter until the sea breeze has set in; the port must be left with the land wind.

Morant Bay.

MORANT BAY.—From Port Morant the shore bends in to the W. N. W. for about r miles to the town of Morant, and then W. S. W. two miles to Belvidere Point, ning Morant Bay. The reef still skirts the above at the distance of three fourths of mile, but becomes more broken, and terminates altogether S. of the wharf at Morant.

The extreme end breaks, and under the lee of it there is good anchorage for larg vessels in six fathoms, and the eye will guide in. A short distance to the Westwar of Port Morant there is a narrow opening through the reef leading into Fisherman Bay, in which the soundings are from four to two fathoms, but it is only fit fo droghers.

White Horses. WHITE HORSES.—From Belvidere Point the coast takes a W. by S. direction fo ten miles to Yallah's Point, situated at the base of the lofty mountains already describe About four miles to the Eastward of the latter there is a small range of remarkabl cliffs of moderate height, called the Upper White Horses. Soundings will be found o this part of the shore to the distance of three miles. On the edge of the bank the dept is twelve fathoms, dark rocky bottom, and thence it gradually decreases to six and seve fathoms, close home to the land.

Anchorage. At three miles S. of the White Horses there is a small space with eight fathoms on i and vessels bound to Port Royal, overtaken by the land wind, will find this a convenie spot to anchor on for the night. The edge of the bank S. by E. from the White Hors takes a slight bend to the Southward, and then turns to the N. W. by W., nearly on straight line to Yallah's Point, which is steep to on the Western side.

Lamotte's Bank. LAMOTTE'S BANK.—With Yallah's Point bearing W. N. W. ¼ W. about two mil and the White Horses N. N. E. ¾ E. there is a small rocky patch about a fourth of mile in diameter, called Lamotte's Bank, on which there is said to be only three fat oms, with deep water all round.* The water is usually so clear that the bottom may seen in ten fathoms.

From Yallah's Point the shore turns abruptly to the Northward for about half a mi and then sweeps outward to the Westward to Cow Bay Point, which is low and wood and gradually rounding. The centre of the outer part of this flat strip of land lies by N. four miles from Yallah's Point. Small craft pick up an anchorage close und the latter, but no soundings will be found on the line between the points.

Lower White Horses. LOWER WHITE HORSES.—From Cow Bay Point the coast trends with a sli curve inward, N. W. by W. for four miles, to a similar small ridge of cliffs to those the Eastward of Yallah's Point, called the Lower White Horses. They are situated the base of Long Mountain, which running to the N. W. and then to the W. forms boundary of the great plain of Liguanea, on the shore of which is the city of Kingst St. Catharine Hill, about seven and a half miles to the N. E. of Kingston, rises to t height of four thousand five hundred feet. The bottom of the Cow Bay Bight, which steep to close home to the shore, terminates two miles N. W. of the cliffs, not far beyo which will be seen a martello tower, and a little farther on and below it a small batte called Rock Fort, which serve as good guides in the approach to Port Royal.

Port Royal. PORT ROYAL.—From Cow Bay the coast takes a Westerly direction eight and half miles to Port Royal Point, near the extremity of which is Fort Charles, and wit it the town of Port Royal. This part of the shore, called the Palisadoes, is composed a narrow and very low sandy flat, skirted for the most part on its lee or Western si by low mangrove bushes, and forms the N. side of the E. end of the Palisadoes sandy beach takes a Westerly direction for three miles, and then trends to the S. W. one mile and a half to Plumb Point. About half a mile to the Westward of the Poi and two cables' length to the Eastward of Little Plum Point, there is a white wood beacon with a triangle on the summit, sixty feet above the sea. Both points are fou the distance of a fourth of a mile, and the beach nearly all along thence to the Westwa as far as the N. end of the town, is skirted by a rocky ledge to the distance of from cable to a cable and a half from the shore.

Light-house. A light-house, painted white, stands sixty-six yards to the Northward of Plum Poi and exhibits a fixed light at sixty-eight feet above the sea, visible twelve miles off. Wh seen between the bearings of W. N. W. ¼ N. (round N.) and N. ¼ E., it is red; but tween N. ½ E. (round E.) and S. E., it is white.

E. Channel. EAST CHANNEL.—The S. side of the East Channel is formed by numerous ban low rocks, and cays, which extend off shore to the distance of three miles, and soundin will be found from two to four miles outside them. The outer or Eastern danger at t entrance of the channel is called the East Middle Ground, which lies S. S. W. one m and a fourth from the light-house on Plum Point.

E. Middle Ground. EAST MIDDLE GROUND.—This rocky bank is composed of two knolls occupy a space of about half a mile, and separated by a narrow cut of deep water in a N. S. direction. On the Eastern knoll there are eleven feet water, and on the Western ei feet, steep to and they generally break when strong sea breezes prevail. A large bl buoy with a staff and vane eighteen feet above the sea, is moored off the N. E. edge the Eastern knoll in seven and a half fathoms, with the beacon on the Palisadoes in with Kingston church, N. by W., and Maiden Cay in one with Helshire Hummock, ¾ S.; the latter is a remarkable elevation of moderate height on the outer range

* Capt. R. Owens, R. N., sounded upon this shoal, and found not less than four fathoms.

regular hills on the S. side of Jamaica. Another black buoy without a vane is moored f the N. W. edge of the Western knoll.

MAIDEN ROCK lies about a mile to the Westward of the N. W. buoy of the Middle round, and N. E. a fourth of a mile from Maiden Cay, which is sandy. It is a low rren rock, one hundred yards long from E. to W., and fifty yards broad, having on its end a black beacon, with a vane thirty feet above the sea. It is connected to Maiden y by a rocky ledge, dry in places, which extends also a cable's length to the Northrd of the beacon, and to the Eastward as far as S. two cables length from the S. end Lime Cay. *Maiden Rock.*

LIME CAY.—This small islet is two cables long in a N. N. W. and S. S. E. direcn, and half a cable broad, and partially covered with small trees and bushes. Its N. end is rocky; the W. and S. E. part sandy; and a rocky ledge extends one cable d a half into the channel from the N. W. end. In case of necessity, a vessel will find chorage close under its lee, in ten fathoms, muddy bottom, taking care, however, to oid the Lime Cay Shoal. *Lime Cay.*

LIME CAY SHOAL is a narrow rocky ledge, nearly dry toward the centre, and half mile in length, from N. W. to S. E. The Eastern edge lies three cables length to the estward of the N. W. end of Lime Cay. *Lime Cay Shoal.*

RACKUM AND GUN CAYS are the two innermost islets in the Eastern Channel. he former lies W. by N. nearly one mile and a half from Lime Cay, and S. E. a little re than half a mile from Port Royal Point. It is very small, low, and barren, and m its N. end a ledge of small dry rocks extends out in that direction a cable's length, the extremity of which is placed a black buoy in twenty-one feet water, with five fathns close outside it. The cay is also foul to the S. and W. to the distance of one cable d a half, but bold to the E. side. *Rackum and Gun Cays.*

Gun Cay, lying about four cables' length to the N. N. E. of Rackum Cay, is somewhat ger, sandy and bushy. It is skirted all round by a reef, which extends only a short tance from the S. end of the cay, leaving a channel about one cable and a half wide tween it and the buoy on the E. end of the Rackum Cay ledge. The reef extends t a cable's length from the N. side of the cay, and at the extremity there is a white oy with the flagstaff of the Apostles' Battery in one with the flagstaff of Fort Charles by N.

NEW SHOAL is a very small knoll, on the summit of which there are twenty feet ter, and a buoy painted black and white. It lies one hundred and forty yards to the uthward of Port Royal Point, with a clear passage between of seven fathoms water, thin forty yards of the buoy. *New Shoal.*

BEACON SHOAL, a similar, small rocky head of fourteen feet water, lies about hty yards to the S. W. of the New Shoal buoy, and about a cable's length from Port yal Point. On the summit of the rock there is a white pile beacon, with a red eleton triangle on the top, eighteen feet above the sea, and within forty yards around the depth is from twenty-two to twenty-eight feet. *Beacon Shoal.*

HARBOR SHOAL is about forty yards in extent, and lies N. W. two cables' length m Port Royal Point. On its S. end, in eighteen feet water, there is a pile beacon, inted white and red, the top of which is surmounted by a cross, twelve feet above the a, and close to its S. side the depth is four fathoms. *Harbor Shoal.*

PORT ROYAL SPIT is a shoal formed by the submergence of part of the town in e earthquake of 1692. It extends off to the Westward a little more than a cable's ngth from the centre of the town, and on the extreme point of it a white buoy is moored eleven feet, with seven fathoms a little outside it. The Admiral's Pen—a conspicus white house, with a flagstaff near it, situated a short distance to the Northward of ngston—just open of Gallows Point—a low mangrove point, running off from the lisadoes, bearing N. E. ¼ N. leads close to the Westward of it. *Port Royal Spit.*

SOUTH PELICAN SPIT.—The Northern boundary of the harbor of Port Royal is rmed by a very shallow sand-bank, called the South Pelican Spit, which runs off three urths of a mile to the Westward of Gallows Point, and its Southern and Western its are pointed out by two pile beacons, numbered one and two. These are all the ngers to be avoided in entering the harbor from the Eastward. *S. Pelican Spit.*

DIRECTIONS FOR EAST CHANNEL.—The bottom of the East Channel, leading Port Royal, is generally mud and sand, except for a short distance to the Eastward of n Cay, where it is mud alone. In the harbor it is mud with a little sand, except r the shoals, where it is formed of broken coral and sand. The beacons and buoys the N. side of the channel are white, those on the S. side are black, and those that are ecquered may be passed on either side. *Directions.*

Strangers having arrived off the E. end of Jamaica had better take a pilot who will always found on the watch, and then run down at the distance of about two miles m the shore. If the land breeze is likely to overtake the vessel before getting rough the channel, it will be better for a sailing vessel not to proceed farther to leerd than the Upper White Horses, and stand off and on, or anchor for the night, as

before pointed out, weighing just before the sea-breeze comes down in the morning. The light on Plum Point is chiefly for the use of steamers.

Land and sea breezes are generally regular; the latter sets in sometimes as early as 9 A. M., and continues till 5 or 6 P. M., when the land wind comes off for the night, particularly during the winter period, from November to the end of May. In December, January, and February, the sea breeze is sometimes diverted by northers, and the wind will, consequently, on the S. side of the island, be variable, coming off the shore in gusts, and the land breeze will blow with greater force and longer than usual. Sometimes at this period the land wind will come off so early in the afternoon as to give a vessel bound to windward the advantage of getting out through the East Channel before dark. In these months, also, when the trade-wind frequently blows very strong, the sea breeze will continue nearly all night; but a stranger should not be tempted to run the risk of getting benighted in the channel.

In the summer or hurricane months the breezes are interrupted by calms—light, Southerly winds, with heavy rains and an exceedingly oppressive atmosphere—and the sea breeze will rush in with violent squalls from the S. E., and continue only a short period. In general the approach of the land wind may easily be detected by a strong aromatic perfume coming off from the shore, which gives time for the sails to be trimmed, for it is apt sometimes to rush off suddenly with great violence.

Should the vessel have been obliged to remain for the night off the White Horses, it will be advisable not to be too hasty in bearing up until the sea breeze is observed to have firmly established itself in the harbor, for the crew will only be worried in bracing about to the conflicting winds.

Having passed Lamotte's Bank, and being abreast of Cow Bay Point, about two miles distant, the course to Great Plum Point is W. by N. eight miles. The light-house on the point, however, will be a guide, and having arrived within one mile and a half of it soundings will be obtained, and the E. middle buoy will be seen about a mile S. S. W. of the point. The leading mark through the East Channel must now be brought on, viz., the Apostles' Battery flagstaff in line with the flagstaff near the S. angle of Fort Charles, at the extremity of Port Royal Point, bearing W. by N.; and this must be done before the beacon on the Palisadoes comes in one with Kingston church, the mark for the E. end of the Middle Ground in case the buoy should be adrift.

From so great a distance a stranger will have some difficulty in making out this mark and will require the use of a glass. The Twelve Apostles' Battery is very small, and is built on the brow of a slightly projecting ridge, about two thirds the way down from the summit of the Salt Pond Hill. Fort Charles will appear as a long, low, red wall just rising above the sea, and behind it will be seen the masts of the guard-ship and vessels in the harbor, and to the Northward of it the church and extensive range of government buildings. This mark will lead up to the white buoy on the N. end of Gun Cay Ledge, when steer for Port Royal Point, passing between it and the chequered buoy on the New Shoal and the beacon on the Harbor Shoal. Having passed the latter and outside the white buoy on Port Royal Spit, haul up and choose a berth as most convenient.

The turning from the Gun Cay buoy to Port Royal Point is, however, rather sharp for long vessels in a strong sea breeze, and they should, consequently, pass through between Gun and Rackum cays. In this case, when abreast of Lime Cay, steer for the narrow opening, and bring the flagstaff of Port Henderson, at the Northern foot of the Salt Pond Hill, in one with Port Royal Point, which mark will lead through; but the eye will be a guide for mid-channel, and after passing close to the Northward of the black buoy on the N. end of Rackum Cay ledge, steer on for the point, and act as above directed, or pass outside the beacon shoal and then haul up. The most convenient berth for merchant vessels will be found outside Port Royal Spit; they should, therefore, reduce their canvas in time after passing the point.

Kingston Harbor.

KINGSTON HARBOR.—The ship channel to Kingston lies close under Fort Augusta, an extensive fortification on the extremity of the low, sandy spit of swampy land called the Mosquito shore, which forms the Western side of Port Royal, and is pointed out by numbered pile-beacons on either side.* There is also a black beacon on the S. E. angle of the fort forty feet high, which, with the beacon on the West Middle Rock, is likewise used for the leading mark through the South Channel into Port Royal. The entrance is about three and a fourth cables' length S. S. E. from the flagstaff of the fort, between No. 3 on the E. and No. 4 on the W. side, and is one cable and a half wide. The narrowest part, which is only a cable across, is four and a half cables' length to the Eastward of the staff, between Nos. 5 and 6, where the depth is twenty-seven feet. No. 5, on the E. side of the channel, is distinguished by a black skeleton sphere on the top

* Since the placing of these piles the N. W. end of the Pelican Spit has advanced several yards to the Westward, and it has been found necessary to place another pile, numbered 13, W. S. W. one hundred and ten yards of the sphere beacon, No. 5.

ree feet in diameter. Thence the channel opens out gradually as the vessel advances the Eastward. The shore becomes so bold after passing No. 11, the last beacon on N. side of the channel, that vessels of large draught can lie alongside the wharves the city.

A light in a single lamp, forty feet above the sea, is suspended from the beacon at rt Augusta, and when bearing N. by E. leads through the South Channel. It shows white light, visible to the S. and W., and a red light to the Eastward. *Light.*

DIRECTIONS FROM PORT ROYAL TO KINGSTON.—In proceeding to Kingston rbor from Port Royal, the mark to run into the channel is Helshire Point in one with rt Small Point, S. S. W. ½ W., or Fort Augusta beacon N. ½ E., until Lindo's house, uated in the interior on the Northern shore, comes in one with the lower red-topped use, near the wharf at Greenwich, N. E. by E., which mark will lead through the rrows. The first mark will lead to the Westward of No. 2 pile. Vessels turning rough the narrows, when standing to the Southward toward Nos. 13 and 5, should e care not to open Lindo's house to the Eastward of the red-topped house at Greench; and when to the Eastward of No. 6, should not stand to the Northward within depth of five fathoms, as the bank is steep to. The piles will be a guide on the S. e of the channel. *Directions.*

Sailing vessels about to leave Kingston will find it more advantageous to drop down the fairway at Port Royal in the afternoon of the day previous to their departure, in der to be in readiness to quit with the land wind at early dawn, so as to get out well ar of the shoals before the sea breeze sets in. *For leaving.*

EAST CHANNEL.—If bound to windward, the E. channel will of course be the best pursue; but it should only be taken by steamers, or vessels of handy size with good ing qualities, that will insure staying. In this case, should the sea breeze overtake essel after getting to the Eastward of Gun Cay, she may stand to the Northward ard Palisadoes, until the flagstaff of the Apostles' Battery is in one with the belfry Port Royal Church, until near Rocky Point, when the staff must be kept open to the thward of the belfry to avoid the reef off that point. *E. Channel.*

After passing to the Eastward of the point continue to use the same turning mark il nearly midway between Middle and Little Plum points, when the staff of the postles' Battery must not be brought to the Northward of the N. part of Fort Charles, ich will lead clear of the shoals off Little Plum Point. When Kingston Church nes in line with the beacon on the Palisadoes, do not stand farther to the Northward n the line of the leading mark for running into the channel, the flagstaff of the postles' Battery in line with that of Fort Charles, to avoid the foul ground off Great m Point.

n standing to the Southward toward Lime Cay Shoal, do not approach it nearer n to bring the flagstaff at Port Henderson just touching Port Royal Point; and when ding toward Lime Cay, do not come within two cables' length of the N. end. When e Eastward of it, the high bluff point at the N. part of Green Bay, kept open of the part of Lime Cay, will clear the foul ground to the Northward of Maiden Rock; and pproaching the East Middle Shoals keep the high cliffs at the S. part of Green Bay n to the Northward of Lime Cay, until the beacon on the Palisadoes comes in line h Kingston Church, when the vessel will be clear outside all the dangers.

HE SOUTH CHANNEL is a narrow vein of deep water, threading its way through close mass of shoals which lie S. and W. of Port Royal Harbor, and which extend four miles from Port Royal Point. It is generally used by sailing vessels proceedoutward, and is buoyed; the buoys on the weather or E. side are painted red, and e on the lee or W. side white. *S. Channel.*

EST MIDDLE ROCK is a very small head, with twenty-two feet water on it, lying ctly at the entrance of the channel, S. W. half a mile from Port Royal Point, and N. W. ½ W. nearly a fourth of a mile from the buoy on the N. W. end of the West dle Ground. On the centre of it there is a floating beacon, with a vein of rails, four square, on the top, thirty feet above the sea; the upper part is painted white, the er black, and, as already stated, it forms with the beacon on Fort Augusta the leadmark for this channel. *W. Middle Rock.*

EST MIDDLE KNOLL.—This small knoll, with only twenty-two feet water on it, W. three cables' length from the West Middle buoy, and S. W. ¼ W. a fourth of a from the beacon on West Middle Rock. When on the knoll the martello tower, Rock Fort, is in one with the S. knob on Gun Cay; a remarkable knob on the th end of the Lime Cay is in line with West Middle buoy; and the beacon on t Middle Rock is open its length to the Eastward of the cocoanut trees on Port al Point. *W. Middle Knoll.*

EST MIDDLE SHOAL is a coral bank, partially covered with a thin layer of sand, near the centre has as little as two feet water on it, steep to, particularly on the side. On its N. W. point is a red buoy, with a staff and vane ten feet above the From it Gun Cay is in one with a red patch in the side of the hill at Rock Fort, *W. Middle Shoal.*

N. E. by E. ½ E.; the flagstaff in the dockyard is in line with the military surgeon' house at Port Royal N. N. E. ½ E.; and the hole in the bluff at Small Point is in on with Helshire Hummock, W. S. W.

Turtle Heads. TURTLE HEADS are numerous, detached, rocky shoals, some nearly awash, whic extend off to the Eastward from Small Point. A white buoy, with a small staff and van is moored in six fathoms, on their outer edge, with Kingston Church in one with Rack um Cay N. E. ½ N., the notch in the mountain open a little to the Eastward of th centre part of the largest building in Fort Augusta N. ½ E., and the S. extreme of Sma Point in line with a deep gap in the distant hills W. N. W. Should the buoy be adrif the belfry of Port Royal Church open to the Eastward of the flagstaff of Fort Charle will lead clear of the E. end of the shoals; this part of the channel is about four cable wide.

Drunken-man's Cay. DRUNKENMAN'S CAY.—The Eastern side of the South Channel is pointed out b Drunkenman's Cay, a small, low cay of stones and sand, on which there are a fe bushes. A short distance to the Northward of it there is a dry sand bore, and thence is nearly connected to the S. end of the West Middle Shoal by a rocky ledge, in som parts dry.

S. Knolls. SOUTH KNOLLS.—Nearly midway between Drunkenman's Cay and the Turt Heads, on the line of the leading mark in the South Channel, are four small, d tached heads of hard sand, called the South Knolls, on which there are twenty-seve feet water.

Portuguese Shoals. PORTUGUESE SHOALS are two small banks at the S. E. side of the entrance of th South Channel, and about a mile to the Westward of the South Cays. There are on six feet water on the Easternmost shoal, seventeen to twenty-three feet on the other, a a red buoy, with a staff and vane fifteen feet above the sea, is moored in five fathoms the Western edge with the remarkable notch in the mountain touching the E. part Fort Augusta N. ¼ E., and Helshire beacon in line with Helshire hummock W. ½ N the latter beacon is painted white, and placed close to the beach in Helshire Bay, a lit to the Northward of St. George's Cliffs. The channel is here half a mile wide, and t W. side is formed by Bush Reef, which generally breaks.

Three-fathom Banks. THREE-FATHOM BANKS are two detached banks lying off the S. E. end of Bu Reef, at the S. W. side of the entrance of the South Channel, and S. S. W. a mile fr the Portuguese buoy. The least water on the inner bank is eighteen feet, on the oth seventeen feet, and on the Eastern edge of the latter a white buoy, with a staff and va fifteen feet above the sea, is moored in four fathoms, with Kingston Church steeple ov the Eastern part of the rocks at Drunkenman's Cay N. E. by N., the flagstaff in P Royal dockyard in line with the S. E. angle of Fort Charles; and Bloomfield House, the beach at Helshire Bay, in one with a gap in the distant hills N. W. by W.

Directions. A vessel proceeding out through the South Channel should be under sail with t land wind at daydawn. If, however, she has good sailing qualities, she may leave wi the sea breeze, provided she can lay up S. by E. Having passed close to the Westwa of the West Middle Rock beacon, keep it in line with the black beacon at the S. E. ang of Fort Augusta, and a notch in the Liguanea Mountain N. ¼ E.; the latter, however, difficult for a stranger to recognize, and is frequently obscured.

If the vessel is of heavy draught, on approaching the South Knolls, when a gap in t distant hills comes on with the S. extreme of small point W. N. W., keep a little to t Westward until the West Middle Rock beacon comes just open of the E. end of F Augusta, and keep it so until the high or Southern end of Drunkenman's Cay bears when haul up again on the leading mark. When the cathedral spire at Spanish To comes open to the Southward of Salt Pond Hill, or Helshire beacon bears N. W. by ½ W., the vessel may be hauled to the wind; or, if bound to leeward, a S. by W. cou can be shaped to pass clear of the outer shoals of Wreck Reef, taking care to keep t Apostles' Battery in sight to the Eastward of Small Point, until she is well to the Sou ward.

A vessel will generally have the assistance of a strong outset as far as Drunkenma Cay, when she will meet the usual Westerly stream and heavy swell; therefore, sho the land wind fall at this point, she had better anchor under the S. end of the cay d ing the calm which intervenes, sometimes for several hours, between the breezes, in or to avoid being thrown on the shoals to leeward. By no means run the risk of havi to bring up outside the Portuguese Shoals. Should the sea breeze set in before she cleared the channel, and she should be obliged to work out, which is a very hazard undertaking, except under most favorable circumstances, do not stand farther to Westward than to bring the notch in the mountain on with the centre of a low house Fort Augusta, nor to the Eastward than to bring the notch on with the E. end of t fort.

Steamers, or persons well acquainted with the locality, may venture, in case of nec sity, to enter by this channel; but it will be attended with some risk, especially if mountains are clouded.

Soundings extend to a considerable distance to the Southward of the cays, but the edge has not been accurately defined. In the fairway of the channel the bottom is generally composed of mud and sand, and occasionally clay, but near the reefs it is sand, with portions of broken coral.

Should the vessel be drifted to leeward, and cannot weather the Wreck Reef, she may run around its N. end, and anchor close to leeward of it, to await the land wind to carry her out again.

Tides. It is high water, full and change, at Port Royal dockyard, at about 11h., and the rise and fall is from ten to eleven inches. There is no regular tidal stream, but in general a strong outset runs out of the harbor and through the South Channel at the rate of a fourth to a knot an hour, until as far as Drunkenman's Cay, where it takes a more Westerly direction, and generally increases in strength. Sometimes it will be found running in this direction at the rate of two and a half knots; a good offing should therefore always be obtained before shaping a course to the Westward.

When the land breezes have been strong, and light Southerly winds have prevailed during the day for a short period, it often occurs that the current is running to the Eastward in the morning, even as far as the East Middle Shoals, when it takes a more Southerly direction, and to the Southward of the shoals it will be found setting to the S. W. or W. S. W., the strength quite depending on the force of the wind that has been blowing.

Portland Bight. PORTLAND BIGHT.—The high land of Helshire terminates about seven miles to the S. W. of Small Point at Polink Point. Thence the coast sweeps round to the N. W., forming between it and Portland Point, twelve miles to the S. W. by W., an extensive bight eight miles deep. The shore is skirted by small islets and detached reefs, within which are several excellent anchorages for vessels of moderate draught. The outer part of the bight is also protected by numerous and small, low, wooded cays, with channels between them capable of admitting vessels of the largest draught. The best channel to enter by is between Pelican and Barebush cays, through which a vessel will carry from six to eight fathoms water.

Pelican Cays. PELICAN CAYS.—About three miles from the Northern shore of the bight are two small, low, bushy cays, nearly half a mile apart, N. N. W. and S. S. E., which lie near the centre of a rocky ledge, three miles in length from E. to W., and a mile in breadth. The ledge generally shows itself, and the W. end is dry and steep to. In the channel to the Northward of it the depth is as little as eighteen feet.

Bare Bush Cay. BARE BUSH CAY lies S. by W. two and a half miles from the South Pelican, and four cables' length from the N. E. end of an oval-shaped coral bank two miles in length, E. and S. W., and one mile in breadth, nearly dry and steep to.

Morris Shoal. MORRIS SHOAL, which lies W. by N. one mile and three fourths from Bare Bush Cay, is a coral knoll of nine feet water, about three cables in extent, steep to, with a clear channel about three fourths of a mile wide between it and the Bare Bush Bank; and also between it and the N. E. end of Portland Reef, a mile to the S. W. of it.

Portland Reef. PORTLAND REEF is three and a half miles long from N. N. E. to S. S. W., and about one mile and a half broad. Its inner or S. W. edge lies about a mile to the Eastward of Portland Point, but in the channel between there is a depth of only twelve feet. Half a mile within the S. W. end of the reef are the Portland Cays, three small, low, bushy islets lying close together; and two miles to the N. N. E. of them are two small cays of similar features, called the Half-Moon Cays, half a mile apart N. E. and S. W., and lying half a mile from the N. E. point of the bank, which generally breaks in most parts.

Pigeon Cay. PIGEON CAY, the largest of the outer islets, lies one mile and a half to the Westward of the W. end of Pelican Reef and N. W. three and a fourth miles from Bare Bush Cay. It is very low and bold, and steep to on its E. and S. sides. The N. W. side forms a small bay, off which there is anchorage in seven or eight fathoms.

White Shoal. WHITE SHOAL is a small detached knoll of eighteen feet water, steep to, lying N. three fourths of a mile from Pigeon Cay, W. nearly three miles from the Northern Pelican, and with the S. side of Round Hill just open of Brazaletta Hill.

Directions. Vessels bound into Portland Bight should have the assistance of a pilot. If coming from Port Royal, having passed well to the Southward of Wreck Reef, edge away to the Westward, until the fall of Brazaletta Hill bears W. by N. This hill cannot well be mistaken, being the Northernmost of two remarkable elevations on the Western range of mountains, about seven hundred feet high, with a deep gap or valley between. Steer upon this course, and as the vessel advances, Pigeon Cay will be seen from aloft on the same line of bearing. This cay in one with the gap will lead through between Pelican and Bare Bush reefs, which is the best channel to enter.

Old Harbor. OLD HARBOR.—If bound to Old Harbor, which is the Northernmost anchorage in the bight for vessels of moderate draught, having arrived between Pelican and Bare Bush cays, a remarkable hummock will be seen on the Northern edge of mountains, resembling in the form of a jockey's cap, called Cudjoe Hill. When this hummock comes

in line with the base of the Western slope of the hill at the E. end of Goat Island, N. W., haul up on this mark, and it will lead close to leeward of the Dry Reef at the W. en of the Pelican Bank, and between it and White Shoal, in five and a half and six and half fathoms water. When the Northern Pelican Cay bears E. steer N. W. by N., so a to pass about half a mile to the S. W. of Careening Cay, to avoid the shoal ground off i When abreast the latter cay, the wharves of Old Harbor will come in sight, and wil direct a vessel to an anchorage off them in four and a half or four fathoms, within th N. E. end of the reef which fronts the Western shore and generally shows itself.

Long's Wharf. LONG'S WHARF.—If bound to Long's Wharf, which is about two miles to the S. W of Old Harbor, having entered the channel as before, and brought the S. side of Roun Hill (the Southernmost of the two hills mentioned above) just open of Brazaletta Hill- which mark leads on the White Shoal, round the latter gradually to the Northward and bring the upper house at Long's wharf in one with the N. end of a gap or flat ope space in the mountains, N. W. ½ N. This mark will lead through the best opening i the reef in four fathoms, which is here a mile from the shore; and when within it anchor as most convenient, in three and a half or three fathoms.

Salt River. SALT RIVER is situated about three miles to the Southward of Long's wharf. Th entrance to the anchorage lies between Long and Salt islands, which are a mile apar The former is about half a mile from the shore, and bordered by a reef on the E. sid to the distance of four cables' length. The latter lies about three fourths of a mile fro the shore, and is steep to, within a cable's length on the N. and E. sides, but is foul o the S. side to the distance of two cables' length. There is a narrow channel between and the foul ground skirting the shore to the Westward, but it is better to take that the Northward, which is half a mile wide.

If bound to Salt River, having entered the Pelican Channel, and being abreast th cays, it will be better to shape a course so as to pass round the S. end of Pigeon Islan which is steep to. Thence a N. W. course three and a half miles will lead to abrea of Salt Island. Round its N. end, at the distance of about two cables' length; ste down for the entrance of the river, and anchor off it in three fathoms, with the S. side Pigeon Island just in sight to the Southward of Salt Island. Pigeon Island, however, so low, that in a small vessel this mark must be watched from aloft. Large vessels wi find a well-sheltered anchorage in five fathoms, close up under the N. W. side of Sa Island.

Peake Bay. PEAKE BAY is situated about one and a half miles to the Southward of Salt Islan between Rocky Point Reef and other reefs, which generally show themselves abo three fourths of a mile to the Southward of it. It is one mile and a half deep, b being open to the Eastward, with strong sea breezes a heavy swell rolls in. The be holding ground will be found in three and a half or four fathoms, under the Northe sandy shore, about a mile within the outer part of the reefs. The entrance bears W. N. three and a half miles from Pigeon Island.

West Harbor. WEST HARBOR is an extensive shallow bight, on the N. side of Portland, in whi there is a depth of only eight or nine feet. The channel lies between the reefs (whi are dry in places) that form the S. side of the entrance into Peake Bay, and those whi extend off half a mile from the N. E. point of Portland, and is half a mile wide. T only anchorage for vessels of large draught is just to the Westward of the Northern ree in from five and a half to four fathoms, where the holding ground is good.

Directions. Vessels should leave either of these anchorages in Portland Bight with the land wi at early dawn, in order to get clear of the outer reefs before the sea breeze arrive should it, however, overtake them before they get to the Eastward of Pigeon Islan they may work out, in moderate weather, either to the Northward or Southward of the former will be the best route, as the water will be smoother. In this case, wh standing to the Southward, attend to the mark already given for the N. end of the Whi Shoal.

Caution. Goat Island and Cabrietta Point may be approached by the lead, not coming within t depth of four and a half or five fathoms. Should it blow hard, it will be better to anch under the lee of Pelican Reef, until the breeze lulls, or the land wind comes off; but intending to proceed on, pass out between Bare Bush Reef and Morris Shoal, and t leading mark for the Northern channel answers the purpose here, viz.: Cudjoe Hill with the fall of Goat Island Hill. It leads, however, so close to the W. side of the re that when the Half-Moon Cays come in one, which is the mark for the S. end of Mor Shoal), it will be better to edge a little away, bringing Cudjoe Hill open a large sa breadth of the fall of Goat Island Hill, until the vessel is to the Southward of the re or the Southern Half-Moon bears W., when she may be hauled to the wind. Shou she not be able to lay through, and the sea is smooth enough to enable her to work o of the Pelican Channel, in standing toward Morris Shoal do not bring Bare Bush Cay the Southward of E. S. E.; and in approaching the Pelican Reef do not open Brazale Hill to the Northward of Pigeon Island. A vessel may stand toward the white water Bare Bush Cay to the depth of five fathoms.

Some patches of three and a half and four fathoms are said to lie a mile to the S. E. *Caution.*
f Bare Bush Cay, and similar ones at two miles to the Southward of Portland Cays; a
ood offing, therefore, must be obtained before bearing up.

PORTLAND is a narrow peninsula of flat wooded land, of moderate height, about *Portland.*
ven miles in length, in a W. by N. ½ N. and E. by S. ½ S. direction, two and a half to
ree miles in breadth, and when seen from the Eastward has the appearance of an
land. Soundings are said to extend out eleven miles from this part of the shore, and
may be approached in the daytime to the depth of six and a half fathoms, which
pth will be found one mile and a half off. A vessel bound to leeward, however, must
very careful to keep the land of Portland to the Northward of W., to avoid falling on
e cays and reefs just described, which are somewhat hidden by the Eastern point.
he current generally sets strong to the Westward, and although the soundings are said
be regular, she had better not come within the depth of ten or twelve fathoms in the
ght.

ROCKY POINT, the W. end of the table land of Portland, is foul to the distance of *Rocky Point.*
ree fourths of a mile to the S. W. At one mile and a half to the Westward of the
int there is a small detached oval-shaped bank, called Robertson Shoal three fourths
a mile in extent from N. to S., on which there are only six feet water.

CARLISLE or WITHY WOOD BAY lies immediately to the Northward of Rocky *Carlisle or*
oint, and is sheltered with the usual breezes, as far as S. E. Good anchorage will be *Withy Wood*
nd in from five to four fathoms, with the fort N. N. E. or N. E. *Bay.*

In running down for Carlisle Bay, Robertson Shoal must not be rounded until a re- *Directions.*
rkable round hill (to the Eastward of that on the chart) bears N. when steer for the
l until Rocky Point comes almost on with the E. point of Portland; the vessel will
n be within the shoal, and may haul up into the bay; taking care, however, to avoid
pot of three and a half fathoms, about two and a half miles from the beach, with the
ve hill bearing N. by E.

he coast from Carlisle Bay sweeps inward with a deep bend to the N. W., as *Coast.*
as Alligator Point, which bears W. by N. eighteen miles from Rocky Point. From
igator Point Pedro Bluff (a remarkable prominent headland projecting about half a
e from the coast) bears W. distant eleven and a half miles. The land between forms
gator Pond Bay toward the E., and Jack's Hole toward the W. end. This part of
shore is greatly elevated, and N. five miles from the bluff it rises to the height of
thousand seven hundred and sixty feet. Nearly midway between the bluff and Alli-
r Pond are some remarkable cliffs called the Pedro White Horses.

LLIGATOR POND and wharf are situated at the entrance of a deep valley, off *Alligator*
h and close to the shore, there is good anchorage in from four to five fathoms, shel- *Pond.*
d to the S. E. by Alligator Reef.

LLIGATOR REEF.—This rocky bank, which lies about two miles from the shore, *Alligator*
bout a mile long E. N. E. and W. S. W., with a slight curve outward to the S. E. *Reef.*
is dry in some places. From Alligator Point the extremes bear S. by W. ½ W., and
½ S. From the S. extreme of the reef Pedro Bluff bears W. by N. Westerly, and
White Horses N. W. by W. ½ W. There are from nine to eleven fathoms within a
lf of a mile of the S. side of the breakers, and between the reef and the shore there
id to be four and five fathoms.

EPORTED BANKS.—A rocky bank of some extent, and on which there is a depth *Reported*
e fathoms, is reported to lie E. S. E. three miles from Alligator Reef; and S. E. six *Banks.*
s from the reef and twelve miles from the shore, there is also said to exist a small
e called the Brune Bank, about a mile and three fourths long, in an E. and W. di-
on, a mile and a half broad, and on which there are four or five fathoms The edge
ndings appears to lie about eight miles from the S. side of Alligator Reef, and about
miles from Pedro Bluff. A vessel must, however, be very careful how she ap-
hes the reef in the night, for the soundings to the Southward are so deep that the
will giving no warning.*

e coast from Pedro Bluff to Parattee (or Parlee) Point trends N. W. ½ W., seven *Coast.*
and is lofty, bold, and steep to; temporary anchorage will be found under Pedro
with the usual winds. From Parattee Point the shore takes a N. by W. ½ W.
ion for five miles to the entrance of Black River, and thence W. five miles to Lu-
oint, and the bay it forms is full of dangerous banks, very imperfectly known.
ear them a vessel should not come within the line of the above points, and
keep Pedro Bluff well open of Parattee; the latter point is also foul to some dis-

ACK RIVER.—There is anchorage for small vessels in eighteen feet water in front *Black River.*
town, about half a mile off shore. The leading mark in, is the church in one with
in the high land, or just open to the Eastward of a large cotton tree bearing N. E.

* In 1826, H. M. S. *Beaver* struck on this reef in the night, with the hand-lead going.

Large vessels had better anchor farther out in eight or nine fathoms, with Pedro Blu shut in about a cable's length of Parattee Point S. E. ¼ S., and the town N. E. by N.

From Luana Point the shore trends in a N. W. direction, with a slight curve inwa for six miles to Crab Pond Point, and is free from danger; but thence as far as St. John Point, which bears from W. N. W. ½ N. thirteen miles it is foul, and skirted by reefs an shallow rocky ledges to the distance of from one to two and a half miles. The coa between these two points sweeps round into a deep bight, in which are the anchorag of Blewfields (or Bluefields) and Savanna la Mer.

Blewfields. BLEWFIELDS is situated about five miles to Northward of Crab Pond Point, an may be known by a small fort on a rocky point three fourths of a mile to the Southwa of the river at the entrance of which are a few houses and above them the buildings a large estate. The anchorage is in a small basin formed within the rocky ledge, whi here lies nearly a mile and a half from the shore, and has a depth across it of three a a half fathoms.

Water. Water may be obtained at the stream in Blewfields Bay, but a more convenient pla will be found round the bluff, at the N. end of the bay.

Directions. In running in for the anchorage off Blewfields, keep the Overseer's house (which stan a little to the Southward of the great house on the estate above), just open to the Sout ward of the tavern at the entrance of the river, N. E. ¾ E., and it will lead across t ledge in four fathoms. As soon as the water deepens within the bar, bear away to t Northward and anchor in five or six fathoms in a clear sandy spot, with the house abo in one with the tavern, N. by E. ½ E. and the Fort Point S. E. by E. ½ E. Vessels large draught will find a temporary anchorage close under the W. side of the ledge nine or ten fathoms but it must be approached cautiously under easy sail, as the led is steep to. The land in this neighborhood is lofty and two and a half miles inl rises to the height of twenty-nine hundred feet.

Savanna la Mer. SAVANNA LA MER may readily be distinguished by the town, which stands the shore of a low and flat plain of considerable extent. The ridge of hills bounding t plain on the N., are very remarkable, and one of the peaks, called the Dolphin He thirty-four hundred and fifty feet high, also serves as a guide to its locality. The r abreast the town extends out to the distance of nearly a mile and a half, and the wa within it is so shallow that vessels drawing over sixteen feet cannot enter.

Directions. To run in through the reef for the anchorage off Savanna la Mer, bring the E. side the Dolphin Head in line with a large cotton-tree to the Eastward of the town, N. ¾ on which line a vessel will carry nineteen or twenty feet water, and as soon as sh within the reef she can anchor in sixteen or eighteen feet: but the channel is so narr that a stranger should not attempt it without a pilot. If a berth is taken up outside reef, be very careful in approaching it, as it is steep to. With a strong trade this chorage is by no means desirable, and a great risk will be run of losing the anch The extreme elbow of the reef, which does not show itself, and has three fathoms o and is steep to, lies S. W. ½ S. four miles from the centre of the town, S. E. by E. th miles from John's Point, and two and a half miles from the nearest part of the sh From the elbow the edge of the ledge takes a direction toward John's Point. To Westward of that point, as far as South Negril, W. by N. ½ N. eight miles distant, shore is bold and steep to.

Banks There appears to be at least two outlying banks off this end of Jamaica, but their li have not yet been accurately traced. One bank lies W. about twelve miles from Pe Bluff, and is of a circular form, about three miles in diameter, with from sixteen twenty-four fathoms on it, over sand and coral. The other lies W. by N. ½ N. a twenty miles from the bluff, the S. S. E. fifteen miles from Savanna la Mer, and app to be a ridge of soundings varying from twelve to twenty fathoms, deepening to Southward.

The W. side of the plain of Savanna la Mer terminates a short distance to the N of John's Point, and thence to South Negril Point the land is of moderate elevation.

Negril Bay. NEGRIL BAY.—South Negril Point the extreme W. end of Jamaica, is bold, ro rocky and steep to, and between it and North Negril Point, which bears N. ¾ E. six m the shore recedes and forms a bight about a mile and a half deep, called Negril or I Bay. The edge of soundings runs nearly N. from the former point, and extends about two miles from the bottom of the bay.

A reef always breaking, and upward of a mile in length from N. to S., lies N. b two and a half miles from the South Negril, and nearly a mile off shore, and on its ce are three beacon poles to guide droghers through a narrow channel into an anch within it. Soundings extend nearly a mile to the Westward of the reef, the dept creasing suddenly about halfway out from five to twelve fathoms. There is good chorage about two miles to the Northward of South Negril, in four or five fathoms, that point bearing S. by W., and the Westernmost huts on the beach (which are a two miles within the point), S. E. ½ E.

A small islet lies a fourth of a mile off shore, at about a mile and a half to the S

ard of North Negril Point, and the coast between forms a small bay called Negril arbor, which, however, is seldom visited, even by droghers, and cannot be recom-ended as a safe anchorage for them.

PEDRO POINT.—From North Negril Point the coast takes a N. E. direction for ght miles to Pedro Point, a bold prominent cliff which forms the N. W. extreme of Ja-aica, and is somewhat similar in features to Pedro Bluff. A mile to the Eastward of orth Negril Point is Orange Bay, and a little farther to windward Half-Moon Bay, hich afford temporary shelter to droghers. *Pedro Point*

GREEN ISLAND HARBOR is merely a small cove situated N. E. about three miles om North Negril Point. It is about three fourths of a mile deep, and little more than cable wide between the reefs which skirt the shore on either side of the entrance, and only fit for droghers or vessels of light draught. Being open to the Northward, a avy sea rolls in with these winds, bringing in the sand, which is said to be gradually ling up the cove. *Green Island Harbor.*

In running into Green Island Harbor, bring a conspicuous house on the high land at e S. W. corner of the harbor to bear S. S. E. ¼ E., upon which line a vessel will carry depth of five and a half fathoms between the reefs, and being within them she may chor as most convenient to her draught. The soundings will gradually decrease as e advances, and with the inner wharf on the Eastern shore bearing E. the depth will only fifteen feet; within this it rapidly shoalens to nine feet, with the fort on the W. int bearing W. *Directions.*

DAVIS COVE is a temporary stopping place for droghers lying about two and a half les to windward of Green Island Harbor. All this part of the shore, with the excep-n of the immediate vicinity of Green Island, is bold and steep to, and a vessel may nd to within a mile of it. *Davis Cove.*

ST. LUCEA HARBOR is situated about three miles to the Eastward of Pedro Point, although of small dimensions is considered one of the best harbors on the N. side of naica. Its entrance is about three cables wide, but within it sweeps round into a st picturesque basin three fourths of a mile in diameter, capable of receiving vessels the largest size. Its position may be readily recognized by the fort, church, and racks, which stand near each other on the Western side of the entrance, and Lucea nt, a bold rocky headland on the Eastern side. From an offing, its locality will be nd by bringing the Dolphin Head to bear S. by E. *St. Lucea Harbor.*

ucea Point is skirted by a rocky ledge to the distance of half a cable's length, and Eastern shore within it as far as Cane Point is also foul to the distance of a cable's gth. A reef, which breaks, runs off S. E. by E. a cable's length from the fort on the stern side, and it generally has a buoy at its extremity; the Western shore is also to that distance. There is a detached rocky knoll about half a cable in extent ed Hospital Reef, lying nearly a fourth of a mile N. of the fort, with the church in with a hill bearing S. S. W., and the great house at Point Estate, and the Northern near Lucea Point in line with the wharf just inside the latter point E. ½ N. A ge with one arch at the N. end of the sandy bay on the E. side of the harbor just of Cane Point, will lead between it and the fort in five fathoms.

approaching St. Lucea Harbor from the Westward there is no danger but the Hos-Reef, but in running down from the Eastward, be careful to keep a good offing until Buckner Reef, which lies about half a mile from the shore, and three miles to the ward of the harbor. In rounding Lucea Point, keep Marly Hill open to the West-of the fort flagstaff, until the Dolphin Head comes open to the Westward of the e on Barbara Hill S. ½ E. The entrance will then be open, when steer boldly in channel, and when the court-house comes open of Mary Hill, edge away to the S. nd anchor in five and a half fathoms, with the fort bearing N. N. W. and the court-e W. If a vessel anchors farther to the Eastward she will be exposed to northers, h send in a heavy sea at times. *Directions.*

essels loading may go as far in as to bring the fort staff to bear N. ½ E. in three and f fathoms. Should a vessel have to work out, in standing toward the Eastern shore, t go farther than to bring the house on Barbara Hill in line with a house above Thorn Hill, which leads close alongside the coral bank off Cane Point.

MOSQUITO COVE, situated about three miles to the Eastward of St. Lucea, is a w, well-sheltered inlet capable of receiving vessels of the largest draught. It is a mile in length from N. to S., but at its entrance between the reefs, skirting it to t distance on either side, it is only about one hundred and seventy yards wide; it ver gradually widens out within, and at its inner end forms a basin four cables in ter, in which the depth is of from four to two and a half fathoms. A vessel will with the sea breeze, but as no marks can be given, and the cove being so narrow, ill require the assistance of a pilot. In approaching the cove be careful to avoid ckner Reef, which lies to the Northward of it, at about half a mile from the shore, channel of six fathoms within it. A vessel may pass round either end of this reef, undings will be found half a mile outside it. *Mosquito Cove.*

Great River. GREAT RIVER discharges itself into a small bay, at about a mile to the Eastwar of Round Hill, a remarkable bold wooded headland, eight miles to windward of Mo quito Cove, and five miles to leeward of Montego Bay. It is protected on the N. by reef, within which there is anchorage for two or three vessels of moderate draught. I the event of being caught by a norther in the bight of Montego Bay, and not able t fetch that anchorage, or weather Round Hill, a vessel may run for this place as a la resource, by observing the following directions.

Directions. Steer down for a bluff, round, dark point, covered with trees to the Eastward o Round Hill, bearing S. W. ½ W. until Pedro Point is shut in with the latter. The steer S. S. W., and as the anchorage is neared a remarkable hill inland will be seen having on its summit a large clump of trees, and when it shuts in with the fall of th Eastern hill mentioned above, steer direct for the bridge or valley until another remar able clump of trees opens midway between the two hills to the left of the bridge, bea ing S. by E. Direct the course then for the point of the reef, which shows itself, leavin it on the port hand; haul close round the end, luff up, shorten sail, and anchor imm diately the vessel is head to wind, as near the reef as possible, as there will be only roo to veer out half a cable, and be in three fathoms. It will, perhaps, be safer to dro both anchors at once, to prevent dragging. The river is navigable for flat-bottome boats to a considerable distance.

Montego Bay. MONTEGO BAY.—From Round Hill the shore continues its Easterly direction f five miles, and then bends suddenly to the Northward for three miles, terminating a low gradually rounding point, which may be said to form the N. end of Monte Bay. The bottom of this bight is filled with low mangrove cays, skirted by reefs the distance of a fourth of a mile, almost wall-sided, and having twenty fathoms wat within almost half a cable's length. To the Northward of the cays, the low shore, the N. end of which will be seen the town, sweeps round with a slight inward curv forming the bay, which, between the reefs, is three fourths of a mile wide, and from t town to the edge of soundings about three fourths of a mile deep.

The N. E. and N. sides of the bay are also foul to the distance of a fourth of a mi except in the N. E. corner, where there is a small secure cove, formed by a break in t reef, capable of holding ten or twelve vessels. The anchorage in the bay is quite s during the period of the ordinary land and sea breezes, which range from N. N. E. S. E.; but between November and March, when northers sometimes blow in, acco panied by a heavy sea, a second anchor may have to be dropped, and accidents ha occurred. It is said, however, that in a period of twenty years (1814 to 1834) the wi was only known to veer to the Westward of N. W. on two occasions.

Directions. Montego Bay being an open roadstead, there is no difficulty in getting to the anch age, except from its generally crowded state, especially from December to June. approaching it from the Eastward run down along the shore at the distance of ab two miles, hauling gradually round the reefs in nine to ten fathoms, which may alm be skirted by the eye, the water is so clear. Having passed to the Westward of the po haul up with the Bogue Road end on, bearing S., which will lead along the reef, when the church comes open bearing E. S. E. luff the vessel up, and as soon as the sa point is shut in, which is a little to the Northward of the old fort, anchor as most c venient. There will be no difficulty in making out the road, which leads up the face the hill. The sandy point just open of the old fort point leads along the edge of the ba which is very steep. A good berth will be with the church from E. to E. by N., the old fort N. by W., in ten fathoms. In the winter the farther to the Northward berth is taken the better, as the vessel will get the protection of the reef. In anchor be prepared to veer out a good scope of cable at once, or the vessel may drag off bank.

Coast. The coast from Montego Bay takes an E. by N. direction, three miles to D Point, the N. extreme of Jamaica, it then trends E. fourteen miles to Falmouth. T part of the island, as far to the Eastward as St. Ann's is generally low, highly cultiva and backed by hills of moderate elevation. In beating up from Montego Bay, the of the current should in the first place be found, and taken advantage of accordin Should there be none, hug the shore aboard during the evening, which may be d without fear, to catch the land wind. If it is found more advantageous to seek an ing, the mariner will find a good guide as to his progress to windward in the peak Turquino, the highest and most remarkable mountain on the S. side of Cuba, and g rally visible.

Falmouth, or Martha Brae. FALMOUTH, or MARTHA BRAE, is merely a reef harbor, capable of receiv small number of vessels not drawing over sixteen feet, moored head and stern, and be readily known by the public buildings of the town, which is of considerable ext the channel, however, although buoyed, is so extremely narrow and intricate th would not be prudent to give any directions to guide a stranger, and a pilot may sel be met with in the offing. Another evil is that a vessel can only leave with the l wind, and in the winter season this is frequently interrupted for many days.

Water is easily obtained at Falmouth, being conveyed by pipes to a fountain standing me yards from the shore, where two or three boats can fill alongside at the same me. *Water.*

RIO BUENO empties itself into a small bay about twelve miles to the Eastward of almouth, in which there is indifferent anchorage for small vessels. *Rio Bueno.*

DRY HARBOR is about three miles farther to windward, and affords somewhat tter shelter; its entrance, however, is very narrow, and the depth only sixteen et. *Dry Harbor.*

ST. ANN'S BAY, about twenty-six miles to the Eastward of Falmouth, may be cognized by the houses of the small town scattered along the shore, the barracks on e side of a hill above them, and some remarkable rows of cocoanut trees along the ach. It is protected on the N. by a reef, through which there is a deep cut only ninety rds wide, leading into a small basin about a fourth of a mile in diameter, with a depth it of five and six fathoms, and with a small arm to the Westward fit for droghers. *St. Ann's Bay.*

The leading mark for the channel into St. Ann's Bay, is to open the barrack gate to e Westward of the house below it bearing S. ½ E., taking care, however, not to open e lower window next East of the gate; but it requires the assistance of a pilot, and it not a safe place for vessels of large draught. *Directions.*

OCHO RIOS, situated nearly seven miles to windward of St. Ann's, is an anchorage, rtially sheltered by reefs near the shore, easily seen, but open to the N. and N. W. nds. The best berth is within the reef which runs off from the E. side of the bay, in ven fathoms, with the W. end of it bearing from N. N. W. ½ W. to N. W. *Ocho Rios.*

ORA CABEZA, about ten miles farther to the Eastward, is also an anchorage for all vessels, but exposed to the Northward. Its vicinity is found by bringing the estern ridge of the Blue Mountains to bear S. S. E., which will lead up to the point. entering give the small reef on the E. side of the bay a berth, and when the Western off point bears W. or W. by N. a vessel may anchor in five and a half, six, or seven thoms. *Ora Cabeza.*

ALLAN'S HOLE is formed by reefs level with the water, which completely break e sea on one side, and the Eastern shore of the bay on the other, and affords good curity to small vessels, not over twelve feet draught, which may warp in. At e N. end of the reef there is a small bushy islet, and between it and the main a rrow channel; there is also a small cut through the reef, but it requires the aid of a lot. *Allan's Hole.*

GALINA POINT, four miles to the Eastward of Ora Cabeza, is low, but steep to. e land rises gradually from the point, and at a short distance forms a remarkable nd hill of considerable elevation. From the point the shore takes a Southerly dition two miles, with a sweep inward, forming the W. side of Port Maria. *Galina Point.*

PORT MARIA.—This anchorage lies between the above shore and a small round nd, of moderate height, named Cabrita; but it is so confined, with foul ground exding nearly over the whole of the harbor, and there is only room for ten or twelve sels moored head and stern, and they lie exposed from the Northward. *Port Maria.*

n running in for the anchorage in Port Maria, give Cabrita Islet a berth of about two bles' length to port, to avoid a reef extending from it to the N. and N. W. The bank oundings is very steep to, and the first cast will be nine or ten fathoms. The most conient berth for a temporary anchorage is in seven fathoms, with Cabrita bearing E. ut two cables' length, the N. end of it in one with Pagee Point, and Galina Point N., the church on the hill N. W. ½ N. Small vessels drawing ten feet anchor between brita and the S. shore of the bay. Vessels in leaving should weigh early, to insure ting clear out before the land wind subsides. Pilots are generally to be found some es out from the harbor. *Directions.*

ANNATTO BAY.—From Port Maria the coast trends E. S. E. six miles to Blowing int, and then S. S. E. three miles to the W. end of Annatto or Anotta Bay. The anrage in this bay is close under the lee of a reef called the Schoolmaster Shoal, which ends a fourth of a mile from the Eastern shore of the bay. The bank of soundings, wever, is so extremely narrow and exposed that necessity alone should take a vessel it. *Annatto Bay.*

f intending to anchor in Annatto Bay, which, as before observed, should only be done case of necessity, have both anchors clear for running, and when off Free Point, ut a mile to windward of the town, run to the Westward until Gray's Inn house es open to the Westward of the wharf S. W. by S., which mark will lead close round W. end of the reef. Run in under easy sail, sufficient to moor with, and when Gibar wharf opens out to the Eastward of a house above it, haul in toward the reef. en Gray's Inn house is in one with the storehouse, drop the port anchor under sail, out about seventy fathoms, and let go the best bower when the house comes open e Eastward of the store, taking care not to shoot into less than five fathoms. Moor an equal length of chain each way, and lay the stream anchor out astern to the ward, on the edge of the bank. *Directions.*

Ship Head. SHIP HEAD.—From Annatto Bay the N. coast of Jamaica takes a general directio to the E. by S. for seventeen miles to Ship Head, a prominent bluff point, with a sma islet close to the Westward of it, called the Ship Rock. In this space there are sever bays said to afford temporary anchorage, but no correct account can be given of them.

Port Antonio. PORT ANTONIO is situated E. S. E. three miles from Ship Head, and W. ½ N. six mil from the N. E. end of Jamaica, at the foot of the Blue Mountains, which rise in lof grandeur abruptly from the shore. The port is divided into two harbors by a narro peninsula, which takes a Northerly direction nearly half a mile from the main, with car to the N. W. The town of Titchfield stands upon it, and at the N. end there is a fort an barracks, which are conspicuous objects from the offing. The point of the peninsula foul to the distance of half a cable's length, and the channel between it and the Easte shore is two cables wide.

The E. harbor is about half a mile in diameter, but the shallow bank bordering it ru off from the E. side, nearly halfway across to the fort, and upwards of a cable's length fro the S. shore, and it is quite open to the N. The W. harbor is about half the size, but equal deep, with bolder shores, and completely sheltered from the N. by Navy Island and th reef to the Westward of it. Navy Island lies about a cable's length from the N. W. si of Titchfield peninsula, and is nearly half a mile long E. N. E. and W. S. W., not quite fourth of a mile broad, and moderately high. Its E. end is foul to the distance of abo a cable's length, but its S. side is so bold that, near the S. W. end, a vessel may care alongside it.

Directions. There is no danger in the way at the entrance to Port Antonio, and the Eastern weath point is bold to. The church and wharf hitherto used for the leading mark into the harbor are both in ruins, and have almost disappeared. A new and conspicuous chur with a spire, has been erected a short distance to the Eastward of the site of the former o and lower down the hill. Stand in with the Eastern ridge of the Blue Mountains bearin S. S. W.: or, if coming from the Eastward, when Ship Island is seen, steer for it on the ½ N. bearing, and the church, fort, and houses of the town, will soon open out. The lea ing mark in is the new church bearing S. by W. Keep in mid-channel between Folly Po and Navy Island, and then haul over toward the fort on the N. end of Titchfield peninsu to avoid the shoal ground on the E. side of the harbor, and approach the anchorage und small sail, as there is no room to shoot far in. A good berth will be in seven fathoms, w Titchfield fort N. W. or N. W. by N.

As a very heavy swell sets into this port, vessels ought not to weigh for the purpose proceeding to sea without being well satisfied that the land breeze extends to a prop distance, for the depth of water at the entrance is so great as to render anchorage qu unsafe should the breeze fail.

To enter the W. harbor, run in under easy sail, and when within or abreast of Fol Point, edge away gradually until the storehouse (a long building on the lower ridge Western hills) opens out to the Southward of Navy Island W. by S. ½ S., which ma will lead in mid-channel. When the church (in ruins) comes open of Titchfield pen sula, haul up and anchor as most convenient in six or seven fathoms. The holdi ground is excellent in both harbors. Vessels intending to make only a short stay h better choose the E. Harbor, as it is easier to sail out of.

Between the reef, which extends half a mile from the W. end of Navy Island and t main, there is a very narrow passage, called Hog Channel, with thirteen feet water it, but it is so tortuous as to be only safe for droghers.

N. E. End. The N. E. end of Jamaica is a remarkably, bold, rounded headland, rising alm perpendicularly from the sea to a considerable height. Thence the rocky shore tren about S. E. by S. eleven and a half miles to another prominent bluff point, with some markable red cliffs, which bear N. W. ½ N. five miles from Morant Point. The land here also very elevated, down to the edge of the beach at the foot of the cliffs.

About four miles to the N. E. of the red cliffs is Manchioneal Harbor, of which have no account.

Plaintain Garden River. PLAINTAIN GARDEN RIVER.—To the Southward of the above cliffs the sho bends in to the S. W. and forms a deep bay, skirted by a reef, at the bottom of which Plaintain Garden River, three and a half miles W. N. W. of Morant Point. Betwe the reefs off the mouth of the river and the shore there is a roadstead; but this is the information we have about it; indeed, our knowledge of this part of the island extremely imperfect.

Current. The current around Jamaica generally runs to the Westward, especially during months of strong trades, when a dull sailer bound to the N. E. will frequently find impossible to make way against it, and more advantageous to pursue the leeward rou It is, however, subject to interruptions, and from the observations of many able navig tors, it would appear that the Westerly stream is not only checked, but turned so times with considerable strength to the Eastward during the increase of the moon; th these statements are much strengthened by the fact that the Cayman fishermen genera select this period for making their voyage to the island. Vessels, therefore, bound

dward, would perhaps do well to choose this time, if possible, for their departure. ne observations tend to show that when the stream is running with unusual strength eeward on the S. side of the island, it will be found weak, if not weatherly on the osite shore, and the contrary; and, again, when setting strong to leeward on the N. re of Jamaica, a weather set will be found on the Cuba coast; but as yet sufficient a are wanting to confirm these statements.

Pedro Bank.

EDRO BANK is about one hundred miles long from E. to W., about thirty miles d near the centre, and forty-five miles at the Western edge. Its Eastern end ap- rs on the chart to terminate in a point, but it has not been correctly defined. The S. dge, from the Portland Rock to near the centre, is studded with dangers. The posi- of this rock and the Pedro Cays has been well determined, but the dangers between m have not been accurately explored.

Portland Rock.

ORTLAND ROCK appears to lie about five miles from the E. point of Pedro Bank, S. S. W. forty miles from Portland Point, on the S. side of Jamaica. It is a barren, ged rock, three hundred and sixty yards long from N. to S., one hundred yards broad, n twenty to thirty-five feet high, bold and steep to. Within five miles to the East- d of it there is no bottom with one hundred fathoms; within less than a mile of the nd the depths are ten to fourteen fathoms, and N. of it ten to sixteen fathoms, clear om. A vessel may anchor about half a mile from the W. side of the rock in seven ight fathoms, but landing is very difficult.

W. ½ S. seven and three fourths miles from the rock, lies a dangerous rocky shoal, ch breaks heavily; it is said to be about two cables in length, and in two places the ky heads just appear above water. There are from twelve to fifteen fathoms between nd Portland Rock, and near the breakers eight and a half fathoms. S. S. W. four es from it, there is reported to be seven and a half fathoms and irregular soundings. edge of the Pedro Bank should be avoided.

N. E. Cay.

E. CAY, lying W. S. W. ¾ W. nineteen miles from Portland Rock, is three cables from N. to S., forty yards broad, and covered with bushes, which grow to the height bove eighteen feet above the level of the sea. From both ends a reef extends to the rthward and Southward to the distance of more than half a mile, and affords shelter n anchorage and landing on the W. side. E. ½ N., nearly six miles from this cay a rocky ledge; and E. S. E. seven miles there is another, and both of them break vily.

Middle Cay.

IDDLE CAY lies S. W. two and three fourths miles from the N. E cay, and is smaller. s also clothed with brush wood, and its W. side is sandy. There appears to be a nnel between them.

S. W. Cay.

W. CAY lies S. S. W. ½ W. nearly three miles from Middle Cay, and is the largest he group, being nearly half a mile long in a N. N. W. and S. S. E. direction, about urth of a mile broad, and partially covered with low bushes of about the same height hose on the N. E. Cay. A reef extends three fourths of a mile from the N. and S. s. On the W. side there is a small sandy bay, where landing can be effected without ch difficulty, and to leeward of it there is anchorage in seven fathoms, but the ground not good. There appears to be no passage either to the Northward or to the South- d of it.

South Cay.

OUTH CAY, lying S. ¾ W. three miles from S. W. CAY, is composed of loose frag- ts of bleached coral, heaped up to the height of about ten feet, and at a distance it the appearance of a small, barren, sandy cay. It is two hundred and sixty yards long n E. to W., and ninety yards broad, and frequently covered with seals. The E. end he cay is foul to a short distance, but a reef extends nearly two miles from it to Westward. The edge of soundings lies close to the Eastward of the above islets, the lead gives no warning of approach.

rom the South Cay the Southern edge of Pedro Bank takes a S. W. by W. direc- for thirty miles, and for a distance of twenty-two miles from the cay it is studded h dangers, and in some places there are no soundings almost alongside them. The thwesternmost of these ledges is about one cable and a half long, and one of the ll rocky heads rises four or five feet out of the water; but it is not easily seen, and breakers in a strong breeze, are not made out until close aboard.

N. W. Ridge.

W. RIDGE.—From the extreme S. Point of Pedro Bank the edge trends to the W. by W. for fifteen miles, where there is a rocky ridge twelve miles in length from S. to N. N. W., from four to five miles in breadth, with from seven to ten fathoms it. To the Northward and Westward of the ridge the depth of the bank is generally n thirteen to seventeen fathoms, sand and broken shells; there are twenty fathoms the edge which is very abrupt. To the Northward of the cays and ledges the sound- s are less, and not so regular, varying from seven to thirteen fathoms. The cays should approached very cautiously indeed from this quarter, and by no means in the night- e.

n some parts the edge of the bank may be discovered from a short distance by the colored water; but this must not be trusted to on the S. side, where in the vicinity of shoals, the bottom is covered with dark weed.

Current. The current on the Pedro Bank generally sets strong to the Westward, sometimes the rate of one knot and a half per hour.

Caymans. THE CAYMANS are three islands, lying to the Northwestward of Jamaica and the track of vessels sailing from that island to Cape St. Antonio, in the island of Cuba they are between the meridians of 79° 44′ and 81° 26′ W., and the parallels of 19° 1 and 19° 46′ N. The Westernmost island is named the Grand Cayman, from its being th largest; the second, the Little Cayman; and the Easternmost, the Cayman Brac.

Grand Cayman. GRAND CAYMAN.—This island is seventeen miles in length from E. to W., fo miles in breadth at the E. end, and seven miles at the W. Its S. E. end forms a round blue cliff, topped with trees to the height of about forty feet above the sea. The S. W end is low and sandy, and at two cables' length to the Southward of it is a small, sand cay about two or three feet out of water, from which a reef which generally breaks o the greater part, runs off half a mile; it therefore requires great caution when roundin this end of the island, especially at night, when the lead will give but short warnin The N. W. extreme is similar to the S. E.; the N. E. end is somewhat lower.

The island is almost everywhere thickly wooded, and on all sides but the W. is skirte by a reef to the distance of from a fourth to a mile very steep to. At the E. end it form a solid barrier to the distance of a mile, and breaks heavily at all times. There are se eral small cuts through it on the S. side, which admit the small vessels of the island in shelter within. The largest opening is on the N. shore. near the N. W. end, and it lea into a shallow lagoon of considerable extent. There is a church and small village sc tered along the shore of the bay, at the S. W. end of the island, but the principal settl ment is at Bodden Town, built about midway on the Southern shore.

Anchorage. The only anchorage for large vessels at the Grand Cayman is under the W. end, abo one mile and a half to the Northward of the S. W. point. They must, however, ta care to pick out a clear, sandy spot, which can be easily done by the eye, and shoot under easy sail, for the soundings do not extend more than about two cables' length fro the shore, and the edge is very steep. A clear berth will be found with the small fo bearing about E. by N., the church E. by S., and the S. W. point but S. ½ W., in sev or eight fathoms; but if it is merely to communicate, a vessel had better remain und sail. As before stated, great care must be taken in rounding the S. W. point, to give a berth of at least a mile, until it is brought to the Eastward of N. In leaving the a chorage with the usual trade-wind, it will be better to heave the anchor up before m king sail, to prevent dragging at a short stay, for the holding ground is not good, a the anchor in tripping might catch under a shelf of rock and be lost or broken.

Supplies. This anchorage is a convenient place for obtaining wood and stock, except cattle, whi is not always to be had at the moment; turtle is generally in abundance, and is the ch commerce of the island. Strangers approaching are met off the S. side, at a consider ble distance, by canoes having them for sale. Water is obtained from wells at about o hundred yards from the beach, but is scarce.

Cayman Bank. CAYMAN BANK, which lies about ten miles to the Westward of the Grand Cayma is a remarkable ridge of coral and sand, taking a N. E. by E. ½ E. and S. W. by W. ½ direction, with a slight curve to the S. E. It is five miles long, but scarcely half a m broad, and carries a depth of from fifteen to twenty fathoms; on the edge the lead dro off suddenly into no bottom with one hundred fathoms. From the N. E. end the N. point of the island bears E. by N. ½ N. six and a half miles, and the S. W. point E. S eight miles; and from the S. W. end the former bears E. N. E. ten and a half miles a the latter E. ½ S. eleven and a half miles, and barely in sight from the deck of a frigat By keeping a sharp lookout the discolored water may be seen, and sometimes it may detected by a strong current ripple.

Little Cayman. LITTLE CAYMAN is nine miles long in an E. N. E. and W. S. W. direction, about mile broad, and from forty-five to fifty feet high. The Southern coast is sandy a skirted by a reef, which extends, however, to only a short distance from the shore a is steep to. Both the E. and W. ends are foul a little way off, and soundings will found about a mile distant from them. There is a well in a small cove, called Bloo Bay, near the N. W. end of the island.

Cayman Brac. CAYMAN BRAC lies four miles to the Eastward of Little Cayman. It is ten mil long from E. N. E. to W. S. W., and about the breadth of the Little Cayman, woody a partially cultivated by two or three families, whose chief occupation is catching turt Its E. end is a bold and rocky cliff one hundred feet high, whence it decreases in ele tion; the W. end is low and sandy. All its shores appear to be foul to a short distan and the rocky ledge is steep to, except at the W. end, where there are from ten to elev fathoms about a mile off.

Pickle Bank. PICKLE BANK is so named from the circumstance of H. M. schooner *Pickle* havi discovered it in 1840. She appears to have been steering at the time W. by N. ½ and for two miles on this course obtained soundings in fourteen, fifteen, and sevente fathoms; but we have no account of its limits. The position assigned to it is lat. 2 20′ N., and long. 80° 23′ W., about N. W. forty-five miles from the Little Cayman

he following remarks are by Mr. James Bodie, master of H. M. S. *Boscawen*, which obtained soundings on this bank in March 1856: "At 6 h. 16m. A. M. sounded in teen, fourteen, and seventeen fathoms, coral, sand, and rocks, the bottom plainly le, white with dark patches. These soundings were obtained in lat. 20° 26′ N., long. 80° 26¼′ W. At 8 A. M. we were off the bank. Our course had been W. by N.; rate, one knot; so that the bank cannot be more than one mile and a fourth, d. At six miles to the Eastward no bottom was obtained with one hundred and y fathoms line."

COAST OF SOUTH AMERICA.

ST OF FRENCH GUAYANA—CAPE NORTH TO THE RIVER MARONI.

UAYANA.—The country comprehended under the general name of Guayana is divided into British, Dutch, and French Guayana. Its coast line extends from the r Amazons to the River Oronoco, and is generally low, as the numerous rivers g down vast quantities of alluvial matter, which, accumulating on the shore, has ed a border of low ground. This ground, between high and low water marks, is monly covered with mangroves; at low water it appears like an inaccessible bank; with the rising tide it is inundated. *Guayana.*

e only ports on this coasts are the mouths of the rivers, which for the most part re- e knowledge and practical experience to pass the bars and shoals that in general unter them; but as in this region no violent tempests ever occur, and as there is he smallest risk in anchoring in any convenient place, the necessity of forcing an nce never can happen, as there will always be sufficient time to wait for a pilot, make the necessary examination by boats to conduct the vessel in safely.

RENCH GUAYANA, the smallest and most Eastern of the three colonies, is in pos- on of the French, who first settled in Cayenne, in 1604. It is about two hundred fifty miles in length, N. and S., one hundred to one hundred and fifty miles in ith, and has an area of twenty-seven thousand five hundred and sixty square miles. oast line extends from the River Oyapok to the Maroni, a seaboard of about one hun- and seventy miles in length. The low alluvial tract along the coast is of great ity. The mountain chains run E. and W., and are wholly of granite, but do not n a great elevation. *French Guayana.*

APE NORTH (Cobo de Norte) forms the Northwesternmost limit of the mouth of River Amazons; it is low and frequently overflowed. Thence the general trend of oast is N. W. by N. for one hundred and ninety miles to Cape Orange. The whole e continues low and is bounded by mangroves of moderate height, which cannot be at a greater distance than ten or twelve miles, and being exposed to the varied and nt action of the waters of the Amazons and other smaller streams in this space the ne often changes. Softs and flats, formed by the debris thrown out of these rivers, d off in some places to a considerable distance, upon which the mangroves advance great rapidity in the dry season, and are torn up again by the violent current and produced by the freshets in the rainy months. *Cape North.*

ARAITARI AND MARACA ISLANDS.—The coast from Cape North sweeps round e N. W. and W., forming a deep bight, encumbered with shallow banks at the ern part and skirted by mangroves in front, which have formed two islands. urlouri Channel, between these islands and the main, is from three to six miles but toward the S. E. end it is nearly choked up by mud flats, leaving a small ge near the main land for vessels of light draught. *Paraitari and Maraca Islands.*

raitari, the Southeasternmost of those islands, lies N. W. by N. about fifteen miles Cape North, and is about two miles in diameter, and being surrounded by shallow s, is inaccessible; there are only three and one fourth fathoms N. E. forty miles it, and the flat is in this direction very steep to.

araca, the other island, appears to be about thirty miles in length, N. W. and S. E., ivided into two parts by an opening called Calebasse Creek, the Western mouth of h forms with the S. side of the N. W. part of the island, a bay sheltered from the d violent currents which are found in the Tourlouri Channel, and affords the anchorage to be found off this shore. It is observed, that the N. W. end of Maraca out of the influence of the current, the mangroves remain stationary.

e best anchorage off Maraca will be found with the Western extreme of the N. W. of the island, bearing W. ½ N., the N. point of the entrance to Calebasse Creek, *Anchorage.*

N. ½ W., and the S. point of the entrance to the River Mapa, W.; a vessel here have not less than nineteen feet at low water, and be sheltered from the current rollers. A greater depth will be found farther off Maraca, but the current is so vi that the anchorage would be untenable in the spring tides. The latitude of this an is 2° 8′ N.

Directions. In standing for the anchorage off Maraca Island, it will be necessary to approach island from the N. N. E., following its N. side at the distance of about four miles, ch gradually toward the shore as the vessel advances to the Westward. The anchorag plainly pointed out by the opening which forms Calebasse Creek, and a vessel may d close round this end of the island.

The bottom in front of the whole of this part of the coast is composed of mud, mor less hard, and the depth gradually increases from the shore to about five and a half f oms, which line of soundings is generally six or seven miles distant; it then incre more rapidly, but still gradually, until near Cape Orange, where the bottom is more rupt for the distance of forty or sixty miles along the coast, the depth being from se teen to twenty-two fathoms, and the mud mixed with fine sand

Tides. It is high water full and change, at the anchorage off Maraca Island, at 6h. The w however, reaches its highest level two and a half or three hours after the comme ment of the flood, and at the equinoxes it has been known to rise thirty-seven feet, the stream to run for a short period at the rate of seven knots. Its strength, howe rapidly diminishes after three or four days from the full and change. The violen the sea at this period is very great in the offing. The difference between the leve low water at the springs and neaps seldom exceeds eight and a half feet. The st always runs to the N. W., and at the period of high water the land is all overflo except at a few spots near the N. W. end of the entrance to Calebasse Creek.

Caution. It may be observed here, that the teredo is most destructive to boats' bottoms in t waters, and they cannot be too often cleansed.

Paraitari and other rivers. PARAITARI, MAPA, MANAYE, MAYECARE, AND CARSEWENE RIVER The principal streams which disembogue on this part of the shore abreast Maraca the Paraitari or Maprouenne, the Mapa, and the Manaye; the two latter comman with extensive lagoons that occupy the low lands between the Tourlouri Channel an course of the Arawari; the mouth of the Mapa is directly facing the Calebasse Cre

N. N. W. eighteen miles from the Mapa is the Mayécaré, which communicates i interior with the Mapa; and nine miles beyond this, in the same direction, is the C wène. The entrance to the Carsewène is obstructed by a sand-bank which exten to the distance of about three miles, and at spring tides it breaks heavily, and pro an effect similar to the prororoca or rollers; at all times, but more particularly a period, boats should be extremely careful how they approach this river.

Mont Mayé. MONT MAYE.—At about twenty miles N. N. W., from the Carsewène, there wi seen among the mangroves, a short distance inland, a small space covered with more lofty than those in the neighborhood: it has the appearance at a certain dis of a hill, and is called Mont Mayé. This is the most remarkable object between North and Orange, and in clear weather it may be seen sixteen miles.

River Conani. RIVER CONANI.—The mouth of this river is only discovered from the many openings between this and the Cachipour River by its proximity to Mont Mayé, which it is distant in a Northerly direction about six miles.

Between Mont Mayé and Cape Cachipour the shore trends N. by W. fifty-eight and is more bold. Abreast the Conani there are six fathoms at three miles, and abreas cape there is the same depth about nine miles off.

River Cachipour. RIVER CACHIPOUR.—Cape Cachipour, about sixty miles N. ¾ W. from Mont M is a low tongue of land which stretches out to the N. E. and forms the Southern poi the River Cachipour. The entrance of this river, which is about eight miles Westward of the cape, is large, and may be recognized by some lofty trees on th side, extending along its left bank, and overtopping the neighboring mangroves.

From the Cachipour the shore trends to the Northward, and being partly drowne only visible at about eight miles; it then takes a N. N. W. direction to Cape Or which is forty-five miles from Cape Cachipour. A shallow flat extends off this p the coast about twelve miles, at which distance the depth is only three fathoms clear weather two remarkable mountains will be seen in the interior which are lent guides for this part of the coast.

Cape Orange. CAPE ORANGE.—The land about this cape is very low, but as this promo forms the Eastern side of the entrance of the Oyapok River, it is easily discernible the Eastward, and from this quarter the hills on the W. side of the river will be behind it. The mangroves which form the extremity of the cape are much higher those in the neighborhood, and are visible at twelve miles.

The mud bank extends out about fifteen miles to the Eastward of the cape, at distance there are only three fathoms water; but to the Northward of the cape, th olent action of the current from the Eastward, and the stream of the Oyapok fro

ward, sweeps away the mud from the shore, and at six or seven miles in that di- n there are five fathoms and the bank being steep to, serves as a guide to this part shore. This would imply that the bottom is rocky, as pointed out on some charts; e numerous soundings recently taken in this neighborhood, by French surveyors, no such indications. In rounding the cape, a vessel should not come within the of five fathoms.

River Oyapok.

VER OYAPOK.—From Cape Orange the land turns rapidly to the S. W. and S. to trance of the Oyapok, the Western shore of which trends to the N. N. W., form- large funnel-shaped bight twelve miles wide at the outer extreme, difficult and dan- to navigate. The Western shore presents behind the low and drowned land many nd mountains which appear at a distance like islands, and are the first elevations chain occupying the interior between the Oyapok and Cayenne.

Mont d'Argent.

NT D'ARGENT, the most salient of these hills, is situated close to the N. W. of the entrance of the Oyapok, and in clear weather the grove of trees on its summit e seen more than twenty miles off; it may, however, be mistaken for the Carimaré, is of the same form but situated farther to the Westward. Between these two ains there is also a hill of the same form, but much smaller and less elevated, False Mont d'Argent, and behind it again several other peaks, the most remark- f which are the Trois Ermites (Three Hermits). Near the bottom of the tunnel- d bight, on the point of land which separates the Ouanari from the Oyapok, stands Lucas, a small but moderately elevated hill.

Directions.

ing passed through the entrance of the Oyapok, a vessel will find good anchorage r fathoms, with Mont Lucas bearing W., distant one mile and a half, or she may ed higher up. About three miles above Mount Lucas is the island of Venados, at high tides, is frequently overflowed; the best channel is to the Westward of it, there are four fathoms close to the shore. Beyond this there are several other islets, but they do not obstruct the navigation. About fifteen or eighteen miles up a fine bay opens out in which there is anchorage in four, five, or six fathoms e to the shore as convenient. Here is situated Fort St. Louis, of Oyapok, and r up there is another fortress called St. Paul. The Oyapok takes its rise far up interior, and, being joined by several lesser streams, conveys a large and rapid of water to the sea, so that vessels should not enter before the commencement of od.

Tides.

the neighborhood between Capes North and Orange, it is high water, full and e. at 6h., and the rise is from twelve to fifteen feet; the flood runs W. N. W., the E. about three knots an hour. In the offing the current takes a N. N. W. course ns about two knots.

Coast.

coast, from the base of Mont d'Argent, sweeps round to the N. W. and low roves can only be seen at a short distance. A little to the Westward of the merid- Mont Carimaré, and about twenty miles from Mont d'Argent, the shore termi- abruptly at some high mangroves, and forms Béhague Point, the Eastern limit of ver Aprouague. This point is prominently seen from the Eastward, appearing de- d from the adjacent low shore. A bank of soft mud stretches off from it to the ward, and skirts the shore to a considerable distance all the way from the Oyapok, hich appears to increase its distance every year.

River Aprouague.

RIVER APROUAGUE is said to be the deepest of the rivers of Guayana, and the to navigate. Vessels of large draught can proceed as far up as the settlement twelve miles from the mouth. The entrance, which lies W. N. W. about thirty from Cape Orange, is easily distinguished, first, by Béhague Point, and afterward wide opening at its mouth, within which there are two small islands. The right runs nearly N. and S. while the opposite side diverges to the N. N. W. and N. W. t forming a distinct point, consequently all the mud thrown out of the river is d away and deposited to the Westward, forming an extensive shallow flat, only pass- r very small craft. About six miles up the river, and nearly in mid-channel, is a low narrow island, generally called Fisherman's Island. To the Northward sand-bank stretches out about a mile and three fourths, and requires a wide berth. is said to be a channel on either side of this island, with twelve feet water to the ward and eighteen feet or more to the Eastward of it. The river winds inland far Westward, and is reported to join the Marowaini.

Connétables.

NNETABLES (Constables) are two small rocky barren islets, the Easternmost of lies N. fifteen miles from Béhague Point. This latter being the largest is called reat Connétable, and is about one hundred and sixty feet high, of a rounded form, flattened summit that may be seen in clear weather from a distance of twenty-five ty miles; it is bold and steep to. The other, called the Petit Connétable, and ly- . S. W. about a mile and a half from the larger islet is quite flat, and at high water, tides, it is not more than three or four feet above the sea; to the Northward and ward breakers extend off about one third of a cable's length. In the channel be- them the depths are from five and a half to seven fathoms. Between the islets and

the mud bank which skirts the shore, the soundings gradually and slowly increas depth from the shore; but outside them they deepen abruptly from eight and a ha nineteen fathoms.

Ballures. BALLURES is a dangerous shoal, lying N. by W. about six miles from the G Connétable, with depths from ten to thirteen fathoms between on hard sand

Although the sea has been seen frequently to break in this neighborhood, it has hitherto attributed by most navigators to the violent rollers which prevail on this of the coast at certain periods. Soundings, however, have been obtained recently, w clearly indicate the existence of this shoal, although the exact depth is not give must, however, be of very small extent, from the frequent searches that have been for it without success.*

Current Breakers. CURRENT BREAKERS.—During the summer the current runs strongly to th W. in this neighborhood, but in the winter it is overcome to a considerable dist from the land by the tides: especially on the ebb at springs, which being augmente the large stream from the Aprouague, rushes out to the N. and N. N. W. with force, causing at three or four miles outside the Connétables heavy breakers, w generally subside at slack water, if the outer current is feeble. The line of ripp broken water has more the appearance of shoal ground, as it runs along the ed muddy water.

Tides. Between the Little Connétable and the land it is high water, full and change, a springs rise eight and a half feet, and neaps from four to five feet.

Coast. The coast from Aprouague to the river Mahuri, a distance of twenty-seven trends to the N. W., and is only visible from a distance of seven or eight miles; backed, however, by a uniform ridge running parallel to the shore and not far in named the Kaw Mountains, which may be seen at a great distance, and are a good to vessels passing outside the Connétables.

River Kaw. THE RIVER KAW disembogues about fifteen miles to the Northwestward o hague Point, but it loses itself among the mangroves, and the entrance is conseque difficult to discover.

River Mahuri. RIVER MAHURI.—The mouth of this river is bounded on the W. by the isl Cayenne, and lies directly under the lofty plateau of Mahuri, one of the most ele points on that island, its base resting upon Cape Diamant; the entrance is, there easily made out. The Eastern side of the river is very low, and the debris washed depositing itself on this side, forms an extensive shallow flat which sometimes re out nearly to the Remire Islands, leaving the deepest part of the channel towa Cayenne shore. Although this river has less depth at its entrance and is more di to navigate than the Cayenne, it has more water within the bar, which enabl vessel drawing over twelve feet to lie afloat at all times, an advantage the other not possess.

Remire Islands. REMIRE ISLANDS are five small rocky islets, lying on a N. W. and S. E. be from two to three miles from the N. E. side of the island of Cayenne, and about eig miles to the Westward of the Connétables. Malingre (sickly), the Northwestern islet, Père (father), the centre one, and Mère (mother) the Southeasternmost and la are of considerable elevation, and the two latter may be seen soon after making high lands of Cayenne, and from off the Connétables. The other two, called the melles (paps), are very small and about eighty feet high, and lie close together, ab mile to the Eastward of Mère Islet.

The tides and current set through between these three latter islets with such ex velocity, that they are dangerous to approach in light winds.

Père Islet lies N. N. W. about two miles from the Mère, and is much smaller lower; about a cable's length from its S. point there is a rocky head, with only feet on it at low water; and at a fourth of a mile from its N. W. point there is a sh rocky ledge. Malingre lies N. W. by W. three miles from the latter, and is smaller and lower. In the openings between Mère, Père, and Malingre, the sound are from three and a fourth to four and a fourth fathoms.

Enfant Perdu. ENFANT PERDU.—This small flat rock lies N. by W. six miles from the house at Cayenne, and about the same distance E. N. E. from Mont Macouria, and good guide for the river. It is elevated only a few feet above the sea, and from its a flat rocky ledge extends out a cable's length, and always breaks. The space be the rocks and the main is obstructed by a bank of hard sand and mud, which grad increases in depth from the shore. With the rock bearing S. ½ E. three and a miles, there are only three and a fourth fathoms at low water, muddy bottom.

Light. There is a fixed light, thirty-three feet high, on this island.

St. François Rock. ST. FRANCOIS ROCK.—At nearly two and a half miles W. by N. from Ma

* M. Montravel, 1851; who states, "I am convinced of its existence, for in passing four mile this island, the sea broke so high and with such force, that it was not possible to attribute the in o the action of the current. The heavy sea prevented my sounding."

ies a dangerous rock called St. Francois, which never uncovers, and to avoid it approaching the river Cayenne from the Eastward, care should be taken to keep re open to the Northward of the Malingre until the N. W. point of Cayenne bears Southward of S. W.

CHOIRAN BLANC is a small rock lying S. S. W. a mile and a half from the re, and about midway between it and the land. N. N. E. a cable and a half from e is a small head, which uncovers at low water. Vessels drawing twelve to four- et may pass between it and the Malingre, but it requires great caution, and this el is only navigated by coasters. *Machoiran Blanc.*

AND AND RIVER OF CAYENNE.—The Island of Cayenne is bounded on the E. river Mahuri, on the W. by the Cayenne, on the S. by a canal which unites these reams, and on the N. by the sea. Being mountainous, it presents totally different es from any other part of the coast of Guayana. Its N. E. shore is formed of sandy separated by bold rocky heights, declining toward the S. and W.; the N. W. ex- terminates at a low point, on which is situated the town of Cayenne, at the East- de of the entrance of the river. From the N. point of the island a rocky ledge runs that direction three fourths of a mile and at the extreme end there is a small clus- little rocks, and within them the Dupont Islets. *Island and River of Cayenne.*

shoals of the river are difficult of access, and the entrance is barred by a hard bank, six miles broad, called the Sommes, on which the sea breaks with great vio- in N. winds and spring tides, making it dangerous to cross, and quite impassable ats. The channel which the river stream cuts through this bar generally pre- a N. and S. direction; but its depth varies continually, according to the state of eather and river, and a pilot is therefore absolutely necessary. At about three to the Westward of the E. point of the entrance there is a small rock, which is times covered, called Aimable, and on which there is a beacon. Two cables to the ward of it is the Maillard, which has nine feet water; and about three fourths of a arther up is the Cheval Blanc, which is also sometimes covered. The Western f the river is bounded by a sand-bank stretching off a mile to the Northward from Macouria, leaving the entrance about half a mile wide.

YENNE.—A fixed white light is exhibited from a wooden structure, thirty-nine igh, erected on the glacis N. of Fort Cépérou. The light is one hundred and feet above the sea, and should be seen, in clear weather, ten miles. *Cayenne Lights.*

xed green light is exhibited from the N. W. angle of the infantry barrack, at an ion of sixty feet above the sea, and visible eight miles. It stands N. W. of the nd N. W. by N. from Cépérou light-house. The two lights in line bearing S. E. lead over the Aimable Rock. A vessel entering the river of Cayenne should ore keep the white light a little open Westward of the green light.

xed red light is shown from the jetty-head, to aid in entering the river at night. *Pilots.*

pilots for Cayenne River reside on Mère Islet, and on the summit is their flagstaff. *Directions.*

rivers of Guayana undergo such frequent changes that it is difficult to give direc- hat can be depended upon at all periods. The banks of sand and mud are some- so extensive as to close their mouths together; and although the entrance to the me may be an exception, it should never be navigated without a pilot; their boats, er, only come out on the ebb, and do not venture off far from the shore.

ll times the land should be made well to the Southward of the point of destination; , vessels from Europe would do well to strike soundings on the parallel of 3° N., sight Mont Mayé, to prevent being carried too far to leeward by the N. W. cur- which runs at the rate of from two to three knots. After rounding Cape Orange, it not be possible to sight the Grand Connétable before dark, it will be better to or stand off and on under commanding sail, coming into not less a depth than ten ns. Vessels drawing less than sixteen feet water can pass inside the Connétables n along the land in four and a half fathoms as far as the Remire Islets; but those ger draught should pass outside all, taking great care how they approach the dan- shoal named the Ballures.

ing passed Malingre Islet, great attention must be paid to the lead, and care taken p Père Islet open to the Northward of Malingre, until the light-house bears S. W., d the St. François. Until a pilot is obtained, it will be better to remain under anding sail, making short boards guided by the lead, not standing out into a great- th than five fathoms, to avoid the outer current, nor in, to bring the Père Islet on Malingre, to avoid the St. François.

bliged to run in before receiving a pilot, bring the entrance of the river to bear . to S. S. W., and steer directly for it, as the channel generally lies on these lines ring. The pilot will be found just outside the banks at the mouth of the river, ill direct the course by waving a white flag to the side that should be steered for. hanges, however, are so great, that to attempt to cross the banks at the entrance t assistance will incur great risk; and at all events it must not be done before od. Additional directions will be found a few pages farther on.

Should it be found more convenient to anchor, great care must be taken to see the bottom is soft mud, which is generally pointed out by the smoothness of the wa On these spots, in the summer season, between April and November, a vessel may ture into little more than her draught, as no harm will come should she touch ground. In the winter months and with spring tides, anchorage here, however, is tended with considerable risk, particularly if the anchor is dropped on hard mud. this period the pororoca or rollers prevail with N. E. winds, and rise up so rapidly, break so violently, that a small vessel is exposed to imminent danger. With sp tides, the sea will sometimes stop after a long lull, without any warning whatever eight fathoms water. At all times a vessel should not bring up to the Westward of entrance. In the fine season, a small vessel may anchor between the Père and Ma gre islets, or between the latter and Cayenne, but it must be on soft bottom. A venient berth lies to the Eastward of the Enfant Perdu, with the fort at Cayenne bea S. S. W.

Tides. The time of high water, full and change, at the entrance to Cayenne River varies f 4h. 15m. to 4h. 40m. At the equinoxes the rise is nine feet, at ordinary springs s feet, and at neaps from four to five feet. On the bar, at high-water springs, there sometimes seventeen feet water. The ebb from the river runs out N. N. W.; outsid sets to the N. N. E., and the flood to the N. W., at about two knots.

The Coast. The coast from the river Cayenne to the Kourou River trends N. W. by W. two one miles, and is called Coast of Macouria. From Macouria Point to the river of name, fifteen miles distant, it is low and sandy; but about midway, and not far inl is Mont Macouria, which, at a certain distance, appears like an island. The rive small and the mouth so narrow that it is not easily found until close upon it. Betw the Macouria and the Kourou the shore is bounded by mangroves somewhat more vated than elsewhere.

River Kourou. RIVER KOUROU.—Close to the shore, on the E. side of the Kourou River, is Guatemala; a short distance farther inland to the S. W. is Mont Condamine; and on W. side is Mont Piriacabo. These are all remarkable objects at a long distance, good guides for the entrance of the river. The mouth lies between low points Southernmost projecting out a little distance beyond the other. It is very narrow, deep enough for vessels of moderate draught, and has the advantage of good anchor in the immediate neighborhood for those of the largest size.

Garadier Rocks. GARADIER ROCKS.—E. about four miles from the entrance of the River Kou and the same distance N. of the Macouria, are the Garadier Rocks which are gener three feet dry at low water springs, but seldom visible at ordinary tides. Lying im diately in the route of small vessels passing to and fro from Cayenne, they are, of co very dangerous, and the more so as their position is doubtful.

Kourou Rocks. KOUROU ROCKS.—These two dangerous rocks lie between the Garadier and entrance of the Kourou River, about a mile and a half off shore. They uncover at water, and are directly in the way of vessels visiting the Kourou. N. W. about miles from the Kourou River there is a well-defined point, with some rocks at its called Charlotte Point.

Salut Isles. SALUT ISLES.—This group of three small rocky islets, occupying a space of a half a mile, lies N. E. seven miles from Charlotte Point, and N. W. twenty-five m from Cayenne. They are inhabited, and upon them are extensive government buildi Anchorage in four and a half fathoms, muddy bottom, will be found under the W. of the Northernmost islet, with the prevailing E. winds, about half a mile from the is and in the bight formed between St. Joseph and Royal islets there is still better s ter, especially for vessels of light draught, in from three to four fathoms. These chorages are the best—indeed the only safe ones—for large vessels, on this coast, side the rivers. The channel which existed to the Southward of the Salut Islets, is obstructed by a causeway which connects them to the main land.

Water. On the N. side of Royal Islet there is a small settlement surrounded by plain trees, and some wells of good water; landing, however, is rough and difficult, and water must be carried to the boats in breakers.

Light. There is a fixed light two hundred feet high on Royal Isle.

Reported Dangers. In the first plan published of the Salut Islands, in 1764, there is placed a rock w is said to break at low water, N. 21° W. a little more than two miles from St. Jo Islet, and another N. 42° W. nearly a mile from that islet; but they have freque been looked for most minutely without success, and there is no account of their ha been seen by the coasters who are continuously traversing this neighborhood. It also been stated that a rocky bank of vast extent existed in these directions, on w there were five fathoms at low water, and six fathoms in the environs, but no bear are given for its position.

The current is rarely so strong at the Saluts as to produce the effects observabl the Connetables; nevertheless, the soft mud-banks change their depths occasionall the eddies toward the shore. These changes, however, cannot be very great, for, the str

nning always in the same direction, the mud deposited at the termination of one will be carried away by the next. While this doubt exists, it will be more prudent oid this space within the above bearings, especially as no inconvenience will result.

The Coast.

e coast from Charlotte Point to the environs of the river Counamana, a distance rty miles, takes a N. W. by W. direction, the mangroves disappear and the shore and sandy. Here and there will be seen a few habitations and small clumps of and the whole line of coast is closely skirted by detached rocks which become numerous as Verte Isle is approached.

Caution.

e Remire, Connétables and Salut islands are the only points on the whole of this that could endanger a ship, should she touch them; it is therefore imperative to utious against the current. The passage between the Connétables should not be pted without a leading wind; on the other hand, it is much better to anchor nine from them, or to pass outside them at a sufficient distance to give a wide berth to allures Shoal.

Malmanouri Flats.

LMANOURI FLATS.—W. ½ N. about ten miles from the Salut Islets, there is in of rocks about two miles from the shore, called the Flats or batteries of Malri. It is two miles in extent from E. to W., and one mile from N. to S.; its edges rd mud and the breakers over it may be seen two or three miles. The sea is er here than on any part of the coast.

Mont Diable.

NT DIABLE.—S. W. from the Malmanouri Flats, and about nine miles inland, is a very remarkable conical hill called Mont Diable, which may, in clear weather, n from a distance of twenty miles.

Verte Isle.

RTE ISLE.—This small islet lies about a mile and a half from the shore, W. by N. teen miles from the Salut Islands, N. by E. from Mont Diable. It is very low, and lly covered with dwarf shrubs, so that it is difficult to make out. There is a chanetween it and the main for small vessels, but it is said to be filling up.

River Sinamari.

VER SINAMARI.—From abreast Verte Isle to the mouth of Sinamari, the coast nues its W. N. W. direction five miles, and presents no remarkable object whatever, the Eastern side of the river is approached, where the mangroves form a grove r than those in the neighborhood. A mud-flat extends out about six miles, and nts an approach sufficiently near to make out the entrance; but a good guide will nd in Mont Corosoni, which bears S. W. ½ W. from it.

Corosoni Rocks.

ROSONI ROCKS.—To the Westward of the Sinamari the shore is low and sandy, r five miles it is skirted by a ledge of rocks, called Corosoni or Toulonnaise, to a mile from the shore, with shallow ground a long distance outside, that will a vessel of her approach.

River Counamana.

VER COUNAMANA.—The entrance of this river is about twelve miles to the ward of the Sinamari, but is difficult to find, and like the latter is only fit for very coasters. Near the mouth of the river there are some huts, and a little to the ward of the river a remarkable ridge of irregular conical hills called the Iracoubo tains, which extend in a W. N. W. direction about twelve miles, and is the least eleland that will be seen to the Eastward of the Maroni River. The Easternmost hill range bears S. W., about eight miles from the mouth of the Counamana, and may n fifteen miles off.

Bourgeois Rocks.

URGEOIS ROCKS.—From the Counamana River the shore trends W. N. W. seven to the Iracoubo. About midway between the two rivers, and but a short distance he coast, lies a small ledge called the Bourgeois Rocks, which are the last that e met with in proceeding to the Westward.

Caution.

navigating this part of the coast, care should be taken not to come within the depth fathoms, to avoid the ledge just described, between this and Cayenne. These e only dangers to be guarded against, and it is to be observed that wherever the is bounded by mangroves the bottom in front is muddy and deeper, and bolder lsewhere.

Rivers Iracoubo and Organabo.

VERS IRACOUBO AND ORGANABO.—The Iracoubo will only admit coasters, difficult to discover. Thence to the Organabo the coast still trends W. N. W. for n miles, and is bounded by a low sandy shore, scantily clothed here and there clumps of brushwood. The interior is nearly drowned, and cut up by extensive s. The mouth of the Organado bears N. by W. from the Western end of the Ira- Hills, but it is difficult to find until close to it; and it is so narrow and shallow be only fit for coasters. Near the mouth there is a clump of mangrove trees at a certain distance, has the appearance of an island, and is called by the fisherlot-aux-Canards; and this is the only remarkable object on the shore between the abo and the river Maroni.

River Mana.

VER MANA.—About ten miles to the westward of the Organabo high land begins from the interior, and trends toward the N., terminates near the entrance of the Mana, W. N. W. twenty-eight miles from the Organabo. The mana will only adall coasters at high water, the mouth being blocked up by a mud flat, which runs W. six miles from the E. side of the entrance.

River Maroni.

THE RIVER MARONI or Marowaini, which forms the Western boundary of Fre Guayana, debouches about eight miles to the Westward of the Mana, and its entrance tween Point Française and Kaimar Head is about three miles wide, and open to the N. E. On Kaimar head there is a Dutch post, and near it two remarkable little hill high clumps of trees, which have the appearance of islets when first sighted. From head the shore takes a Northwesterly direction for about five miles, and then resu its Westerly course; this short space is more elevated, and forms three little hills, wh are guides to the river.

From Point Française the Mana mud-flat stretches off to the Northward six miles, from Kaimar Head a sand-bank runs off to the N. E. about three miles, and breaks half tide. Between the two there is a channel of thirteen feet water, but it is only n igable for small coasters; large canoes can get up as far as Armina, which is a little low the first rapids.

"The two bluff points at the entrance may be seen twelve or thirteen miles when soundings of five or six fathoms water, the Westernmost projecting out a little bey the other. It is remarkable that, in the vicinity of this river, the bottom is composed red sand, which is a good guide for it in the night, the soundings off other parts of coast, for a distance of thirty miles, being mud. Off the N. part of the entrance ther a hard bank, having from six to nine feet at high water, the centre lying S. S. W. ½ three and a half miles from the E. point. That point and a clump of trees on the s side in line will lead directly on the S. side of this bank, between which and the sh there are twelve feet, muddy bottom. Between the W. point and this bank there very narrow channel, but, as the flat stretching off from the point is hard sand, it is ficult of access."*

Buoys.

At the entrance of the Maroni River there are three black buoys, the outer on which lies in eleven feet at low water neap tides, over muddy bottom, with Jean Pi (an Indian camp of French Guayana) bearing S. S. W. The second buoy lies on edge of the French Bank, in sixteen feet, over hard bottom, with the Mana River ope E. by E., Jean Pierre S. by W. ¼ W., and the outer buoy N. N. E. The inner buoy twenty-one feet, over soft mud, with the entrance of the Mina just closed E. S. E., J Pierre S. by E. ½ E., and the second buoy N. E. ¼ N.

Directions.

It is advisable for vessels approaching the Maroni River to bring Papagaay en h (French Guayana) S. S. W., and to stand in upon this course with Zeekoe Kreek (Cow Creek) just open of Papagaay en hoek, which will lead to the outer buoy. bottom on this track will be found soft mud.

From the outer to the second buoy the course is S. S. W. When Française Poi just in sight the bottom becomes hard; but the depth speedily increases. From second to the inner buoy steer S. W., and thence direct the course for the middle of river. In going in, all the buoys must be kept on the port side. When working ou the river, care must be taken not to go inside of the second buoy, as it lies on the e of the French Bank, which is very steep.

Tides.

It is high water, full and change, at the entrance of the Maroni River, at 5h. 30 springs rise eight or nine feet, and neaps four or five feet. The flood sets to the S. from the outer buoy to the mouth of the river, and the ebb to the N. N. W.

Soundings.

In comparing charts published in 1817, 1823, and 1826, it would appear that g changes are taking place in the soundings off many parts of the coast of Guayana, ticularly near the land. In 1817, between the Connétables and the main there wa depth of eight fathoms, which, in 1826, was reduced to five fathoms at low water. the same period the depth in the channel between the Saluts and the shore changed f eight to four fathoms. In the same interval, however, farther out, between Cape chipour and the Maroni, no alteration was observed. To the Southward of Cape Ca pour, in the offing, the soundings differ again considerably.

In 1817, there were thirty fathoms at sixty miles E. of the cape, where, in 1826, charts placed sixty-five; and twelve fathoms where there were sixty. Off the entra of the rivers the changes are naturally much greater and far more variable, and at tain periods occur almost daily. The difficulties, however, are so great in obtaining necessary observations for the construction of correct charts of soundings, that m confidence cannot be placed on these statements. To the Northward of Cape Ora the current becomes less rapid, and running parallel to the shore, enables the reckon to be checked more correctly by the land and the latitude; here, therefore, the rec may be more trusted.

It is to be observed that, in front of all the large rivers of Guayana, to a consider distance from the land, the bottom is invariably mud and shells, which is a good gu for elsewhere it is mud alone.

Tides.

It has been stated that the tides are limited to the space between the land and

* Capt. E. Rich, H. M. S. *Ringdove*, 1826.

r edge of the great current, which is seldom more than thirty-six miles distant from mouths of the rivers. A portion of the ebb stream, running out from them to the E., meeting with this obstacle, is diverted to the N. W., augmenting the strength of current, while a portion is thrown back, forming eddies within and to the Westward he openings. The waters which enter the rivers on the flood proceed, on the con-y, with those that detach themselves from the main current, and are brought, fol-ing a curved line to their mouths, to find their level. The first direction of these ched streams is that of the current itself, N. W. by W., or W. N. W., and they after-d gradually incline to the W. The portion opposite the rivers naturally runs to-d them, and the other part follows the line of the shore.

Mud Banks.

UD BANKS.—It is in the space just spoken of, where the tides are felt, that the ks undergo displacement. All the shore between Mont Mayé and Cape Orange is ted by mud to a great distance; the limits of these banks, however, are nearer the e than the main current, and they have seldom more water over them than four oms.

is presumed that the mud thrown out of the rivers situated to the S. E. is carried y by the current on the flood to the Northward, and deposited in the eddies on this of the coast. In years of heavy rains, the tidal streams are of course very much nger on the shore and in the rivers; the ebb then acquires sufficient force to carry mud out to the current, which conveys it away to the Westward, depositing it in the es near the shore, at the mouths of the rivers, and under the islets. When the rains light, the tidal streams are consequently weak, and the ebb not having sufficient er to carry the mud out so far, it is deposited within and at the mouths of the rivers, ing banks of great extent. If they remain long in one position they become indu-d, and they require several years of strong tides to remove them. When they are in hardened state, they are frequently discovered by the sea breaking furiously over n right into the mouths of the rivers, as if it were a coral bottom; whereas over soft the water is generally smooth and offers temporary anchorage.

he greatest changes appear to take place between Cape Orange and Cayenne, cor-records of which have been kept at the latter place for a long period. Off Cayenne hard mud bank, called the Sommes, never extends beyond the line of the Malingre Père islets, because outside that the eddies are scarcely felt, and the tidal stream es close out to the edge of the current.

he soundings change sometimes, however, between the Sommes and the Enfant u, but the deposit there has not time to harden, and it never passes beyond a cer-elevation. In 1764, there were only from seven to nine feet water on the Sommes. 820, there were from fourteen to seventeen feet in the channel; the winters of the preceding years had been unusually rainy, the fluvial and tidal streams had conse-tly received increased scouring power, and were enabled to carry the debris out to main current, and prevent its return on the flood. Probably there never was so great pth here as during the years 1819 and 1820.

1824 and 1825, very little rain fell; the streams were consequently feeble; the de-remained near the shore at the mouth of the rivers and accumulated in the eddies, n 1826, there were only five feet water, where in 1820 there were fourteen to seven-feet. The channels were also much narrowed, and on the edges the depth was re-d from sixteen to two feet. All that part lying outside the Remire and Dupont underwent a similar change. In the vicinity of Malingre Islet, and N. N. E. two from Père Islet, there were only ten feet, where in 1820 there were twenty-seven water. The winter of 1826 was very rainy, and the freshets carrying away the de-s from the mouths of the rivers deepened again the channels; and in the month of there was a little more water than in January.

Mangrove Trees.

ANGROVE TREES.—During the rainy season the mangroves are torn away from anks of the rivers and thrown out upon the shallow mud flats, where they take with great rapidity; detaining the mud and elevating themselves with it, the fea-, and even the direction of the coast, are frequently changed to a considerable dis-. To the Northward of the city of Cayenne, in 1826, they had planted themselves e, in 1820, there was a depth of fifteen and sixteen feet water; and about twenty rty years previous to this they approached within two or three miles of the En-Perdu.

ROUTES ACCORDING TO SEASONS.

ssels proceeding from Europe to the coast of Guayana and the Southern Antilles ally make Madeira, and sometimes find it necessary to sight the Canaries before are able to pursue a Southwesterly course. Sometimes, particularly in the winter, vailing N. E. wind will enable them to take a more direct route, passing to Westward of Madeira; this wind, however, is not to be depended on so far N., and

it will always be better to push as fast as possible to the Southward, in order to g the general trade breeze. In all cases, when within the torrid zone, a vessel ought preserve the parallel of 20° N. as long as possible, in order to avoid the variable wi the Northern limits of which, between May and December, often reach as far as lat. and sometimes 20° N. From December to June it will be necessary to follow a m Southerly parallel to escape the variables of the temperate zone, which at this seas with those of the torrid zone, approach nearer to the equator.

If bound to the coast of Guayana, a vessel should endeavor to make the land near M Mayé, but avoid approaching the river Amazons, from which proceeds a heavy sw that is felt at a great distance, and is dangerous at the mouth. This phenomenon known in the Ganges, and in some other very large rivers, where it is called the bo here it is termed prororoca.

Having made the land and discovered the point arrived at, run along it with the l kept constantly going to keep in six and a half, seven, and eight fathoms water, tak care not to have less, to avoid the shoals that stretch off the shore; and although in th soundings land cannot be seen in some places, even in clear weather, it can be of no convenience, for on nearing the point of destination the vessel may be hauled in m the land comes in view. This may be done whenever it is desirable to make out particular part of the coast; but in such cases the greatest attention must be paid to lead. If a vessel gets near her port at nightfall, she must be brought to an anchor, wh practice should also be followed in fine weather when she is within the limits of tides, for the current at the flood would draw her toward the land.

Touching the ground upon this coast is not attended with danger, because the bot is mud, more or less soft. Nevertheless a vessel must not be conducted carelessly, at least it will occasion loss of time, with a possible loss of anchors, &c., to get her again. When a vessel keeps the regular course, even in eight or nine fathoms wa she will stir up the mud from the bottom, apparently as if her keel were plough through it; and this might cause anxiety to a person observing such a circumstance the first time.

July to November. On the coast of Guayana from July to November is the fine season, the band of va ble winds N. of the equator often extends as far as lat. 18° N. It does not, howe reach the shore, but follows nearly its direction at the distance of about one hun and eighty miles; a vessel must therefore necessarily traverse the space of rains calms in proceeding to Cayenne. In this season, after reaching the trade-wind, a sel should endeavor to pass about one hundred or one hundred and fifty leagues the Westernmost of the Cape Verde Islands, and thence a course should be shape the Southward, so as to cross the variable as quick as possible, and gain the gen winds, which advance as far as lat. 5° or 6° N. Having met them, it will be bett run between the equator and the parallel of 3° N., where the variables never reac this period; here the winds are fresh and favorable, the weather continually fine, the current strong to the Westward. Endeavors should be made not to recross parallel of 3° N. until soundings have been obtained in forty-five or fifty fathoms, a more Northerly course may be pursued, until the depth is reduced to five or fathoms. The land has nothing whatever remarkable on this parallel, and frequent not visible from this depth; and a vessel will have no other means of knowing her act position than the soundings and observations. The distance from the shore wil very doubtful, but all dangers are avoided by not coming within the depth of five fathoms.

A N. ½ W. course with the ebb, or N. ½ E. with the flood tide, will maintain a this depth. On approaching Cape Orange the soundings will slowly diminish, but moment the cape is doubled they will very suddenly increase two or three fathoms must be observed, however, that abreast the entrance of the Cachipour the depth also increase, and care must be taken not to mistake this alteration for the one a Off the Cachipour the augmentation will be only one or two fathoms, and it dimin afterward very slowly.

December to May. During the period from December to May the Northern limit of the variables extends as far as lat. 10° N. The weather is then generally rainy on the coa Guayana, and at all parts of the ocean between that parallel and the Southern lim the band of variable winds. As it is desirable at this period to preserve fine we and favorable winds as long as possible, it will be better to cut the parallel of 10 between long. 37° and 42° W.; and if the voyage is made at the commencement o mination of the season of N. E. winds, the nearer the first meridian is cut the be Having crossed this line, the course will be S. S. W. until the parallel of 3° N. is rea as before.

The rain at this season frequently prevents observations for latitude, and a ves consequently exposed to great uncertainty in her reckoning, more particularly dependence can be placed in the probability of her being able to see any of the re

mountains in the interior, as the land is approached. Between lat. 10° and 3° N. current setting to the N. and W. must be estimated for, and failing observations, a el should commence sounding as soon as she conceives herself to be on the parallel ° N. If bottom is gained on this line it will be a proof of being in the neighbor- of the river Maroni, and consequently to leeward of Cayenne. Should sound- not be obtained until the fifth degree is reached, it will indicate a position to wind- d of that place, and a vessel may then haul more to the Southward, to sight if pos- the highlands in the neighborhood.

very seldom happens, however, that the dead reckoning is so far in error as this, the probability is that soundings will be struck in about lat. 4° N., or near the par- of Cape Orange. In this case a S. S. W. course should be continued until getting ten fathoms, when a more direct route may be shaped to double that cape. Should e time have elapsed without an observation for latitude, and it be supposed that the llel of 3° N. has been gained without finding soundings, a more Westerly course ld be shaped until bottom is found in thirty fathoms, observing that to the South- d of the parallel of Maraca Island the bottom is gray sand, and to the Northward mud.

whatever position a vessel should find herself, if the N. E. winds which predomi- at this period be moderate, a W. N. W. course should be pursued, so as to gradu- decrease the depth. Should the wind be strong a N. W. by W. course may suffice, care must be taken to keep in above twenty-two and under thirty fathoms water; route ought to conduct to the neighborhood of Cape Orange. As the cape is ap- ched the soundings ought to diminish; therefore, should this not be the case, it will ecessary to haul in W. by S. until the depth is reduced to ten fathoms.

taking this route it will be easily seen whether the land will be sighted to the ward or Northward of Cape Orange; if to the Southward the depth will decrease rapidly, and the contrary to the Northward. In the former case it will be neces- to continue the Westerly course until the depth is eleven fathoms, and then haul e wind on the starboard tack; in the latter the ship's head should be put to the hward in order to gain the depth of five or six fathoms as soon as possible. ld the weather be hazy and the land not seen, it will then be better to haul to the on the port tack, or if moderate to anchor; but, as before stated, a vessel should reful to see that she brings up upon soft mud, particularly in the season of the rs when, perhaps, it will be more advisable to keep in the offing until the true po- is determined. When to the Southward of the cape in the season of strong N. E. s, the shore should not be approached within the depth of ten fathoms, to secure ing around.

e Northern limit of the variable winds during May and June extends to lat. 10° or N. and they often reach as far as the coast of Guayana; and when they do not, are never far off. The currents in this period are very strong; calms prevail, the ior is squally, and if it blows hard it is more often from the S. E. than the N. E. e wind will permit, the parallel of 10° N. should be passed on the meridian of r 40° W. The region of the variables will probably be entered in the lowest lati- and a course should be shaped so as to reach the parallel of 3° N. before getting n three hundred miles of the land, and then followed until near the shore, which ld be navigated in from five to seven fathoms, as already directed. During these ths and the latter part of April the winds are more favorable for navigating to the hward. *May and June.*

the season of the N. E. trade, from December to the end of March, when observa- for latitude are attainable, it may not be necessary to go farther to the Southward lat. 4° N.; but from April to July it is indispensable to go to 3° N., for if calms net with, in traversing the great current, which is very frequently the case, a vessel most infallibly be drifted to leeward of Cayenne, and find great difficulty in getting ndward again. Should this happen, and the wind fail after getting into deep dings, even in sixty fathoms, it will be better to bring up with a kedge or stream or, and await the breeze.

Tardy de Montravel, 1851, states, "I have indicated one route only to make in all ns, which I have pursued myself with success, and find recorded in twelve voyages pt. Lebrouch, one of the most able navigators on this coast. On all others the larities from year to year in the same season are so great, that no certain rules e established."

the coast of Guayana the winds blow from E. to N. E. during the winter, and E. to S. E. in the summer. The zone of variables and calms which separates the from the general winds seldom approaches the land nearer than one hundred and miles; or passes the parallel of 10° N., and disappears entirely to the Westward e meridian of 50° W. Experience appears to show that calms are the most fre- between long. 35° and 40° W. As this space must be traversed by vessels from pe, it is of course advisable to cross it in the narrowest part, and at the same time

not too far to the Westward, to prevent the possibility of being carried to leeward the point of destination by the great equatorial current.

With this view, on quitting Europe, at all seasons, the parallel of 10° N. should crossed between the meridians of 43° and 45° W., so as to pass the variable zone to Westward of its most difficult part, and at the same time sufficiently far to East to be able, when gaining the regular winds, to make the land well to windward.

When bound to Cayenne the course should be shaped, allowing one and a half po for a N. W. current, so as to strike soundings in lat. 3° 30′ N. in nine or ten fatho Having reached the depth of five or six fathoms, the course should be shaped par to the land; N. ½ W. on the ebb, and N. ½ E. on the flood, so as to preserve this de until to the Northward of Cape Orange.

Route to Windward. Vessels of light draught proceeding to windward from the Antilles, or having b thrown to leeward of their port in the season of the N. E. breeze, will find it eas beat up between the land and the inner edge of the current, which is generally enc tered in the depth of five fathoms. The inshore or port tack will of course be the m favorable, as the wind will generally allow the flood and current to be stemmed, the ebb off the rivers to assist under the lee. Those of heavy draught leaving the ri on the main, will find it more to their advantage to cross the main stream, and wor in the zone of variable current.

From May to November this will be the best plan to adopt by all vessels, for at period the winds and currents are at their greatest strength. The inshore passa these months should only be made by those drawing under ten feet. Nevertheles the rainy season, an Easterly current will sometimes prevail inshore, and run at the of even three knots.

The direction of the principal current at a distance from the coast is nearly N. W W. and its general velocity from two to three knots, but the position in latitude w its strength slackens and the direction changes is extremely uncertain, and defie rules. Generally, however, a counter current will be met with between lat. 8° and N. on the meridian of 53° W., where its direction changes to N. and N. N. E. Fa Eastward the zone increases in breadth, its rate is greater, and its direction more erly, as far as long. 37° W. Thence it progressively widens out, but decreasi strength is finally lost in long. 25° W. In the Northern part of this eddy, the dire of the wind and stream inclines more to the N., and the contrary on the Southern li Profiting by these changes, and watching the reckoning closely, the voyage may be to windward at the rate of sixty miles a day at least.

When standing along shore, even in the depth of ten fathoms, it will frequentl pear as if the ship was stirring up the mud at the bottom; and on the soft banks rect soundings are very difficult to obtain.

Discolored Water. After passing to the Southward of lat. 10° N. and between the meridian of 46 50° W. the water is often seen to change its color from a light blue to dark gre dirty drab. This indicates that a vessel has got within the influence of the river non, and will find a current setting to the Northward from one to one and a half an hour. In the rainy season it has been found running to the N. N. E. at the r two to two and a half knots. As she proceeds to the S. W. on about the parallel N. the usual light blue tinge will be resumed, and she may then calculate havin tered the general Westerly stream; and this color will continue toward the shore within the boundary of deep soundings.*

Caution. In order to check the errors which will naturally occur in a vessel's reckoning the varied effects of the great current which sweeps along this coast, and the u tainty of obtaining regular astronomical observations, the seaman would do well reaching a moderate depth, to use a ground log, which will not only give him h rate of sailing, but, by using the log ship at the same time, enable him to ascerta velocity and direction of the current, with tolerable accuracy. The following m may be used:

Let a hand lead of four, six, or eight pounds be made fast to the log, without th being fixed in it, and thrown overboard; the lead taking it to the bottom will pre coming easily home to the ship. In this manner it is clear that the log line will the distance run by the ship, both from the effect of the wind and of the cu Having noted the number of knots, make the line fast, so that it may be upon a Set the bearing of it by compass, and the opposite point will be the ship's c There can be no doubt of the course and distance obtained in this manner being rect as if there were no current. If the log be hove in the usual way, and the di shown by it, and the ship's course by compass be compared with the course and di shown by the first mode, sufficient data will be obtained to find the force and velo the currents.

* Mr. W. Cook, master of the ship *Highbury*, 1834, and others. Col. Sabine states that he fo stream of the Maranon in blue water, in lat. 5° N. and long. 50½° W.

TCH GUAYANA—THE RIVER MARONI TO THE RIVER CORENTYN.

TCH GUAYANA lies between British and French Guayana, being separated from ormer on the W by the River Corentyn, and from the latter on the E. by the River ni. It presents a sea face about one hundred and seventy miles in length, without levated spot of consequence throughout its whole extent. Its Southern limits are mperfectly known, but its supposed area is said to be about thirty-eight thousand undred square miles. *Dutch Guayana.*

e coast from the River Maroni to Bram Point, a distance of about seventy miles, nearly straight W. by N., and may be navigated without fear, provided a proper tion be paid to the lead. *Coast.*

A-WIA BANKS, which are to the Westward of the Maroni, are said to have only r three feet over them. To the S. of them there is a creek of the same name, the nce to which is in lat. 5° 53′ N., and long. 54° 8′ W. *Wia-Wia Banks.*

VER SARAMINA.—Between Wia-Wia Creek and Post Orange the entrance of aramina River will be perceived; the points of this river show themselves when in W. direction, and will be lost sight of when bearing S. *River Saramina.*

ST ORANGE, OR VREDENBURG.—The next object met with is a little village st, situated on the shore about thirty-eight miles to the Westward of Kaimar Head, Western point of entrance to the Maroni. It lies almost hidden in the wood, and is n by a small fort, where the Dutch flag is generally hoisted to a vessel passing, and r seen than the two or three white houses, which are barracks, and in the centre of h there was, in 1837, a remarkable large tree. Some authorities state that high may be seen far into the interior, between the Maroni and this place. *Post Orange.*

ANCHWACHT, OR MOT CREEK.—To the Westward of Vredenburg the shore dy, and backed by swamps and extensive lagoons. About ten miles from it there is er little scattered village, at the entrance of a small creek called Branchwacht. It covered by a small break in the bushes that border the shore, and being also a mil- station, the Dutch flag may be seen above the trees. On either side of the flagstaff everal houses. *Mot Creek.*

hen the opening to Branchwacht Creek bears S., a vessel running along the coast d haul out to the N. W., keeping in three and a half or four fathoms to avoid the e of an extensive mud flat, the N. end of which lies about E. by N. ½ N. twenty- miles from the light-vessel at the entrance of the Surinam. This shoal commences four miles to the Eastward of Mot Creek, and stretches from the coast eight or iles. *Caution.*

TAPPICA AND WARAPPE CREEKS.—Farther to the Westward is the Metap- Creek, which cannot be seen from the sea. There are here, however, a considera- umber of buildings which can be seen with the glass, and with the naked eye when mosphere is clear. About three or four miles more to the Westward is the Warap- eek. At this spot the coast is everywhere cultivated, and many of the trees stand- y themselves have the appearance of vessels sailing before the wind. *Metappica and Warappe Creeks.*

other authority states that to the Westward of Branchwacht Creek, and about six- miles to Eastward of Bram Point, there is another small opening in the trees, through will be seen the huts and buildings of a plantation. The principal house, a large structure called Cameron's Castle, has a steeple upon the roof, which makes it the mark on this part of the coast.

AM POINT, which forms the E. side of the entrance to the River Surinam is very ad has close off it a beacon. Where the coast begins to trend to the S. W., on the of the wood there is a row of trees without leaves, and of a singular brown, burnt rance, which have existed for half a century, and are called the Crab Wood. These trees are a good landmark before making Bram Point; they are about eight miles Eastward of it, and are rather extensive. The land will not be seen beyond the of four fathoms. *Bram Point.*

RINAM, the principal river of Dutch Guayana, is navigable for vessels drawing en feet to Paramaribo, the chief town and seat of government, which is situated on ft bank, about twelve miles from the entrance, and for small craft to a considerable ce farther up. The mud discharged from it forms extensive shallow flats to a long ce to the N. W. of Briam Point. The mouth, which is about two miles wide, opens the Westward; the channel to it is bounded on the Eastern side by a firm sand- extending to the N. N. W. from Bram Point out to sea; and to the Westward by a ud bank which also extends far out to sea; the S. shore is not seen until a vessel is the outer banks. In front of it there is anchorage in four or five fathoms of water, le of receiving about one hundred vessels. A little below the city, on the left is Fort Zelandia, which protects the shipping, and off it there are depths of six and fathoms. About two and a fourth miles within Bram Point, on the Eastern shore, is a flagstaff and a few houses, forming the quarantine establishment, off which is anchorage in fifteen or sixteen feet. To the Southeastward of these houses is the *Surinam.*

Resolutie Plantation, and abreast it is the outer edge of the lower bar, which has th teen feet on it at low water, and extends up to within a mile of the entrance of the Co mewine.

At Fort Amsterdam the river forms a bend to the S. and S. W. up to the city of P amaribo; above the fort, between the upper and lower bars, the Surinam considerab deepens, and vessels of heavy burden generally drop down here to complete their carga Just above the Voorburg Plantation, which is about three fourths of a mile above A sterdam, is a spot called Tiger's Hole, which has six fathoms water. At Jagtlust Pla tation, which is about three and a half miles to the Southward of Fort Amsterdam, i signal station, and here the second bar stretches right across the river, and extends u ward of two miles to the Plantation Meerzorg, carrying over it only twelve feet of wat when it deepens to the anchorage.

About two and a half miles above the Resolutie Plantation, on the same shore, is t entrance to the Commewine, which is protected on the N. by a redoubt, and on the S. Fort Amsterdam. This river is about one mile wide at the mouth, and a bar of sa stretches across from the fort for a fourth of a mile, but there are depths within at hi water of three and four fathoms; it is not, however, navigable for vessels of hea draught. The banks are highly cultivated.

Light. At the entrance of the Surinam a vessel is moored in sixteen feet, at low wa springs, soft mud, and exhibits from sunset to sunrise a fixed white light at an elevat of twenty feet above the sea, which may be seen in clear weather from a distance ten miles. In the daytime she carries a red ball at her masthead; and she has Surin painted on her sides. From the vessel Bram Point bears S. E., and the second buo by E. ½ E.

Buoys. The entrance to the Surinam is also pointed out by three black buoys, which on tering must be all left to the Eastward. The outermost, which is egg-shaped, lies fourteen feet at low water, clay ground, with the light-vessel bearing S., distant one m and Bram Point S. E. by S. The second buoy lies in eighteen feet, with Bram Po bearing S. E. by E. ¾ E., and the buoy near the edge of the reef S. E. ¾ E. The th buoy lies in eighteen feet.

Anchorage. With Bram Point bearing about E., there is a pit or hole, carrying three fath water, which affords good anchorage for vessels waiting for wind or tide. In every p of this river the anchor sinks deep into the mud, and if a protracted stay is made, it be well to weigh the anchor from time to time.

Water. Ships-of-war obtain their water from wells in the vicinity of the landing-place, or fr the stairs set apart from their boats. Merchant-vessels generally obtain theirs from w in the town, but sometimes they are obliged to get it from the Soden Savannah, as inhabitants depend upon rain caught in cisterns.

Directions. Vessels bound to the Surinam from Europe should endeavor to obtain the parall lat. 5° N. on about the meridian of long. 50° W., unless they have good chronomet when they may venture to cross that meridian a degree farther to the Northward; b ing in mind, however, that in the rainy season more particularly, observations are in rupted by long intervals of cloudy weather.

The object should be to obtain soundings, and, if possible, make the land in the ne borhood of Cayenne, where it is so remarkable. If soundings be obtained in sixty f oms, fine sand and mud, on about lat. 5° 55′ N., it is a certain indication of being to Eastward of that place. Should a vessel have been swept by the current to the No ward of lat. 6° N., without sighting the high lands to the Eastward of the Maroni, will find thirty to forty-five fathoms, soft mud, with fine sand and broken shells, six ninety miles to the N. and N. E. of that river.

In approaching the shore above Mana Point, to the Eastward of the Maroni, g care must be taken not to come within the depth of ten fathoms, where the ground be coarse. This will avoid the Maroni shoals, which extend out to the Northward e miles, where the depth is only two fathoms, and twenty miles to the N. W., where only three fathoms. N. E. thirty miles from the Maroni there are fifteen fathoms, here the current generally runs to the N. W. from two to three knots an hour.

To the Westward of the Maroni the bottom is soft sand and mud, which is a g guide. The land should by all means be made between the Maroni and Vredenburg insure being to windward of Bram Point, for should it be missed, there will be g difficulty in getting to windward again. This remark applies also to vessels bound Surinam from the Northward, or the Antilles.

Having sighted Vredenburg, a vessel may safely run along shore by the lead, ta care when off Branchwacht to haul out to the N. W. to avoid the outer banks off B Point, keeping in not less than four fathoms, until the light is sighted; from the l vessels steer S. W. by W. for the outer buoy, remembering that if the vessel is more twelve feet draught she must await the flood-tide.

If of heavy draught, she should not attempt to pass within the buoys without the tainty of being able to gain an anchorage inside them before dark, for getting agr

is always attended with fatal consequences, although a vessel may sail over the soft in little more water than she draws. Should it be necessary to wait for the wind ide, instead of heaving to it will be far better to anchor outside in three and a half our fathoms to prevent being swept to leeward by the current.

aving passed within the buoys, which must all be left to the Eastward, the chimney Resolutie plantation should be opened out to the Southward of the trees on the E. side he river, to avoid the hard sandspit off Bram Point.

Then within the point, the Eastern shore must be kept within one fourth the distance oss, and if necessary to await a pilot, a vessel should bring up anywhere below Reso- e. On proceeding up the river from this anchorage, after passing Resolutie, the er will shoalen to thirteen feet at low water on the lower bar. In approaching the mmewine river great care must be taken not to get thrown by the flood stream into s a vessel cannot return except with the following ebb tide: and, at the same time, to go too near the Western shore of the Surinam, which is along foul.

After passing Fort Amsterdam the water will deepen; thence to the upper bar is the pest part of the river, and the Eastern shore must be kept aboard as far as Jagtlust, ow which vessels of heavy draught generally unload and load.

From the shore near Jagtlust a course must be steered for the vessels at anchor off town.

Caution. athing is dangerous in the River Surinam, from the force of the stream or the attacks he saw-fish. Instances have been known of soldiers while washing their clothes on banks of the river, losing their legs from the attacks of the saw-fish. Care should be taken to prevent the water serpents getting on board by the cables, &c., as a from one of these reptiles may cause a person's death in two or three days. Boats uld be kept in the water as little as possible.

Tides. t is high water, full and change, at the light-vessel off the river Surinam at 5h.; at m Point at 5h. 30m.; off Fort Amsterdam at 6h.; at Paramaribo at 7h. Rise at ings, nine to ten feet; at neaps, five to six feet. The water falls a foot and a half or feet before the commencement of the ebb stream in mid-channel. In the offing, the d sets to the Westward, the ebb to the Eastward. The influence of the tides is felt ve sixty miles from the mouth of the river, and the water becomes fresh about nty-five or thirty miles up.

Rivers Saramacca and Coppename. RIVERS SARAMACCA AND COPPENAME.—From the Surinam, the shore trends by N. about thirty-three miles to Barbara Point, at the entrance of the Saramacca Coppename. It is low and sandy, and backed by mangroves and trees, which are arkably green, and visible from a depth of nine or ten fathoms. About fifteen miles m Bram Point there is a remarkable break in the wood, called the Gap; and ten es farther to the Westward a conspicuous clump of trees, called the Bear's Rump, ch is a good mark.

The entrance to the above rivers is about seven miles wide, but it is so barred up as e only navigable for coasters drawing about twelve feet. The Saramacca at its ance runs nearly E. and W., and for four miles it carries from six to nine feet at low er, but farther up the river the water deepens to six and a half fathoms.

The channel of the Coppename is bounded on the W. by the leeward mud bank, and he E. by the Coppename shoal, which extends from the E. point of entrance as far he Saramacca. The least water at the entrance is seven to eight feet at low water; ch increases to three and ten fathoms within the river, but the navigation is inter- ted by banks having from seven to thirteen feet over them. At about forty-four es from the entrance is a small island called Bonnie, where the passage has from six a half to seven fathoms; at four miles farther on is a sand bank which is dry at low er. From this sand bank the river is navigable a few more miles, when it can be ended only by very small vessels. The Coppename is one of the principal rivers of ch Guayana; but its source is unknown. The woods extend to its banks and become ker and higher the farther the river is ascended. Its banks appear to be steep to, a vessel's rigging may easily become foul of the trees. Many small rivers or creeks into it, and the Cosewina, just within its entrance on the right bank, is about four les' length wide at its mouth, with two and a half and three fathoms of water, ying depths within of four and five fathoms for several miles, and is sufficiently wide admit a moderate-size steam-vessel to turn. It is not impeded by shoals, its banks steep to, and it may be ascended by small steam-vessels drawing five feet for about hty miles.

Tides. At the entrance of the Coppename the tides are regular. The springs rise ten , and the neaps seven to eight feet; but higher up the river they are affected by the s.

Coast. The coast from the Coppename to Gordon Point, at the entrance of the Corentyn, istance of about sixty miles, trends Westerly, and is sandy and slightly wooded. ere appear to be several small creeks and posts or plantations in this space, and the d flat from the Coppename River extends out about six miles. When abreast of

a quantity of withered trees or burnt wood, a vessel will have passed this shoal, and th shore may be approached much nearer.

Corono. CORONO is about thirty miles to the Westward of the W. point of the Coppenam River, and will be known by the houses on the shore and a flagstaff with the Dutch flag and in its vicinity there are several sugar and cotton plantations, the buildings of whic are to be seen from the sea. To the Eastward of Corona a soft mud bank extends o two and a fourth miles from the shore.

Potosie and Turtle Banks. POTOSIE AND TURTLE BANKS.—About four miles to the Westward of Corono a sugar plantation, called Burnsick, and may be known by a conspicuous tall chimne In its neighborhood there is a bank which stretches off from the shore about eight mile and is steep to on its E. side. With a fresh breeze there is a heavy rolling sea, by whic the extent of the bank is seen. This bank is considered the most dangerous on the coa and is much in the way in beating to windward. When Potosie Creek, which has muc the appearance of the entrance to the Coppename, but not so wide, bears S., the ban will be passed. Between this shoal and Gordon Point there is another bank, named th Turtle, which extends about four miles from the shore. It has on it sand and shell but we cannot give any further particulars. About four miles to the Eastward of Go don Point is a shoal off a large opening in the wood which has the appearance of th mouth of a river.

River Corentyn. RIVER CORENTYN.—This river is only navigable to vessels under nine or ten fe draught, which may proceed up forty miles, to the port of Oreala; but large caro get up to the lower rapids about one hundred and fifty miles from the sea. The e trance between Gordon Point and Mary's Hope, the Northernmost British plantati on the Western shore, is about fifteen miles wide, but it is dangerous to approach, o account of two hard sand-banks lying in front of it, about nine or ten miles from t land.

Gordon Point will be easily recognized by some straggling trees, loftier than those the neighborhood; it has likewise some buildings upon it, and visible twelve or thirte miles off, in nine fathoms water. Thence the shore trends S. W. ½ W. eleven miles Bluff Point, when it turns abruptly to the S., and here the mouth of the river is th and a half miles wide. Abreast Bluff Point, the Western shore commences to trend little to the Westward of N., and sweeps gradually round to the N. W. and W. towa the river Berbice, and is so low that the tops of the trees are only just seen in five fat oms water.

The bar of the Corentyn begins on the Western shore, abreast and for about five mil to the Northward of Mary's Hope, and halfway across toward Gordon Point there a only seven and a half and eight feet water. It then gradually deepens to eleven fe about four and a half miles to the Westward of that point.

With Gordon Point bearing E. by N. and Bluff Point S. by W. ½ W., there is a narro sand bank, one and a half miles long N. and S., with only four feet water on it; the i ner end lies about two miles from the Eastern shore, N. W. ¾ E. from the fort at Nic erie, and in the channel between the depths is ten feet. About one and a half miles the Westward of this there is another called Cameron Bank, running in the same dire tion seven miles, and dividing the mouth of the river into two channels. On the N. e of this bank there are five feet water, but the S. end, which lies abreast Bluff Point, dr at half tide; to the Eastward of it there are also ten and eleven feet, and after passi within it the river deepens to seventeen feet. Between it and the Western shore the are ten feet, but the bar to the Northward has to be crossed, which has only sev and a half and eight feet; the channel to the Eastward of these banks is therefore t best.

About three miles to the Southward of Bluff Point is a narrow island, seven and a h miles long N. and S., and about a mile broad, lying close to the Eastern bank, call Corao Oboro or Parrot Island, or more generally First Island. A shoal spit of three five feet water runs off from its N. end, the extreme end of which bears E. ¾ N. from remarkable umbrella-shaped cotton tree on the Western shore. The channel betwe this island and the right bank of the river is three cables wide, and carries nine feet w ter. To the Southward of this, off the opposite shore, abreast the river Molesono, the is another island, called Marietta Oboro or Second Island.

Directions. In entering the river Corentyn, the Eastern shore should be approached gradually the lead, and Gordon Point passed at the distance of about three miles in ten feet at le water. Thence this shore should be kept close on board to avoid the outer sand ba decreasing the distance from one mile and a half N. of Nickerie, to a mile abreast it, a to half a mile off Bluff Point. In passing the S. end of the outer bank, care must be ken not to bring the remarkable cotton-tree on the Western shore to bear to the Sou ward of S. W. ½ S. In standing over from Bluff Point to the anchorage on the Weste shore, attention must be paid to the tide, to keep clear of Cameron Bank. Vessels se dom go higher up than Skeldon, the Southernmost plantation, which is nearly abre the N. end of First Island.

he Western channel may be taken at half-flood by a vessel not drawing more than e feet. In this case she should run across the entrance, with Mary's Hope planta- n bearing about W. ½ S., until the cotton-tree bears S. by W., which must then be ered for in a depth of water from eleven to sixteen feet.

he produce of the British estates is carried round in droghers for shipment at Ber- e.

Tides.

t is high water, full and change, at the entrance of the Corentyn, at 5h. 10m. ings rise eight and a half feet, and neaps five and a half feet. The flood sets in . W.; the ebb runs out N. N. E. and in the rainy season its rate is from three to ee and a half knots to the distance of ten or twelve miles; the edge of the stream istinctly marked by the discolored water. In the river, seventy miles from the sea, tide rises thirty inches. At the Nickerie River spring tides rise from nine to twelve t, and neaps from six to eight feet.

River Nickerie.

RIVER NICKERIE.—The entrance to this small stream, which disembogues about en miles to the Southwestward of Gordon Point, is about one cable wide, and on the side there is a village protected by a small battery. It has a depth of ten feet, but ut three fourths of a mile from the shore there is a bar of eight feet water, which uld be crossed with the battery bearing between E. by S. and E. S. E.

Buoys.

he entrance of the Nickerie is marked by three buoys, the outer one of which lies ourteen feet at low water, spring tides, with Gordon Point E. S. E., and Parrot Isl- open half a ship's length of Bluff Point, S. S. W.

he second is in eleven feet, with Parrot Island S. S. W. ¾ W.; the flagstaff at the itary commandant's house S. E. by S.; the outer buoy N. N. E. and the inner buoy y W.

he inner buoy lies in ten feet; with Bluff Point S. W. by S., and the above flagstaff y S. ½ S.

Directions.

hen entering this river all the above buoys are to be kept on the port side. The se from the first or outer buoy to the second is S. S. W., and thence to the inner y S. by W. In running between the two latter strict attention must be paid to the , as the channel bends toward the lee banks, and on opening the mouth of the river flood tide sets strong toward them.*

TISH GUAYANA—THE RIVER CORENTYN TO THE RIVER ORINOCO.

British Guayana.

RITISH GUAYANA.—The seaboard of the colony of British Guayana is com- d between the river Corentyn and the river Orinoco, an extent of two hundred and nty miles. The colony has an area of about seventy-six thousand square miles, and vided into three counties, Demerara, Essequibo, and Berbice—so named from the e principal rivers which drain them. Demerara occupies the centre of the sea- d; the N. W. of it the county of Essequibo extends along the coast toward the ps and forests of the Western frontier; and to the S. E. lies the county of Ber-

Duivel Creek.

IVEL CREEK.—The coast from the W. side of the Corentyn sweeps gradually d to the N. W. for about thirty miles to the entrance of the Berbice, and is very nd slightly wooded. About fourteen miles to the Eastward of the river Berbice e Duivel or Devil's Creek, the entrance to which may be recognized by a deep gap e wood; and a short distance to the Eastward of it there is a large house with e sides and white roof. A few more houses are scattered along the shore, and numbers increase as Berbice is approached, but they have generally red roofs. xtensive sand-bank runs out to the N. E. from the creek and sometimes breaks. To astward of it a mud flat extends out nearly six miles from the shore, and dries at water springs.

River Berbice.

VER BERBICE.—The entrance of this river is obstructed by a bar of sand mixed mud and stones, with only seven feet on it at low water spring tides; it is, there- only navigable at high water for vessels drawing not more than fifteen feet; these proceed as far up as Fort Nassau, almost forty-five miles from the mouth, but of lighter draught may go much farther. The entrance is about four miles wide, short distance within, it is divided into two channels, by a narrow wooded islet a mile long from N. to S., called Crab Island.

e Western Channel is only fit for small droghers, although it is said to be deepen- A mud flat runs out six miles to the N. E. from the Western shore; it is steep to, ometimes dries at low water.

hard sand and shell bank, steep to, and which breaks at low water, runs off to the E. about five miles from the E. point of the entrance. The main channel into the

* From a government notice at Paramaribo, December, 1858.

Berbice lies between these two banks, and is about a mile wide; but the edges are stationary.

River Canje. RIVER CANJE.—Nearly abreast the S. end of Crab Island, the mouth of the Berbice is protected by Fort St. Andrew, on the E. side, and by York redoubt on the W. About two miles above these forts, on the Eastern side of the river, is the entrance to the Canje River, which is navigable for small vessels to the first rapids about fifty miles up, and is connected with the Corentyn by a creek. About half a cable's length from Canje Point there is a mud bank about sixty yards long N. and S., with nine feet on it at low water.

New Amsterdam. NEW AMSTERDAM.—On the fork which separates the mouths of the Berbice and Canje rivers is New Amsterdam.

Light-vessel. The light-vessel at the entrance of the Berbice exhibits a fixed white light, which should be seen, in clear weather, from a distance of fifteen miles. She is moored close to the Eastern point of entrance, in lat. 6° 19′ 18″ N., long. 57° 22′ 30″ W., and may be recognized by being roofed over, and having a jigger mast aft, and a ball at the foremast head. The vessel is painted red.

A good mark for the river are two high red chimneys; one is eight miles and the other about four miles to the Eastward of the river. No vessel drawing over fourteen feet should go there.

Directions. Vessels bound to the Berbice should sight the land well to the Eastward, and run down in about five fathoms water, which will carry them outside the rollers. A pilot sloop is always on the lookout off the bar, and carries a white flag with the word pilot on it.

Having waited until the last quarter flood, the light-vessel should be brought to bear S.S.W. before getting into four fathoms, which depth will be found six miles from the land, and the vessel keep on this bearing will lead across the best part of the bar. When a remarkable tree on the low land to the Eastward is just shut in with the bluff clump of trees at the entrance of Duivel Creek, bearing E. by S. ½ S., the water will deepen inside the bar to eighteen and twenty feet, about two miles from the entrance of the river.

The channel will now decrease in width, and a vessel may keep so far to the Eastward as to shut in Crab Island halfway with the Eastern point of the river, and to the Westward so as to open the land a handspike's length of the Eastern point. When about three fourths of a mile from the E. point, open the shipping between it and Crab Island. Having arrived off the point, the Eastern shore must be kept within about three fourths of a cable's length, and on approaching the S. end of Crab Island, the steeples of the two churches at Amsterdam must be brought to touch each other, to avoid some shoal ground off the S. E. end of the island.

After passing Canje Creek, the course must be shaped for the anchorage pointed out by the shipping, and a convenient berth will be found with the Northernmost church in line with the court-house, and Crab Island N. ½ W. Vessels drawing twelve feet generally lie aground here at low water.

Tides. It is high water, full and change, at the entrance to the river Berbice at 4h.; spring rise eight to eleven feet, and neaps five to six feet. The flood sets to the S. W., the ebb to the N.

Coast. The coast, from the Berbice to the entrance of the Demarara, trends about N. W. by W. fifty-five miles, and is of the usual character, without any very remarkable features. At about twenty miles to the Westward of the bar of Berbice, is the mouth of a small stream called the river Abary, and near it there are two clumps of trees called Eighteen and Nineteen. When they bear S. by E. a vessel will be off the W. end of the mud bank which extends off to the distance of six miles all along the shore from Berbice, and here forms a hook to the Eastward. River Maicony disembogues about five miles leeward of the Abary, and the entrance is pointed out by wooded points, the land being clear of trees on either side of them.

Not far from the mouth of the Maicony, and about twenty-six miles to the S. E. of Demerara, there is a large silk cotton tree, called the Murrayo, or General Turner's tree, which is a well-known object to those accustomed to navigate this part of the coast.

The shore at about seven miles to the Westward of the Maicony becomes skirted with flat-topped mangroves as far up the river Mahaica, with gaps between them. In the neighborhood there is also a long row—some authorities say two—of cocoanut trees, and about half a mile to the Westward of them a white building, with a cupola in the centre, called Paradise Plantation. As there are no other trees of this sort in the vicinity, they are a good guide.

Caution. It would, however, be scarcely prudent to trust altogether to these objects, for accounts vary considerably in their positions; the lead will therefore be the best guide. It is stated that there is another, if not two more rows of similar trees to the Westward of the Mahaica.

RIVER MAHAICA.—The entrance of this river is about fifteen miles to windward the Demarara. On its Western side there is a large sugar-boiling house, with two fty chimneys, and to the Westward of it a row of cocoanut trees. At about eight miles the Westward of this house is Good Hope Estate, the chimneys of which may be seen ove the bushes near the shore. *River Mahaica.*

The rivers Abary, Maicony, and Mahaica, are navigable at high water for river craft about six or eight feet draught.

The next object that will be recognized in proceeding along this coast from the East- ard is the light-house which stands just within the fort, on the E. side of the mouth of e Demarara, at half a mile to the Southward of the extremity of the point. The build- g, which is octagonal, and painted with red and white alternate vertical stripes, is e hundred feet high, and exhibits a revolving light of one minute, at one hundred and ree feet above the mean level of the sea, visible at fourteen miles; on the summit of e light-house there is a lofty semaphore signal post. The light-house stands in lat. 49′ 20″ N., long. 58° 11′ 30″ W. (Owen.) Variation 2° E. in 1864. *Light-house.*

The light-vessel off the mouth of the Demarara lies N. N. E. ¼ E. about ten miles from e entrance of the river, in three and a half fathoms water, and since the 1st Decem- r, 1861, has exhibited a fixed light, which in clear weather may be seen eight miles. he vessel has one mast, and is painted red. The pilot-boats having been done away th, the pilots reside on board of her, and in the daytime she carries a large, blue, uad pendant. *Light-vessel.*

Vessels coming from the Eastward, and being in four fathoms, may sight the white ht of the light-house first. *Caution.*

RIVER DEMERARA.—This river is said to have its source in about lat. 5° N., and er a Northward course, nearly parallel with the Essequibo, for about two hundred ies, discharges itself into the sea. The entrance is obstructed by a mud bar about ree fourths of a mile broad, of only ten feet at low water, but is navigable at high ter for vessels drawing seventeen or eighteen feet. These generally, however, take o or three tides to clear the flats on leaving the river; but the mud is so soft, and the ather so fine, that no injury is likely to occur in grounding, and they prefer it to the convenience of completing their cargoes outside. *River Demerara.*

George Town, the capital of the colony, is situated just within the mouth, on the right nk of the river, and occupies a space of about half a mile in breadth and one mile and alf in length from N. to S.

For about sixty-five miles, as far up as Leckie, the river is navigable at high water vessels drawing twelve feet, and for boats to the rapids, about ninety-five miles from orge Town. At the mouth it is about three fourths of a mile wide; at the sand-hills, enty-five miles up, it is a fourth of a mile across, at Christianburg, thirty-three miles ve this, it is one hundred and sixty yards; and at the post of Seba, eighty-three miles m George Town, it is sixty miles wide.

The sand-hills, which are on the W. or left bank of the river, are about seventy feet h, and appear to be the commencement of a sandy ridge, which alternately recedes d approaches the bank, and attains in some places an elevation of three hundred feet, low this the banks are low and thickly wooded, and when cultivated obliged to be tected by dams and embankments.

Water has to be purchased, and is brought alongside in tank vessels, at the charge of guilders (about two dollars) a puncheon. In the rainy season it can be spared from tanks in the town. There are also some wells in the town, and the water is con- ed from them by pipes to the shore, and into the boats, at the rate of only one guilder uncheon, but it is not good. At the sand-hills a vessel may lie alongside the bank and ter with great facility, by means of hose led from the spring into the hold. Excellent ter may also be obtained with equal ease off Kooliserabo Creek, about twelve miles ve the sand-hills, in a depth of ten fathoms. All other supplies are generally at- able at George Town, but are very expensive; firewood is about four dollars a cord, vegetables are sometimes scarce in the dry season. *Supplies.*

SUGAR BANK.—The outer part of the entrance to Demerara is obstructed by a d flat called the Lee or Sugar Bank, which extends out to the N. and N. E. eight or miles from the mouths of this river, and the Essequibo, with from six to ten feet of er on it. About three miles to the Westward of the light-vessel the depth is only teen feet at low water. *Sugar Bank.*

N. by W. ¾ W., about eight and three fourths miles from the light-house, there is a d sand-bank about three fourths of a mile in extent, with only five feet water.

N. of this two and a half miles there is a beacon, with a triangular head, and a black y two and a half miles Southwestward shows the channel into the Essequibo river. *Beacon.*

There is a large red buoy in nine feet water, N. N. W. seven and one fourth miles ant from the light-house on the edge of the bank. *Buoys.*

Within the bar of the river, and on the N. side of the channel, N. ½ W. one mile and

three fourths from the light-house, a black buoy is moored on the Eastern edge of t Sugar Bank; and a mile E. of this there is a white buoy, marking the edge of the sa spit on the E. side of the channel.*

Directions. From whatever quarter the river Demerara is approached, the edge of soundings the land should be made well to windward. This direction must be most carefully tended to, for if a landfall be made to the Westward of the river, there will be gr delay in getting to windward, and it must be remembered the Essequibo banks run a long way from the land and are by no means stationary, from which there will considerable danger, if the lead be at all neglected. Vessels bound to Demerara, or far up as Surinam, from Trinidad and the Caribbean Islands, should not come to Southward of lat. 8° or 10° N. until they can fetch well to windward of their de nation, to avoid the strength of the main current. On crossing the parallel of 8° N. the depth be thirty-five fathoms, a vessel will be N. of the Demerara; if a less de be obtained on this parallel, she will be to leeward; if a greater depth, she will be windward of it.

Should the land be sighted to the Northward of 7° it may be certain that the ves is too far to leeward; and in working up it will be better to take advantage of the ti anchoring with the flood. In this case she should stand out to about twelve fatho water, and in four or five fathoms, according to her draught. Between Demer and Surinam the inner edge of the current is sometimes as far out as eighteen fatho The vicinity of Demerara may be recognized from the wood being burned in seve places cleared for cultivation, forming open grounds on which houses may be dis guished.

Abreast the Mahaica River, the land or rather the tops of the trees, may be seen fr the depth of from six to eight fathoms. Thence a vessel should run down in from f to five fathoms, until the light-house is sighted, or a pilot been received from the lig vessel.

The outer edge of the bar lies E. N. E. about two miles from the black buoy, and N by N. from the light-house; and should the tide not serve for crossing it, it will be be to wait at anchor about ten miles N. E. by N. from the light-house, to prevent be swept to leeward by the current.

A vessel coming up from to leeward, should keep well to the Northward until she fetch the light-vessel; remembering the flood sets strong to the S. W.

When outside the bar all that is necessary is proper attention to the lead.

Vessels proceeding up the Demerara to the Sand Hills will find that on the East shore, a little above Houston Estate, there commences a flat with ten feet on it at water; it extends up about four miles, to a short distance below the Grand Diamond tate, which is six miles from the town. The deepest water will be found about one the distance across from the left or Western bank. Above this flat the E. side of river must be kept within about a ship's length, up to the Glasgow Estate, two a half miles below the hills. Thence a vessel must haul obliquely toward the opp shore, and when the Sand Hill reach comes open, a mid-course should be taken to the anchorage nearly abreast the house, in about three and a half or four fath water.

Tides. It is high water, full and change, at George Town, at 4h. 45m.; springs rise nine and neaps three feet. The stream attains the rate of three knots in the dry season, the tide continues to flow on the surface for upward of an hour after high water. the Sand Hills it is high water at 6h. 15m., and the rise is nine and a half feet; at Ch tianburg at 8h. 30m., and the rise six feet; and at Seba the tidal stream is lost in the season, but there is a rise of about a foot. In the rainy months the tide sometimes to twenty-one feet.

Outside the mouth of the river, and to the distance of twelve miles off shore, the sets strong to the S. W. and W., the ebb to the N. E., decreasing in strength to a kn the edge.

Soundings. Soundings will be found at a long distance off this part of the coast, and the d gradually decreases toward it. On the meridian of Demerara the depth in fathoms within two miles of the edge of the bank, in lat. 8° 20′ N., ninety miles from entrance of the river, and thirty-five fathoms on the same meridian in lat. 8° N. fifty miles from the Pomeroon River there are twelve fathoms, and the same depth be found about fifty miles to the Northward of Demerara light-vessel.

About twenty miles from the land the water becomes discolored, and patches dark suspicious hue will frequently be met with; but there is no danger. The limits, however, will, of course, alter as the season is dry or wet. It has been obs

* The position of the light-vessel, and the information respecting the buoys and beacon, are fro authority of Mr. Magill, superintendent of pilots at Demerara, 1858. It must, however, be ke mind that the buoys are moved whenever the edges of the banks undergo any change.

in the rainy season between the Demerara and the Maicony the water has a reddish e.

may be useful to repeat that in front of the large rivers to a considerable distance, muddy soundings are mixed with shells, which is a good guide.

ttention has already been drawn to the rollers, which in December and January, n Northerly winds prevail, set in upon this coast with great violence at the com- cement of the flood, and are sometimes fatal to small vessels, when caught unman- ble. It has, however, been noticed by intelligent mariners at Demerara in 1858, within the last ten or fifteen years the rollers have been much less frequent, and by eans so violent as formerly. *Rollers.*

Demerara there are two dry and two wet seasons in the year. The short dry sea- s during February, March, and April: and the long one from August to November. long wet period is May, June, and July; and the short one from the middle of No- ber to the end of January. There is occasionally a little variation in these periods, he above may be taken as an average of several years. *Seasons.*

the distance of between forty and one hundred and twenty miles from the shore the generally prevails from E. S. E.; but within about thirty miles it is variable. In morning it is generally at S. E. and E. S. E.; toward noon it draws round to E. N. E., between 2h. and 8h. P. M. it is from N. E. to N. N. E. and sometimes N. In the night ers from E. by S. to E. by N. When beating to windward a vessel should there- not stand farther off with the S. E. wind than about thirty miles, when she should bout noon, ready to take advantage of what may be termed the sea breeze. About . M., the N. E. breeze dies away, and sometimes near daylight the wind will come e land blowing at S. W. or W. By proper attention, therefore, with the assist- of the ebb, the voyage from Demerara to Berbice may be made in three or four *Winds.*

the short dry season, winds prevail from E. N. E. to E., squally with occasional ers. In the long part they are moderate from E. N. E. to E. S. E.; the moorings enerally hazy, but afterward there is a clear atmosphere, particularly after noon. e long wet period the wind is variable, and the weather squally with continued y rain. In the short season, the wind blows from the Eastward in November, and N. E. to N. N. E. in the other two months, and the squalls have an interval of fine her between them.

settled weather the wind draws round from E. S. E. to N. E. about 3h. P. M. daily. continues at the latter quarter until after midnight, when it goes back again to the ward. At the anchorage off George Town, in fine weather, the winds are generally the S. E. in the early part of the morning.

VER ESSEQUIBO.—From the Demerara, the shore sweeps round to the W. N. r about ten miles to the Boeraseric Creek, when its direction gradually changes S. W., forming the E. side of the mouth of the Essequibo, the principal river of h Guayana, which rises in the Sierra Acarai, and after a course of at least six red miles, discharges itself into the sea by an estuary about twenty miles wide. ntrance of this river which is open to the N. E., is so blocked up by low wooded isl- and mud banks that it is chiefly navigated by droghers which carry the produce e estates on its banks for shipment at Demerara. Vessels, however, of sixteen raught can get up to Macouri Creek, about forty miles from the mouth. *River Essequibo.*

e Essequibo has been ascended about two hundred and thirty miles in a direct line its mouth; the rapids and cataracts are, however, very numerous and danger- The first rapids are about ninety miles from the mouth; and up to this point the is navigable for large trading canoes. About fifteen miles from the entrance is the d of Zealand, upon which may still be seen the ruins of the first Dutch settlement in ana. About thirty miles above this, the River Mazarony enters from the West- , the bed of which is full of rocks, and the rapids are numerous. On the point nfluence there is a missionary station, called Barteke.

out five miles above the mouth of the Mazarony, the Cuyuni, which also enters the Westward, communicates with the Orinoco, and is navigable for about three red miles.

about five miles below the confluence of the Essequibo and Mazarony, the river el or Macouri Creek, a considerable stream, enters from the Eastward. Vessels ing sixteen feet sometimes load here, and the navigation of the river thus far, and the entrance of the Cuyuni, is pointed out by beacons. A short distance below e the Cuyuni enters the Mazarony, the N. bank rises to the height of about one red feet, and there is here a large settlement.

e principal channel into the Essequibo is between the Eastern shore and the East- ost island, called Leguan, which lies nearly opposite, and three and a half miles t from the Boeraseric Creek. From the entrance of this creek a coarse sand-bank hes off N. E. by E. four and a half miles, and from the N. E. end of Leguan, a simi-

lar bank runs off in the same direction, and to the same extent, both of which are in places, at low water, leaving a channel about two miles wide, and carrying a de of from fourteen to seventeen feet. The outer part, however, is barred across by shallow part of the Sugar Bank, which has only eight or ten feet on it at low w springs.

There are deep channels between Leguan and Wakenham, the centre island; and tween the latter and Aroebasi, or Tiger Island, which lies close off the Western sho but they are only used by droghers. The mud-banks extend out to a great distance ward from these islands, and dry four miles off.

Channel Beacons. The channel across the bar is between the beacon which is pointed out in page it being eleven and one fourth miles N. by W. ¾ W. from the light, and a black b two and one fourth miles Southwestward of the beacon.

There is a beacon with a St. Andrew's cross on the Western edge of the Boera sand, about one mile and a half from the mouth of the creek.

Tides. At the mouth of the Essequibo the tidal stream runs from three to three and a knots, even in the dry season, and its influence is felt as far up as the first rapids. rise at springs is from eight to nine feet.

River Pomeroon. RIVER POMEROON.—The coast from abreast Aroebasi Island, on the Western of the entrance of the Essequibo, takes a Northerly direction for about twelve m and then sweeps round to the N. W. to Cape Nassau, the E. point of the Pomeroon, wh is about sixty-four miles from the Demerara light-vessel. The entrance of the Pome is open to the N. W., and between Cape Nassau and the shore opposite it is about mile and a half wide; its banks are low, and covered with wood, and it is so shallo to be only admissible to small craft; but we know very little about it. It was however, that the Dutch first settled themselves, and erected a town called New dleburgh, which is now in ruins, about forty miles from the mouth. The countr said to be wooded, and in parts highly cultivated, the soil being extremely rich, adapted for the growth of the sugar-cane.

River Bayne. RIVER BAYNE.—From the Pomeroon the shore trends N. W. for about eighty m to the entrance of the Guayama. It is bounded by mangroves, and skirted by mud sand flats to a considerable distance from the land. The only remarkable object grove of cocoanut trees, to the Westward of Cocoa Point, where a bay is formed, a thirty-six miles from the Guayama. This bay or opening may be the entrance of River Bayne, although it is stated that the only stream which empties itself into the between the Pomaroon and Guayama is the Morocco creek, about five miles N. W the Pomeroon.

The interior is cut up by immense lagoons and swamps, and the Indians are obl to erect their huts on the stumps of trees, four feet above the level, and commun with each other by means of canoes.

River Guayama. RIVER GUAYAMA.—The entrance of this river faces the N. W., and is about miles wide, with a depth on the bar of only six feet at low water neap tides, and within the mouth thirteen feet. From the E. point, a bank of sand and shells, breaks heavily, stretches off about two miles; and nearly three fourths of a mile to Westward of the point, a shell bank, which has eleven feet close to, dries at half From the mouth the Western shore trends about N. N. W. five miles to Duck Point, this side is skirted by a shallow blue mud bank, leaving a channel across the bar, tween it and the sand-bank, about a mile wide.

Caution. The entrance of the Guayama may be recognized by three remarkable trees on B Point, about two miles from the mouth on the Western shore, described by most gators as three hills. Behind them are low bushes, and to the N. and S. thick fo Great care should be taken in approaching this part of the shore, for on the Guay Bank, which faces the river to the N. and N. E., there are only ten feet at the distan fifteen miles. A vessel in passing should therefore not come within the depth of fo five fathoms.

Tides. It is high water, full and change, at the entrance of the Guayama at 4h. 10m.; and rise is seven and a half feet. The flood sets across the entrance to the S. W., the to the N. W.

Corocoro Islands. COROCORO ISLANDS.—From Duck Point, at the entrance of the Guayama, the trends N. W. twenty-two miles to Mocomoco Point. About midway, close to the s are the Corocoro Islands; but all this part of the shore is but imperfectly known, ex that the shallow flats of mud, sand, and shells, extend out of sight of the land.

River Orinoco. RIVER ORINOCO.—The outer edge of the delta of this great river extends alo seaboard of about one hundred and twenty miles. In this space are the mouth six considerable streams, which become united to the main trunk about seventy m from its Eastern mouth; but the latter is alone navigable for vessels of mod draught.

The Eastern shore of the mouth of the Orinoco from Mocomoco Point takes a

direction, seventeen miles to Sabaneta Point, and thence it trends S. W. by S. miles to Barima Point at the mouth of the Brazo de Barima. This river com-cates with the Guayama by the Mora Creek, which is navigable for large s. The land about Mocomoco is higher than usual on this coast, and visible at fifteen miles in clear weather. Between Sabaneta and Barima points the land nues high, while that on the Western side of the entrance is low and broken. na Point is low and easily known by Cangréjo Island seen just to the West-of it; but Sabaneta Point cannot be recognized when coming from the North-ard. About ten miles to the Southwestward of Barima Point, is the entrance e River Amacura, which forms the boundary between British Guayana and Ven-a.

e navigable entrance of the main branch of the Orinoco, generally called the Boca de, between Barima Point and Cangréjo or Crab Island is about fifteen miles wide, n the bar there are sixteen feet at high water. From the entrance of the Barima, hore forms a bay to the Southward, and the mouth of the Orinoco between the S. of Cangréjo and the main, is about four miles across.

e first of the above six streams, called the river Loran, disembogues about twenty-miles to the Northward of the Boca Grande, and is navigable for small vessels. usas, the next, is about fifty-four miles to the N. W. of the above. The third, named reo, about twelve miles farther in the same direction, is also fit for small vessels. ra or Cuscuina, eighteen miles to Westward of this, and opposite the S. W. point rinidad, is only fit for canoes. Perdenales, which is twenty-one miles farther on dmit long-boats. Grand Manamo or the river Vagre is the Westernmost, and emp-tself into the Southern bight in the Gulf of Paria.

e depth of all these streams, however, naturally changes with the seasons, and in ains, from the latter part of January to the middle of June, the Northern part e delta to the Westward of Mangles Point is drowned, and the inhabitants are ed to reside in the palm-trees. The four last-named branches unite near the of Barrancas, and enter the Orinoco about one hundred miles above Cangréjo Is-

Light-vessel.

e light-vessel at the mouth of the Orinoco lies in eighteen feet water, to the ward of Barima Point, and exhibits a fixed white light which may be seen eight .*

Pilots.

pilot boat now cruises outside as formerly, but the establishment for pilots is on réjo Island. It is recommended for a vessel drawing over twelve feet to anchor or eight miles to the Northward of Mocomoco Point, and send a boat provisioned o or three days, for a pilot. Tidal observations may be taken while waiting, so insure going over the bar at half-flood, when the water is smoother than on the

Water.

e confluence of the river Caroni a little above the village of Las Tablas, is an ex-t place for watering; its waters maintain themselves for a considerable distance and transparent among the turbid waters of the Orinoco, though these are means unpalatable or unwholesome, and drinkable as far down as Cangréjo Is-

Directions.

ling vessels bound to the Orinoco should endeavor to make the land well to the ard, and sight the remarkable trees at the entrance of the Guayama. This, however, res great caution, for they only become visible in two and a half and three fath-ater. If this be not done, there is great danger in approaching the entrance, for a may be suddenly aground out of sight of the land, and if she get to leeward there be much difficulty in beating up against a N. W. current of from one knot and a o two knots. Steam-vessels should, however, endeavor to make Mocomoco Point, from its salient position cannot be mistaken; and if the land is first seen to the ward, haul out.

e depth gradually decreases toward the shore, but to the Northward of Sabaneta at the entrance of the Orinoco, there are only two and a half fathoms when nearly sight of it. Mocomoco Point may be approached to the depth of three and a half ms; but between it and Sabaneta Point is a shoal of soft mud.

proceeding in, having the land of Mocomoco in sight, steer to the Westward, g about eight or nine miles off shore. When Barima Point bears about S. by er for it, and the least depth of water over the bar will be sixteen feet at half When across the bar, the depths will increase to four and five fathoms; care then be taken to avoid the S. spur of the spit extending from Cangréjo Island, projects far into the channel. The course in mid-channel will be between S. W.

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is light-vessel is sunk, and there seems at present no chance of her being replaced. Lieutenant ray, H. M. S. *Skipjack*, 1859.

and S. W. by W., observing to keep in clayey bottom, which will be found toward main land.

From off Barima Point the course will be about W. by S. toward Cangréjo Island, til the E. end of it bears N., or when the S. E. end of the island covers some sr woody clumps or islets off the N. E. end, a vessel may haul up for the middle or S. point of the island. At half a mile to the Westward of the pilot's house, on the bea which is very conspicuous, will be found four and five fathoms.

Above Cangréjo Island the channel leads through a labyrinth of islands, but not ficiently marked to be known to strangers; and as the discolored water prevents banks, which are steep to, from being seen—the rise and fall of the river altering appearance of the land, and anchorage being required at night—the ascent of the ri without a pilot is difficult and dangerous.

In leaving the river, there will be no difficulty by bringing Barima Point S. by and keeping it on that line. H. M. S. *Hydra*, in June, 1860, steamed out with Bar Point S. S. W., carrying not less than fifteen feet water.

Should a vessel proceed to Ciudad Bolivar, the cathedral on a hill, being very spicuous, may be seen ten miles off. The river at this point is extremely deep, and anchoring ground very contracted in consequence. The best place to the Eastward the market-place point; where, however, a vessel must moor head and stern, within a ship's length of the beach, in ten fathoms. At four ships' length from shore are eighteen fathoms, at the mean level of the river; and in mid-channel sou ings cannot be obtained except in the dry season, in consequence of the great velocit the cross currents; the extreme depth at this period is stated to be from thirty to fathoms.

The current in these narrows runs about five knots in December, when the rive about half-ebb. The width between market-place point and the rocks below Soled on the left bank of the river, is seven hundred and seventy-six yards at the mean le but above, as well as below these narrows, the river not unfrequently expands to th miles. The position of market-place point is in latitude 8° 8′ 52″ N., and longitude 32′ 58″ W.

Caution. The muddy water apparently thrown up by the mirage is easily mistaken for land, and heavy rollers sometimes occur off the mouth of the river in November December.

Tides. In the Orinoco the periodical rise of the water commences immediately after the nal equinox; but for the first month it does not exceed an inch in twenty-four ho sometimes, however, it falls again in April. In July it attains its greatest height, remains at the same level till about the 25th August, when it gradually falls, but slowly than on the increase, and reaches its lowest state in January and February. ordinary rise in the lower Orinoco is estimated to be from seventy-eight to ninety The height, however, naturally varies according to the breadth of the bed and the ber of tributary streams received by the main trunk.

During the period of the rise, the river is navigable to Ciudad Bolivar, formerly gostura, a distance of more than two hundred and fifty miles from the sea, where mean rise is twenty-four or twenty-five feet, and the annual rise and fall not less fifty feet. Formerly, in the dry season, vessels were obliged to stop about fifty lower down, below the bar or pass of Del Mano, which at this time had only fo five feet water, and transport their cargoes to the capital in canoes; but this pass now twelve feet of water over it when the river is at its lowest.

At Barrancas, which is about halfway to Bolivar, the river falls off forty fee tween July and November, and here the caños or creeks unite into a single cha from one to three miles wide, and with a general depth of seven to twenty fathoms many sand-banks, most of which are above water in the dry season, and occasio masses of granite, form little islands in the stream.

When the river is at its lowest level, the tide is felt at Bolivar, causing a rise an of twelve or fourteen inches; and about one hundred and eighty miles up, at the fluence of the Caroni, the rise is fifteen inches.

At thirty miles above Barima Point the flood will make up at 2h. 20m. A. M. A rima Point it is high water at 6h., and the rise is about three feet. At the mouth the edge of the delta, to the Westward of Mangle's Point, the rise is seven, eight even ten feet within the Gulf of Paria. To the Northward of Mocomoco Point seven miles, the tide runs about six hours each way, the flood to the W. S. W., and ebb to the E. N. E.

In the month of April, off the Orinoco, the water is sometimes fresh fifteen or miles from the land.

TOBAGO, TRINIDAD, AND GULF OF PARIA.

TOBAGO is described by some authorities as the Southeasternmost of the Caribbee lands, but it is so nearly connected to Trinidad, and consequently to the main land, erra Firme, that it may take its place more properly in this portion of the Coast lot; and perhaps the more so, as it is considered to be out of the line of hurricanes, e only having been recorded in a period of one hundred and fifty years. *Tobago.*

The island is about twenty-five miles in length from N. E. to S. W., thirteen miles at greatest breadth, and its shores are generally bold and steep to. A lofty, rugged ge of irregular mountains, commencing at the N. E. end, runs through the island at an vation, in some parts, of eighteen hundred feet, for nearly two thirds its length, when declines in height, and the S. W. part of the island terminates in broken plains and lands. The summits of the ridge are generally rounded, and do not present any of se volcanic features that are seen at the neighboring islands to the Northward; and valleys are well watered and highly cultivated.

The S. E. side of Tobago is continually exposed to a heavy swell, and as the current erally sets very strong toward the shore, it should not be navigated within the dis- ce of three or four miles. *Caution.*

T. GILES ROCKS.—The N. end of Tobago terminates in a slightly rounded point, close off it is a cluster of bold, rocky islets, called Melville or St. Giles Rocks, which steep to. The Westernmost rock, when seen from the Northward, is very remarka- from the sea having pierced a large arch through it. *St. Giles Rocks.*

AN-OF-WAR BAY.—S. W. about three miles from the St. Giles Rocks is the N. t of a deep bight, called Man-of-War Bay, in which is the best anchorage at the island vessels of large draught. The only danger in it is the Cardinal, a small rocky shoal, about halfway down the Western side, at a third of a mile from the shore; but it rally breaks, and is therefore easily avoided. At the bottom of the bay there is a l islet, called Booby Island, which is steep to. There is anchorage ground all around bay, but only to a short distance from the shore; and the soundings change rapidly forty to twenty and ten fathoms. *Man-of-War Bay.*

good watering place will be found, in the rainy season, at the N. E. end of Man-of- Bay; and water may also be obtained on the S. shore; but it is difficult to get at on account of the heavy surf. *Water.*

n-of-War Bay should be entered from the Northward. The point is bold and steep t a vessel must be prepared to meet the sudden flaws and gusts which rush from gh lands, and careful not to be taken aback. When abreast the Cardinal Shoal, the will generally draw ahead; but it will be better to stand on to the S. W., and tack ooby Island, and in two or three boards an anchorage will be obtained off Pirate's in the N. E. part of the bight. *Directions.*

e most convenient berth for watering will be found with Booby Island bearing S. W. ½ W., the N. extreme of the Bay N. N. W. ½ W., Corvo Point, the Western ex- e W. ¾ S., and a remarkable cotton-tree S. S. E. ½ E. If the wind will not permit ning in, it will be better to anchor on the edge of the bank, and warp up. The an- ge on the S. side of the bight is in eighteen to ten fathoms, about a fourth of a mile ore.

OTHERS AND SISTERS.—About a mile and a half to the Westward of Corvo are several rocky islets, called the Brothers, which are bold and very steep to; bout the same distance to the Westward of them there is a similar cluster, but more mber, called the Sisters, having forty fathoms water close to. *Brothers and Sisters.*

adjacent coast is bold and clear, but, as there is said to be a shoal with four fath- ater on it, lying about midway between the Sisters and the shore, it will be more nt for a large vessel to pass outside all.

m Corvo Point to Courland Point, about thirteen miles distant, the N. W. of Tobago is generally rocky, bold, and steep to. In this space are several small called Cheese, Bloody, Palatuvier (Mangrove), Englishman's, Castara, Flamingo, Peter's Cotton, and Formagiers, all of them affording anchorage for small ves- *Anchorages.*

EAT COURLAND BAY.—Courland Point, the Northern extremity of this bay, is oody, flat, and rocky, and may be recognized by a flagstaff and the houses of the f Plymouth, which are near it. Between this and Hawke's Bill Point the bay tle more than half a mile wide and about a fourth of a mile deep, with nine s water three fourths of a mile from the shore, gradually decreasing to three s within a cable's length of it. The only danger is the Barrel of Beef, a small hich dries at low water, lying about sixty yards off Courland Point. The best age will be found in eight fathoms, with Courland Point bearing N. E. by N., awke's Bill Point S., about midway between the two. With the wind to *Great Courland Bay.*

the Northward of E., a heavy swell rolls into the bay, but the holding ground excellent.

Water. A small stream empties itself into the Northern part of Great Courland Bay, but t water is not good, and the mouth is generally blocked up by stumps of trees.

Stonehaven Bay. STONEHAVEN BAY.—To the Southward of Hawke's Bill Point there is anchora in Stonehaven Bay, in from twelve to eight fathoms clear ground, but the bottom rocky in some places.

Little Courland Bay. LITTLE COURLAND BAY is situated a little farther to the Southward, and p sesses a much easier anchorage than that at Great Courland Bay. On Rocky Poi which forms the Northern extremity of the bay, there are the remains of an old Du fort. Off Booby Point, at the Southern extremity of Little Courland Bay, there i small islet, whence the Buckoo Reef sweeps off to the Westward and Southward, f two miles from the shore, and breaks the swell which rolls round the S. W. point of T bago. At the Northern part of the reef, several patches dry at low water, and there boat channels between the heads; but a sailing vessel should approach this end of island very cautiously.

Directions. Little Courland Bay should be entered from the Northward, and the best anchor will be found close up under rocky point which is steep to.

In leaving the bay, should the wind be light and variable, great care is required, should it fall calm, the current runs so strong to the S. W. that there would be gr danger of being set on the Buckoo Reef. Soundings extend out about three miles fr the reef, and under favorable circumstances, with a steady breeze, it may be approac within two cables' length.

Sandy Bay. SANDY BAY.—The Southwestern extremity of Tobago terminates at two low sa points, between which the shore forms a small bay, where there is anchorage in se or six fathoms. The Buckoo Reef terminates at Sandy Point, the Northwest most of these points, and in leaving this anchorage great care must be taken avoid being drifted upon it by the heavy swell which rolls round this end of island.

Brown Point, the S. E. point of Sandy Bay, is distinguished by a remarkable tree its extremity. Thence the shore trends Easterly five miles to Columbus Point, wh is a bluff headland; it then takes a N. E. direction.

Wasp or Drew Rock. WASP OR DREW ROCK.—From this dangerous rocky shoal, which has from s enteen to twenty feet water on it, and six to twelve fathoms at two miles to the Sou ward of it, Brown Point bears N. by E. ¾ E. two and one fourth miles, and Colum Point E. N. E. three and one fourth miles. Sandy Point open a boat's length to Westward of Brown Point will lead a vessel to the Westward of the shoal in eight f oms; and when the high land to the Eastward comes well open of Columbus Point, S. W. end may be passed in from eight to twelve fathoms.

Little Tobago. LITTLE TOBAGO.—S. S. E. about three and a half miles from St. Giles Roc the N. E. end of Tobago, there is a lofty, dark, rocky islet called Little Tobago; covered with brushwood—makes in four or five peaks—and can be seen eighteen m and near it are several smaller islets and rocks. Between them and the main the rent is very strong and uncertain in its direction, and the ground foul.

Tyrrel Bay. TYRREL BAY.—Within these islets the shore forms Tyrrel Bay, where vesse about one hundred and fifty tons burden will find anchorage in six fathoms.

King Bay. KING BAY.—About three and a half miles to the Southward of Little Toba Pedro Point, and rather less than two miles thence is a high rocky islet, called Q Island. Between these points is King Bay, which has good anchorage within weather point in from six to twenty fathoms water. The high land on the Eastern however, intercepts the regular breeze, and there is great risk of a vessel becomin manageable, and drifted by the swell on the lee point. A vessel must wait for the wind to carry her out, which generally blows off from the Southward in the morni early dawn.

Queen Bay. QUEEN BAY.—Nearly a mile to the Westward of Queen Island is a large dry called Roxburg, and between them is Queen Bay, where there is anchorage in five oms, about a cable and a half from the shore.

Directions. In running in for Queen Bay, give Queen Island a good berth until a large house a gallery comes open, it is easily recognized, as it stands on the rising ground, the quays facing the island, and there is no other house like it in the bay. Contin without borrowing, until this house comes in line with another that will be seen o hill above. This mark should be kept on until within about two cables of the s when anchorage may be taken up abreast a watch-house on the beach. Should the prevent reaching thus far, the anchor should be dropped, and the proper anch gained by warping.

Hog Bay. HOG BAY.—At about three miles to the S. W. from Queen Island is Richmon and, which is very similar to it, and between them is Hog Bay, in which the grou foul.

HALIFAX BAY.—This small bay is situated to the N. W. of Richmond Island, and *Halifax Bay*
fords good anchorage to vessels of moderate size, but it is obstructed in the centre by
e Great River Shoal. The windward side terminates at Fort Granby Point, which is
ul to the distance of a cable's length.

GREAT RIVER SHOAL.—Smith Island lies S. W. four and a half miles from Rich- *Great River*
ond Island, and is smaller; and as both of them are opposite bold projecting points, *Shoal.*
ey are conspicuous objects. The Great River Shoal extends almost as far as Smith
land, and is one mile and a half broad, with a depth in many places of only three
thoms.

In approaching the anchorage in Halifax Bay, Little Tobago should be kept open *Directions.*
the Eastward of Richmond Island to avoid the Great River Shoal. When Smith
land bears N. W. it will be necessary to luff up gradually and carefully around the
ranby Point Reef; and anchorage should be taken up in from twelve to seven fathoms
fore George Town, with a remarkable cotton-tree on the beach in a line with the flag-
aff on the summit of the hill.

BARBADOS BAY.—A little to leeward of Smith Island is Barbados Bay, in which *Barbados*
ore is anchorage; but this shore should be cautiously approached, and not without the *Bay.*
sistance of a pilot.

ROCKLY BAY.—W. S. W. about five and a half miles from Barbados Bay, and N. E. *Rockly Bay.*
e miles from Columbus Point, the shore curves round, forming a small bight called
ckly Bay. At its head is the town of Scarborough, the seat of government, which is
otected on the E. by King George Fort, standing on a hill four hundred and twenty-
o feet above the sea.

MINSTER ROCK.—The approach to Rockly Bay is obstructed by a small head of *Minster*
e feet water, called the Minster Rock, lying E. by S. ¼ S. one mile and a half from *Rock.*
e light-house; it is buoyed, and generally breaks, and is very steep to.

Right in front of the bay, and nearly two miles from the Western shore, there is a
ngerous coral ledge about two miles long, N. E. and S. W., and more than
lf a mile broad, leaving a clear channel into the bay to the Eastward of it, about
ree fourths of a mile wide, and a narrow one within it for small vessels. The East-
n shore, between Bacolet Point and the town, is bold to within less than two cables'
gth.

A light-tower of a pentagon shape, forty-six feet high, and painted red and white, *Light.*
nds on Bacolet or Red Point, at the Southeastern extremity of Rockly Bay, and ex-
its, at an elevation of one hundred and twenty-eight feet above the mean level of the
, a fixed white light, which may be seen in clear weather at a distance of twelve
es, when bearing from a vessel between W. S. W. and N. E. by E.

Approaching Rockly Bay from the N. E., Little Tobago must be kept open of Pedro *Directions.*
nt or Richmond Island, to avoid the Great River Shoal; and Richmond Island must
rward be kept open of Smith Island to clear the Minster Rock. The two latter
nds in line lead directly over it; and Richmond island kept open between Smith
nd and the main, leads inside the rock.

The entrance to the bay will be readily discovered by the fort and light-house on
olet Point. When the light-house bears N. W., or a remarkable large cotton-tree
es open of the Eastern point of entrance, the Minster will have been passed,
a vessel should then haul in toward Scarborough Point, a bold bluff under the
, and keep the Eastern shore aboard within about a fourth of a mile, to avoid the
stern reefs. Should the wind be scant, the Western board should not be prolonged
her than to bring the Westernmost of two mills on the hill over the centre of the
, nearly touching the end of a single large house, which stands a little below it. A
d berth will be found in eleven fathoms, soft bottom, with the fort bearing N. E. ½
and the centre of the head of the bay N. N. W. ½ W. About a cable's length within
spot there is a fairway buoy, and just inshore the buoy there is a rocky head of
feet water. Merchant vessels may take up a more convenient berth farther in,
n the principal street in the town open, or according to their draught, taking care,
ever, to avoid the Western shore, and to choose a sandy spot. The anchorage is
osed to a long ground swell, and with strong N. E. winds a vessel will roll
vily.

We have no account of the tides around Tobago. Off the S. E. side a strong N. W. *Current.*
ent comes home to the shore, and off the opposite or N. W. side there is a strong
r running to the S. W., sometimes at the rate of a mile an hour.

etween Barbados and Tobago the stream is generally setting to the Westward, but it
ten found running in an opposite direction, and in August none whatever has been
with. In the month of February its course has been found N. N. E. two knots, and
une, N., one knot an hour.

f the N. E. end of the island, and to the Eastward and Southward of it, the stream
rally runs between N. N. W. and W., two and even three knots an hour; therefore,

when running from one island to the other, it will always be prudent to steer well to windward of the direct course, and never to lie to in the night.

Between Tobago and Trinidad the stream is always running between N. W. and W., and as the former island is approached to the S. of W., and on the ebb, its velocity is sometimes three knots. Vessels bound to Tobago, from Port Spain in Trinidad, should therefore work up to Galera Point before attempting to cross over. This channel is frequently taken by vessels from Demerara, bound Northerly, but in doing so great care must be taken to keep clear of the Wasp Shoal.

Trinidad. TRINIDAD.—This island is of considerable magnitude, containing about two thousand and twelve square miles. Its shores are all so straight that it possesses no indentation that forms a harbor of magnitude for large vessels; there are, however, several anchorages on the W. side, which, from the absence of hurricanes and the regularity of the breezes, are always safe.

The N. side of the island is bounded by a range of densely-wooded mountains, about eight or ten miles in breadth, varying from eighteen hundred to three thousand feet in height. The loftiest summit, called the Cerro de las Cuevas, or Maracas Mountain, is three thousand one hundred feet above the sea, and rises near the shore, about fifteen miles from the W. end of the island, and N. E. ten miles from Port Spain. To the Southward of this range the interior is generally low and flat, with a few insulated hills from seven hundred to eleven hundred feet high.

The S. side of the island is also bordered by a range of mountains, but considerably inferior in height to those on the N. side; and near the middle of the E. coast is another small range, extending to the W. N. W., nearly across the island. All the W. coast of Trinidad is low, excepting Mount Naparima, which is round and lofty. In clear weather it may be seen twenty-four miles distant, and is a good mark within the gulf.

Rollers. Rollers, similar to those met with at the Virgin Islands and on the coast of Guayana, sometimes occur on the N. side of Trinidad between the months of January and March.

Galera Point. GALERA POINT.—The N. side of Trinidad from Galera Point, the Northeastern extreme of the island, to Mono Point, the Northwestern extreme, runs on almost a straight line W. by S. forty-six miles; and the whole coast is bounded by a rocky shore, upon which the surf breaks with such fury as to render landing impossible except at a very few places under favorable circumstances. The land about Galera Point is not above fifty feet high, but about three or four miles to the Westward it begins to rise, and connects itself with the great chain of mountains which bound the side of the island.

About three fourths of a mile to the Eastward of the point there is a rock, often visible, but upon which the sea always breaks; and there is reason to suspect that some sunken rocks lie both within and without it. N. by W. four miles from the point the depth is twenty-two fathoms, and half a mile farther off forty fathoms, sand and mud; and it may be here stated that this is the character of the bottom all along this shore.

Toco Bay. TOCO BAY.—The coast from Galera Point trends N. W. by W. ½ W. one mile and a half to Reef's Point, and is skirted by a reef which extends off about a third of a mile and which should not be approached nearer than a depth of twelve fathoms. To the Westward of Reef's Point the shore curves in a little to the Southward, and between it and Toco Point forms a small bay, about two miles in extent, in which there is anchorage, but by no means to be recommended, as a heavy swell rolls in.

The best shelter will be with Reef's Point E. ½ S., and Harris's house S. S. E.; or a little farther in with the point E. ½ N., and the house on the same bearing, in twelve or fourteen fathoms, about three fourths of a mile from the shore. The house stands on a little hill at the S. E. part of the bay, and is the largest in the neighborhood. Close to Toco Point there are some small islets or rocks.

Point Sans Souci. POINT SANS SOUCI bears W. by N. about two and a fourth miles from Toco Point and W. four and a fourth miles from Reef's Point. Thence the shore trends W. ½ S. two and a fourth miles to Rio Grande Point. This part is chiefly scarped, and off the last point there is an islet or rock.

Rio Grande Bay. RIO GRANDE BAY.—From Rio Grande Point to Matelot Point, seven miles distant, the coast takes a W. by S. direction. S. W. by S. three fourths of a mile from the first point is the Rio Grande, which, however, is only admissible to boats; the shore between is scarped. From the entrance of the river a sandy beach extends to the Westward about half a mile, and off its W. end are two rocky islets, the outermost lying about a third of a mile from the shore. Thence to Matelot Point the shore is rocky and high, with a few sandy beaches.

Anchorage. A vessel will find temporary anchorage in nine fathoms, with Rio Grande Point S., and the E. end of the sandy beach at the entrance of the river S. by E. ½ E.

about three and a half miles from the Rio Grande the depth is twenty fathoms, and the same distance N. N. W. of Matelot Point seventeen fathoms.

SHARK'S RIVER.—About a mile to the Eastward of Matelot Point is the Petit Matelot, and between them, close to the Eastward of a rocky spot, is the entrance of the Shark's River, which is only fit for boats. *Shark's River.*

MANDAMUS RIVER, a similar stream to the above, disembogues at the E. end of a sandy beach, about three miles W. S. W. from Matelot Point. About one mile and a fourth to the Westward of the entrance is Trou Bouillé Ris, and two miles farther on in the same direction is Paria Islet, the shore between being chiefly rocky cliffs, with two islets lying near it. *Mandamus River.*

RIVER PARIA.—Paria Islet lies close off the E. side of a small sandy cove, into which the little river of that name empties itself, and which is of the same character as those just described. *River Paria*

RIVERS MACAPOU AND CHUPARA.—The Macapou River discharges itself into the sea, about three miles to the Westward of the Paria. Two and a half miles to the Westward of Paria Islet, off the rocky points a little to the Eastward of the Macapou, a reef extends out about a third of a mile. The Chupara is about three and one fourth miles to the Westward of the Macapou, but neither of them is of any importance, and fit only for boats. Between the two mouths the shore is partly composed of cliffs, and from the Chupara it is sandy for about three fourths of a mile to the W. N. W. N. by W. two and a half miles from the Macapou, the depth is twenty-one fathoms. *Rivers Macapou and Chupara.*

CHUPARA POINT is twenty-eight miles to the Westward of Galera Point, and terminates the W. end of the sandy beach described above. It is scarped and cliffy, and extending about a mile nearly E. and W., forms the most bold and prominent headland on the N. coast. From the Eastern extremity a reef extends off in that direction half a mile, and a little more than a cable's length to the Westward of the opposite extreme there is a sunken rock, which generally breaks. Only three fourths of a mile N. of the point there is sixteen fathoms water. *Chupara Point.*

ESCOUVAS BAY.—From the W. extreme of Chupara Point the shore trends to the S. W. about one mile and a half to the E. point of Escouvas Bay, on which is Fort Abercrombie. This bay is about three fourths of a mile wide and half a mile deep, and carries from ten to four fathoms water. *Escouvas Bay.*

With the fort E. N. E. about one third of a mile distant, the largest house on the S. side of the bay S. by W., a vessel will find anchorage in nine fathoms, sand and mud. *Anchorage.*

MARACCAS BAY, lying S. W. about two miles from Escouvas, is a mile wide and about the same deep, with sixteen to ten fathoms water over mud at its entrance, gradually decreasing to eight and seven fathoms, on sand, near the middle. Although open to the N., it affords better shelter than any other anchorage on this shore; but being under the high land the winds are so variable that it is not so convenient to navigate as Escouvas. *Maraccas Bay.*

VACHES COVE, about two miles to the Westward of Maraccas Bay, has anchorage in from twelve to eight fathoms, sheltered from N. N. E. winds. Off the E. point there is a small islet of the same name. *Vaches Cove.*

CHUTE D'EAU COVE, above one mile and a half Westward of Vaches Cove, takes its name from a remarkable waterfall in the centre, which throws itself over the rocks from a considerable height. Off it is Isle Chute d'Eau, a small, woody, islet about three hundred and eighty feet high, steep to, with a boat channel between it and the main a fourth of a mile wide. On the sandy shore there are a few fishermen's huts. Neither this nor Vaches Cove affords safe anchorage on account of the heavy swell, which rolls into them, and the uncertain winds from the highlands. S. of islet Mount Mal d'Estomac rises abruptly from the shore to the height of two thousand two hundred and thirty feet. *Chute d'Eau Cove*

COROZAL POINT.—About three miles to the Westward of Chute d'Eau there will be seen on a hill seven hundred and forty feet high a signal-house and staff, called North Post, which communicates with Port Spain, and about three miles more to the Westward is Corozal Point; the whole shore between is bold and rocky, without any shelter whatever. From this point the shore trends S. W. by W. about four miles to Mono Point, the Northwestern extremity of Trinidad. *Corozal Point.*

MACARIPE COVE, which is about three fourths of a mile from Corozal Point, is defended by two small batteries, and affords shelter for coasters in from seven to three and a half fathoms water. *Macaripe Cove.*

At all the anchorages on this shore water may be obtained, but only under very favorable circumstances, on account of the heavy surf, which makes landing difficult at all times, and more particularly in the months of January and February, when rollers prevail. *Water.*

Anchorage. On arriving off Macaripe Cove with light winds, a vessel will find good anchorage with a kedge or stream in twenty or thirty fathoms, on the soft, muddy bank extending from the N. coast, keeping more than a mile off shore, so as to have room to get under way.

Tides. At the Rio Grande it is high water, full and change, at 4h. 30m., and at the Boca Grande at 3h. 30m.; springs rise four feet and neaps two and a half feet. Between the Rio Grande and Chupara Point the last two hours of the ebb, and sometimes the whole of it, sets to the Eastward along the shore. To the Eastward of the Rio Grande the tidal stream is overcome by the current running to the Westward between Trinidad and Tobago. To the Westward of Chupara the ebb runs always to the Eastward, increasing in strength, and diverging to the N. E. and N. as Mono Point is approached. Off the Bocas de Dragos the ebb runs to the N. and N. W. from two to three knots, according to the season and the state of the Orinoco, and in the months between July and October its influence is felt fifteen or twenty miles from the land. The flood sets to the Westward, decreasing its velocity as it approaches Mono Point, and increasing as it recedes from the shore.

Bocas de Dragos. BOCAS DE DRAGOS.—Mono or Entrada Point is situated ten and a half miles Eastward of the Easternmost extremity of Paria. The space between is divided by three small islets reaching halfway across from Mono Point, into four navigable channels leading into the Gulf of Paria, called by Columbus the Bocas de Dragos (Dragon's Mouths), from the opposition he met with from the currents and baffling winds in getting into them.

Mono or Ape Island. MONO or APE ISLAND, the Easternmost of these islets, is about two miles long N. E. and S. W. and one mile and a third broad. It is composed of two lofty hills, the Northernmost one thousand feet high, from which the land on the S. side shelves gradually down to the sea in ridges singularly sharp, and on the N. side terminates in bold perpendicular cliffs, from seven hundred to eight hundred feet high. The few inhabitants on it have to depend upon rain for water.

E. N. E., about a cable's length from the N. E. point of the island, there is a cluster of rocks called the Puercos, the largest of which is seventy feet high, with eight fathoms close to them. A useful anchorage for small craft will be found in Debert Bay, on the S. E. side of the island; and in the Carénage de Mono or Scotland Bay, there is a deep vein of water that might be made use of by steamers in case of necessity. From the Eastern point of Coxall or Pierre Bay a ledge of eight feet water runs off to the Southward about a cable's length.

Boca Mono. BOCA MONO.—The N. E. point of Mono is about two thirds of a mile in a S. W. by W. direction from Mono Point, and the S. E. point is about half a mile W. N. W. from Taitron Point; but the channel in the narrowest part is not quite a third of a mile wide N. and S. It has a depth of from twenty-five to forty-five fathoms, muddy bottom, but the eddies off the points are so strong and irregular, and the wind so baffling under the high land of Trinidad—although a fine steady breeze may be blowing outside—that it is by no means adapted for a sailing vessel. Steamers have only to steer in mid-channel. A small rock, which dries three feet at low water, lies close off Taitron Point; and there is a small ledge close off the opposite point on Mono, but they can scarcely be called dangers.

Huevos or Egg Island. HUEVOS or EGG ISLAND, the centre and smallest islet of the group, is uninhabited and lies abont three fourths of a mile to the Westward of the nearest part of Mono. It is of a semicircular form, convex to the N. E. about one mile and a half in length but very narrow, and near the middle of it almost divided into two parts by a small neck of sand which dries at low water. The N. E. point, which is the most elevated part, is six hundred and eighty feet high, and close off it there is a small islet ninety feet high, steep to, called the Quitasol or Umbrella Rock. Although a deep bay is formed under its S. W. side quite free of danger, it does not afford safe anchorage.

Boca de Huevos. BOCA DE HUEVOS, more generally called the Umbrella Channel, is about three fourths of a mile wide, and being open to the N. E. and S. W. is usually used by vessels entering the Gulf of Paria. It requires, however, a good, commanding breeze to the Northward of E. to stem the current; and in running in Huevos should be kept aboard to avoid the eddies and baffling winds under Mono. With the wind to the Southward of E. it should not be attempted.

Chacachacare. CHACACHACARE, the Westernmost islet, is irregularly shaped, and like Huevos the Northern part is nearly separated from the Southern by a small low neck of sand. The two parts form a large bight named Chacachacare Harbor, open to the S. E. about a mile deep, and three fourths wide, entirely free of danger, and which affords excellent anchorage for vessels of the largest draught, in from fifteen to twenty-five fathoms.

To enter this bight, keep Romain Point, the Southeastern extremity of the island aboard, until within the line of the points, as the current sets strong to N. E. across the entrance.

bout one hundred inhabitants, who cultivate vegetables and fish for whales, are scat-
l on the shore and around the bay. There are no springs on the island, but rain-
r is caught in tanks.

Jago Point, the Eastern extreme of the island, bears W. S. W. three fourths or
le nearly from the S. end of Huevos, and thence the shore trends to the N. W.
t one mile and a half, to Lue Point, the N. extreme. The land rises abruptly from
ea to the height of from six hundred to eight hundred and thirty feet at the latter
t, which is composed of remarkable red cliffs. From Lue Point the land trends W.
. for nearly half a mile to Cape Rota, and about midway, a cable's length from the
e, there is a small rocky islet called Cabres, one hundred and thirty-four feet high,
steep to.

om Cape Rota to the S. W. point of the island, the coast trends about S. by W. one
and a half, but near the middle there is a small cove, formed by the narrow low
of sand that nearly divides the island; the cove, which is named Tinta Bay, is
ted by rocky heads to the distance of about a cable's length, and close off the S. end
e sandy beach under the Alum Cliffs, there is a small black rock.

he S. W. point of the island is terminated by a bold perpendicular cliff four hun-
and twenty-six feet high, facing the W., and gradually sloping down to the South-
d to the sea. Close to it are two remarkable small rocky islets lying about a cable's
th N. and S. of each other; the Northernmost is called Bolo, and a cable's length
e Westward of it there is a small rocky head of thirteen feet water.

he S. side of the island trends Easterly one mile and a half to Romain Point, with
ight curve to the Northward, and is clear of danger; but there is no safe an-
age.

IAMANTE OR DIAMOND ROCK.—This dangerous rock is about half a cable in *Diamante or*
nt, and is composed of large blocks of coral, upon which there are only nine feet at *Diamond*
water. The rock is steep to, and between it and the S. W. point of Chacacha- *Rock.*
there are twelve fathoms water; but the channel is only three cables wide, and
o means safe for a sailing vessel, on account of the violent tide eddies and baf-
winds.

February, 1859, an iron buoy, painted white, was moored in nine fathoms water, *Buoy.*
bout fifty yards to the S. W. by W. of the shoalest part of the Diamond Rock, with
N. W. point of Chacachacare bearing N. N. E. ½ E.; the summit of the small conical
in the S. W. part of Tinta Bay, between the two largest houses on the cliff of the
N. E. ½ E.; and all the Southern points of Chacachacare shut in with the S. W.
, E., nearly.

OCA DE NAVIOS, between Huevos and Chacachacare, generally called the Ship *Boca de*
nnel, is about two thirds of a mile wide, and has no danger in it whatever, being in *Navios.*
e places upwards of one hundred fathoms deep; but as the wind will seldom allow
ssel to lie up so high as the S. E., the course through it is not a safe entrance to the
It may, however, be freely navigated from the Southward, with a steady com-
ding breeze, and in this case it is far safer than the Umbrella Channel; but if the
d is light and variable, it will be more prudent to run through the Boca Grande, for
e is no safe anchorage, and the current sets strong toward Chacachacare.

OCA GRANDE, as the name implies, is the largest of the channels leading into *Boca Grande.*
Gulf of Paria, and by far the safest to navigate, particularly in the summer months,
n the tides are most violent and irregular, and the winds light and variable. Be-
en the N. W. point of Chacachacare Island and Peña Point, the Eastern extremity
aria, the channel is about five and a half miles wide. Off Peña Point there is a
ll rock awash; it lies about a fourth of a mile from the shore, but, as it breaks, it
be easily avoided.

ATO ISLAND, which belongs to the British, is about a mile long, E. and W., a *Pato Island.*
rth of a mile broad, and three hundred and fifty feet high. Its E. end lies about S.
, five and a half miles from Peña Point, and its W. end is about two and a half
es from the main land of Paria, and is steep to on all sides; the only danger, there-
, in this channel is the Diamond Rock.

esides a regular ebb and flow of the tide through the Bocas de Dragos, there is a *Tides.*
tant current setting out of them from the Gulf of Paria, which, during the months of
y, August, September, and October, is at its maximum; this accelerates the ebb, and
eks the flood. During these months the tides in the Bocas during the springs run at
following rates:

n the Boca Mono it is high water, full and change, at 3h. 50m. On the flood there
o stream whatever; the ebb runs through to the Northward from two to three knots
hour.

n the Boca de Huevos the flood seldom overpowers the current, and the ebb runs at
rate of from three to four knots, and even five knots in the rainy season.

n the Boca de Navios the flood seldom exceeds a knot; the ebb runs from two and

a half to three and a half knots. In this channel, and in the Boca de Huevos, the fl is sensibly felt under the East side of the islands.

In the Boca Grande it is high water, full and change, at 3h. 30m.; rise at spri four feet; at neaps two and a half feet, and this is the average range at all the Boc and along the W. side of Trinidad. The highest tides are in October, the lowest April and May. During the summer months, from July to October, the flood r through this Boca at the springs, about four hours, but seldom exceeds half a knot; t ebb runs eight hours at the rate of from two to three knots. During the neaps and the dry season, from about November to June, the tidal streams are reduced to ab one knot, but they are continually interrupted by local causes, and the state of t rivers which empty themselves into the Gulf of Paria.

Inside the Bocas the flood sets to the Eastward along the Trinidad shore, runni strong through Chaguaramas Bay, the Diego, and Five Islands up to Port Spain, wh it turns to the Southward in the direction of the coast. At Chaguaramas it fights way in at about two thirds ebb by the shore, very suddenly, like a bore, checking t ebb, and after a short time subsiding into a steady rate. From a commanding positi the contending streams may be seen producing a strong ripple, extending in long curv lines for several miles outside the Bocas, and which gradually approach them as t flood makes. In the Bocas the ripple frequently becomes a violent race, and very da gerous to small boats. The ebb between Port Spain and the Bocas is usually ab twice the velocity of the flood. In the offing, to the Southward of Gaspar Grande, b streams run regularly six hours each way, and the actual rise and fall on the shore f lows the general law.

The water in the Gulf of Paria, and for several miles outside the Bocas, has a di hue; in the month of October it has a reddish tinge.

Directions. If entering the Gulf of Paria by the Boca Grande, keep the island of Chacachac aboard, taking care, however, not to come within the influence of the baffling wi under the high lands. If a vessel has to beat in, the Paria shore should be give wide berth, as the current sets strong toward it, and there is no safe anchorage. T only danger to be avoided is the Diamond Rock, which will be cleared when approa ing the S. W. point of Chacachacare Island, by keeping Cabres Island open of C Rota N. E. ½ N., until Romain Point comes open of the rocks off the S. W. point bear E. by N., when a course may be shaped to the Eastward for Port Spain.

The navigation from the Bocas to Port Spain is so simple, that it is only necessary take advantage of the winds in beating up, and to observe that the farther to the So ward of the Bocas the less will be the current. Should it be found necessary to st far to the Southward, the soundings will be found not quite regular, there being se small banks, with six or seven fathoms on them, fifteen or twenty miles from the la The shoals of Naparima, described hereafter, must be carefully avoided, and the sh to a considerable distance to the Northward of this, should not be approached nea than four miles. With Mount Naparima bearing about S. E. seven miles distance, the land three miles off, there are only two and a half fathoms water, and ten fath just outside it. About eight miles to the Southward of Port Spain, off a mangr point, there are two and a half fathoms one mile and three fourths from the land.

Vessels from Port Spain, running out through the Boca Grande with light wi must be careful to keep Chacachacare at least a mile and a half distant, and the B Huevos well open until Cabres Island is seen to the Westward of Cape Rota, whe more Northerly course may be pursued. Having shut Romain Point in with the S. point, the Diamond will have been passed, and a fairway course may be shaped, tak great care, however, to keep well to the Eastward of the Paria shore.

Anchorage. At about seven or eight miles to the Southward of Chacachacare Island the depth creases to sixteen and twelve fathoms, olive mud, and these soundings will be carr up to the Diego Islands, and afford good anchorage. Thence to Port Spain the b becomes gradually shallower, and should it be necessary to anchor in the offing, kedge will be sufficient, indeed more convenient, for the ground is so tenacious there is often great difficulty in weighing a bower anchor.

Carénage de Mono. CARENAGE DE MONO.—From Mono or Entrada Point, the Northwestern treme of Trinidad, the shore trends about S. by E. three fourths of a mile, to the trance of a small inlet named the Carénage de Mono, called also Scotland Bay, and ridge of hills which bounds it is nearly eight hundred feet high. The inlet is ab half a mile wide at the outer end, and runs in to the N. E. about the same distance. the entrance there is a depth of seventeen fathoms, which decreases to four and th fathoms at the inner part, where a vessel of the largest draught might be secured to shore in safety. Off the sandy beach on the E. side there is a bank, which shoals denly; therefore, in beating up, the Northern shore, which is steep to, must be aboard.

Taitron Bay. TAITRON BAY.—About a mile to the Southward of the Carénage de Mono is iron Point, and between them the shore curves round a small sandy bay, with a de

een fathoms at its entrance, decreasing to eight fathoms within a cable's length of each. About half a cable from Taitron Point there is a small rock which is dry feet at low water. The land rises to the height of fifteen hundred feet.

Gaspar Grande Island.

SPAR GRANDE ISLAND.—Espolon Point, the W. end of this island, bears S. a mile from Taitron Point, and is steep to. The island is about a mile and a fourth E. and W., half a mile broad, and three hundred and sixty-five feet high. There few inhabitants on its S. side, scattered along the shore of a deep cove, called Cor- Bay, which forms a good boat harbor, but the place is considered unhealthy. On on Point there is a small whaling establishment. A rocky ledge of ten feet water off one cable and a fourth from the S. E. end of the island, and from its outer end a Point, the N. E. end of the island, bears N. by E.

Supplies.

ter, stock, and vegetables, may be procured at Corsair Cove, and firewood cut, but l be necessary to obtain permission of the proprietor, who resides at Port Spain.

Gasparillo Island.

SPARILLO ISLAND.—From Taitron Point to San José Point the shore trends S. three fourths of a mile. Off the latter point is the little islet called Gasparillo, undred and twenty feet high, which has a small rock off its N. side, leaving a chan- tween the rock and the point one cable and a fourth wide, with six fathoms water. islet lies nearly four cables from Gaspar Grande; the channel between them is quite and carries from fifteen to twenty-four fathoms.

Chaguaramas Bay.

AGUARAMAS BAY.—From San José Point the coast trends to the N. E. and E. e mile and a fourth, and then to the S. S. W. about three fourths of a mile to San s Point, and forms a bight, which being sheltered by Gaspar Grande to the S. W., s an excellent anchorage in every part. The only obstruction is a flat sand-bank of et water, very steep to, which extends off about two cables from the N. side of ght between San José Point and the narrow neck of land which separates the bay the Carénage on the E. side of the Peninsula. This will be avoided by keeping o Point open of San José Point. The channel between San Carlos Point and the end of Gaspar Grande is half a mile wide, and the only danger in it is the ledge spoken of, at the S. E. end of Gaspar Grande.

Water.

ter may be obtained here, in Chaguaramas Bay, and the most convenient anchor- r this purpose will be found with the E. end of Gaspar Grande bearing S. ½ E. aitron Point a little open of San José Point, in thirteen fathoms.

Tides.

Chaguaramas Bay it is high water, full and change, at 4h. 20m., and the rise is four feet. The flood runs strong through to the Eastward for eight hours, fighting y in about two thirds ebb by the shore; and this long tide will be found very ad- geous to small vessels working up to Port Spain.

Directions.

mers may enter Chaguaramas Bay from the Northward by the Boca Mono and annel between Gasparillo and Gaspar Grande; and all that is necessary is to steer -channel. Sailing vessels should enter by the Eastern channel, between Gaspar e and the Chaguaramas Peninsula, and the only caution here is, not to bring Rey- int, the N. E. end of Gaspar Grande, to the Eastward of N., to avoid the ledge, has only ten feet on it, off the S. E. point of that island. It will be better to enter annel on the flood, with a good breeze, which will not only place a vessel more command, but lessen the risk of drifting upon Gaspar Grande, should it fall light the peninsula of Chaguaramas, which is four hundred and eighty feet high. As nd generally blows right out, it will be better to leave the bay by the Western el.

Escondida Bay.

ONDIDA BAY, a little cove a short distance to the Northward of San Carlos affords anchorage for small coasters.

nce the shore trends S. E. by S. about half a mile, to Gorda Point, and then takes N. E. direction one mile and a fourth to the extremity of the peninsula.

Carénage.

RENAGE.—On the N. W. side of the E. point of the Chaguaramas Peninsula there mall inlet or bay, carrying from twenty-three to ten feet water, which makes an ent harbor for vessels of light draught to effect repairs. A short distance to the of it there is another small bay, with two and a half to four fathoms water.

Diego Islands.

GO ISLANDS are two small islets, each about a fourth of a mile in extent, and undred feet high, lying N. E. by E. and S. W. by W. of each other, and separated lear channel a fourth of a mile wide, carrying five fathoms over a narrow coral They are steep to, and lie about the third of a mile from the Southern extremity Chaguaramas Peninsula, and in the passage between there are fifteen to twenty- thoms water.

Five Islands

E ISLANDS, or Cotorras, are a cluster of five small islets, the largest one hun- d fifteen feet high, occupying a space of about half a mile. The Western islet by S. about one mile and a fourth from the Easternmost of the Diego, and S. E. ½ t the same distance from the E. point of the Chaguaramas Peninsula. They are d steep to within a cable's length, and the channels between them and the point, e Diego Islands are free of danger; but the tides run through the openings with treme velocity that it will be always more prudent to pass outside both groups.

Cocorite. COCORITE.—From the Carénage the coast takes an E. S. E. direction for about miles to the city of Port Spain. Between, on the shore, is the small village of Cocor where there is an excellent wharf, conveniently situated for landing military stores St. James barrack. The three-fathom line of soundings comes within half a mile of shore.

Port Spain. PORT SPAIN (Puerto España).—The city of Port Spain is the seat of governm and capital of Trinidad. It is situated on the shore, at the S. end of a small, low, plain, at the base of the St. Anne Mountains, which rise to the height of upward of thousand feet, N. E. three and a fourth miles from the city. Only half a mile to Eastward it is overlooked by the Levantille Hills or Abercrombie Heights, the last of the Northern mountains; and on the summit of a small hill, four hundred and ten above the sea, may be seen the ruins of St. David's tower, but it is not a promin object.

On another part of the ridge, about three or four miles to the N. W., is George, with a signal-post eleven hundred and twenty feet above the sea, which comm nicates with the city and a post on the N. side of the island before mentioned. valley is drained on the E. side of the city by the St. Anne River, and on the W. by Maraval, but they are mere mountain streams.

The Caroni empties itself into the sea about one mile and a half to the Southwar the light-house. On the bar there are six inches of water, but it deepens within, runs up a considerable distance; it is not, however, navigated. Blue River, abo mile farther to the Southward, has a foot of water on the bar at low water.*

There are no wharves at the town, and vessels are loaded by means of large Hulks are moored in the offing for the convenience of heaving down; and steam chinery can be efficiently repaired.

Light. A fixed white light is exhibited from an hexagonal-shaped tower forty-three feet erected on the end of a jetty close to the small water battery at the S. end of the The light is elevated fifty feet above the main-level of the sea, and in clear weather be seen five miles off.†

Water. The watering place is at the commissariat abutment, about a fourth of a mil the Northwest of the light-house, but boats have to wait for the tide. Merc vessels are generally supplied from a fountain in the city at the rate of half a do a ton.

Anchorage. The most convenient berth off the city will be found with the light-house and St. vid's tower, before mentioned, in line, bearing E. N. E., in a depth most convenient long as there is one foot and a half water under the keel at low water; indeed, sh a vessel touch the bottom, she will incur no damage. There are fourteen feet three fourths of a mile from the jetty, and twenty feet one mile and a half off. It be better to steady the vessel by a kedge to the Westward, to keep the bower an clear, and to prevent grounding on it.

Directions. Vessels bound to Port Spain in the dry season between November and June, the trade-wind is to the Northward of E., should navigate the N. side of Trinidad, enter the Gulf of Paria by either of the Bocas (for directions for the Southern see page 670). In the remaining portion of the year, when the light winds to the So ward of E., and heavy rains prevail, which increase the velocity of the current, it be more advantageous to navigate by the S. and through the Serpent's Mouth. Sa vessels should always leave the gulf by the Bocas.

In either case vessels from the Eastward should lose no opportunity by night or of correcting their latitude, in order to detect the effects of the current; more cially in the rainy season, when its strength and direction, as the island is approa are extremely variable.

The soundings also must be closely watched, as they will be found an excellent to the N. E. end of the island. The edge of the bank appears to lie fully sixty to the Eastward of the island, in lat. 9° 46′ N., long. 59° 50′ W., where there are hundred and eight fathoms dark blue mud. A degree to the Northward of this edge is probably still farther off.

About twenty-four miles to the Eastward of Galera Point there are forty-three oms gray sand and shell, and the depth increases to thirty fathoms stiff dark clay in six miles of the shore. It is observable that the bottom all along the N. sho Trinidad is soft mud, and on the E. side of the island it is generally gravel and sand.

It will always be prudent to keep well to the Southward of the intended lan

* On the 7th of June, 1861, an iron buoy was placed on the Western edge of the Caroni Bank in fathoms at low water; a red buoy on the Western edge of the Canna (Coura ?) in three fathoms a buoy over a wreck in the harbor.

† The position of the water battery close to the light-house, was determined with great precis 1849, by Lieut. Lawrence, R. N., who places it in 10° 38′ 40″ N., 61° 30′ 36″ W., the longitude ing on that of St. Thomas, assumed at 64° 55′ 40″ W.

will at all times be extremely difficult to get back to the S. E. against the wind current. The Northern and Easternmost mountains of Trinidad may be seen thirty rty-five miles; but Galeria Point is only made out at about nine miles. As already , the N. shore of the island is bold to, and should be skirted to a distance of about miles. On arriving off Macaripe Cove, should the wind fall light or draw to the ward, so that the current in the Bocas could not be stemmed, it will be better to up with the kedge in twenty or thirty fathoms, about a mile from the land, and for the breeze. If, on the other hand, this point should only be reached just before and a fresh breeze prevail, especially in the season of rollers, it will be better to off and on all night under commanding sail to windward of Isle Chute d'Eau, and for the full strength of the breeze on the following day, which generally sets in at noon.

ing vessels should not attempt to run through either of the Bocas after sunset, as ind then generally falls and becomes variable. Steamers, however, may pass gh either of the channels at any period, by observing proper precautions.

h a steady five-knot breeze, the Boca de Huevos or Umbrella channel may be without fear, and something will be gained to windward on entering the gulf, ould the wind be light, or to the Southward of E., much time will be saved and far sk incurred by taking the Boca Grande. Frequent accidents occur in the Umbrella el by vessels attempting to run through with a light wind. They become un- eable under Mono, and the current either sweeps them out again or drifts them he rocks of Huevos, for there is no anchorage (see page 662).

en about five miles within the Boca Grande, the spires of the two principal hes in the city of Port Spain will be in sight, and serve for guides in working

Port Spain it is high water, full and change, at 4h. 30m.; springs rise four feet, two and a half feet. The flood sweeps round the bay to the S. E. at the rate of half a knot, and the ebb with the same velocity to the N. W. *Tides.*

er the W. side of Trinidad, in the dry months from November to June, when ttled weather prevails, the sea breeze sets in about 9 A. M. varying from E. to E. inclining more to Northward in January and February, and continues steady P. M. when it subsides into a calm of light air until the following morning. In mmer months, although hurricanes do not reach thus far, violent squalls rush between S. E., round S. and W., and in October they occur almost daily, with rain. There is seldom, however, at this period, any fall of rain during the night, eavy shower without wind generally comes down about half an hour before . *Winds.*

bout lat. 10° 42′ N. and long. 60° 3′ W., E. by S. fifty miles from Galera Point, s a spot of five fathoms, the depth gradually deepening to thirty-seven fathoms, nd shells, on the edge seven miles N. of it, and in like manner to seventy fath- bout the same distance S. of it, and the bottom was distinctly seen in the shallow *Reported Dangers.*

re is also said to be a dangerous small rock, visible at low water, spring tides, hich a vessel was wrecked S. E. ½ S. twenty-one miles from Galera Point, E. by n Mount Manzanillo, and E. about twenty miles from Manzanillo Point, but its n is very doubtful.

OAST OF TRINIDAD.—From Galera Point (page 660) to Galeota Point, the astern extremity of Trinidad, the coast trends about S. ½ W. forty-one miles, with- indentation sufficient to afford secure anchorage for large vessels. From Galera o Forrest Point, bearing S. ½ W., the distance is one mile and a fourth, and the between forms a rocky bay in which there is no landing. *E. Coast of Trinidad.*

ce to Guayama Point the coast takes a S. W. by S. direction for four and a fourth and is still rocky, except nearly halfway between the points, where there is a each, and the only safe landing place on this part of the coast; elsewhere a tre- s surf breaks on the shore at all times. At three fourths of a mile off there are thoms water, and the depth gradually decreases to the beach. From this spot d rises with a gentle ascent to a level plain, upon which are three or four plan- called Cumana. Between this and Guayama Point the shore consists of rocks and eaches.

Guayama Point the shore trends S. W. by S. four miles to Balandra Point, and long composed of cliff until within three fourths of a mile of the latter, when it sandy, and terminates close to the point in a scarped rock.

ANDRA BAY, immediately to the S. W. of the point, between it and Salibia s a mile wide, and affords shelter under the N. shore for small coasters in from two and a half fathoms. The N. shore of the bay is a sandy beach, and near nd of it a mountain torrent throws itself into the sea. Thence to Salibia Point e is rocky. *Balandra Bay.*

IBIA BAY is formed between Salibia Point and Matura Point, W. by S. ½ S. *Salibia Bay.*

two miles from it. From the former point the shore curves to the Westward rocky for about three fourths of a mile, when it trends to the S. W. and becomes to Matura Point. About four fifths of a mile from Salibia Point, there is a small islet, and W. by N. half a mile from the islet is the entrance of Salibia River, will admit boats; a little to the Westward of the river there is a tolerably good ing place.

Anchorage. Between the islet and the main there is shelter for small craft drawing eigh water, and to the Southward of the islet there is exposed anchorage in five fathoms.

Matura Point. MATURA POINT has also a small rocky islet near it, and the coast is cliffy, t somewhat lower than before, for about half a mile, whence it turns abruptly Southward.

The rocky shore and the base of the Northern range of mountains terminate tura Point. Thence to the Southward the shore is sandy; the interior is appa level: of modern height, and densely wooded, with a few distant insulated hills out of the plain.

Matura Bay. MATURA BAY.—From Matura Point this sandy shore runs nearly straight S. nine and one fourth miles to Manzanillo Point, upon which the surf breaks wit violence as to render landing on any part of it totally impracticable. The rive puche disembogues through the surf over a bad bar, about midway between th points.

Manzanillo Bay. MANZANILLO BAY.—From Manzanillo Point the shore trends to the S. W. and W. S. W. for about a mile and a half, and is for the most part rocky: but th little sandy bay, to the Westward of the point, in which there is shelter for small drawing nine feet water; and, being protected by some rocky islets near its E. p is the best anchorage on this side of the island. A reef of rocks stretches off fro zanillo Point to the Eastward more than half a mile.

Lebranche Rocks. LEBRANCHE ROCKS.—S. E. ½ E. nearly two miles from Manzanillo Poi cluster of three small rocks just above water, over which the sea always break S. W. half a mile from them there is another rock, but so small that it scarcely a breaker, and is not seen until close to. Foul ground runs off to the E. N. E. fro three rocks, nearly half a mile; the sea breaks over and about it in very bad we and near it the depth shoals suddenly from nine to four and three fourths fathom

Anchorage. With the leewardmost of the rocky islets, at the entrance of Manzanillo Bay, b N. W. about three cables' length, and Manzanillo Point N. N. E., there is very good in five fathoms; and this is by far the best temporary anchorage on the coast, for sel will have sufficient room to get under way in case of necessity. Vessels from the Northward may run with safety between the Manzanillo Point reef Lebranche Rocks; but the prevailing wind will scarcely permit a square-rigged to lie through this channel from the Southward.

Cerros de Manzanillo. CERROS DE MANZANILLO.—The base of the narrow ridge of mountains nearly divides the great central plain of Trinidad into two parts, lies W. S. W. three and a half miles from Manzanillo Point. The ridge follows the line of di nearly two thirds the width of the island, and terminates on the W. side at S Lisas Point. About ten miles from Manzanillo Point, the Manzanillo Peak reach height of nearly twelve hundred feet, and is a conspicuous object from the Eas and near the W. end of the ridge the Tamana Peak is eleven hundred and f above the sea.

River Lebranche. RIVER LEBRANCHE.—Close to the Westward of the cliffs on the W. side zanillo Bay is the mouth of a little stream called Lebranche.

Cocos Bay. COCOS BAY.—From the Lebranche, a low sandy shore, upon which the surf with great violence, trends S. by E. ten and a half miles to the River Ortoire. F or eight miles the beach is bordered by a narrow grove of cocoanut trees, whic its name to the bay; and near the middle, a small stream, called the River M Cocos, forces its way through the sand.

Guataro or Mayero Point. GUATARO OR MAYERO POINT.—This prominent headland, which may fifteen or eighteen miles off, lies S. by E. about twelve miles from Manzanillo Po about a mile and a half to the Eastward of the Ortoire. It is formed by a ro bold, flat promontory, about a mile in breadth, from N. N. E. to S. S. W.; th presents a face of high cliffs, and from its N. E. end several rocks and reefs exte a considerable distance. This part should not be approached within two miles, tle short of a mile the depth is only three fathoms, and a heavy swell often sets this coast, which makes it unsafe for vessels to border too close.

Anchorage. To the Northward of the promontory, with the N. E. point bearing S. E. and th ernmost rocky bluff, near the mouth of the Ortoire, S. W. ½ S., there is good ground about a mile from the shore in five fathoms; and about half a mile to th ward of the Ortoire, behind a projecting rocky point, there is a landing place.

Mayero Bay. MAYERO BAY.—The S. part of the above promontory continues scarped f

rds of a mile to the W. N. W., when the land again becomes low and sandy, and ith a slight curve to Galeota Point which bears S. ½ W., thirteen miles from o Point.

Anchorage.

he Northern part of this bay, the sea is generally smooth enough to permit of g for two or three miles; but to the Southward of this there is a heavy surf. Off rthern part there is also exposed anchorage in six fathoms, about a mile and a half e shore, and the depth gradually decreases to the beach. To the Southward taro Point there are some plantations, and at the distance of three miles, a

Galeota Point.

LEOTA POINT, the Southeastern extremity of Trinidad, is also a small promon- moderate elevation, and separated from the main by a low, even neck of land, rises to the S. W. to join the Southern ridge. It is formed of remarkable red ut the summit, unlike Guataro Point, rises into small, barren, rugged, round hil- hat may be seen eighteen or twenty miles; from the N. E. and S. W., at the dis- f about fifteen miles they have the appearance of small islands.

ral rocks lie off the promontory, but they are all above water. S. ½ E. nine from it there are thirty-two fathoms, muddy bottom: three fourths of a mile S.E. of it there are ten fathoms, and the depth gradually decreases to the

Guaya-Guayara Bay.

AYA-GUAYARA BAY.—Between Galeota Point and Point de la Grande Calle, W. S. four miles from it, the shore forms a deep sandy bight, called Guaya-Guayara There is shelter here for small vessels but a rocky shoal lies nearly in the centre bay, and there are only three fathoms a mile from the land.

ridge of hills which borders the S. shore of the island begins to rise from Point rande Calle, and W. N. W. a mile and a half from it, the hill of Guayara rises to ght of seven hundred and sixty feet, and serves as a guide to the elevation of the

Coast.

coast from Point de la Grande Calle trends S. W. by W. five and one fourth miles Cruz Point, and is all along scarped and rocky; the depth is five fathoms at a nd a half from the shore. From Casa Cruz Point to Taparo Point the shore runs W. with slight inflections, about thirty-two miles. The land in this space is scarped with two or three sandy beaches, and a few rocks off the projecting which separate them; and the hills decline in height to the Westward. From Point the coast trends W. by N. about two and a half miles to Herin Point. a sandy point, and the shore presents the same feature for a distance of five n the same direction to Islot Point. Herin Point bears N. about fourteen miles he island of Redonda, which lies off the main at the entrance of the River Ma-

Water.

land about Casa Cruz Point is cultivated, and about a mile to the Westward of it may be obtained with a little trouble from a small mountain stream which emp- elf into a well on the beach.

Dispatch Shoal.

PATCH SHOAL.—A windmill will be seen at about four miles to the Westward in Point, on an estate called Chatham, and S. three and a half or four miles from e is said to be a shoal of rock and sand, about half a mile long E. and W. and e. With Herin Point bearing E. ¼ S., Islot Point W. by N., the Western extrem- Trinidad W. ½ N., and the windmill N., there are only five feet at low water, with fathoms within the shoal and five fathoms on its outer edge.*

Anchorage.

porary anchorage will be found to the Westward of this shoal; but in running from the Eastward be careful not to get into a less depth than eight fathoms, and haul in before the mill bears N. E. by N.

Icaque Point.

QUE POINT.—From Islot Point to Quemada Point, the coast trends W. S. W. six and thence Westerly for three miles to Icaque Point, the S. W. extremity of Trin- All this part is low and sandy, and between the two last-mentioned points the may be approached to within a fourth of a mile.

n Herin Point the land declines considerably in height, and Icaque or Icacos terminates in a low, rounded, yellow, sandy promontory, covered with trees, so hat the depth is eight or nine fathoms only half a cable's length from it. Just and a little to the Northward of the point there are a few huts. From Icaque he shore trends Northerly about a mile and one third, and then sweeps round to rtheastward a mile and a half to Gallos Point, close off which there are two or conspicuous perpendicular rocks, with shoal water to a considerable distance from

Serpent's Mouth.

E SERPENT'S MOUTH is the name given to the channel formed between the extreme of Trinidad and the entrance of the River Cucuina, the nearest point of in land, which bear N. E. by N. and S. W. by S. from each other, and are distant miles.

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*. G. Daniell, H. M. S. *Dispatch*, 1835, which vessel struck on it. His position of Herin Point, , does not agree with the present chart.

This opening is obstructed by several banks which terminate about sev a miles t Westward of Icaque Point, at the Soldado or Soldier Islet, and which f rm four nels leading into the Gulf of Paria.

The Soldado is a small, high, round bluff rocky islet, from which dangerous heads extend out in a S. and S. E. direction at least a mile and a half.

First Channel. FIRST CHANNEL.—The Easternmost passage, generally called First Channel between Icaque Point and a rocky shoal half a mile to the Westward of it. The is about two cables in extent, and has only nine feet water on it. There are nine oms in the channel, and all that is necessary is to keep Icaque Point within a ca length when passing through it.

Second Channel. SECOND CHANNEL is formed between the last-mentioned shoal and a bank of and gravel lying about a mile to the N. W. of it. The greatest extent of this which carries a depth of four fathoms, is three fourths of a mile N. W. and S. E. it lies W. by N. ½ N. two miles from Icaque Point, and S. W. by W. ½ W. three from Gallos Point.

Third Channel. THIRD CHANNEL is nearly two miles wide, E. and W., and lies between the fathom bank on the W. side of Second Channel and the shoals to the S. E. and S. of dado Islet. At the distance of about two and a half cables from the reef off the E. of the islet there are six fathoms water, and in mid-channel eight fathoms; and the four-fathom bank five and a half fathoms.

Fourth Channel. FOURTH or SOLDADO CHANNEL is the largest, and between the S. end of Soldado Reefs and the main it is about four miles wide.

Directions. The easiest and safest channel through the Serpent's Mouth is the First, which be navigated with safety, night or day, especially on the ebb tide, as the current keep a vessel clear of the Western shoal. All that is required is to keep Icaque close aboard, hauling up gradually to the Northward. Should the wind fail and it necessary to anchor, there will be no risk of getting aground, as the shoal will least three cables off.

Second Channel. To enter the gulf through the Second Channel, after passing Quemada Point, a should approach to within a fourth of a mile of the shore, and steer for Soldado, Gallos Point comes open of Corral Point, the Northern extremity of Icaque Point will be necessary then to luff up, but not so high as N. N. E., until Corral Point E., when she may haul in for the coast of Trinidad.

Third Channel. To navigate through the Third Channel after passing Quemada Point, as abo rected, steer for Soldado until Gallos Point bears E. N. E. Thence luff up t Northward, and when the S. front of Icaque Point bears S. E. by E., and Gallos nearly E. by N., a vessel will be within the banks, and may pursue her course as sary.

Fourth Channel. In running through the opening known as the Fourth or Soldado Channel, steer to pass about two miles to the Southward of the Soldado, taking care not to brin S. extreme of Icaque Point to the Eastward of E. by N. until Soldado bears N. E. luff up gradually to the N. and N. E. round the W. side of the shoals. It must served, however, that the current sets strongly to the N. W. over the dangerous off the S. side of this islet which cannot be rounded too cautiously.

Tides. The stream in First Channel sets to the S. W. on the flood, at the rate of two half knots an hour, and to the N. W. on the ebb at three and sometimes three and knots.*

The stream in Second Channel sets in nearly the same direction as in the pre one.

In the Third Channel on the flood the stream runs W. by S. at the rate of thre a half knots, and the ebb to the N. W. and W. N. W. four to four and a half kno

The tides in Fourth Channel are completely overpowered by the current which to the W. N. W. and N. W. continually. From Soldado to mid-channel its rate is four and a half to five knots an hour, but to the Southward of that, at half a mile the land, its velocity is diminished to one and a half or two knots.

Three-fathom Bank. THREE-FATHOM BANK.—About four miles to the Northward of Soldado Is a bank on which four fathoms has been found, and there is said to be as little as fathoms. It appears to be composed of pitch, which may be seen floating over it.

Cedro Bay. CEDRO BAY.—From Gallos Point the W. coast of Trinidad curves round Eastward and Northward, forming a sandy bay, which terminates at Cedro Point by E. ¼ E., and five and a half miles from it. The N. E. part of this bight is shallow to a considerable distance.

Barrel of Beef. BARREL OF BEEF.—From Cedro Point a spit runs off to the Westward abo thirds of a mile, and at its extremity lies a small rock called the Barrel of Beef. s also a shoal of nine feet lying N. E. ¼ E. about three miles from the same poi one mile and a half from the nearest part of the shore.

* We can give no account of the time of high water at full and change on this side of the

APE DE LA BREA, or Pitch Point (so named from immense blocks of pitch, having appearance of Black Rocks, lying among the foliage around it), bears N. E. by E. fourteen miles from Cedro Point, and the shore between forms two shallow bays, rated by Guapo Point, Cape Brea presents a rounded front two or three miles in nt, projecting to the N. W. A reef, the extremity of which is marked by a stake, tches off from it a short distance to the Westward. Inside the reef there is a small harbor. A vessel should not approach this part of the island within the depth of and a half fathoms. *Cape de la Brea.*

n the N. side of Cape de la Brea, about three fourths of a mile inland, there is a e lake of pitch or bituminous matter on the side of a hill eighty feet above the sea. the beach there are five or six houses.

he best anchorage on this part of the coast will be found in seven fathoms water, the above houses bearing S. or S. by E. about a mile distaht. *Anchorage.*

Guapo Bay, to the Southward of Cape de le Brea, there are two small rivers of llent water, which is fresh close to the beach, and easily obtained at high tide. d can also be procured in abundance with little trouble, as the trees are large and at hand. *Wood and Water.*

OUNT NAPARIMA.—The shore between Cape de la Brea and Mount Naparima, h rises about nine and a half miles to the E. N. E., sweeps round into an extensive ow bight, and is very low and swampy. The mount is a rounded hill six hundred igh, and an excellent guide to vessels working up from the Bocas to Port Spain. ear weather it may be seen twenty-four miles; a dense mist, however, arising from wamps, frequently hangs about it. At the foot of the Mount, on its W. side, is the ge of Petit Bourg, and about one mile and three fourths to the S. W. of it is the Siparia. *Mount Naparima.*

APARIMA SHOALS.—S. W. two miles from the village of Petit Bourg, and about hirds of a mile from the shore, midway between the Mount and the river Siparia, is a small, dry rock called the Farallon. *Naparima Shoals.*

N. W. two miles from Farallon and W. from the Mount lies a shoal of fifteen water; there is also a very shallow spot lying W. by S. ½ S. four miles from the lion. A coral shoal, a fourth of a mile in circumference, with nearly three fathoms nd it, called the Ringdove, is also said to lie within the village E. by N. ¾ N.; a mill, S. E. by E. ¾ E.; and the Farallon E. ¾ N. about one mile distant.

ese shoals are very dangerous, for their positions are uncertain, and mariners d not approach their neighborhood within the depth of four fathoms, or within miles of the land.

ONY POINT, at about two and a half miles to the Northward of the village of Bourg, terminates the Western end of the range of hills which runs nearly across iddle part of Trinidad from E. to W. *Stony Point.*

ween the village and Stony Point are the little rivers Tarouga and Gauracaro.

e coast from Stony Point trends about N. ½ W. eight and one fourth miles to Cas- Point, and is bordered with shallow water to the distance of four miles off. With t Naparima bearing about S. E. seven miles, and the shore three miles distant, is only two and a half fathoms water, and ten fathoms close outside. S. E. by mile and one third from Cascaal Point is the little river Coura. *Coast.*

m Cascaal Point to Port Spain the shore trends about N. by W. ½ W. for nine and is low and swampy. In this space the rivers Carapichima, Chagouane, and Caroni, discharge their waters. About eight miles to the Southward of Port off a point of Mangroves, there are only two and a half fathoms at one mile and fourths from the land.

the W. coast of Trinidad, from Icaque Point to Cape de la Brea, the flood sets to outhwestward, and the ebb to the Northeastward. From the Cape to Port Spain ood runs to the Southward, and the ebb to the Northward along the line of the *Tides.*

most favorable period for entering the Gulf of Paria by the Serpent's Mouth is the summer or rainy months, when the winds hang to the Southward of E.; in- it is seldom attempted at any other time by sailing vessels. In this case vessels course keep very much farther to the Southward than if pursuing the Northern to avoid being drifted past the entrance by the violent current running to the which is greatly increased in strength at this period. Some mariners assert e force of the stream is here also greatly augmented on the declining quarters of oon; this, however, requires confirmation. *Directions.*

outer part of the Serpent's Mouth, between Galeota Point and Baja Point on the land S. of it, is thirty-six miles wide. The current runs here to the Westward, ne and a half to two knots, increasing in velocity as it approaches the narrows e or even four knots.

nature of the soundings on the E. side of Trinidad have been described already, proper attention to the lead will guide a vessel to the S. E. end. With Galeota

Point bearing N. nine miles there are thirty-two fathoms, muddy bottom, and the sou ings become regular. Along the S. side of the island, at the distance of five or miles, there are twenty-seven to twelve fathoms, soft mud and shelly ground.

As soon as a vessel has passed Galeota Point she should keep along the shore at a tance of about two miles, where the depths will be from eight to ten fathoms; although the water will change its color occasionally, particularly to the Eastward Herin Point, there is no danger, until the Dispatch Shoal is approached, the exact p tion of which is doubtful. Here a vessel should not come within the depth of e fathoms.

Having entered the Serpent's Mouth through either of the channels into the Gul Paria, should it be necessary to beat up to Port Spain, some assistance may be obtai from the inshore tides, but the coast of Trinidad should be neared very cautiously, not approached in the neighborhood of Mount Naparima within four miles, or the d of four fa homs.

The only channel that is safely navigable in the night, is the First or Eastern near Icaque Point, but should the wind fall light before reaching thus far in daylig will be far more prudent to anchor under the S. side of the island in seven or e fathoms, for it would be impossible for a sailing vessel to keep her position to w ward, against the current.

The land of the Delta of the Orinoco is of uniform height, and may be seen fi miles from the deck of a frigate.

Gulf of Paria. GULF OF PARIA.—This gulf is bounded by Trinidad on the E., and by the land on all other sides. Its greatest length from E. to W. is about eighty miles its breadth from N. to S from twenty to forty miles. It is entered from the North by the Dragon's Mouth, during the dry season, from November to June, when the w blow from N. E. to E. N. E.; and from the Southward by the Serpent's Mouth (alr described), in the wet season, or from July to November, when the wind is gene from E. S. E. to S. E.

The only European settlement within the gulf is at Port Spain, which carries commerce with the interior of Cumana, by means of the rivers Guarapiche and Ca and the town of Guiria, which is situated on the N. shore of the gulf.

Guarapiche. THE GUARAPICHE enters at the S. W. end of the gulf and is navigable for larg noes to a considerable town on its banks, called Maturin. Large vessels can proce this river to the Caño Colorado, about twenty-seven miles lower down in a straight

Aricagua Bay. ARICAGUA BAY.—From Penas Point, the Eastern extremity of Paria, the sho the S. W. is faced in many places with reddish cliffs, as far as Aricagua Bay, whi about seven miles from the point. There can scarcely be said to exist any danger except the rock awash off Penas Point. A little to the Eastward of the bay, a fou a mile from the shore, are the Patitos Rocks, which are three feet above the sea. bay is open and the anchorage only fit for coasters; on the E. side there are few in tants, and a rill of excellent water.

Cariaquita Bay. CARIAQUITA BAY, about three miles to the N. E. of Aricagua, forms a snu chorage for coasters. In the entrance there are three and a half to four and a fathoms, but the current runs across it with such violence that it is not fit for larg sels. On the W. side of the inlet there are some settlers, and a little stream of exc water, but the mosquitoes are insufferable.

COAST OF VENEZUELA AND THE OUTLYING ISLANDS—GULF OF PA TO CAPE CHICHIBACAO.

The Northern boundary of Venezuela extends from the mouth of the Orinoco to Chichibacao at the Western extremity of the Gulf of Venezuela, a coast line of more seven hundred miles in extent from E. to W., without including the sinuosities Eastern limits, however, are still disputed, the Venezuelean government claim coast as far E. as the left bank of the Esquibo. The whole area of the repu estimated at four hundred and eight thousand miles, which is divided into th provinces.

Province of Cumana. PROVINCE OF CUMANA.—The provinces which terminate on the coast of zuela are Cumana, Margarita, Barcelona, Caracas, Cerabobo, Coro, and Mara Cumana is the Easternmost province, and its seaboard extends from the Orinoco noma Point, opposite the Arapos Islets in long. 64° 37′ W. Its area is about sev thousand five hundred square miles.

Paria. PARIA.—The name of Paria is given to the narrow, mountainous ridge of which bounds the N. side of the Gulf of Paria. These mountains rise to the he from two thousand to upward of three thousand feet, are clothed with wood to summits, and throw off large spurs to the N. and S., which terminate in bold proj points on both shores, forming deep gorges in the heads of the bays.

Peña Point. PENA POINT.—The little promontory of Peña Point, which forms the North

emity of the coast of Paria, is nine hundred and eighty feet high, and nearly sepa-
d from the main by a narrow ridge of land at the head of Celeste Bay, about two
ired yards broad and two hundred and fifty feet high, so that at a certain distance
the N. W. and S. E. it has the appearance of an island.

Coast.

he coast, which is lined with perpendicular cliffs, thence runs Westward, with a
t inflexion to the S. nineteen miles to the Bay of Mexillones, when it trends a little
thward to Cape Tres Puntas, which is fifty miles W. of Isleta or Morro Island, to
N. W. of Peña Point.

he whole of this space is quite clean and bold to, and at the distance of a mile there
from twenty to forty fathoms, on a bottom of muddy sand. About six miles from
Point a mountain peak rises to the height of three thousand two hundred and fifty
and seven miles farther to the Westward another reaches three hundred feet
er.

Cape Tres Puntas.

APE TRES PUNTAS is the most Northerly projection of all this part of the coast,
h continues to be equally as clean and deep as the preceding part, to the bay of
re, a distance of two miles.

Unare Bay.

NARE BAY.—From Morro Point, the Northeastern extremity of Unare Bay, the
e sweeps round to the S. and W., forming a bight three miles in extent from E. N. E.
.S. W., and a mile and a half deep, in which there is good shelter with the trade-
. Morro Point is skirted by rocks to the distance of half a mile; and from the S.
oint of the bay a reef, with several islets upon it, extends off to about the same dis-
e, and which may be approached within two cables' length.

little river falls into the S. side of the bay, and on a hill to the Eastward of it is
ndian town of St. Juan de Unare.

Directions.

entering Unare Bay, give Morro Point a berth of about three fourths of a mile,
anchor just within it in five or four and a half fathoms, sandy bottom, with the vil-
bearing about S. E., and the Morro Point N. E., about a mile off shore. The three-
m line skirts the bay at the distance of about a fourth of a mile.

Cape Mala Pasqua.

APE MALA PASQUA.—From Unare Bay the coast continues its Westerly direc-
with some curves to the Southward, for ten miles, whence it turns to the North-
of W. for nine miles farther to Cape Mala Pasqua, which bears from Cape Tres
as W. ¾ S., and is distant twenty and a half miles, The shore is all clean and steep
d may be coasted at the distance of a mile, in eight fathoms, sandy bottom.

Testigos Islands.

STIGOS ISLANDS.—N. by W. forty miles from Cape Mala Pasqua, lie a group
ets called the Testigos, which consist of seven principal ones, besides several faral-
or high rocks. The largest, named Testigo Grande, or Goat Island, is about two
third miles long N. W. and S. E., and may be seen from a distance of twenty-one
: the shores appear bold, and the N. end is sandy. It abounds in land tortoises,
n the turtling season it is inhabited, but there is no fresh water.

e passages between the above islets are free from dangers, and may be navigated
ut any risk whatever; but the contrary is the case with those between the rocks,
are very narrow. All the islets may be approached to within two cables' length,
en nearer if necessary, except the Northeasternmost, which is surrounded by a reef
e distance of half a mile.

Anchorage.

tween the islets the bottom is sandy, and affords anchorage in case of necessity.
best shelter will be found under the W. side of the largest or Goat Island, about a
and a half off shore, with the N. end N. ½ E., and the S. end E. by S. ½ S., in fifteen
teen fathoms, coarse sand.

Directions.

is anchorage may be approached either by the N. W. or S. E.; if by the former, it
be outside a rock lying off that end of the island; if by the latter, the passage is
en Goat Island and another lying S. W. of it. The channel, at the narrowest part,
en the rock at the E. side of the little island and another about a cable's length
the S. W. coast of Goat Island, is half a mile wide, with a depth of from eight and
to nine fathoms, on red gravel.

Current.

e current in the neighborhood of the Testigos Islands often runs with great velocity
en W. and N. W. In February its direction has been found even N. N. W., and
ength two knots an hour. In July its velocity may be three knots, and in August
not and a half. It is necessary, therefore, to approach them very cautiously in
ght.

Banks.

ween the Testigos and the main there are soundings apparently all the way, and
l detached sand-banks, which have not yet been explored.
shallowest yet discovered, which is called by some the Greek Bank, lies S. S. E.
five miles from the largest islet of the Testigos group, and has only four and
fathoms on it; between it and the group there are from nine to twenty-three
ns.

Daring Bank.

RING BANK.—With the S. W. islet of the Testigos bearing N. by E. ¾ E. about
iles, the water shoals suddenly from thirteen to five and a half fathoms, sandy bot-
For two miles to the W. N. W. of this the depth gradually increases, and with

the same islet N. E. ½ N., there are fifteen fathoms, and soon after no bottom with tw fathoms.

Cumberland Bank. CUMBERLAND BANK.—With the Western extreme of the largest islet of the tigos bearing N. by W. Westerly about thirteen miles, the depth shoals suddenly f seventeen to eight and seven fathoms, the latter depth continuing for two miles to Southward, when it deepens to fourteen and seventeen fathoms, with the E. extrem the largest islet N. ¼ W

Puerto Santo Bay. PUERTO SANTO BAY.—From Cape Mala Pasqua the coast trends nearly W., or eight miles to the Morro del Puerto Santo, which is connected to the shore by a narrow strip of sand, about half a mile in length; close off the W. end of the M there is a small islet, also called Puerto Santo. The N. side of both, and the W. of the islet, may be approached to two cables. S. of the Morro, about six miles inl is the remarkable mountain of Puerto Santo, nearly two thousand feet above the lev the sea.

Anchorage. Off the W. side of the sandy tongue of land which connects the Morro to the there is good anchorage, with the usual breezes, in four and a half to five and a fathoms, sand and mud, about midway between the islet and the main; taking care, h ever, when shooting in, not to bring the islet to the Northward of N. N. E., unless vessel of light draught, for to the Eastward of the islet the depth decreases sudden three fathoms.

Carupano Bay. CARUPANO BAY.—From the Morro del Puerto Santo the shore trends W. S three and a half miles to Hernan Vazquez Point, and is foul all the way, half a mil From the last point the land curves round to the Southward for nearly three fourth a mile, to the entrance of a small river; it then takes a Westerly direction two a half miles, to Salinas or Jarro Point, forming the Bay of Carupano or Hernan Vaz

Salinas Point is hilly, and close to it lies a small islet, with a depth of five fathom two cables to the N. W.; but to the N. and E. the ground is very foul to near centre of the bay. About half a mile to the Westward of the river is the town o rupano.

Water. Good water is to be obtained from the little stream at the S. E. corner of this bay

Anchorage. With the trade wind there is smooth anchorage close up under the E. side of Caru Bay, but great care must be taken to avoid three small shoal patches which lie to leew The outer and Northeasternmost patch, with two and three fourths fathoms on it, five and a half fathoms close around it, lies W. by N. ½ N. a mile from Hernan Vaz Point, and N. by W. ½ W. from a little islet close off the E. side of the town. The W ernmost patch, with only nine feet water, lies W. ¼ N. one mile and three fourths the same point, and N. E. ½ N. one mile and a fourth from the little islet off Sa Point. The innermost patch, with three and a fourth fathoms on it, and five fat close to, lies W. by S. ¾ S. three fourths of a mile from the point, and N. ¾ W. about a mile from the islet off the town. There are five fathoms water two cables from He Vazquez Point, and anchorage must be taken up just within it, in five or six fath sandy bottom.

Coast. The coast, from Salinas Point to Morro Blanco or White Point, which bears m W. three miles from it, is clean, with several patches of small rocks lying close t shore. Nearly S., nine miles from this morro, may be seen the peak of Monte de José, which is upward of sixteen hundred feet high.

From Morro Blanco the coast takes a direction W. ¼ N. three and a half miles to quien Point, and thence W. by S. ¾ S. eight and a half miles to the Emerald Morro. this part is foul and should be kept at the distance of two miles. Between the two points is the Morro de Padilla, known by an islet and several rocks a short way fro Taquien Point projects farther to the Northward than Padilla Point, and is also s by several islets. The Morro of Lebranche, which is to the Westward of Taqu joined to the main by a low sandy, swampy tongue of land.

Garrapatas Islets. GARRAPATAS ISLETS.—This group of small islets lies a moderate distance the land between Lebranche and Esmeralda points, but from rocks and shoals, th no passage among them; there is, however, between the most Southerly islets a main, a good channel; but it will be much better to keep outside them, especia large vessels.

Morro de la Esmeralda. MORRO DE LA ESMERALDA is a small islet, separated from Esmeralda Poin channel about half a cable wide. S. by E., about thirteen miles from it, is the Re or rounded mountain, upward of thirteen hundred feet high.

Esmeralda Bay. ESMERALDA BAY.—From Esmeralda Point the shore diverges to the S. a forming a large bay, about a mile and a half wide; but it is obstructed within Esme Islet by a shallow bank, on which are three small cays, called the Cascabel Islets, nearly E. and W.

Anchorage. The Esmeralda Islet is bold and steep to, and vessels may anchor about a fourth mile within it in five and a half and six fathoms, sand and mud, taking care not to any part of it to the Westward of N.

ANZANILLO BAY.—From Esmeralda Bay the coast trends in a Westerly direc- *Manzanillo*
for about five miles to the Morro of Manzanillo, and is all the way skirted, at the *Bay.*
nce of the third of a mile, by the bank which extends from the Esmeralda Islet.
t Manzanillo Point a small bay is formed, but it is obstructed by the same bank,
ch terminates at the first steep point, about two thirds of a mile to leeward of
bay; and a vessel must not steer to the Southward until she is to the Westward
.

UARAPOTURO ROCK.—To the Westward of the above steep point the coast is *Guarapoturo*
e clean for the space of eight miles, to Guarapoturo Point, where another bank be- *Rock.*
, and extends two thirds of a mile from the shore. To the N. E., about one mile
Guarapoturo Point, lies a sunken rock, that must be very carefully avoided. A
Eastward of this point, and about three miles inland, will be seen the peak of a
ntain called Pico del Este, Peak of the East.

ORRO DE CHACOPATA.—From Guarapoturo Point the coast takes a Westerly *Morro de*
ction about three miles to Escudo Blanco or White Shield Point, the whole space *Chacopata.*
g steep and high, but thence the shore runs out about N. W., very low and swampy,
wo and a fourth miles. Here there rises a small hilly promontory, called the Mor-
e Chacopata, which projects into the sea about two miles. The shoal ground still
s the shore, and comes within a third of a mile of Chacopata point.

HACOPATA BAY.—Between the Morro de Chacopata and Cayman Point, S. two *Chacopata*
a half miles distant the shore forms a deep but shallow bay, which is also obstructed *Bay.*
e entrance by two small islets. Caribes Island, the Easternmost islet, lies W. ½ S.
y one mile and three fourths from the centre of the morro. Isla de Lobos or Seal
is a mile farther to the Westward, and has a rock close to its E. side.
e shoal ground off the morro continues out to the Caribes Islet, whence it turns to
., trending with the shore to Cayman Point, off which it does not extend more than
a mile.

short distance inland from the coast are the three peaks of Chacopata, the Eastern- *Mountains.*
of which is nearly fourteen hundred feet above the sea; and six miles to the West-
of them is the peak of Cariaco.

e coast, from Cayman Point, trends Westerly, and is moderately level, the only *Coast.*
nt points being those of Tuna, a mile and a half from the above, and the Morro del
llo, two miles farther on. From Castillo Point the shore inclines somewhat to
., as far as the point and Morro of La Peña a distance of four miles; this point bears
y S. ½ S. fourteen and a half miles from the Morro de Chacopata.

ALINAS BIGHT.—From the Morro of La Peña the coast takes a direction to the *Salinas*
W. for two and three fourths miles to Gorda Point. Thence a flat shore, bounded *Bight.*
beach, trends W. S. W. ten miles, when it turns abruptly round to the N. E. for
five miles to Guachin Point. This latter space forms a narrow ridge of steep, high
and, with the opposite shore, a long but very shallow bight.

NINSULA OF ARAYA.—Guachin Point bears nearly W. six and a fourth miles *Peninsula*
Gorda Point. Thence the coast trends W. N. W. three and a half miles to Escar- *of Araya.*
Eddy Point, the Northern extremity of the little peninsula of Araya; this part is
nd flat. The point presents a front half a mile in extent, the Western extremity
called Cardon Point.

om Cardon Point a low sandy shore bends round to the S. W. two and a fourth miles
aya Point, and about half a mile farther on is Chica Point. On Araya Point there
few small houses, inhabited by salt-rakers.

AYA SHOALS.—All the coast from Cayman Point to Escarseo Point is skirted *Araya*
bank half a mile off, and which from the latter point, extends to the Westward at *Shoals.*
our miles, when it sweeps in towards Araya Point, and terminates at Chica Point.
part is called Araya Shoal, and is extremely dangerous, for some of the heads on
ter part break in heavy breezes. The discolored water on the edge may be seen
aloft in favorable weather; it is, however, so steep to that there are thirty-two
ns close alongside the shoals, and before a second cast of the lead can be obtained,
el may be on shore; there is, consequently, no warning in the night.
dras Point bears about S. S. E. two miles from Chica Point, and the shore between
t sandy beach; Piedras Point is a bold headland, about half a mile wide, formed
Western extremity of the high ridge of Guachin, that bounds the S. E. side of the
ula. On the S. part of the lofty hill, just within the headland, stands a chapel
ted to the Virgin of Agua Santa. The shore here may be approached to within
bles' length in five or six fathoms.

ounding the Araya peninsula from the Eastward, Escarseo Point must not be *Directions.*
ht to the Northward of E. before the Westernmost peak of the Macanao Mountains
rgarita Island bears N. ¼ E., which line leads only a fourth of a mile outside the
w heads in sixteen fathoms. It has been stated, however, that the extreme point
W. by W. six miles from Araya Point, which is a mile beyond the above line, and
and a half miles beyond the limits of the present charts. It would, consequently,

be more prudent not to bring Escarseo Point to the Eastward of E. by S. before above peak bears N. by E., and the W. end of Gubagua Island N. E. ¼ E.*

Having hauled round the reef, keeping the peak on the same line of bearing, the sho will be passed when the houses on Araya Point bear E., and the shore may then be proached as near as convenient.

Araya Bay. ARAYA BAY.—From Piedras Point the shore sweeps slightly in and round to Southward of Barrigon Point, three and a half miles distant, forming a small bay on W. side of the low sandy neck which connects the Araya peninsula with the main. shore is so steep that it may be coasted at a cable's length, and anchorage taken up where.

Barrigon Point is lofty, and a short distance within it the land rises to the height eight hundred and seventy-six feet; on the N. side of the point, where the land begin rise there is a castle in a ruinous state.

Arenas Point. ARENAS POINT.—From Barrigan Point the coast runs about S. E. by S. two mile Caney Point and continues lofty and very clean; here it changes its direction to S. by E. for rather more than a mile to Arenas or Sandy Point, which is the Southern part of this coast, and the N. W. point of entrance to the Gulf of Cariaco. At Ca Point the ground becomes foul, and at Arenas Point a shallow ledge stretches off ha mile to the Southward.

Anchorage. Anchorage will be found in nine fathoms, sandy bottom, with Arenas Point bea E. S. E. distant about three fourths of a mile.

Margarita Island. MARGARITA ISLAND forms one of the provinces of Venezuela. Its extreme le from E to W. is thirty-seven miles, but its breadth varies considerably; the whole is four hundred and forty-four square miles. The only exports of importance are tu fish, poultry, and salt.

The island consists of two large mountainous masses of rock, separated by a sandy isthmus, about ten miles long, and from sixty to one hundred and eighty y wide, therefore at only a short distance to the N. and S. it will appear as two island

The Eastern portion of Margarita, which is the larger, is eighteen miles long, N. S., and about fourteen miles broad, and near the centre Mount Margarita in the Cer Copei or La Vega rises to the height of over thirty-two hundred feet, and may be from Cape Tres Puntas, a distance of about seventy-five miles. This part, howev much broken, and contains several summits, and between them cultivated valleys one of these valleys on the S. E. side of the Cerro is Asuncion, the capital. The po entry is at Pampatar, at the E. end of the island.

The Western portion is about twelve miles long from E. to W., and seven miles b and consists of nearly an unbroken mountain mass of rock, called the Cerro del Mac which forms four peaks, on nearly an E. and W. line, the highest being nearly four sand five hundred feet above the sea.

N. E. Coast. NORTHEAST COAST.—Ballena Point, the Eastern extremity of Margarita, b N. ½ E. seventeen miles from the Morro de Chacopata, the nearest part of the cont Thence to the Morro de la Isla, the Northeastern extremity of the island, the trends N. W. by N. thirteen miles, and the whole is clean to about three cables' le to which distance it is bordered by a bank. A mile to the Southward of Cape de la and half a mile from the shore, lies the Northernmost of two small islets called which are about three fourths of a mile apart.

N. W. Coast. NORTHWEST COAST.—From Cape de la Isla the Northern shore of Mar trends N. W. ½ W. seven and a half miles to Galera Point, which is high and bla this part is also free of danger. N. E. ½ N. a mile and a half from this point there small islet called Galera, and between there are fourteen fathoms on sand and shell

From Galera Point the coast curves in and round to the S. W. for three and one miles to Maria Libre Point, forming a large bay, which is skirted by a bank that centre reaches nearly a mile from the land. On the shore abreast this part stand Indian village.

Anchorages. A vessel will find anchorage in Galera Bay in from ten to four fathoms, with G Point bearing about N. E. ¼ E. distant two miles. In approaching it from the ward and Westward, the soundings will be regular, from thirty fathoms at twelve off, to six fathoms, passing at a moderate distance from Galera Isle.

N. Bay. NORTH BAY.—From the Maria Libre Point the shore takes a Southerly dir about four miles to the E. end of the sandy isthmus which separates the two peni The sandy beach trends Westerly for ten miles, and is generally from ten to twel only above the sea, but there are a few hillocks here and there. The W. end is sw and thence the shore runs to the N. W. and N. for about five miles, to Tuna Point is the N. E. extremity of the Western peninsula.

The whole of this large bay, which is eleven and a half miles in extent, is clean,

* Capt. E. Lloyd, H. M. S. *Esk*, 1821, which vessel grounded with Araya Point bearing S. E. at an estimated distance of six miles; unfortunately no cross bearing was taken.

y bordered by a bank, which, at the widest part, extends about half a mile from the d. A reef of considerable extent runs off in a N. N. E. direction from Tuna Point. m the latter the coast trends W. by S. ½ S. for about eight miles, to Tigre Point; it ll along clear, and may be coasted at a little more than half a mile. From the latter t the shore takes nearly the same line of direction two and a half miles to the rro del Robledar, the Northwestern extremity of the island.

WEST COAST.—From the morro the W. coast of Macanao sweeps round to the S. S. W. for four and a half miles to Arenas Point, which is the Western extremity of rgarita. Between the Morro del Robledar and Arenas Point, the reef which bors the coast is said to extend about a mile and a half from the Western part of the nd. *W. Coast.*

STIAL SHOAL.—N. W. ¼ N. about four and a half miles from Arenas Point, and by S. four miles from the Morro del Robledar, lies the Southeastern edge of a rocky al, called Ostial, having on its shallowest part four and a half fathoms; it thence exds about N. W. by W. three miles, and is nearly a mile wide. Between it and the rro there are from five to seven fathoms on sand and mud; to the Northward and stward the soundings extend to a considerable distance; but to the Southward and stward the bank is steep to. *Ostial Shoal.*

OUTH COAST—BAY OF PAMPATAR.—Between Ballena Point, the Eastern emity of Margarita, and the Moreno Head, S. W. ¾ S., three and a half miles dis, the coast forms two small sandy bays, separated about midway by a rocky point. he shore of the Northernmost bay is the town and castle of Pampatar, and on a rocky t opposite is Fort la Caranta, which protects the anchorage in front of it. The hernmost bay is called Port Moreno, which, like the other, is also quite free of ger. As already stated, Pampatar is the port of entry for the island. *S. Coast.*

LANCO ISLE.—Nearly on the line, and midway between Ballena Point and Mo Head, is a small islet called Blanco, which has a rock close off its N. E. end. m its S. end a ledge runs off about a cable's length, and a reef is said to extend out n its S. E. side; the passage between it and Margarita has no danger, and carries n five to eight fathoms. *Blanco Isle.*

oth of the above bays being completely exposed to the Eastward, they are only safe n moderate trade breezes, although it is said much sea is not thrown in. All parts hem afford anchorage in seven and eight fathoms, but the farther out and to the thward a vessel lies the better, in order to be able to fetch round Moreno Head if ed to quit. *Anchorage.*

convenient berth for getting to sea will be found with Fort Caranta, N. W. ½ N., t a mile distant, in eight fathoms. In sailing out it will be better to pass to leed of Blanco Isle.

he coast from Moreno Head, which may be passed at a cable's length, curves d to the S. W. to Mosquitos Point, forming the deep bay of La Mar, six miles in nt; but it is so foul that it would be hazardous to come within two miles of the e. On the N. part stands the little village of straw huts, which gives its name to bay. *Coast.*

rom Mosquitos Point to Mangles or Mangrove Point, which bears W. by S. ten and lf miles, the shore again curves inward, and is still foul at a mile from the land. ut three miles to the Westward of Mosquitos Point there is a small lagoon.

rom Mangles Point the shore curves to the Northward for a short distance, and then e Westward to Piedras Point three and one fourth miles distant; here it again eps round to the N. and W., forming Mangles Bay with Pozo Point, which is six and lf miles from Piedras Point, and N. W. by W. ¾ W. ten miles from Mangles Point. part is foul to the distance of a mile from the shore.

. W. ½ W. five and a half miles from Piedras Point is the E. point of entrance to una Grande or Arestinga, which is ten miles long from E. to W., and about two s broad; and is bounded on the N. by the sandy isthmus that separates the two nsulas. The water in it is salt; at its E. end stands the village of San Juan.

rom Pozo Point the shore trends W. ½ N. twelve miles to Arenas Point, the Southern extremity of Margarita. As far as halfway from Pozo Point the coast is foul, should not be navigated nearer than two miles; but to the Westward of this it is bold.

OS FRAYLES.—E. N. E., about nine miles from the N. E. point of Margarita, lies oup of small islets, extending five and a half miles N. and S., called the Frayles or rs. The Southernmost islet is the largest, and they are all bold and steep to except Northernmost, which is surrounded by a reef to the distance of two cables. *Los Frayles.*

OLA ISLAND.—This solitary little islet is situated N. E. twelve miles from the est of Frayles, and W. ¾ S. twenty-eight miles from the S. end of the largest islet he Testigos group, and it is steep to all round. *Sola Island.*

the passage between these islands there is no danger whatever.

HANNELS BETWEEN MARGARITA AND THE MAIN.—Between Margarita *Channels.*

and the main, the passage is obstructed by two islands, Coche and Cubagua. Coche, t Easternmost island, lies nearly in the middle of the passage, and is six miles long E. S. and W. N. W., and two and a half miles broad. It is of good height, except the N. point, which is low, and is surrounded by a rocky ledge and reef that extends abo three miles from the N. W. point, and one mile and a half from the S. E. point. The are thus two channels, each about two miles wide; the one to the Northward, towa Margarita, and the other to the Southward, toward the coast of the main land. T N. W. end of the island terminates in a dry sandy spit, which runs off from the body the island in a N. W. direction about one mile and a half.

Cubagua lies nine miles to the Westward of Coche, and is about five miles long E. a W. and two miles wide. From the E. end a reef extends out about a mile, leaving a cle channel between it and the ledge off Mangles Point three and a half miles wide, a carrying ten and twelve fathoms. The N. and S. sides of the island are steep to, but the W. side a rocky shoal runs off about a third of a mile.

Sapphire Shoal. SAPPHIRE SHOAL.—The Northern channel, between the edges of the rocky ledg which skirt Coche Island and Margarita, is quite clear, but at the entrance of t Southern channel, between Coche and the main, there is a most dangerous small sho of fifteen feet water, on which H. M. S. *Sapphire* struck, and from which the Morro Chacopata bears E. by S. ½ S., distant two and two thirds miles, and the W. end Caribes Islet S. ¾ E. two miles.

Anchorage. The bottom elsewhere in both the above channels affords anchoring ground in case need, but better shelter will be found off the S. W. side of Coche, with the W. extre of that island, which is low and sandy, N. W. by N., and the S. E. extreme E., in nine a a half fathoms, mud, about three miles off shore; or under the W. end, with the N. point, which is also sandy, N. E. by N., the S. W. extreme E., and Mangles Point N. W. ¾ W., in seven fathoms, mud, one mile and a half from the island.

Directions. In navigating the channel to the Northward of Coche and Cubagua islands, a ves will keep in mid-channel, by bringing the most Northerly little point of Cubagua bear about W. ½ S.; which course will lead clear of the ledges on either side. Af passing Mangles Point, a course a little more Northerly must be shaped, so as to p to the Northward of Cubagua, if necessary, which will avoid all danger.

The S. channel, between Coche and the main, is dangerous on account of the Sappl Rock, which lies right in the way. In entering from the Eastward, a vessel had be go to the Southward of this rock, passing at about three fourths of a mile from Morro de Chacopata in seven and a half or eight fathoms, and thence steering dir for Lobos Island, which is steep to.

In this track there are not less than four and a half or more than five fathoms, an abreast of Lobos Island, but in steering thence to the Tuna Islets, lying off Tuna Poi the depth increases rapidly; these islets are bold to, and the channels between th clear, but it will be better to pass outside, and thence steer W. to avoid the end of Araya Bank, already noticed.

Neither of these channels should be navigated in the night-time, and if there is sufficient daylight left to carry a vessel to the Westward of the Araya Bank when bo to Cumaná, it will be better to anchor for the night under Coche, for the current is str and variable.

Gulf of Cariaco. GULF OF CARIACO.—This gulf is about thirty-five miles long E. and W., and ei miles at its greatest breadth, which is near the middle.

The entrance between Arenas and Carenéro points is two and three fourths miles wi The former point is foul to the distance of about half a mile; the latter is steep to at extremity, but between it and Baja Point, which bears E. four and a half miles from and thence to Morro Blanco, about two and half miles to the S. E., the shore is sho by a rocky ledge to the distance of nearly three fourths of a mile, which is steep to; a where the shores are clean, safe, and bold.

Laguna Grande del Obispo. LAGUNA GRANDE DEL OBISPO (Great Bishop's Lagoon).—On the N. shore the gulf, about ten or twelve miles to the Eastward of Arenas Point, is a small called Little Bishop's Lagoon, and one and a half miles farther on there is anothe much greater extent called Laguna Grande del Obispo, the entrance to which is a fou of a mile wide, with a depth of eleven fathoms in mid-channel; in the interior there ten to sixteen fathoms on muddy bottom, and all the dangers are visible; but neithe these places nor the gulf itself are of any importance to navigation, and are conseque seldom visited.

Cumaná. CUMANA.—The plain on the Southern shore of the Gulf of Caraico extends sh ten miles inland to the offsets of the Cerro del Bergantin, which twenty-five miles the entrance to the gulf reaches to the height of about five thousand feet. On this pl rises a group of isolated hills, and on the Northwesternmost, which is only a mile fr Carenero Point, stands, at about one hundred and eighty feet above the sea, the ca of San Antonio, which protects the town of Cumaná that lies on its Western side; ill, however, is commanded on the E. by a more lofty but unfortified summit.

below the castle, on the Southwest slope, stand the ruins of the castle of Sta. a.

maná is the capital and chief port of entry of the province; it is enclosed on the d W. by the small river Manzanares, which from near the town, forces its way gh the sandy shore at three different points; one toward the N., called Caño de Catalina, and two toward the W. The centre branch, which disembogues about a to the Southward of Carenero Point, is navigable for canoes, and the entrance is cted on the S. side by Fort Boca. In the rainy season small vessels can get up e town by this branch. On the W. bank opposite the city, there is a large Indian rb.

e shore from Carenero Point trends S. two and a fourth miles to the Morro Colo- or Escarpado Roxo, a little hill with a red cliff, and thence S. W. ½ S. two and a miles to Piedras Point, and is sandy. About three fourths of a mile to the East- of the latter point is the entrance to the river Bordones. From Carenero Point e Southernmost mouth of the Manzanares, about a mile distant, the shore is bold steep to; but thence a shallow coarse sand-bank, carrying from one to two and a fathoms, stretches off to the S. W. to a point W. N. W. a mile from the red cliff, S. W. ½ S. from Fort Boca; and then, taking a Southerly direction, terminates at ras Point.

ater may be obtained from the mouth of the Manzanares near Fort Boca, but it will cessary to go about a fourth of a mile up the river. *Water.*

e anchorage off Cumaná is confined to the space between Carenero Point and the hernmost mouth of the river Manzanares, and the best is within two or three cables e shore, for outside this the depth increases suddenly, especially to the Northward rt Boca. A good inner berth will be found with the castle of San Antonio bearing d Fort Boca N. by E., in fourteen fathoms, mud and clay, or farther out, in twenty ms, mud, with the castle E. ½ N., the fort N. N. E. ½ E., and the red cliff S. ½ E. will be better to steady the vessel with a kedge or stream anchor to the S. W., or rd the shore. The wind generally blows from the land, but there is often a land sea breeze, the latter setting in from the W. N. W. *Anchorage.*

working up to this anchorage, a vessel must not stand farther to the Southward to bring the Castle of San Antonio to bear E. N. E. to avoid the bank off the red The rise of the tide is from four to five feet. *Directions.*

RT ESCONDIDO.—From Piedras Point, the coast trends about W. ½ S. three and f miles to Port Escondido; in some parts it is scarped, and in others bounded by a y beach. This port is merely a bay, three cables wide at the entrance, and about a mile deep. In the middle of it there are four and a half fathoms on sand, but r the shore only three and two fathoms; off the W. point there are some rocks, h extend out about a cable's length. *Port Escondido.*

MPANARITO BAY.—From the W. point of Escondido the coast runs in a West- direction, one mile and a fourth to Campanarito Point, and is scarped and clean, the exception of a sunken rock which lies about half a cable's length from the , and two or three cables to the Westward of Escondido. From Campanarito Point e morro and vigia or signal tower of Mochima, the distance is three fourths of a * in this space the coast forms a bay with depths varying from sixteen to five and f fathoms, which will be found within a cable's length of the shore. A few rocks d off to the N. and W. about half a cable's length from Campanarito Point. *Campanarito Bay.*

RT MOCHIMA.—The vigia above mentioned stands about half a mile to the East- of the E. point of Port Mochima, which is one of the best-sheltered harbors on hore. The entrance is nearly a mile wide; but three fourths of a mile within, it ws to a short channel only two cables in width, leading in to the inner basins. port is four miles in length N. and S.; and the shores are indented with several coves, which are so bold and deep as to form secure natural docks. The depths verywhere regular, deepening from three to four fathoms at one cable and a half the land to fourteen and sixteen fathoms in the middle. All the dangers lie close e shore, and are easily avoided by the eye. *Port Mochima.*

ater may be obtained from the River Mochima, which runs into the bottom of the r on the S. shore. It is not, however, a convenient place; but by clearing away bstructions which collect a little above the mouth, enough might be procured for umber of vessels. *Water.*

e most convenient temporary anchorage will be found in either of the two coves st to the entrance on the E. side of the harbor, outside the narrows, mooring with le or hawser to the shore. A vessel may proceed to sea from either of these places the usual sea breeze; but from the anchorages within the narrows, it will be neces- to await the land wind, which generally comes off toward evening. *Anchorage.*

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ese vigias are often constructed of large square open frames of wood, from thirty to fifty feet in , and only discovered with the assistance of a telescope.

Port Manare. PORT MANARE.—About a mile to the Westward of Mochima is the harbor of M nare, which is also an excellent port. The entrance is spacious, the shores are cle and the depths from fourteen to four and a half fathoms at half a cable's length fr the land; and vessels may pass in and out with the sea breeze.

Tigrillo Bay. TIGRILLO BAY.—From Manare Point, the W. point of Port Manare, the coast ta a S. W. by W. ½ W. direction for one mile and a half to Tigrillo Point, from wh a reef extends to the distance of half a cable's length. Thence the shore sweeps rou to the Southward and Eastward for two and a half miles, and then returns to the W W. for five miles to Gorda Point, forming the Bay of Tigrillo, at the inner end of wh a canal communicates with the S. W. part of Mochima.

Caracas Islands. CARACAS ISLANDS.—In the entrance of Tigrillo Bay there are three islands: first, or Easternmost, is called Venados; the second, or middle one, the Caraca del E and the third, the Caraca del Oeste.

From Campanaria Point, the N. end of Venados, a rocky ledge extends out abou cable's length; and from the S. W. end of the same island, a small shallow bank r off to about the same distance; elsewhere, the shores both of the bay and islands free of danger, and steep to. Some of the channels between the islands are narrow, they are all navigable for vessels of the largest draught, and afford sufficient room anchoring if necessary

Caraca Shoal. CARACA SHOAL.—The only danger to be avoided in the vicinity of the Caraca a rocky shoal, about half a mile in extent from E. to W., called the Caraca, which about N. W. ½ W. rather more than a mile from the Caraca del Este. There is however, much risk, for in passing between it and the Caraca del Este, it will be av ed by keeping near the latter; and in going outside of it, by keeping Manare Poin the Southward of E.

Picuda Grande Islet. PICUDA GRANDE ISLET.—About a mile and a half to the Westward of the Car del Oeste, and N. W. nearly three miles from the Western extremity of Tigrillo B there is an islet called the Picuda Grande, which is about a mile long N. E. and S. About two cables from its Eastern extremity there is a sunken rock; and off its N point are two dry rocks, one a cable, and the other three cables distant. Elsewhere shores are clean and steep to.

Gulf of Santa Fe. GULF OF SANTE FE.—The entrance to this gulf is formed between Gorda Pe the Western extremity of Tigrillo Bay, and Escarpado Roxo or Red Cliff, which is th miles to the S. S. E. The gulf extends inland in an Easterly direction for about miles; all its shores are clean, but at the entrance, at about a third of a mile from N. shore, there is a rock which should not be approached within two cables' leng the depths in the gulf are from twenty-seven to eighteen fathoms on muddy bottom.

Bay of Cruz. BAY OF CRUZ.—From Escarpado Roxo the coast inclines to the Southward then to the Westward for two and a half miles, to Cruz Point, forming a bay tha very clean and affords excellent anchorage.

South of the bay, about four miles inland, the peak of Sta. Fe rises to the heigh nearly three thousand four hundred feet, and about twenty miles to the S. E. the Ca del Bergantin reaches an elevation of nearly five thousand feet.

Arapos Islands. ARAPOS ISLANDS.—About W. S. W. one mile from Cruz Point, lies the East most of a little group of islets called the Arapos, extending altogether to the Westw about half a mile. The passage between the Easternmost and the coast is open without danger, but the islets are connected by a shallow bank and reef which is passable. Off the Western part of the Westernmost islet there are two rocks which steep to.

The Coast. The coast from Cruz Point trends Westerly, inclining a little to the Southward, ne four miles to Conoma Point, which forms the Western limit of the province of Cum The whole of the shore between these points is free of danger, and navigable within cables' length without the least risk.

Conoma Bay. CONOMA BAY.—Between Conoma Point and Pertigalete Point, which bears two miles, the shore forms a fine bay, with twelve fathoms water within a cable's les of the land. It is all clean, except on the Eastern part, from which a reef extends a a cable from the shore. Two small rivers force an entrance into it through the s beach at the inner end.

Monos or Guaracaro Island. MONOS or GUARACARO ISLAND lies in front of Conoma Bay, about three ca to the Northward of Pertigalete Point, leaving a clear bold channel between, with fo five to fifty fathoms water close to the island. About two cables' length from the side of the island there is a rock and a reef, which should not be approached ne than half a cable's length. The channel between Monos and the rock is clean, twenty-five fathoms water, and in sailing through, it will be best to keep the is aboard.

Pertigalete Bay. PERTIGALETE BAY.—At one mile and a half to the Westward of Pertig Point is Guanta Point, and between them is Pertigalete Bay, within which are sev small islets, and a little river disembogues into it. Pertigalete Point is foul to

V., and should not be passed at less than a cable's length; a reef and shoal lie also
e centre of the bay.

ssels entering this bay from the Eastward must give Pertigalete Point a berth of at *Anchorage.*
a cable's length, to avoid a reef which extends from its Western side, and also be
ul not to get to the Westward of the most Easterly part of the Northern islet, to
the shoal in the bay. A good berth will be found with the mouth of the little
bearing S., in four and a half fathoms, about a cable and a half from the beach on
side of the bay.

ANTA BAY.—From Guanta Point the coast trends Westerly three miles to Ber- *Guanta Bay.*
n Point, and between them, about a mile from the former, is the little Bay of Gu-
in the outer part of which lie several islets and rocks, with narrow but clear navi-
channels between them. A reef runs off about two cables' length from the W.
of the bay, but off the E. side there are fifteen to nine fathoms water at half a
's length from the shore.

RGANTIN BAY.—From Bergantin Point a reef runs off about a cable's length, *Bergantin*
xtends about a mile to the Southward. Off the S. W. side of the point there is an *Bay.*
with foul ground between it and the shore, leaving no passage; thence the coast
nues in a Westerly direction, forming Bergantin Bay, the Southern side of which
foul.

ZUELOS BAY.—From the W. end of Bergantin Bay the coast sweeps round to *Pozuelos*
W. and W. for about four miles, and then turns to the N. W. and N. for two miles, *Bay.*
nating at the Morro of Barcelona. The bay thus formed is called Pozuelos, and
r and three fourths miles in extent; the land all along is very low, and bounded by
dy beach, which is skirted by a shallow bank to the distance of about a mile. Ves-
hould, therefore, not come within the line of Bergantin Point and the morro, or
n the depth of seven and a half fathoms, sandy bottom.

RCELONA BAY.—The Morro of Barcelona is a remarkably narrow hilly penin- *Barcelona*
about a mile in length from N. to S., which is connected to the main in an E. S. E. *Bay.*
ion by a very narrow low ridge of sand of about the same length. The Northern
mity of the morro is so steep that it may be passed at a cable's length; but the W.
s foul to the distance of a fourth of a mile.

m the S. end of the morro the shore bends in to the S. E. and round to the S. W.
rms a bay between it and Maurica Point, three miles wide and nearly a mile deep;
e River Neveri, emptying itself into it at several points, throws out such a body
dy mud, that on a direct line between the points there are only three fathoms
, and on this bank the sea breaks heavily. The Neveri is navigable for small boats
miles, and for large bongos to the distance of eighteen miles.

out one mile and a half inland, on the left bank of the river, stands the city of Bar-
, the capital of the province.

best anchorage for large vessels in the Bay of Barcelona is with the rock off the *Anchorage.*
Chimana just open to the Westward of the Morro of Barcelona, in four and one
fathoms. Those of light draught may go into three and a half fathoms, with the
N.E ¼ N., and the peaked rock of Borrachitos N. W. ¾ N.

TLYING ISLANDS.—Between Conoma Point and the Morro of Barcelona are *Outlying*
l small islands and rocks, which reach to a distance of from three to seven miles *Islands.*
the land.

uda Chica, the Easternmost of these islets, lies S. W. ½ W. about three and
fourths miles from the Picuda Grande, and about three miles to the Northward
noma Point. It is of a circular figure, about three cables in extent, clean and
to.

IMANA ISLANDS.—S. S. E. ½ E. a mile from Picuda Chica, and nearly the same *Chimana*
ce to the Northward of the rock off the N. side of Monos, is the Chimana del Este, *Islands.*
is smaller than the Picuda, and steep to.

two miles from this islet is the Chimana Segunda, which is about a mile and one
long E. and W., and very clean. To the Eastward of it are two little islets, the
t lying about one cable, and the other five cables off; and off the W. side is an-
islet, distant about a cable's length.

mana Grande, lying S. W. about two cables' length from Chimana Segunda, is of
lar figure and its greatest extent from E. S. E. to W. N. W. is about three and a
iles.

mana del Oeste, about a third of a mile to the Eastward of the above, is joined to
shoal of rocks and sand, extending a full half mile to the Northward of the
ern extremity of Chimana Grande. On this shoal, and midway between these two
, there is an islet, and a short distance to the Westward of the Western Chimana
s another.

mana del Sud, about two miles long from N. E. to S. W., is separated from the
d of the great Chimana by a clear channel about a cable and a half wide, with a
of twenty fathoms, mud; also from Bergantin Point by a passage half a mile

wide, and the only danger here is the reef which extends about a cable's length fr the point.

Between the great and S. Chimana there are several islets, all steep to.

Directions. From what has been said, its appears that these islands and their outlying islets a bold and steep to; the only dangers being the rock off the E. side of the great Picu and the shoal which connects the great and W. Chimana; consequently all the chann between these islands are navigable, although some of them, from being very narro are not so eligible for large vessels; this circumstance, however, is a matter of choi for the navigator; in other respects. he has no hidden danger to guard against.

Borracha Island. BORRACHA (Drunken) ISLAND, lying about three miles to the Westward of t W. Chimana, is rather more than two miles long from N. to S., and a mile and a half its greatest breadth. The E. and N. sides are free of danger; but from the N. W. p a shallow, rocky bank extends to a considerable distance, having on it several sm islets, the most Westerly of which must be passed at a distance of at least two cabl length.

This island, the Caracas, and Picudas, are visible from Cumaná, whence they ha the appearance of fortifications; the former is thirty-five miles distant.

Borracho and Borrachitos Islets. BORRACHO AND BORRACHITOS ISLETS.—From the S. end of Borracha large sand-bank runs off about S. S. W. nearly three miles, and on it are the Borrac and Borrachitos Islets. The first lies close to Borracha; the others, which are two ve small islets, are two long miles from Borracha. There is no passage between any them, and the Southernmost Borrachitos, which is packed, and has the appearance o sail, should not be approached within three cables' length.

River Unare. RIVER UNARE.—From Maurica Point, the S. W. extreme of Barcelona Bay, t coast trends to the S. W. for about four miles and then takes a Westerly direction thirty-two miles to the entrance of the River Unare, which forms the Western bound of the province of Barcelona, and is navigable for boats at a distance of eighty mil The whole of this coast is very low, but two miles to the Eastward of the River Un is a little hill named Morro de Unare, and seven miles farther in that direction is Morro de Piritu, which is a little more inland, and rises to the height of about sixte hundred feet. A flat of sand runs gradually off from the shore, and at the distance about five miles there are twelve and thirteen fathoms. The edge of the bank lies ab twenty-two miles from the land, nearly midway across the island of Tortuga.

Piritu Islands. PIRITU ISLANDS.—W. about ten miles from Maurica Point and three and fourth miles from the main land are two small, low, sandy islands, with some mangro on them, called Piritu, from which a reef extends about a cable and a half. There passage between the two islands, but it is hazardous to attempt, for the reefs on eit side have a channel only two cables wide with five and a half fathoms water. The p sage between them and the main may be freely navigated by vessels of any size, att tion to the lead being all that is required.

Hermanos Islets. HERMANOS (BROTHERS) ISLETS.—N. ½ W. forty miles from the N. W. point Margarita Island lies the Southernmost of a group of seven islets called the Herman which occupy a space of eight miles in a N. W. by N. direction. The three Southe most, the Northernmost of which is called Pico, lie close together, and are separa from the others by a clear channel three miles wide. The Southernmost of the ot four is called Orquilla; this is the largest, and about three hundred feet high. Most them are high, bluff, conical rocks, and when bearing E. N. E. several of them may seen above Blanquilla Island; they are all clean and steep to, and there are no sou ings in the passages between them.

Blanca Island. BLANQUILLA or BLANCA ISLAND, lying seven and a half miles to the W ward of the Northernmost of the Hermanos, is six miles long N. and S., three mi broad at the S. end, and a mile and a half at the Northern extremity; it is very low, and sterile, and its shores are chiefly white cliffs. Several rocky ledges extend to distance of three cables from the S. W. point, and foul ground about two cables from some parts of the W. side, and off the N. end.

Anchorage. There is an anchorage in from eighteen fathoms, at a mile from the N. W. shore Blanquilla Island, to six or seven fathoms, at three cables' length from it, sandy botto also with the S. W. point of the island, N. ¾ E. about a mile distant, in eight or nine f oms white sandy oaze.

Tortuga Island. TORTUGA ISLAND, the E. end of which is situated forty-seven miles to the W ward of Margarita, and N. about the same distance from the Morro de Unare, is so what oval in form, twelve miles long, from E. to W., and about five broad in the mid the Eastern part is about one hundred feet high, the Western portion is low, and b these ends terminate in distinct points.

The shore from Oriental Point, the Eastern extremity of the island, to Delgada Po and thence to Ranchos Point near the middle of the N. side, is clean with the excep of a rocky ledge, which runs off about a fourth of a mile from Delgada Point. Betw Oriental Point and the middle of the S. shore, there are several small islets lyin

rt distance off; but to the Westward of them the coast is bold and steep to. On
S. side of Arenas Point, the Western extremity of the island, there is a small vil-

f the N. W. shore of Tortuga, between Arenas and Ranchos points, there are several
l islets, and foul ground which requires attention to the lead. The first to the West-
l of Ranchos Point is Anguila Cay, which lies about half a mile from the shore,
shoals inside it. The next, called Herradura or Horseshoe Cay, is about a mile
the shore with a navigable channel between, but too dangerous for strangers or
e vessels; from the N. E. part of the cay, a rocky ledge runs off to the Eastward
t a fourth of a mile. Tortuguillos, the Westernmost, are two small islets lying
together about the same distance off as Herradura, and are surrounded by a very
ow bank.

e only anchorage is between the shore of Tortuga and the Tortuguillos; it may *Anchorage.*
tered either from the Northward, passing between the Eastern Tortuguillo and the
adura, or from the S. W. between the former and Arenas Point; and the only care
ired is not to get into a less depth than six and a half fathoms.

ROVINCE OF CARACAS.—The Northern boundary of Caracas, which is the *Province of*
st province of Venezuela, extends from the River Unare to Aroa Point, a seaboard *Caracas.*
E. to W. of one hundred and sixty-five miles.

om the Unare the coast trends W. by N. fifty miles to the entrance of the River
erote; it is all along very low and swampy without any elevation whatever.
ral small rivers empty themselves into the sea within this space, the principal of
h are the Tuy and Higuerote.

AKE OF TACARIGUA.—About thirty-four miles from the entrance of the Unare *Lake of*
entrance to the lake of Tacarigua, which is fifteen miles long, and more than six *Tacarigua.*
wide, and contains an incredible number of fish of different kinds. It is separated
the sea by a narrow strip of low land, over which in one place the sea breaks at
water. Its depth does not exceed four fathoms.

HE RIVER TUY or TUI flows about one hundred and fifty-four miles, and after *River Tuy.*
ing the principal valley of the coast range of mountains, disembogues about four
to the Westward of the Tacarigua Lake, and is navigable for small river barges
sixty-eight miles.

IVER HIGUEROTE.—The entrance of this river lies about fourteen miles farther *River*
e Westward. The shore in front of it, and for a distance of about six miles to the *Higuerote.*
W., is fringed with many small cays and reefs which extend four and a half miles
the land. N. E. fourteen miles from the mouth of the river there are thirty-five
ms, muddy bottom.

RENERO BAY.—At the N. end of the above cays the shore forms a small bay, *Carenero*
hence turns round to the Northeastward for about seven miles to Cordero Point, *Bay.*
ppears to be clean and bold. This bay is probably the harbor or anchorage men-
d by some authorities, whence is shipped the exports of the River Higuerote.

ere is a large lagoon in a W. S. W. direction from the above anchorage, whence *Water.*
water can be obtained.

e shore of this bay is low, but to the Westward there is some remarkable table- *Anchorage.*
which, by being brought to bear W. S. W., or S. W. by W., will lead a vessel into
orage; a convenient berth lies with Cape Codera bearing N., or N. by E., and dis-
bout two miles from the shore, or farther in, according to draught.

APE CODERA, a well-known headland on this coast, bears W. by N. eighty-five *Cape Codera.*
from the Morro of Barcelona, and S. W. by W. ¼ W. forty-seven miles from the
end of Tortuga. The cape forms a very round morro or hill, about a mile to the
ward of which a tongue of land projects out that has a rock close off its North-
rn extremity, which is so steep that at half a cable's length there are nine fathoms,
bottom; nine miles to the Eastward of it there are forty-three fathoms, and six
to the Northward forty-two fathoms.

ence to the Westward, as far as Laguayra, the shore is bounded by the great moun-
idge of Caracas, which in most parts rises abruptly from the shore, and at only a
distance inland reaches an elevation of between three and four thousand feet.
of Maspa Point, about ten miles inland, Mount Caculo rises to the height of
thousand four hundred and thirty feet.

SARIOS BAY.—Between the tongue of land near Cape Codera and Caracoles *Cosarios*
two and a fourth miles to the Westward of it, the shore forms a bay about three *Bay.*
s of a mile deep at the E. side. The S. E. corner, for about three cables' length,
, sandy, and swampy; to the Westward of this the shore is foul to the distance of
half a cable all the way to Caracoles Point, which has a small rock close to it
reef that runs off a cable's length.

se up under the W. side of the tongue of land, and just within it, there is anchor- *Anchorage.*
about seven fathoms, at about two cables' length from the shore; in using it a
should bring up as soon as she is within shelter from the wind.

Centinella Islet. CENTINELLA ISLET.—N. by W. nearly fourteen miles from Cape Codera lie islet which appears like a ship under sail, and called the Centinella or Sentinel R It is very bold, except at about a musket-shot from the N. side, where there are sunken rocks, having between them and the islet a channel of great depth.

The Coast. The coast from Caracoles Point takes a W. by N. ½ N. direction nine and a half m to Maspa Point, whence it trends W. S. W. two and a half miles to Chuspa Point. this space is skirted by a reef which extends off one mile to the Northward from M Point, and terminates at Chuspa Point; for this reason it should not be coasted at a distance than two miles.

Chuspa Bay. CHUSPA BAY.—From Chuspa Point the coast trends about S. W. one mile a half to the entrance of the small river Chuspa, on the E. bank of which, about a fo of a mile inland, stands the town of that name. Thence the shore trends to the W ward one mile and a half to Curuao Point, to the Southward of which about a third mile distant is the town of Curuao.

Caution. Between Chuspa and Curuao points Chuspa Bay is very clean, and the anchorage cellent, and the only guide required for entering is the lead; but in working up the Westward care should be taken not to bring Chuspa Point to the Northward o before Curuao Point bears to the Westward of S. to avoid the Sabana Bank, the E. of which lies three miles to the Westward of the anchorage.

Sabana Bank. SABANA BANK.—From Curuao Point to Frayle Point, which is four miles far to the Westward, the shore is foul to the distance of two cables' length. About a c off from the latter point there is a small rock. Between Curuao and Frayle p there is a slight projection of the land toward the N., called Sabana, and about a N. of it lies the Southern edge of a rocky bank, a mile in its greatest extent S. E. N. W.; the general depths over it are from eight to four and a half fathoms, but in places there are less than three fathoms. As already stated, great care must be t in approaching this part from the Westward.

Coast. The coast from Frayle Point trends W. ½ S. thirty miles to Laguayra. It i along bounded by the base of the lofty, wooded mountains of Caracas, and is so that a vessel may approach it and anchor, if necessary, at half a mile distant, or less.

The most remarkable mountain peaks on this part of the coast are the Pico Agu Carés, bearing W. by S. ½ S. thirty-two miles from Cape Cordera, and about ten inland; the Pico de Nigautar ten miles farther to the Westward, about nine thou five hundred feet above the sea; the Silla de Caracas (Saddle of Caracas), eight sand five hundred feet high, about four miles to the N. W. of the latter, and lastly, de Avila, which rises only about three miles S. E. by E. from Laguayra.

Macuto. MACUTO is the name of a village on the shore of a small bay about three mil the Eastward of Laguayra: it is protected on the W. side by a small fort. Th good anchorage all over the bay, and the soundings are regular in approachin watering place. The depth is twenty fathoms about three fourths of a mile fro shore, with a street in the village, close by the watering place, open or end on, an Eastern point about a sail's breadth open of the point to the Westward of it.

In standing in toward the village keep the watering place in line with the N. W. ner of the chapel, and the highest cocoanut tree over the E. angle of the fort.

Wood and Water. This is a convenient place for obtaining wood and water, the latter being convey the beach through iron pipes.

Laguayra. LAGUAYRA, the port of entry of Caracas, is situated at the foot of the mountai a narrow and uneven plain between two huge masses of rock.

Supplies. Wood and water can be procured at Laguayra; the latter is of good quality, procured from a reservoir about five hundred feet above the level of the sea, in th of a small river, for two dollars a ton; the casks have to be landed at the wharf, a short distance, and filled at a fountain; or they may be filled in the boat, by mea a portable engine and hose. All other supplies are plentiful.

Anchorage. The anchorage at Laguayra is merely an open roadstead in front of the town, ex from E. to W. by the N.; but except in the season of rollers, it is generally cons safe. At this period, in 1821, nineteen vessels out of twenty were forced from anchors and wrecked, the only one saved being an American frigate, which parted four anchors; it is stated, however, that they all snapped their cables, which show that the holding-ground is excellent; still some authorities assert that the places where even in strong sea breezes the anchors will come home.

A berth of good holding-ground in twelve fathoms, sandy bottom, will be found the bastion of Trinchera, the N. E. angle of the fortifications, E. by S. ¼ S.; the ing place in the town S. E. ½ E. and Fort St. Miguel S. E. by E., about half a mi shore. The sea breeze generally fails about 7 P. M., when a calm succeeds, and times a breeze sets in from the Westward, which renders it necessary to lay out a in that direction ready to swing to.

There is no danger near the shore, and three fathoms water will be found w

's length of it; a heavy surf rolls in upon the coast, and landing is frequently im- for several days together.

intending to water, it will be more convenient to take up a temporary anchorage e watering-place in five or six fathoms, a short distance from the shore.

Caracas.

RACAS, the capital of the province, and the seat of government of the Republic nezuela, is situated six miles in a direct line from the shore, but about twenty-one by the carriage road, at the W. end of the plain of Chacao, about two thousand hundred feet above the level of the sea.

Coast.

e coast from Laguayra trends about W. six miles to Pedrera Point, and thence four miles to Arrecine Point, when it takes a W. by S. direction seventeen miles rt Cruz. The shore about Cape Blanco, which is a short distance to the Eastward edrera Point, has a gray and rugged appearance, and at about four miles off looks town standing under the high land. From Pedrera Point to Arrecine Point and Carayaco Point the shore is foul; but thence to Cruz Point it may be coasted n a mile. From Port Cruz the coast continues to run on the same line of bearing ty-three miles to Cape Bay; it is all very clean, and may be approached with safety e distance of a mile, or less. From Laguayra to Puerto Cabello a narrow ridge ountains runs parallel with the shore at the distance of about six miles inland. nt Palmer, sixteen miles to the Westward of Laguayra, rises to the height of about housand four hundred feet, and Mount Tamaya, S. of Cruz Point, is elevated nearly thousand feet above the sea.

Port Cruz.

RT CRUZ is merely a small indent or cove, about one cable and a half wide and ables deep, and the shore all round is so steep that, at half a ship's length, there our and a half fathoms. A rock lies close to its Eastern point, and a small river arges its water into the bottom of the cove. The anchorage is good; but being so ned, it is only fit for small vessels.

Province of Carabobo.

OVINCE OF CARABOBO.—About eight miles to the Eastward of Cata Bay is ll projecting headland, called the Morro Choroni, and a mile to the Westward of orro is Aroa Point. Aroa Point forms the N. E. limit of the province of Carra- the Northern boundary of which extends to the Westward to the river Yazacui, tance of about forty miles.

Cata Bay.

TA BAY is half a mile wide at the entrance, and about half a mile deep. Close Eastern point there is an islet, and from this point the shore trends to the South- to the inner part of the bay, where a river falls into it, throwing up a shallow which extends almost a cable's length from the shore. Every other part of the s clean, with from twenty-five to four and a half fathoms about one cable and a from the beach.

the E. side of the bay there is a vigia or lookout, and it is farther recognized by t Meseta, a remarkable table mountain, three thousand seven hundred and fifteen igh, situated about six miles to the Eastward of it, and five miles inland; and also ount Ocumare, seven hundred feet above the sea, which rises about the same dis- S. of the bay. Water and wood may be obtained in Cata Bay, and stock and ables from a small town about four miles distant.

Supplies.

Ocumare Bay.

UMARE BAY.—At two thirds of a mile to the Westward of Cata Bay is the rn point of Ocumare Bay in which there is good anchorage, but confined, for it any banks in it and becomes narrow to the Southward. An islet lies about half a to the N. W. of the E. point, and in the channel between it and the point there ot less than six fathoms.

taking up an anchorage in this bay, a vessel must haul in close round the W. side e islet, and be prepared to anchor quickly, as soon as shelter is obtained, in six or d a half fathoms, on sand, about a cable's length or a little more to the Southward Great care must be taken to stop the headway in time, for by shooting farther ere is danger of grounding.

river falls into the bay to the Southward of the islet, having on its banks a few fish- n's huts; and a short distance inland is the commercial town of Ocumare.

Cienaga de Ocumare.

ENAGA DE OCUMARE (or Swamp of Ocumare) is the name given to a bay or ng, the E. point of which is two and a half miles to the Westward of the islet in nare Bay; the W. point is formed by an isolated morro that rises on the low land. opening is skirted by a broken reef, through which there is a channel carrying e to four and a half fathoms water, leading into an anchorage; it is very indiffer- however, and only fit for small coasters.

Port Turiamo.

RT TURIAMO.—From the Morro of Cienaga the shore trends Westerly one mile half, to the E. point of the harbor or inlet of Turiamo, a cable's length from which small islet, that is high, bold and steep to. The harbor affords excellent anchor- and is capable of receiving vessels of any class. It is about a mile wide at the nce, but decreases inward to three fourths of a mile, and is about two miles deep N. to S. All its sides are fringed with a coral ledge to the distance of about a of a cable; so that by not approaching nearer than half a cable all danger will

be avoided. The general depth in mid-channel is from twenty-five to eighteen fath on sand and mud. The river Turiamo forces its way through the sandy beach w forms the inner end of the inlet.

Outlying Cays. OUTLYING CAYS.—From Turiamo the shore trends Westerly and N. W. for a nine miles to Brava Point, at the entrance to Puerto Cabello. Abreast the bight, w the shore alters its direction, is Cay Largo, or Long Islet, which is about a mile in tent E. S. E. and W. N. W., and its S. W. end lies about a mile from the shore. H mile W. N. W. of Cay Largo is Santo Domingo or Middle Islet; and three fourths mile farther to the N. W. is Alcatras Islet; these two are each only about three ca in extent. They are all wooded, and it is said that Cay Largo may be seen eightee twenty miles from the Eastward. S. about a fourth of a mile from the S. W. poi Cay Largo there is a small, dangerous shoal; but with this exception, these islets steep to at a cable's length, and the channels between them are quite clean, and ma freely navigated within a cable's length of the shores.

Anchorage. Between Cay Largo and the main there is excellent anchorage in ten or twelve oms, with the S. W. point of the cay N. N. W., and the trench bastion, which stand a hill above Puerto Cabello, W. S. W. This is a convenient anchorage for obtai

Wood and Water. wood, and water may be procured from the Borburata River, on the main, to the S. as the mouth of the river shifts, the best way will be to anchor the boats off it, stead them with a line to the shore, and fill the casks in them from breakers carried on the sand being too soft for the erection of shears. To water it would be more hand take up an anchorage in ten or eleven fathoms, about half a mile to the N. N. E. o river, midway between it and the S. W. end of Cay Largo.

Puerto Cabello. PUERTO CABELLO may be described as a lagoon about a mile in extent, bou on the N. and W. by a line of narrow, low, sandy islands, to the interior, to the E. an being nearly filled with mangrove swampy cays, between which are several ve deep water. The entrance lies nearly in the middle of the W. side, and forms a c nel nearly half a mile in length, leading into a small basin on the N. side of the la called Great Bay, where vessels of the largest draught may lie secure in from fi seven fathoms; the channel, however, is so narrow that only one vessel can pass in time; and as it lies E. and W. she must be warped in.

The town is situated on the S. side of the entrance, and is strongly fortified, bot ward the sea and the main, from which it is separated by a small cut, and commun with extensive suburbs by a wooden bridge; on the N. side of the entrance stand Philip's castle, and the entrance to the bay is further protected by a fort on B Point. On a hill at the back of the town there is also a fort, built of white stone, w may be seen ten miles off. It is the port of entry of the province of Carabobo, an situated N. about twenty miles from Valencia, the capital. It affords every resour quired by shipping, and vessels meeting with accidents will find every means for m them good, with the convenience of being able to lie alongside piers at the entran complete safety; in fact, it is the only harbor in Venezuela with these advantage is to be observed, however, that, lying so low, and immediately to leeward of pestile swamps, it is exceedingly unhealthy, and therefore by no means so desirable a plac this purpose as Sta. Ana, at Curaçoa.

Light. There is a revolving light on Brava Point, showing alternately red and white fac intervals of forty seconds. It is elevated seventy-nine feet above the sea, and shou seen in clear weather about fourteen miles. The tower is quadrangular, and sta stand in lat. 10° 30′ N., long. 68° 2′ 26″ W. of Greenwich. Vessels bound to P Cabello from the Eastward should give a berth to Alcatras Island, which lies N. E. ¼ E., distant two and three fourths miles from Brava Point.

W. one mile and three fourths from Brava Point there is a small islet, about a fo of a mile long, N. and S., called Guaiguaza, lying about three cables from the s with a depth of eight fathoms in the channel between. At two cables to the North of the N. point of the islet lies a dangerous patch of coral, named Larne Shoal, ab cable in extent, with three fathoms water, which breaks in strong breezes; its edge bears W. by N. ¼ N. from the centre of Fort Brava.

Water. The watering place is at the entrance of the river Estevan, a little to the West of the town; but it should be obtained early in the morning, before the bathers washerwomen take possession of the stream.

Anchorage. The bay, between Brava Point and Larne Shoal, is quite clean, and good anch may be taken up as most convenient, in ten to twelve fathoms, sand and muddy bo

Borburata Harbor. BORBURATA HARBOR.—About a mile and a half to the Eastward of Brava P there is a small, snug inlet, about three cables deep, and nearly two cables' wide, depths from nine to six fathoms almost alongside the beach at its head; the other are skirted by a coral ledge to a short distance, leaving a channel in the middle a cable wide. As it lies N. W. and S. E., a vessel can sail in and out with the trade-wind; and being to the windward of the swamps of Puerto Cabello, is healthy temporary anchorage, for a small steamer or handy vessel, than off the city.

large bank is said to lie about ten miles to the Northward of Puerto Cabello, on *Bank.*
h eight fathoms has been found and much less is suspected.

ULF OF TRISTE.—From Puerto Cabello the shore curves round to the W. and *Gulf of*
V. for about twenty-eight miles, to Tucacas, forming the Gulf of Triste; it is all *Triste.*
g low and sandy, and backed by mangroves; the land in the interior, although high,
e elevated, and a few miles to the Westward of Puerto Cabello slopes gradually to
ea. The coast, as far as the river Aroa, is clean, but, as a heavy swell rolls in, and
urf breaks violently on the beach, it will be better not to navigate it within less than
le and a half, or within the depth of fifteen fathoms.

IVERS YAZACUI AND AROA.—At about sixteen miles W. by N. ½ N. from Bra- *Rivers Yaza-*
oint is the entrance to the river Yazacui, which forms the boundary between the *cui and Aroa.*
ince of Carabobo and Coro; and N. N. W., six miles thence, is the entrance of Aroa,
e there is a village of about two hundred huts.

e Aroa has become of importance, from its being the means of transporting the prod-
of the copper mines lying about sixty miles in the interior; the ore of which being
ght to the banks, according to the state of the river, is conveyed to the mouth in flat
canoes, drawing about fourteen inches water, and taken thence in coasters to the
t at Brava Point for more convenient shipment.

om the Aroa the shore trends more Northerly to Tucacas, six miles distant, and here
andy beach terminates.

UTLYING ISLETS.—Fronting the Northern part of the Gulf, are three small low *Outlying*
grove cays with swamps in their centre, occupying a space about four miles in length *Islets.*
and S. W.

AYO DEL SUR (South Cay), about two cables long, lies N. E. four miles from the *Cayo del Sur.*
nce of the Aroa. From its S. W. point a reef in most part dry, stretches off about
rth of a mile, and is steep to; there are seven fathoms half a cable from the S. W.
and ten fathoms at a cable's length; on the S. E. side there are six fathoms close to.
the N. E. point of the cay a coral ledge with from two to three fathoms water runs
fourth of a mile. The N. W. side forms a sandy beach, skirted by rocks, which
s landing difficult; but there are seven fathoms at the distance of only half a cable's
h from the shore. The channel between the cay and the main is quite clean, and
es fifteen fathoms in the middle.

AYO DEL MEDIO (Middle Cay) is about a third of a mile in length, and lies N. E. *Cayo del*
about three fourths of a mile from South Cay. It is steep to on all sides but the *Medio.*
, whence a reef runs out a fourth of a mile, where it terminates in four fathoms. In
entre of the channel, between this cay and South Cay, there is a bank of three fath-
water, about two cables in extent, leaving a passage on both sides of it, a cable wide,
a depth of twelve fathoms.

passing through, it will be safer to go to the Northward of this bank, and within
a cable of Middle Cay, or less, for there are seven fathoms within a ship's length of
atter; great risk will be incurred by taking the South Cay side.

AYO DEL NORTE (North Cay) lies N. E. two and a half miles from Middle Cay; *Cayo del*
E. six miles from Tucacas Point; N. W. by N. twenty miles from Puerto Cabello; *Norte.*
E. ¼ S. five miles from the light-house on Brava Point. This cay is about half a
in length and steep to on all sides but the N. E., whence a ledge with two or three
ms water on it, and seven fathoms a fourth of a mile outside, runs off half a mile.
are sixteen fathoms within a cable's length of the S. E. side of the cay; seven
ms close to the S. W. end, and eleven fathoms a fourth of a mile from the N. W.

e channel between it and Middle Cay is quite clean, with the exception of the ledge
e N. E. end of the latter; and it is by far the best to navigate, either from the East-
or Westward.

RTH CAY BANK.—About two miles to the Northward of North Cay, there is a *North Cay*
bank, which shoals suddenly from twenty-four to seventeen, nine, and six fathoms; *Bank.*
pears to trend about N. W. by N. toward Tucacas Point, and is reported to be of
derable extent.

e soundings between the cays and the main, from the Aroa to Tucacas, are very *Anchorage.*
ar, decreasing from sixteen to three fathoms within three fourths of a mile of the
, and afford good anchorage anywhere; the best shelter will of course be under
V. side of the cays, leaving room, however, to veer or weigh with the land breeze,
sometimes blows fresh.

CACAS is a village of about two hundred huts, besides a few large wooden houses *Tucacas.*
ging to the officers of the mining company, and stands on the W. point of entrance
extensive lagoon, in the N. part of the Gulf of Triste; unfortunately it does not af-
good water, and the inhabitants are consequently obliged to obtain it from the River
A mud flat extends out S. S. E. about two cables' length from the wharf on the
e of the town, and between it and the cays to the Eastward there is a narrow chan-
arrying eight feet water, but it requires a pilot.

Brava Island. BRAVA ISLAND.—The shore for the space of about six miles to the Eastward Tucacas, as far as Tucacas Point, is fringed with wooded mangrove cays, the outer s being skirted by low coral points and shallow ledges, leaving small channels lead into extensive lagoons navigable for boats; the Southernmost and largest of these is named Brava Island.

Light. A fixed white light is exhibited from a light-house standing on Brava Point, the S extreme of Brava Island. The light is elevated thirty feet above the sea, and may seen in favorable weather from a distance of nine miles.

Buoys. A coral reef stretches off to the Eastward two cables' length from Brava Point, near the extremity are some dry rocks, with six fathoms within less than a cable's le from them. To the Westward of the light-house a ledge runs off W. S. W. about a c and a half, and then curves round to the N. W. a cable's length; on the extremi the elbow in five fathoms water there is a buoy with a staff and vane; and on the N end of the reef in three and a half fathoms there is a black buoy.

Brava Cove. BRAVA COVE.—From Brava Point the shore sweeps round to the N. W., form a small snug sandy cove, at the W. end of which stands a large white building c the Ore House, with a wharf in front, which will allow a vessel drawing sixteen fee lie alongside and load; the end of the wharf lies N. sixty fathoms from the black b and between it and the buoy the depths are from eighteen to twenty-four feet. F the W. side of the wharf a reef extends along the S. side of Brava Island, having feet on its outer edge half a cable's length from the shore; there is also a coral s of nine feet water, a cable in extent, with the Ore House, bearing N. E. by E. a fo of a mile, and the buoy with staff and vane E. by N. three cables distant; and there five fathoms at a cable distant to the Southward of it.

Anchorage. There is a good outer anchorage with the Ore House N. by W. about a third mile distant in five and a half fathoms, and a vessel should not go nearer the shor the Westward of this, than a depth of five fathoms, to avoid some coral heads in direction.

Directions. Vessels approaching the Gulf of Triste from the Eastward, or from Puerto Cab will observe from off the latter place in clear weather a remarkable gap in the Ea part of the mountain ridge, which commences to rise a short distance to the West of Tucacas Point; and on the S. side of the gap, on the face of the hill, will be some white cliffs; the gap bears N. W. ½ W. from Puerto Cabello; N. W. ¼ N. South Cay, and W. N. W. from North Cay.

As has been already stated in the page overleaf, the widest and the safest cha is between the North and Middle cays, and the remarkable gap on or about a N. W W. bearing will lead a vessel up to it. Having passed through within about h mile of the former cay, the village of Tucacas and the Ore House will come in from the mast head, bearing W. by N. ½ N., and this latter course will lead to the anchorage of Brava Cove. All that is necessary to observe is that the soundings crease suddenly when near Brava Point, and preparation must be made to bring quickly. A convenient berth will be found, the Ore House bearing N. or N. by about half a mile distant, or if necessary, and no vessel be in the way, farther in, inside the black buoy, ready to warp up to the jetty.

When coming from the Northward, and being uncertain if the cays seen are tho Chichirivichi, or those off the Gulf of Triste—which a stranger is liable to mista course should be steered to keep two or three miles outside all of them, until the tion is made out by means of the gap, when the above direction may be followed.

In leaving Tucacas, vessels often have to beat out, and in this case it will be to move out on the previous afternoon, and anchor for the night near the cays.

Puerto Cabello may sometimes be fetched from the S. channel, but it will be to proceed out through the passage between the North and Middle cays.

Winds. The winds that prevail in the Gulf of Triste are alternate sea and land breeze former setting in from the Northward, and veering to S. E., the latter blowing off S. to W. S. W. But the times of these changes vary daily, and cannot be depe upon; generally the sea breeze commences at ten A. M., and lasts till sunset, whe wind falls sometimes to a calm, the land wind coming off about ten P. M. and conti till eight A. M.; it frequently happens, however, that the sea breeze blows all nigh

Currents and Tides. The current when setting to the Westward in the offing, which is usually the c by the formation of the Gulf of Triste, forced out to the Northward, between the and the main: therefore, if from the strength of the sea breeze, or other causes suspected to be running strong in that direction, it will be better for a vessel bou Puerto Cabello, or to windward, to work up to North Cay before stretching across

The tide rises about three feet in Brava Cove, but the time of high water is tain.

Tucacas Point. TUCACAS POINT bears about N. E. five miles from the light-house on Brava P no distinct point, however, shows itself, for between Brava Island and Chichi the shore gradually curves round to the N. and N. E. a distance of about eight

projection is low, and cut up by mangrove swamps for about a mile inland, when mmences to rise, and about twenty miles to the Westward Mount Mission reaches height of nearly two thousand four hundred feet.

he shore of Tucacas Point is foul, and not far from it lie some cays, the Southern- of which are called the Pescadores.

he Northernmost, named Sombrero, is about a mile in length S. E. and N. W., and een it and the main there is a channel barely half a mile wide, carrying eleven oms, but it is dangerous from the reefs and shoals that skirt the main land to lee- d. Off the N. E. side of Sombrero there is also a cay surrounded to the distance of cables' length by a reef, which should be given a berth of a mile.

rom abreast the N. end of Cay Sombrero to Chichirivichi, a distance of about three s in a N. W. direction, the shore is still low and bordered by a reef half a mile d.

ORT CHICHIRIVICHI is a small, narrow, tortuous inlet, with low mangrove shores, miles in length, with depths from four to six fathoms. The entrance is obstructed mall cays, leaving a channel about two cables wide open to the N. E., therefore diffi- for a sailing vessel to get out of, except with the land wind. A short distance in the entrance it opens out to half a mile, and affords good anchorage. The East- side of the port is formed by a neck of swampy land about a mile long, the North- part of which, named Chichirivichi Point, is bordered by a reef which extends out t three cables' length, and on which there are several small islets or rocks. *Port Chichirivichi.*

eraza Cay, the Easternmost and the smallest cay at the entrance of Port Chichiriviis foul all around to the distance of half a cable, leaving a channel about two es wide between it and the reef off Chichirivichi Point, and carrying seven fathoms er.

hichirivichi Cay, lying four cables to the Westward of Peraza, is also fringed with ef a cable broad. The channel between it and Peraza is about two cables wide and ies six to seven fathoms water. Between it and the N. W. point of the port, near main, are two small shoals of two fathoms water, which contract the channel been them and the cay to a width of about two cables, carrying from five to seven oms.

al Cay, so named from having a salt pond in the centre, is half a mile to the Northd of Chichirivichi, and the depths between them are six and nine fathoms. The is about three fourths of a mile in length N. W. and S. E., and is also skirted by a l ledge which runs off nearly a cable's length, except on the S. W. side, where it is p to.

orracho, the last of these cays, bearing N. by E. one mile and a half from Cay Sal, mall, and also very foul, with a reef extending half a mile from its N. E. and S. ts.

he soundings around these cays are very irregular; there are six and a half fathoms bout half a mile off the coast, which depth continues to two and a half miles Northd of Borracho, where there are fourteen fathoms on sandy mud.

o enter Port Chichirivichi from the Eastward keep in mid-channel between the e islets on the reef off Chichirivichi Point and Peraza Cay, and when the latter rs N. E. by E., haul gradually round to the Southward, anchoring as soon as shelis obtained in six and a half fathoms, mud, about two cables from the Eastern re. *Directions.*

IVER TUCUYO.—From Chichirivichi the coast trends neary N. W. by N. eighteen s to San Juan Point. About midway is the entrance of the river Tucuyo, the largest r in Venezuela; its course is said to be three hundred and thirty miles, and it is igable for canoes more than one hundred and fifty miles. *River Tucuyo.*

A PIRAGUA SHOAL.—About five miles to the Northward of the Tucuyo, and and a fourth miles from San Juan Point, is a small shoal, called Piragua, which about a mile off a point named Menatie Point, under the Cerro del Manglar. *La Piragua Shoal.*

lsewhere in this place the soundings are regular, and the depth is fourteen fathoms our miles from the land.

AN JUAN BAY, formed on the W. side of San Juan Point, is nearly one mile and alf in extent, sheltered from the E. and N. E., but is so shallow that at a mile n the beach the depth is not more than three and a half fathoms. A reef runs off cables from San Juan Point, and at a long half a mile from the point is San Juan which is fringed with a reef to the distance of a cable's length: the channel been it and the point is about two cables in width, with three and a fourth fathoms water. W. ¾ W. two and three fourths miles from San Juan Point there is another islet, ut two cables in extent, called Northwest Cay, which is very foul, except on the W. . A reef extends out from it to the S. E. half a mile, upon which are several small, rocks and cays, leaving a clear opening one mile and one fourth wide between it San Juan Cay. *San Juan Bay.*

he anchorage in this bay is to the S. W. of San Juan Cay. If of large draught, a

vessel should pass outside the cay, at the distance of at least one fourth of a mile. channel between the cay and the point is only eligible for small vessels.

Coast. The coast from San Juan Point takes a N. W. by W. ½ W. direction about nine miles to the Ubero Point, the whole space being clear and the soundings regular; about eight miles from the former point there is a small rock called the Peñon Soldado, lying close to the cliffy part of the shore. Abreast this rock, about seven eight miles inland, the Cerro de Capadare rises to the height of about sixteen hund feet.

Ubero Bay. UBERO BAY, formed on the W. side of Ubero Point, is very shallow, and scar affords shelter from the trade-wind for large vessels. About N. N. W. ½ W. one and a half from this point there is a bank over which the least depth is four and a fathoms.

Coast. The coast from Ubero Point to that of Zamuro runs N. W. by W. twelve miles, from the latter to Manzanillo Point it trends, with a few slight curves of no importa W. ¾ N. twenty-five miles. All this part is clean, and may be safely navigated proper attention to the lead, to within the distance of one mile and a half.

In the interior, and also near the coast, are several heights which may be seen a long distance; and S. W., only six miles inland from Manzanillo Point, the Cerro Cumarebo rises two thousand feet above the sea.

Cumarebo Bay. CUMAREBO BAY.—From Manzanillo Point the shore trends to the S. W. for a six miles, when it forms a small sandy beach, called the Bay of Cumarebo; and three miles from it, on the side of the hill, is the small town of that name, which sesses some commerce.

From Cumarebo beach the shore takes a Westerly direction for ten miles to Carr Point, and then curves round to the S. W. for about three miles to Frayles Point.

Cumarebo Bank. CUMAREBO BANK.—W. by N. ¾ N. seven and three fourths miles from Ma nillo Point, and N. N. W. ½ W. six and a half miles from the sandy beach, lies a sm rocky bank with five and a half fathoms water over it, and eleven to eighteen fath close to.

Vela de Cora Bay. VELA DE CORO BAY, formed on the W. side of Frayles Point, has good anchor and may be entered by the lead, for there is no danger. At the S. E. side of the stands the town of Vela de Coro.

The river Coro falls into the sea about one mile and a half to the Westward of town, and about two miles inland to the Eastward of the town is an Indian vill called Carrizal.

Isthmus of Medanos. ISTHMUS OF MEDANOS.—From the river Coro the direction of the shore ta abruptly to N. W., and forms a ridge of low sand-hills, about nineteen miles in le and three miles in breadth, interrupted by some swamps and small lagoons, uniting peninsula of Paraguana to the main land.

Sta. Ana de Coro. STA. ANA DE CORO.—At the inner end of this isthmus, and on its Western about five miles to the Westward of the river Coro, is the city of Sta. Ana de Coro, capital of the province, which stands on an arid plain two miles from the sea, and hundred feet above its level.

Peninsula of Paraguana. THE PENINSULA OF PARAGUANA is thirty-two miles in extent from N. to and from twenty to twenty-eight miles from E. to W. The centre is occupied by a fe rocky mass of mountain, and about ten miles from the S. E. end of the peninsula Pan de Sta. Ana rises to the height of thirteen hundred feet, and may be seen fro distance of thirty miles; thence an irregular ridge of hills extends to the North terminating abruptly at Cape San Roman. The shores at the base of the moun both to the E. and W., are low and level; on the W. side there are numerous cultiv salt ponds, but the land is swampy and often overflowed.

The E. coast of the peninsula from the isthmus trends N. ½ W. fifteen miles, thence it sweeps round to the N. W. about twenty miles to Cape San Roman, the No ern extremity of the peninsula, which is bold and lofty. The shore is all along to a short distance, but the soundings off it are deep, and at ten miles there are eight to thirty-two fathoms.

Cape San Roman bears S. S. W. ½ W. fifteen and a half miles from the Southeas extremity of Oruba Island; there is no danger whatever between, and in the middl the channel there are fifty-five fathoms. The extremity of Oruba is low, but steep the distance of two cables' length. The current generally runs here strong to Westward. The W. coast of the peninsula from Cape San Roman trends S. W. by thirteen miles to Macolla Point, and is all along very low. Macolla Point is forme a low projection of sand, which extends out from the coast, and is about two broad; the Northeastern extremity of this projection is called Medano Point, the S western Bergatin Point. From Macolla Point to Cardon Point, the S. W. extre the peninsula, the shore trends in a Southerly direction for thirty miles, with a s outward curve.

Breakers. H. M. S. *Emulous*, when standing toward the shore, Cape San Roman bearing

., distant about twelve miles, and off shore about three miles, fell in with a shoal ich the water broke, having fifteen fathoms close to. To the Eastward of this, the cape, the soundings are regular, and there is anchorage all along, every being visible in the daytime.

Anchorage.

e latter space there are twelve to eight fathoms of water at three miles from the nd with the Pan of Sta. Ana bearing E. ½ N., a vessel will be led to a place called ues, where there is good anchorage in from three to ten fathoms, about half a om the land. A large vessel may go so far in as to bring Salinas Point to bear W. ½ W., and Estanques Point S. ½ E., in four and a half fathoms, about two cables' off shore. This place is also known by a long tongue of sand, upon which are uts occupied by fishermen, who, in the season, take immense quantities of fish by ne.

els merely communicating with Maracaybo, with the probability of having to re- ome time, will find this a more convenient anchorage than the heavy riding off trance of the lake.

er may be procured here, but it is muddy and not fit to drink.

Gulf of Venezuela or Maracaybo.

LF OF VENEZUELA OR MARACAYBO.—Between Macolla Point on the E. spada Point on the W., the entrance to the Gulf of Maracaybo is forty-eight miles and its depth, to the head of Caboza Bay, at its Southwestern extremity, is upward hundred miles.

Gulf of Coro, at the S. E. end of the Gulf of Maracaybo, is shallow, and little , being seldom visited, the trade of the city of Cora being carried on chiefly by f the Bay of Vela de Coro. There appears, however, to be an anchorage, called arbor of Los Taques, on the main, about eighty-four miles to windward of the bar racaybo, probably formed by the island of Chicagua, where vessels of too great a t to pass the above bar receive their cargoes from lighters; they are not, how- llowed to discharge here, but must go to Maracaybo for that purpose.

S. Side of the Gulf.

S side of the gulf, from the head of the Gulf of Coro to the head of Calabozo rends Westerly upward of one hundred and fifty miles; it is all along very low, the Eastward of the Laguna de Maracaybo sandy; and here numerous small s empty themselves into the sea. The principal of these streams is the River r, which discharges itself into the Bay of Oribano, about twenty miles to the East- of the entrance to the laguna, and forms the boundary of the provinces of Coro aracaybo. The high lands of the interior, however, are visible at a long distance, , about fifteen miles from Coro, the Cerro de la Teta rises to an elevation of over housand one hundred feet. This great mountain ridge declines in height as it ap- es the laguna, and from the sea it appears to nearly terminate about twenty miles Eastward of it.

Zapara Island.

PARA ISLAND.—Immediately to the Westward of the River Palmar the land ences to be cut up by low mangrove islands, forming the shore of the delta of the a de Maracaybo, and for a distance of twenty miles to the Westward of the Pal- he front is called Zapara Island. Formerly the channel into the laguna was near . end of this island, and was defended by a castle, now seen in ruins, on that this end is also pointed out by the mangroves being much higher than else-

Bajo Seco Island.

JO SECO ISLAND is the name given to a small sandy cay, about two miles to estward of Zapara, upon which there is a large white castle, defending the bar. Zapara and this island, a shallow bank of quicksand stretches off to seaward from three miles, and breaks heavily in all parts except at the entrance of the bar el, which serves to point it out.

Maracaybo.

RACAYBO, the capital of the province, is situated on the Western shore of the a de Maracaybo, about twenty miles from the entrance, on the N. side of an inlet two miles in length, which forms a good harbor.

channel into the laguna across the bar is about two and a half miles to the N. ard of the castle on Seco Island, and at high water has a depth of thirteen feet; is not stationary, and, therefore, must not be entered without the assistance of a The inner part of the channel lies between Zapara and San Carlos, an island of formation, which has also a large white castle on its E. end, and bears about . one mile and a half from the castle on Seco. Within this is the bar of Tablazo, prevents vessels drawing more than ten feet from getting up to the city at high

Caution.

bar must not be approached in the night. The best time for a boat to cross it is 9 A. M., when the wind has moderated and the sea is comparatively smooth, for the strength of the breeze the surf breaks on the sands and all along the coast, reat violence. Should a vessel unfortunately ground on the bar, as no depend-

e Derrotero states that in the rainy season, from August to November, the depth increases to and a half feet, but this information must not be trusted to. An official notice, in 1840, states all times there are not more than ten feet at high water on the inner bar.

ence can be placed on anchors to heave off by, and being a quicksand, she will be p in imminent danger.

Water. Water can be procured from the main land, directly opposite the fort of Bajo S The water in the laguna becomes fresh about ten miles within the bar. The seine ma drawn anywhere in the sandy bays, but the alligators are very numerous.

W. Side of the Gulf. The W. side of the gulf is bounded by the peninsula of Guajira, the interior of w is of considerable elevation. The Teta of Guajira, at the S. end of the mountain r about fifteen miles inland, is five hundred and forty-eight feet above the sea; the S de Aceyte, at the Northern extremity of it, reaches the height of upward of two thou eight hundred feet. This side of the gulf, being to leeward and having no shelt seldom visited, and consequently but little known. It is said that it may be safely igated in every part by the lead, to within the depth of six or five fathoms; this i mation, however, must not be trusted to entirely, for the *Icarus*, having tacked in and a half fathoms in standing out, struck in two fathoms, with Espada Point bearin by E. nine miles.

Tides. On the bar, at the entrance of the Laguna de Maracaybo, it is high water, full change, at 5h. 15m., and the rise at springs is about two and a half feet. In the r season it is said to rise sometimes four feet. The ebb commences on the rising o moon, and runs with great strength to the N. E.

Directions. Vessels bound to the Gulf of Maracaybo from the Eastward, having rounded Cape Roman at the distance of about five miles, should steer to the Westward until the de Azucar (sugarloaf hill), on Oruba Island, which may be seen eighteen or tw miles, is brought to bear N. E. by N.; and taking this point for a departure, steer S by S. This course will lead well to the Westward of the suspicious ground off Ma Point; in sight of the Mesas of Borojo, which are some level hillocks or sand hills, ated a considerable distance to the Eastward of the Laguna de Maracaybo, and into fathoms about twenty-five miles to windward of the bar. On reaching this dep more Westerly course must be taken, running along the land at the distance of abou miles, guided by the lead, and taking care not to come into less than six or five half fathoms, to avoid the quicksands off the mouth of the delta. The water will sionally be discolored in patches, but there is no danger, provided the above dep maintained. Advancing on to the Westward, the first remarkable objects seen wh the two hills, two hundred and twenty feet high, on the island of Todos or Toas, ted about three miles to the Southward of San Carlos Island, and to the Southwa them are three more small hillocks. When these latter bear S. S.W. ¾ W., about miles distant, the white castle on the E. end of San Carlos will be seen under them soon afterward the castle of Bajo Seco.

In approaching from Espada Point, a course should be shaped about S. by W., to the land well to windward; the soundings will gradually decrease from fifteen to fathoms, and the first land sighted will be the Toas Hills.

Anchorage. The best anchorage to await a pilot lies with the castle on Bajo Seco Island fro ½ W. to S. S. W. ½ W., in five fathoms, about three miles from the island; or wit castles of Bajo Seco and San Carlos in line, in about six fathoms. It is to be obse however, that during the strength of the sea breeze, from 4 P. M. to about 3 P. M., it blows half a gale of wind, the riding is very heavy, and requires good ground-ta therefore, if it is only intended to communicate with the city of Maracaybo, it wi better to remain underway, or proceed to the anchorage off Estanques (page 69 cording to circumstances.

Winds. In working out of the Gulf of Maracaybo, it should be borne in mind that, off sh the wind generally shifts to the Northward at 4 or 5 P. M.; therefore endeavors sh be made to get near the Western shore about that time, so as to be able to make a board to the Eastward, before the wind draws round in that direction. By payin tention to these changes, a vessel will work out quickly.

In the early part of the year the winds from N. N. E. to N. E. by E. are very h and from 2 P. M. to 2 A. M. it blows a gale with a heavy sea; yet, at about 8 A. M. wind generally moderates.

Cape Chichibacoa. CAPE CHICHIBACOA bears N. W. ½ N. thirteen miles from Espada Point; in space the coast is low, but everywhere clean, and may be safely approached by tion to the lead.

The boundary line which separates Venezuela from New Granada runs from Chichibacoa through the middle of the peninsula of Guajira N. E. and S. W.

Los Monges. LOS MONGES (Monks) is the name given to a group of small but rather high lying off the entrance of Gulf of Maracaybo. The South Monks, the two Sou most, which are close to each other, bear E. by N. ¾ N. nineteen miles from Cape chibacoa, and are steep to within half a cable's length. N. E. ½ E., three miles them there is a single islet called the East Monk, which is equally bold, and there danger whatever in the space between. N. W. by N. about eight miles from the Monk, lies a group of seven rocks called the North Monks; these are all foul, and

t at the distance of at least a mile. The channels between them and the East outh Monks, and between the whole and the main, are quite clean, and may be ted without risk.

OUTLYING ISLANDS.

CHILA, lying N. ½ W. seventy-two miles from Cape Cordera, is in form like a *Orchila.* bout six miles long. E. and W., and three and a half miles broad at its E. end; the rn extremity terminates in a point, W. N. W., half a mile from which there is a old rock, steep to, with a clear safe channel between. The island is generally low t, but on the N. side are three hills separated by low valleys, the highest of which r the W. end; they may be seen fifteen miles off, and when first seen from the North- they appear as three islands.

se off the N. E. end of the island there is a narrow cay about two miles long, N. from which a reef runs off to the Northward two miles, and then sweeps round S. W., to near the middle of the N. shore, enclosing within it several smaller islets. her parts of the coast are clean and steep to within a cable's length. The island habited, and possesses no water. The mountains of Caracas may be seen from it r weather.

the S. W. side of Orchila, near the W. end, there is a clear sandy beach, in front *Anchorage.* ich, at the distance of about a cable and a half, there is well-sheltered anchorage the trade-wind in six or seven fathoms.

GIAS.—By reference to the present charts several banks will be seen placed to the *Vigias.* ward of Orchila. The nearest one to it, in lat. 12° 11′ N., long. 66° 7′ W., is said e been seen in August, 1803, but we have no record of it; there is also a separate about five miles to the S. W. of it. Another lies in lat. 12° 59′ N., long. 66° 35′ f which we can find no account whatever. A third, in lat. 13° 16′ N., long. 65° 25′ as passed over by a slaver called the *Scorpion*, and supposed to have from four to thoms water; but no soundings were taken.*

S ROQUES is the name given to a large group of cays, situated on a dangerous *Los Roques.* occupying a space twelve miles in extent N. and S., and twenty-three miles from W. They are all low with the exception of El Roque, which lies at the Northeast- xtremity of the group; this islet is chiefly formed of limestone hills, which may be welve or fifteen miles off.

y Grande, the Southeasternmost islet, is the largest, and its S. E. point bears W. by enty-three miles from the W. end of Orchila. It is triangular-shaped, seven miles gth E. and W., and six miles N. and S.; the S. side is bold and clean, but from the e a dangerous reef stretches off between two and three miles, and terminates N. N. bout seven miles from the N. end of the cay.†

y Sal, which lies close to the W. end of Cay Grande, is very narrow, but seven miles from E. to W. To the N. W. and N. of this cay, for a space of ten miles, there are at number of smaller islets, without any passage between them, and the reef is to.

RT EL ROQUE.—At the N. E. end of the reef extending seven miles from the N. *Port el* f Cay Grande, is a group of seven or eight cays, occupying a space about four miles *Roque.* ent E. and W., and two and a half miles N. and S., in the centre of which there is cellent anchorage, quite secure against all ordinary winds; El Roque, the Western- and largest cay, is nearly two miles long, E. and W., and three fourths of a mile at its E. end. As already stated, its Western part is formed of limestone hills oderate height, which are quarried, and used for lime and building purposes at coa.

e other cays appear to be formed of a bed of sand, over a coral foundation, which is ily clothed with the samphire plant; some have salt marshes, skirted by mangroves dwarf trees, large enough, however, to form boat's knees and breast-hooks, and to ed for firewood.

ere is a well of water at the S. end of El Roque, but the supply is uncertain, and it *Water.* yields more than eighty gallons a day. It may also be procured by digging wells e sand, but it is brackish.

h may be caught in abundance, either by the seine or hook; and there is a fishing lishment on El Roque.

the S. W. side of El Roque there is good anchorage in seventeen or eighteen fath- *Anchorage.* about three cables from the beach; but being to leeward of a swamp on the E. end

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xtracted from the chart of that vessel by Captain W. Bushby, H. M. S. *Wanderer*, who captured on after, in November 1838. She was furnished with chronometers.

is intended to have a fixed light on the S. E. point of Cay Grande.

of the island, it is an unhealthy spot, and it will be far better to proceed to the ha in the centre of the cays.

Directions. Vessels bound from St. Thomas to Laguayra generally pass through between Ore and the Roques; but it requires the utmost care, and had better not be attempted in night. Wrecks frequently occur on the Roques.

Clear channels lead into Port el Roque from the N. E., N. W., S. W., and S.: the three being from two and a half to three cables, the last half a mile wide; and they all so clear, and the edges of the reefs which bound them so distinctly seen, that it requires the eye, with the assistance of the plan, to navigate them. It will, howe be more prudent for a stranger to pass outside all, round the W. end of El Roque, work up to the S. channel. In doing this, Blackman's Cay, which points out the of the reef to the Southward of the cays, will at first appear like a single large r but it is a low islet, covered with bushes, bearing S. S. E. ½ E. four and a half m from the W. end of El Roque. The S. channel is formed by Pirate Cay and a dry sa bank about half a mile to the Eastward of it; they are both skirted by a coral le the edge being so shallow that it is easily seen. From the S. W. side of the cay ledge stretches off to the distance of nearly four cables, but its limits are equally tinct. The best anchorage will be in the centre of the Eastern part of the basin, wh a vessel will have the advantage of the pure sea breeze.

Tides and Current. At Port el Roque it is high water, full and change, at 4h. 30m. P. M., and the ris springs is three feet.* The current in the vicinity of this group of cays is extrem variable in both direction and force, and the changes sometimes take place sudde Its velocity has been known to change quickly from three fourths to even three k an hour.

During the summer, the period of light winds, the current between these cays and Gulf of Triste seldom exceeds a knot an hour, and is often less; indeed, the pilots sa that it frequently sets strong to the Eastward for many days together, which ena vessels to beat up very rapidly.

Caution. The wood obtained from Los Roques should be barked before taking it on board, indeed, this should always be done in these seas, for green wood, with the bark on ing allowed to remain in the hold of a vessel, is undoubtedly a source of sickness.

Islas de Aves. ISLAS DE AVES (Bird Islands) are two groups of small, low cays, lying upon tremely dangerous coral banks. The Easternmost bank is about five miles in ex and the Southern part bears about W. ¾ N. thirty miles from the Westernmost of Roque Cays; the Westernmost bank is nine miles beyond this in the same direct and is six miles long N. and S., and about four miles broad; an approach to eithe them is extremely dangerous, especially from the N., and both should be carefu avoided.

Buen Ayre Island. BUEN AYRE ISLAND, situated about thirty-three miles to the Westward of Westernmost Aves, and fifty miles from the main land, is a dependency of Cura From Lacre Point, the Southern extremity of the island, to the N. E. point, the dista is twelve miles in a Northerly direction; and from the latter to the N. W. point thirteen miles; the breadth is from three to four and a half miles. The Southern tion is very low and sandy, and cut up by cultivated salt ponds; and the E. side of part for some distance is skirted by a dangerous reef, which runs off more than ha mile in some places, but the W. side is steep to.

The Northern arm of the island is rugged and uneven, and of moderate elevation, highest part being at the N. W. end; the hill at the latter point is called Bran (light-house or beacon), and so much resembles Mount San Christopher, at the W. of Curaçoa, that mariners are apt to mistake the one for the other. The trees some parts grow in high clumps, and when first seen have the appearance of mar towers. From the N. E. point all round the W. end the shore is clean and very s to, and the water is so clear in this part of the sea, that the bottom is seen at a g depth.

In the bend of the bight on the W. side of the island, about a mile from the shor a small islet called Little Buen Ayre, and abreast lies the town and fort.

Light. Lacre Point, the Southern extremity of Buen Ayre, is a low rocky spit of land en in a reef of sand and coral. Near the extremity of the point is a white tower with tical stripes of red, seventy-five feet high, which exhibits a fixed white light of second order, visible from a vessel when bearing between S. by W. and E. by S. elevated eighty-five feet above the level of high water, and should be seen in weather at a distance of twelve miles.

Anchorage. The shores of Buen Ayre are so bold that the only anchorage lies off the town seventeen fathoms, only a cable and a half from the shore; the bank is so na and precipitous, that it requires care and skill not to shoot in too far, and not to b

* From the survey and remarks of Commander E. O. Johnes, H. M. S. *Arachne*, 1827.

o short, to risk dragging the anchor into ocean water. The best way is to have a and large hawser in a boat ready to make fast to one of the old guns or anchors d near the battery for this purpose, and not to drop the anchor until having d in to a berth. A vessel may pass in or out of the bight on either side of Little Ayre, but the S. W. channel will be found the most convenient.

Little Curaçoa.

TTLE CURACOA is a very low islet of coral, stones, and sand, partially covered the prickly pear and mangrove bushes, the tops of which are only about ten feet the sea. It is about three fourths of a mile long, N. and S. and a fourth of a broad, and so steep to that within half a cable of it there is no bottom within forty ms of line, except to the Southward, where it is said soundings have been obtained lf a mile off.

Light.

fixed red light of the second order, is exhibited at an elevation of sixty-two feet high water from the light-house standing on the S. side of Little Curaçoa, and ar weather it is visible from a distance of ten miles. It bears W. ½ S. twenty-one from the light on Buen Ayre; S. E. by E. five miles from Cañon Point, the E. end raçoa; and E. by S. ¼ S., sixteen miles from the Sta. Ana harbor light.

Curaçoa Island.

RACOA ISLAND.—This island is thirty-three miles long from E. S. E. to W. N. nd about six miles across in its greatest breadth, and of considerable elevation. Table Mount, or Tafelberg, about five miles to the Westward of Cañon Point, comes in sight in making the island from the S. E., and has the appearance of a separate d; Ronde Klige (Round Rock) on the N. E. shore, and San Hieronymus and San topher mountains on the Western part, are also remarkable objects. The latter, h is situated about four miles from the N. W. end of the island, is about twelve red feet high, and as already stated, when first seen from the Northward, very resembles the Brandaris Hill on the W. end of Buen Ayre. The surface is gen- y rocky and barren, yet in some spots it produces in perfection the finest fruits of West Indies.

he N. coast of the island is everywhere bluff, clean, and steep to; and its rocky es almost overhang the sea, which breaks on it with great violence. The S. side is ered by a bank of sand and coral, which extends off about a cable's length. On shore is the fine harbor of Sta. Ana, where the whole commerce of the island is ed on. There are also several small harbors and coves, one of the best of which is ish or Sta. Barbara Cove, which is pointed out by a fort and flagstaff about seven s to leeward of Cañon Point.

Water.

though destitute of running streams, there is plenty of good well-water; and rain- r, collected in tanks, is also to be obtained; but the charge for it is generally very

Sta. Ana Harbor.

A. ANA HARBOR, the entrance to which is situated above twelve miles from the nd of Curaçoa, is a fine basin or lagoon about two and a half miles in length, from W.; but its interior is so cut up by small islets and projecting points that its dth varies considerably; in the centre, however, there is a clear space, with a depth om eight to eleven fathoms, where a fleet of the largest-sized vessels may lie in ect security. The entrance to the harbor is very narrow, and is formed between long tongues of land, only half a cable apart, and is strongly defended on the E. by Fort Amsterdam, and on the W. side by Fort Rif; besides which a chain is in iness to be run across in case of necessity. Just within the forts, on the E. side, is the town of Willemstad, and on the opposite shore is Overzijde. The inner part he channel is from a half to a cable in width, and runs nearly on a straight line N . three fourths of a mile, when it opens out into the lagoon, which is called the ottegat.

essels-of-war generally lie in the Schottegat, for, having the advantage of a con- al pure breeze day and night, it is more healthy, and there is less annoyance from mosquitoes, which at times are insufferable. Merchant vessels will find it more con- ent to lie alongside the wharves that line the channel, and where those of every size find means for heaving down or refitting.

Light.

fixed white light is shown from Fort Rif, on the Western side of the entrance to Sta. harbor.

Directions.

essels bound to the harbor of Sta. Ana, from St. Thomas, or from the Northward, erally endeavor to sight the high land at the N. W. end of Buen Ayre, in order to well to windward; but as already pointed out (page 694), the Brandaris Hill so much mbles Mount San Christopher, at the W. end of Curaçoa, that they are often mis- en. Care should be taken not to do so, for, if the latter is made first, and, being n for Brandaris, a coarse be shaped to the S. W. a vessel may find herself far to lee- d before discovering the error, and meet with considerable delay in going to wind- d again.

When bound from the Northward, care should be taken when rounding the E. end of açoa, as it is very low, and the currents set toward it from the Eastward with great ngth. Vessels approaching from the Eastward will first sight either the light on

Little Curaçoa or the Table Mount. The S. side of the island should be navigated the distance of one or two miles. A pilot will be found waiting in his boat about a mile to windward of the entrance.

With the wind strong from the N. E., it will rush off through the channel in baffling gusts, therefore, one or two hawsers should be at hand, or one coiled in a boat astern ready to run out to the posts placed on either side of the channel for this purpose. The best mark in running down is to keep the Westernmost angle of the Rif fort, directly under the sharp point of Priest Mount. When near the entrance, the yards must be braced sharp up, and everything ready to clew up and anchor the instant the sails begin to come aback, to prevent getting on the lee shore, which is foul off some places. The moment a crane or crab, situated on an elevated spot, is seen from the forecastle to open out to the Westward of Fort Amsterdam, luff boldly up, and when the vessel's way is lost, bring up, or run out the warps. A ledge runs off to the S. W. a cable's length from the water battery under Fort Amsterdam; but the discolored water on the edge is easily seen.

With the wind from the S. E. there is no difficulty, as a vessel will sail right through the channel into the harbor, and the middle of the entrance may be taken from a wide offing, as soon as the channel is fairly open; it is to be observed, however, that a strong Westerly current generally comes close home to the shore.

A vessel bound hither from the Westward, would do well to try the direction of the current off the main first, as it is sometimes found running to the Eastward; but should it be otherwise, she will do better by standing out at once, and working up to the Northward of the islands reaching off to at least forty miles.

Oruba Island. ORUBA ISLAND, the E. end of which bears W. ½ S. forty-three miles from the N. point of Curaçoa and N. E. by N. sixteen miles from Cape San Roman, is seventeen miles long S. E. and N. W., and about four miles broad; the extremities are level and very low, but in the middle it is of moderate height: the Pan de Azucar (sugarloaf) Hill, so named from its shape, is visible eighteen or twenty miles off, and when first sighted the land toward the W. end appears in broken hummocks.

The S. side of the island is skirted by a chain of low bushy cays which extend from the S. W. point to within three miles of the E. end, where they terminate in a rocky islet considerably higher than the others; they are so bold, that there is no bottom with the hand lead at the distance of a cable's length. About three miles to the Westward of the Pan de Azucar Hill, there is a projecting sandy point, and between it and the cays to the Westward is an opening leading into an anchorage called Port Caballos, where there is a small settlement.

Water. There are no springs on Oruba; good and wholesome rainwater is collected in tanks but it is scarce. Water may also be produced by digging wells a few feet in the sand at a short distance from the beach at Port Caballos.

Directions. Vessels having occasion to visit Port Caballos for provisions or to repair damage should get close in with the cays as far to windward as the Pan de Azucar, before running down, on account of the strong Westerly current which generally prevails. When the port opens bearing N. N. W. a flagstaff will be seen in one with a red house standing by itself on a hill behind it; these two objects kept in line will lead in clear of a rocky ledge off the extremity of the point, and as soon as shelter is obtained within it the anchor should be dropped in five or four fathoms, taking care, however, to pick out a sandy spot as there are several rocky patches in the way. Those of light draught may go within the reefs, and anchor close off the town in three fathoms, sandy bottom.

Strangers had better take a pilot, for if the port is missed, it will take some time to beat up again.

Anchorage. The best anchorage off Oruba is about four or five miles to the Northwestward of the village. Here a vessel will find good shelter on a white bank in about seven fathoms, three fourths of a mile from the shore, with the Pan de Azucar at the back of the village, bearing E. ½ S.; a low white sandy point, N., and the Easternmost extremity of the land S. E. ½ E. Care, however, must be taken to pick out a clear spot as some parts are rocky. There is also anchorage under the W. end of the island, in six and a half fathoms, coral and sand, about a mile from the shore, with the N. W. point N. by W. W.; the S. W. point S.; and the Pan de Azucar S. E.

COAST OF NEW GRENADA—CAPE CHICHIBACAO TO PORTO BELLO.

Gallinas Point. GALLINAS POINT.—From Cape Chichibacao the coast trends to the N. N. W. about twenty-five miles to Gallinas Point, which is the most Northerly projection of the peninsula of Maracaybo, and is very low, with a sandy beach.

Druid Shoal. DRUID SHOAL.—N. N. W. ½ W. five miles from Gallinos Point, and N. by E. from Aguja Point, there is a bank, upon which the depth shoals suddenly from ten to four and a half fathoms, and it is said there is as little as two fathoms. Vessels, therefore

ing down this part should not approach nearer than to bring the low sand-hills shore just in sight; the mountains of Chiniare in the interior being visible at the ime in clear weather.

HIA HONDA.—From Gallinas Point the coast line runs S. W. by W. ½ W. five to Aguja Point, which has foul ground to the distance of a mile off it Thence ere curves to the Southward and Southwestward for about four miles to the East- int of Bahia Honda. In this space, called Bahia Honda Chico, the water is very w, and affords no shelter or safe anchorage; the shore is low and barren, but may ly navigated with proper attention to the lead. *Bahia Honda.*

entrance to Bahia Honda is about three miles wide, but the interior is seven miles gth N. E. and S. W., and about three miles in breadth. On the E. coast there are remarkable red cliffs; the W. point is low. Anchorage may be taken up as most nient on the E. side of the bay, in from eight to four fathoms.

CA BANK.—The only danger in Bahia Honda is a shoal nearly four cables long W., which lies nearly in the middle of the entrance, on a line between the two Its Western extremity is about three fourths of a mile from the W. point of the d the opposite end is about one mile and three fourths from the E. point. The East- tremity has only a foot water, and the sea breaks over it in light breezes, so that on to the lead is all that is required. *Boca Bank.*

PORTETE.—The coast at Bahia Honda begins to rise and trends to the S. W. eleven miles to the narrow entrance of a large shallow bay or lagoon, called El e, which is only fit for small vessels. *El Portete.*

PE LA VELA.—Beyond El Portete the shore takes a W. ½ S. direction for about me distance, and is all along clean to a little hill which projects out about half a nd rises abruptly from the shore in the shape of a sugarloaf, against which the eaks with great violence. From this hill a high rugged ridge of land trends to W. about three miles, to a bold headland called Cape La Vela; some authorities, er, give this name to the hill just described. About a fourth of a mile to the ard of the cape there is a round islet or rock, steep to within a ship's length. In annel between it and the shore the depth decreases from five and a half to four ree fathoms near the cape, so that a vessel may run through in safety by keeping o the rock. *Cape La Vela.*

land immediately within the cape is very low and sterile, but about seven miles , to the S. E. of it, the Sierra del Carpintero (Carpenter Mountain) rises to a great ; and about seventeen miles to the Southward, a short distance inland, there is a kable conical hill, a great part of which has a chalky appearance.

en seen from the Westward, beyond the distance of seven or eight miles, Cape La makes like a number of small islands.

the S. side of Cape La Vela there are five and a half fathoms two miles from the whence the depth gradually diminishes inward over a clean sandy bottom. Good , with the usual breezes, will be found with the small islet off the cape from N. by N. N. E., about two and a half miles distant, in from seven to four fathoms. *Anchorage.*

w Indians reside on the shore, from whom stock may be procured, but it is said re not very friendly. Water is scarce.

coast from Cape La Vela sweeps round to the S. and S. W. to Castillete's Point, bears S. by W. ½ W., distant twenty-three miles. It is all along very low, and int is only discovered by a large grove or clump of mangroves near it. E. by N. iles from the point is the little hill of Remedios. *Coast.*

are Point is W. S. W. fourteen miles from Castilletes Point. Between the two ore curves a little to the Southward, and the beach is intersected by two slightly ting points.

ond Manare Point the shore takes very nearly the same direction for thirteen and miles to Point de la Cruz, and in this space there are also several small projec- or points, called Almidones, Pajaro, and Jorote.

JARO SHOAL.—Between the two last-mentioned points, and four miles to the ard of Point de la Cruz, there is a very dangerous sand-bank, with only two fath- n it, about one mile and a half from the shore. The outer edge is said to lie miles from the land, and sometimes shows itself; vessels are advised not to ap- h this neighborhood within the depth of ten fathoms. *Pajaro Shoal.*

HACHA.—S. W. ¼ W. four miles from Point de la Cruz is Point de la Vela, and ½ S. seven miles from which is the entrance to the Rio de la Hacha. The whole s part of the coast is also very low, and presents nothing very remarkable until he latter place. The town of La Hacha is situated on the shore on the W. side above small stream, and on the opposite bank there is some dark-wooded land, than that adjacent, which hides the town from the N. E. It is pointed out from ing, when nearly abreast it, by the large square tower in the centre of the church. he capital of the province. It carries on some commerce in dyewoods, and is in importance. *La Hacha.*

Light. A fixed white light is exhibited from the tower of the church at La Hacha, at an elevation of sixty-nine feet above the level of the sea, and is visible in clear weather from a distance of about six miles.

Anchorage. The best anchorage off La Hacha will be found with the church bearing S.S.E. in five fathoms, or nearer in, according to the draught of the vessel, bearing in mind that the three-fathom line is two miles from the shore. Being, however, so completely exposed, it is by no means a desirable roadstead, especially in the season of the breezes.

Directions. From a position about three miles to the Westward of Cape la Vela, a S. W. course for fifty miles will bring a vessel into five and a half or six fathoms water about six miles N. N. W. of the town of La Hacha. Soundings extend off a considerable distance even outside this course, and the five fathom line is from four to five miles from the shore, within which depth it is not prudent to come. West fifteen miles from La Hacha the elbow of the five-fathom line is nine or ten miles from the land. Vessels leaving La Hacha bound Westerly, should, therefore, stand well to the Northward before beating away. In beating up they should stand in to ten fathoms and off to sixty, until to windward of the Pajaro Bank, when the shore may be more freely approached, and anchorage taken up if necessary in six or seven fathoms.

Should a vessel run past La Hacha, her error will be discovered by the soundings, by a bearing of the remarkable snow-topped mountains rising between it and Santa Marta, and which are visible sixty or seventy miles. The highest, called the Sierras Nevadas, form two sugarloaf-shaped peaks, which are over sixteen thousand four hundred feet above the level of the sea, and bear S. W. ½ S. from La Hacha.

Navio Quebrado Shoal. NAVIO QUEBRADO SHOAL.—From Rio de la Hacha the coast trends S. W. sixteen miles to Caricari Point, which separates the entrances of two large lagoons. N. W. about two and a half miles from this point there is a very dangerous shoal called the Navio Quebrado (wrecked ship), and vessels passing this spot should not come into less than twenty fathoms. The Western edge of the elbow of the five fathom line trends N. nine miles from this shoal; and in that direction, by proper attention to the lead, the soundings will give a sufficient warning.

Coast. The coast from Caricari Point to Dibulle Point, which is fourteen miles distant, is nearly S. W., when it takes a Westerly direction for thirty-nine miles to Cape San Juan de Guia.

The five-fathom depth comes close home to Dibulle Point, and to the Westward of this the coast is clean and steep.

Near Dibulle Point there is a small commercial town, off which there is anchorage, and the riding and landing are much easier here than off La Hacha. From Cape San Juan de Guia the shore takes a W. N. W. direction for about four miles, when it curves to the W. and W. S. W. for eight and a half miles to Cape Aguja. This space is very irregular in outline, forming several small islets and coves, free of danger, and affording good shelter. These coves are separated by high, scarped, rugged hills, which form bold, projecting headlands, steep to, and when first seen from the Westward appear several islands.

Cape Aguja. CAPE AGUJA.—Cape Aguja is the Northern extremity of a small islet, separated from the main land by a channel three cables wide; but as reefs run off from both shores it is too narrow to be safely navigated, although it has sufficient depth for any vessel. N. W. of the islet there are three dry rocks near to each other, the outermost, which is also the largest, lying three cables off. A short distance to the Westward of the point of the island there is also another rock which is higher than either of the former; they are clean and steep to.*

Taganga Bay. TAGANGA BAY.—From Cape Aguja to Betin Point, the N. point of Santa Marta Bay, the bearing is S. S. W. ¼ W. and the distance three and a half miles; to the Northward of the latter the shore sweeps round to the Eastward and Southward for about one mile and a half, forming the bay or bight of Taganga. The land around is high and scarped with some beaches and coves steep to; there are also in this neighborhood some remarkable white cliffs, which may be seen ten or twelve miles off; there are others of the same appearance on this part of the coast, and consequently they be guide to Santa Marta.

Santa Marta Bay. SANTA MARTA BAY, formed between Betin and Cuerno or Gaira Points, is mile and a half wide, and being sheltered from the usual breezes is one of the best most convenient anchorages on this coast. The city is the capital of the province Santa Marta; it stands on the shore, at the base of the lofty ridge of mountains which, rising gradually in rugged, conical peaks, terminate in the snowy summits the Sierras Nevadas; these peaks bear S. E. by E. ½ E. from the bay, and are a guide for it.

* In Nautical Magazine, 1843, page 854, it is stated that H. M. S. *Comus*, in August, 1840, shoal with ten to three fathoms on it, lying three miles from the land, with Cape Aguja N. extreme of land W. S. W.

e city is of considerable commercial importance, its exports consisting mostly of , rice, and cotton, and a short distance from it are some natural salt pits or mines; rade with the interior is carried on principally by means of large canoes and ers of large draught, which communicates with the river Magdelena. The river anares disembogues a short distance to the Southward of the city, and supplies it water by means of an aqueduct which runs along the sea front.

arly a cable's length to the Westward of Betin Point lies a small rocky islet, called orro Chico, and in the channel between, near the middle, there are four and a half ns water, but it is not safe to navigate, on account of the unsteadiness of the e; the W. side of the islet is steep to. About three cables Westward of the Morro is a much larger islet, with almost perpendicular sides, called the Morro Grande; is a strong fort on the summit, which commands the bay, and stands so high that s at the anchorage could not elevate their guns sufficiently to have much effect it. From the N. W. and S. E. points of the islet a foul ledge runs off about half a s length; but elsewhere it is steep to, and the only landing-place is near the mid- f the S. side.

east the city, and as far to the Southward as the mouth of the Manzanares, a shal- ank stretches off a fourth of a mile, and its edge, in three fathoms, lies with the f San Antonio, at the N. end of the bay, in line with the hill on Taganga Point g N. N. E.; inside this line the depth gradually decreases to the shore.*

m the S. W. side of Betin Point a coral ledge, named Druid Rock, with from e to ten feet water off its outer extremity lies W. by N. half a cable's length the S. end of the point; close outside there are four and a half fathoms, but there passage within it.

ere is also said to be a small rock, called Pobea, in the middle of the anchorage, the cathedral bearing E. by S., the hill of San Antonio N. E. by N., and the E. end orro Chico N. by W. ½ W.; but its existence is doubtful.

ter may be obtained with great ease at the entrance of the river Manzanares; it d be taken, however, very early in the morning, before the washerwomen com- to work. *Water.*

en approaching Santa Marta from the Northward or Westward, should the peaks e Sierras Nevadas be visible, there will be seen, at a considerable distance, a re- able division or separation in the mountains which overlook the city. When close shore this gap will be lost sight of, and the bay will then be found by steering e highest mountain at the S. end of the Santa Marta range. *Directions.*

the wind is to the Northward of E., the channel between the Morro Islets may be without fear, being careful, however, not to haul into the cove at the N. end of the efore Betin Point bears to the Northward of E., to avoid the Druid Ledge. Should nd be at E. or to the Southward of it, and blowing strong, it becomes so variable the high land, and rushes off so violently, that it will be better to pass outside Grande, and work into the bay between it and the main, where it is quite clean. ings will not be obtained until on a line between the islet and Cuerno Point, where are thirty fathoms, and thence the depth gradually decreases inward.

horage can be taken up anywhere, but the farther to the Northward the smoother e the sea; for the convenience of watering, however, a berth may be chosen about bles from the mouth of the Manzanares, but it will be necessary to drop another r to the S. W., and to lie with a long scope of cable, to prevent dragging off the in the heavy gusts. Merchant vessels, and those requiring repairs or careening, the cove at the N. end of the bay, and moor with a cable to the shore. *Anchorage.*

ere is no regular tide in Santa Marta Bay, but in the month of March the water een known to rise four feet. *Tides.*

VELA OR VABALA.—This bank holds a place on the charts in lat. 15° 12′ N., 75° 23′ W., but we have no account of it, although lying near the track of Santa , Cartagena, and Jamaica. *La Vela or Vabala.*

ken water is also reported by Captain Willoughby, in 1823, to have been seen W. fifty-five miles from Cape Aguja, in lat. 12° 12′ N., long. 74° 32′ W.

coast from Cuerno Point, the Southern extremity of Santa Marta Bay, trends S. about fourteen miles to the Boca de la Ciénaga, and then sweeps round in a West- irection for twenty-six miles to the Boca de Rio Viejo or Old River, the Eastern of the Magdalena. The Boca Ciénaga leads into an extensive shallow lagoon, communicates with the Magdalena by several small creeks, navigable for canoes. *Coast.*

ENAGA.—At twelve miles S. of Santa Marta is the village of Ciénaga, lying about mile from the beach, on low ground; the houses are built principally of mud, e roofs only are visible from the anchorage. The church tower is a conspicuous and seen at a distance of ten miles. The best anchorage is with the church tower *Ciénaga.*

s shoal is gradually increasing, from the deposit brought down by the river, and carried to the ard by the current.—Mr. E. Wise, Master H. M. S. *Cadmus*, 1860.

S. S. E. two and a half miles, in about four fathoms. S. of this is the village of Pue de San Juan, having also a conspicuous church tower.

River Magdalena. RIVER MAGDALENA.—The course of this great river is said to be eight hund and forty miles, and it empties mainly into the sea by two arms, called the Boca de Viejo and Boca de Ceniza—the latter about eight miles to the Westward of the forme which, uniting about six miles from the sea, form the island of Gomez. At the junct of the arms, on the Western shore, is the town of Barranquilla, the capital of the pr ince of Savanilla; it stands about eighty feet above the level of the sea. The Mag lena is navigated by steamers drawing from three to five feet water as far up as Hon about three hundred and eighty miles in a direct line from the sea, and three d journey from Bogota.

Off the mouths, and to the distance of fifteen or twenty miles in the rainy season, river water gives to the sea a greenish tinge, and the influence of the streams, runn to the N. and Northeastward, with discolored water and driftwood, may possibly be as far as lat. 12° 25′ N. When the river stream comes in contact with the Caribb current running to the Westward, it frequently causes a violent race, and if encounte in the night, is alarming to strangers. The spot where this takes place will, of cou depend upon the strength of the two streams, but it has been met with sixty miles fr the mouth of the river.

The bars at both entrances are so shallow that the produce of the interior is obli to be carried by the river steamers and bongos (large trading canoes) to Santa M and Savanilla for reshipment.

Water. Water of an indifferent quality may be procured from the S. W. mouth of the Mag lena; but the bar is only passable for very small boats. Firewood is easily obtai the beach near the river being nearly covered with driftwood.

Savanilla and Verde Islands. SAVANILLA AND VERDE ISLANDS.—The Boca de Ceniza, between Go Island and the Western cays, is about two miles wide, but it has two small sandy c in the middle. To the Westward of these the shore is fringed with low, swampy, m grove cays, to the distance of from one mile and a half to three miles.

Savanilla, the largest of these islets, lies nearest the main land, and is about miles long from N. E. by E. to S. W. by W.; being, however, exposed to the vio action of the river, its extremities undergo continual change, especially at the W end.

Verde Island, the outer and Northernmost, is also about five miles in length, and ning parallel with Savanilla, leaves between them a channel navigable for canoes the river; the W. end of Verde Island is sandy, and appears to be stationary and s to; about three miles N. of it no bottom has been found with twenty fathoms of lin

Savanilla Bay. SAVANILLA BAY, between the W. end of Verde Island and Hermoso Point, wh bears S. by W. ½ W. from it, is five and a half miles wide, and about a mile and a deep; it affords excellent anchorage in from eight to five fathoms, muddy bottom, w in about three fourths of a mile of the main. Near the middle of the S. shore, a two and a half miles from Hermoso Point, there is a small range of remarkable red yellow cliffs, and at a short distance inland of these a table-hill, with a square humm at the E. end, resembling a battery, which serve as guides.

Upon San Antonio Point, on a rising bluff under the high land, which is about a to the Northeastward of Nisperal Point, there is an old fort, which, however, is not e discovered; and also the custom-house, a large white building, showing on its Nort face a double row of arches, and standing at an elevation of fifty or sixty feet above sea; and on the Northwestern extremity of the main land is the town of Savanilla.

Cupion Rocks. CUPION ROCKS.—Nearly abreast the E. end of the above cliffs, about two ca length from the shore, there is a rock just out of the water, and two others close o N. side, with two feet, and another a short distance to the N. E., with four feet w over it. There are two and a half fathoms within them, and four fathoms close to t N. W. side; but a shallow ledge of sand and mud runs off a short way to the No ward. Between these rocks and Hermoso Point the shore is clean.

Arena Bank. ARENA BANK.—To the Northeastward of the cliffs, between them and Nisp Point, the shore forms a sandy bay; and abreast the middle part, and about four c from the beach, there is a very shallow bank of sand and oysters.

Culebra Bank. CULEBRA BANK is the only danger in entering Savanilla Bay, and lies right a entrance; it is about four cables long N. E. and S. W., and two cables broad, depths of from ten to sixteen feet, and four fathoms between it and the cays. From S. W. end, which is the shallowest part, Hermoso Point bears S. S. W. ½ W. two three fourths miles, the Table Hill behind the red cliffs S. E. ½ E., the old fort on extremity of San Antonio Point E. N. E., the Northernmost building in Savanilla ½ E., and the sandy point at the W. end of Verde Island N. ½ E.*

* Captain Jodrell Leigh, H. M. S. *Ontario*, 1821, and Captain W. B. Bigland, H. M. S. *Fa* 1821. From a Spanish survey made in 1794, it appears that the S. W. end of Savanilla Island w

approaching Savanilla Bay from the Eastward, Verde and Savanilla islands be- *Directions.*
very low, should be kept at a moderate distance until Hermoso Point opens well to Westward of Verde Island, when haul in toward the bay. Care, however, must be n not to bring Hermoso Point to the Westward of S. by W. ½ W., or to shut in the to the Westward of that point before the Table Hill or highest of the single cliffs s S. E. by E., or the Northernmost building in the village bears to the Northward E. ½ E., to avoid the Culebra Bank.

vessel will generally have to beat in; therefore when standing toward the main, Antonio Point must not be shut in with Nisperal Point, to avoid the Cupion Bank; in reaching to the Northward San Antonio Point must not be brought to the East- d of N. E. by E. ½ E., to avoid the Culebra. A convenient anchorage will be found Hermoso Point S. W. and the Table Hill about S. E., in six fathoms, about three ths of a mile from the coast.

here is no regular tide in Savanilla Bay, but the water sometimes changes its level *Tides.*
or five feet.

AMAS BAY.—From the bluff headland of Hermoso Point, the coast trends S. by *Damas Bay.*
five miles, and then turns off to the Westward for about two miles, to the Morro de as, forming the bay of that name. About midway between the bottom of this bay Hermoso Point is the little hill of Inasco, and nearly abreast it, not far from the e, is the Cascavel shoal.

AUTILUS SHOAL.—H. M. *Nautilus*, in 1821, being three miles and a half from *Nautilus*
nearest shore, with Hermoso Point bearing about E. N. E. distant five to six miles, *Shoal.*
ck on a sunken rock, not three times the size of the ship; it had eleven feet water and six fathoms around it. Its true position, however, is very doubtful, for in a equent account it is said Hermoso Point bore N. E.

he coast from the Morro de Damas trends S. W. ½ W. eleven miles, when it curves *Coast.*
he Westward for about ten miles, to Galara Point. The latter portion forms a nar- sandy neck of land, so low that in some places the sea, in strong breezes, washes it, and the Eastern part is called the Island of Zamba. Off all this part of the e the water is said to be shallow, and there are twenty-six fathoms, muddy bottom miles from the land.

leaving Cartagena at night for the Eastward, care must be taken to keep well to *Caution.*
Westward, until to the Northward of Zamba Island, as the current sets strongly the bay.

ALMARITO BANK.—At the bottom of this bight, N. W. by N., about three miles *Palmarito*
the Morro Pelado (Bald Hill), and W. by S. about ten miles from the Morro de *Bank.*
as, there is a dangerous shoal called Palmarito; its exact locality, however, is still doubtful.

otwithstanding what has been stated above, some authorities assert that the sound- are here very regular, increasing from seven fathoms close to the shore to fifty oms; that good anchorage will be found from three to four miles off; and that in ing to windward, it is advisable to keep close along this shore, to obtain smooth r and avoid the N. W. current.

ALERA BANKS.—Between the bearings of W. and N. W. and at the distance of *Galera*
t two miles from the extremity of Galera Point, there are four small banks of black *Banks.*
, of different sizes, with five and a half fathoms water; and between and inside them are seven to ten fathoms over the same sort of bottom.

ALERA DE ZAMBA BAY, which is completely sheltered from the Northward *Galera de*
eck of land terminating at Galera Point, affords good anchorage. In the centre, *Zamba Bay.*
ever, is Areno (Sandy) Cay; indeed, some authorities say there are two if not four and being elsewhere encumbered with shallow banks, it is difficult for a vessel to far in, and requires very great attention to the lead. On the S. shore of the neck nd, there are several small mangrove lagoons with a depth of from twelve to fif- feet. Anchorage may be taken up in the bay with Galera Point bearing N. W., the an de Tierra Firme N. E. or N. E. by E., and Zamba Hill E. S. E. to E. about one and a half from the shore. The Volcan is situated on the E. side of the bay, and round hill with a flattened summit about seventy-five feet above the sea. Zamba is probably the Morro de la Venta on the S. side of the bay, which appears like en Paps; there is also another remarkable hill in this vicinity with the appearance barn, which is probably the Cerro del Bujio del Gato, on the S. W. point of the

ASCAJAL ISLAND lies S. by E. six miles from Galera Point, and nearly two *Cascajal*
from the shore, and is very foul. N. ½ W. about one mile and a fourth from the *Island.*

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xactly at this spot, and that, consequently, a mile of that cay has been washed away since that , and the debris thrown up into sandy cays and bars between the island and the main. When ured by the above officers, in 1821, this bank had only from five to seven feet water; but in 1846 not less than ten feet; it may, therefore, disappear altogether ere long.

island, there is a shoal of two fathoms water; N. three fourths of a mile, there one of four fathoms; and N. W. by W. ¾ W. two short miles, there is one of the sa depth.

Bujio del Gato Banks. BUJIO DEL GATO BANKS.—The Westernmost, which is also the largest of th banks, lies S. ¾ W. seven miles from Galera Point. N. by E. ½ E. half a mile fr the N. end of this bank, is the N. E. rock, or Uña de Gato (cat's claw); outside t shoal the depth gradually increases from seven to fourteen fathoms at the distance two and a half miles. N. N. E. ¼ E. three and a half miles from Canoas Point, th is a dangerous rocky bank of only three fathoms water right in the middle of the G Bay.

Caution. In the night-time a vessel should not approach this part of the coast within the de of twenty fathoms.

Canoas Point. CANOAS POINT.—The extremity of this point, which bears S. by W. ¾ W. fourt and a half miles from Galera Point, is low and rocky, but the land is hilly just within and the shore is all along of moderate height. N. E. from the point, and near the sho is a hill with a flat summit and several barrancas, or reddish-colored ravines on sides.

From Canoas Point the shore trends to the Eastward for about a mile, and t curves to the Southward for three miles to the base of three little hills or remarka cliffs, called Cerros Morritos, whence it takes a S. S. W. ½ W. direction, for about miles to the city of Cartagena; this latter part is a low mangrove shore.

Negrillo Shoal. NEGRILLO SHOAL.—This dangerous rocky shoal is said to lie between S. W. S. W. ½ S. from two and a half to three miles or even more, from Canoas Point; w the hill of La Popa at Cartagena bearing S. by E. ½ E., and the citadel of San Lazaro about seven and a half miles.* It is about a fourth of a mile in extent, with only t to five feet water over the rocky heads, three to five fathoms between them, and six nine fathoms close around. The channel between it and the coast would be practica were it not for three more sunken rocks, which make the passage dangerous.

The Cabeza. THE CABEZA is another dangerous small shoal, with only two feet water, lying W. about a mile from the Southernmost of the Morrito Hills.

Playa Grande. PLAYA GRANDE is the name given to a large bank of soundings between Can Point and the Boca Grande, with nine fathoms water on it at four miles from the la toward which the depth gradually decreases. On the W. side of Tierra Bomba depth increases to twenty, thirty, and forty fathoms, and at two cables' length from t island there are six fathoms.

Anchorage. There is good anchorage on this flat in front of the city of Cartagena, with La Po Hill bearing E. or E. ½ N., and Canoas Points N. by E. ½ E., in from five to seven fatho water, two to three miles from the beach.

Salmedina Bank. SALMEDINA BANK.—This dangerous bank, in the way of vessels approachi Cartagena from the Westward, is three miles in extent from E. to W. and nearly miles from N. to S. From the N. E. extreme in six fathoms, La Popa Hill bears E. E., and the S. W. extreme of Tierra Bomba S. E. ¼ S.; from the S. E. extreme in fathoms, La Popa bears N. E. by E. ¼ E., and Fort San José, in line with the sa point at the S. end of Tierra Bomba, S. E. by E. ¾ E. The Western edge of the where the sea breaks in is in lat. 10° 23′ 45″, long. 75° 41′ 45″.†

Cartagena Harbor. CARTAGENA HARBOR is the finest and most commodious port on the N. coa New Grenada; where vessels of the largest class can lie in great security, effect ordinary repairs, and if necessary heave down. It is formed between the low grove shore of the main on the E., Tierra Bomba Island on the W., and Barú Island the S., and is about eight miles in length from N. to S.; but its breadth varies siderably. Near the middle, the Eastern extremity of Tierra Bomba stretches so across, as to nearly divide it into two large basins. The city, which is the capital the province, is situated at the N. end of the harbor, on a low, narrow, neck of about two miles in length, and is enclosed within fortified walls of the most solid des tion, capable of mounting upwards of two hundred guns, but at present they are al dismantled; the churches and other buildings are also of a similar substantial cha ter, having been built with a view to defence. It occupies a space of about fourths of a mile from N. to S. and half a mile from E. to W. and contains three thousand inhabitants, who communicate with the main by a wooden bridge two hundred and fifty yards in length, and by the river Magdalena by a recently structed canal.

About a mile to the Eastward, the city is overlooked by the hill of La Popa, five

* Captain J. F. Chapman, H. M. S. *Nautilus*, 1820; Captain H. Patton, H. M. S. *Isis*, 1826; Lieutenant W. James, H. M. S. *Spey*, 1829. All which vessels struck on it, but the Derrotero de las Antilas states, that it lies N. ¼ W. from La Popa, and only one mile and a fourth S. W. from Point.

† Mr. Stephen Spain, Master H. M. S. *Indus*, 1857. The long. of Fort Pastelillo is considered 75° 33′ 18″ W.

d and ten feet above the sea, of a wedge-like form, with the thick end to the S.; at end there is a signal post and a large convent, the massive white walls of which are y feet high. In clear weather the hill may be seen thirty miles off, and becomes a kable object from off Galera Point.

t the base of La Popa, between it and the city, on a small hill one hundred and nty-five feet high, are the ruins of the castle of San Lazarus; and at the entrance of small lagoon which separates the city from the main and the harbor, is Pastelillo

essels of large draught will find depths of six fathoms within a cable's length of latter fort, but inside the little lagoon, between it and the city, there is only suf- nt water for small craft drawing six feet, which can lie alongside the walls of the

he bottom of the harbor being soft mud, the water assumes a sort of green or olive and shoals of three and four fathoms are consequently difficult to discover; but e with a depth of from only six to twelve feet are easily seen. The interior is ob- cted by several shoals, the channels between which are pointed out by posts on the remities of the banks, and the spits which run off from Tierra Bomba; but the posts sometimes washed away, and not replaced for some time.* Pilots may be found off a Chica.

Supplies.

o streams empty themselves into the harbor, and well-water is slightly brackish. inhabitants have tanks to their houses for rain-water, and it can be purchased from n at a dollar a ton. Vessels-of-war may obtain it, by permission, from the govern- t tank, near the magazine at the W. end of Manzanillo Island. Other supplies are rally scarce and expensive. The trade of the place is chiefly by British.

Tierra Bomba Island.

IERRA BOMBA ISLAND is four miles in length from N. to S., three miles across greatest breadth, and two hundred and eighty feet high in the centre. Its N. and tremities terminate in low, distinct points, and formerly the channels into the har- were immediately to the Northward and Southward of them, and were called the a Grande and Boca Chica.

he Boca Grande, which was between the N. end of Tierra Bomba and the sandy arm hich the city stands, has, however, been closed up by an artificial barrier, a mile formed of large limestone blocks from a half to a ton weight, which have not yet consolidated by the debris and silt, and are, therefore, capable of being removed if ssary.

Boca Chica.

HE BOCA CHICA, at the S. end of Tierra Bomba, between the low sandy points ing the Southern extremity, and the mangroves which form the N. end of Barú Isl- is about three cables wide, and is readily discovered by the forts on either side, h are capable of mounting altogether sixty guns. Fort San Fernando stands N. E. cables from Sandy Point, and has a flagstaff and signal post. The Fort of San José from the water about a cable and a half N. E. from the N. end of Barú. Sandy is steep to almost alongside, but from Barú a shallow ledge runs off to the North- which renders the channel tortuous, and contracts it to a cable's length in width e entrance, whence it gradually opens out into the harbor.

tween Barú Island and the main there is a navigable channel for large bongos, enables them to pass from the bight of Barbacoas into the harbor.

Directions.

e only danger in the immediate vicinity of Cartagena is the Salmedina, the inner of which is three miles from the W. side of Tierra Bomba. Vessels approaching the Northward, however, must be extremely cautious in passing Canoas Point, from ncertainty which still exists in the position of the Negrillo. They will, of course, inside the Salmedina, which is safely done by keeping at only a short distance from a Bomba, which is steep to.

the windy months, from January to June, the seabreeze generally set in from the ward, and drawing round to the N. W. and N., establishes itself in a direction along ore about noon, or before, in the months of May and November.

ing advantage, therefore, of the first of the sea-breeze, and having opened out the Chica, Sandy Point should be brought midway between the forts San Fernando osé, in line with the centre part of a long ridge on the main bearing E. by N. Point must be rounded close, within half a ship's length, and hauling up gradu- course must be shaped in mid-channel, the edge of the banks on both sides being seen.

N. end of the San José Spit is pointed out by a post, and having rounded it at the ce of about a cable's length, with the flagstaff of San Fernando kept midway be- the first tower to the Northward of the gate of the fort, and the first embrasure Northward of that tower, the course must be altered to about E S. E. until the osé Spit post is in a line with the N. end of the high wall of San Fernando, W. ¼

* S Spain, Master of H. M. S. *Indus*, states that in 1857 there was only a single beacon on the Spit, instead of a double one, as marked in the Admiralty plan of 1854.

N. This mark will lead clear of the S. end of the inner knoll, which lies on the N. of the channel; and when the S. end of Fort San José is in line with the outermost at the Northern extremity of Barú Island S. W. by W. ¾ W., or the Southeastern hill of Tierra Bomba is in one with La Popa, N. by E., a vessel will be inside this and may haul up for the post off the S. E. side of Tierra Bomba. The wind may pe the Northern basin to be entered by the channel between Tierra Bomba and the S Cruz shoals, and the magazine on the W. end of Manzanilla Island open in breadt the Westward of Fort San Lazarus leads between them but over five fathoms; wi this the breeze will generally be adverse, and if going up to the city, unless in a s vessel, the assistance of a pilot cannot be dispensed with, for the water is so muddy the edges of the banks are not well distinguished at a greater depth than twelve feet part of the Santa Cruz shoal, which is of coral formation, is now at times six inches a the water, where formerly there was a depth of nine feet. It is also said that the José ledge has grown up in like manner.

Small vessels drawing less than eighteen feet, having passed the narrows instea rounding the San José post may continue on steering for the first post off the E. sid Tierra Bomba, leaving it about a cable's length to the Westward.

Should the wind have established itself to the Eastward of N. before entering the ca Chica, a vessel will not be able to fetch round the San José ledge, and it will the necessary to shoot as far inside Sandy Point as possible to an anchorage, and wa through the narrows.

In running out of Cartagena harbor, La Popa must not be opened to the Westwa the S. E. hill of Tierra Bomba before the San José post is in line with the N. end of San Fernando. Vessels drawing more than eighteen feet must be cautious of a s knoll in that depth, which lies nearly in the centre of the Southern basin, with the staff of Fort San Fernando, W. ¾ S., and La Popa just open to the Eastward of th extreme of Tierra Bomba, N. ¼ E.

Tides. It is high water in Cartagena harbor, full and change at 11 h.; springs rise a foot a half, neaps six inches. The stream runs in and out of the Boca Chica at the ra about a knot an hour, and over the barrier of the Boca Grande at about half that strea but in the interior it is scarcely felt.

Barú Island. BARU ISLAND is about thirteen and a half miles long in a S. W. and N. E. d tion, and is everywhere low and wooded, the tops of the trees being only about forty above the level of the sea. To within about four miles of the S. W. point the We shore is clean; but here, abreast the farallon or Islet of Perico, it is skirted by the sario Islands.

Rosario Islands. ROSARIO ISLANDS are a group of small, low, woody islets, extremely dang of approach. The reefs extend out to the Westward about nine miles from Perico; should, therefore, be given a wide berth, and no stranger should attempt to sail a them. To the Southward of the islets, however, there is good sheltered anchorage the trade-wind. Arenas, which is the Easternmost islet, is scarcely a mile half from Barú, but the channel between the reefs on either side is only about cable wide, and lies on the Arenas side. It has not less than four and a half oms water, but is so tortuous, that to navigate it from the Southward a vessel warp through, for the current runs strong from the Northward; and the eye must guide.

W. by N., nearly four miles from Arena, is Rosario Island. Not far to the ward of this is Larga or Long Island, which is the largest of the group, and lies three miles to the Westward of Perico; the shoals at the W. end of this islet exte to the Westward of Rosario.

About three miles to the Northward of Larga is Tesoro, which bears S. W. about ten and a half miles from the Boca Chica. Foul ground runs off from the of this islet to a considerable distance, and between it and Larga there are from teen to twenty-five fathoms on sand and rock.

Rosario Banks. ROSARIO BANKS.—W. by N., three and a half miles from Rasario Isla bank of rock and sand with six and seven fathoms water over it; and S. W. two and a half miles from the islet, there is another of the same character w fathoms.

Tortuga Bank. TORTUGA BANK, which is of similar formation as the Rosario, but of la tent, has seven fathoms, on the shallowest part, and lies S. W. by S., about from Rosario, and twenty miles from the nearest part of the main land.

General Directions. On examination of what has been stated respecting the winds that are experie this coast, between Trinidad and Cape la Vela, it would appear that nothing need be added to the description already given to enable the navigator to pro voyage with the greatest safety; in fact, as there is in this space only the gener or trade-wind, neither hurricanes nor hard northers are to be feared: the first b solutely unknown, and the second, if they do at any time occur, never exceed the of the ordinary breeze. If in the rainy season, that is from May to November,

General Directions.

times strong Southerly winds, they must be considered rather as squalls with heavy of short duration, and as they blow off shore, do but little injury. This part of the , therefore, may be considered as a continued harbor, as far as climate is concerned; no more is necessary, to enable the mariner to avoid every danger upon it, than a ence to the description given; for the loss of a vessel upon it has been very rarely effect of a storm.

the breezes, especially from Aguja Point, or rather from Cape San Juan de Guia, exceedingly strong, so much so that they may be considered as real gales, and as hifting of the wind, which we have before said changes to S. and S. W., from June ovember, it becomes necessary to present some rules for making the different har- Westward of Cape la Vela.

e principal commercial establishments on this coast, and toward which vessels from pe in general direct their course, are Cumaná, Barcelona, Laguayra, Puerto Ca- , Tucacas, Maracaybo, La Hacha, Santa Marta, Cartagena, Pampatar in the island argarita, and Santa Ana in Curaçoa.

being a general rule on this coast, as well as in the whole of the Caribbean Sea, ake the land well to windward of the port of destination, to prevent the trouble delay consequent upon getting to leeward of it, vessels being once within this sea, intending to anchor at either Margarita or Cumaná, should close with the coast t Cape Three Points, or Cape Mala Pasqua, passing in preference through the nel between Margarita and the main land. This route also appears preferable if d to Barcelona, although there certainly can be no inconvenience in going to the hward of Margarita.

ssels bound to Laguayra from Cumaná, or Barcelona, should shape a direct course ape Codera, passing always between Tortuga and the coast; but those coming Europe, or any of the Windward Islands, to that port, should navigate to the hward of Tortuga to approach the coast about the same cape, or a little to leeward taking care to sight the Sentinel Rock (see page 683), which lies to the Northward e cape. If bound to Puerto Cabello it will not be so necessary to make Cape Co- as any other point on the coast will answer the same purpose, provided it be suf- tly to windward of their port.

make Cape Codera, or any other harbor on the coast to leeward of it, a vessel may through any of the channels between the islands to the Northward of the coast; ing which nothing more is necessary than to attend to the description of the one .

ssels bound to Maracaybo from the Eastward should sight Cape San Roman, and from the Westward should make Espado Point. In running for Cape San Roman may pass either to the Northward or Southward of Curaçoa.

uld the navigation to Cape San Roman be taken outside the islands, it should be ected that the Roques and the Aves islets are extremely dangerous on their N. and that the N. W. end of Buen Ayre may be mistaken for that of Curaçoa.

avoid these dangers and risks, especially in the night, every pains should be taken ck the latitude as often as opportunities occur for observations, and to apply to ckoning a correction for currents which have been experienced in the day, as de- from the comparison of the dead reckoning with the points of departure and alls. The due attention to these remarks is very important, as the currents in this f the sea are strong and variable.

ssels bound to Santa Marta, or Cartagena, should navigate outside all the islands, to make that of Oruba and the land about Cape la Vela; having obtained sight of tter, they may with safety steer direct for Aguja Point, in order to reach the an- ge of Santa Marta, as before directed.

se who, without touching at Santa Marta, go on to Cartagena, should shape a di- ourse from Aguja Point for the mouths of the Magdalena; whence, by passing five miles to the Westward of Galera Point, and about two miles from Canoas they may proceed direct to the Boca Chica; or else anchor off Canoas Point, or bank of Playa Grande, if not able to effect an entrance into the Boca Chica with ht. Calculations ought to be made, in order that the distance may be propor- to the rate the vessel sails at, so as to take the Boca Chica by day; or anchor off s Point, or on the Playa Grande, in order, if possible, to avoid the necessity of g the wind for the night, and thereby saving much trouble, wear and tear to the nd ripping, in the time of the strong breezes; but if there be no means of avoid- the position must be maintained by short tacks off and on; or, if the wind and ill permit, by coming to an anchor. By following the above route the various and dangers lying between Cape la Vela and Aguja Point will be avoided, as s those lying between Galera and Canoas points, among which no vessel ought and when in their neighborhood too much attention cannot be paid to the sound-

uring the season of the breezes, it is necessary to follow the route which has been

General Directions.

described to Cartagena, from any place situated to the Eastward of it; in the season the rains, or during the Vendavales, a vessel, after passing Cape la Vela, ought to ke on the parallel of 12° N., or somewhat more, in order to retain the wind, until she a rives at long. 75° 45′ or 76° 15′ W.; then steer S., coming up by degrees to S. E. on g ting into the limits of the rains; observing also that it is better to make the land to t Southward of the Boca Chica than to the Northward of it; because in this season t current sets strong to the N. E., though in the season of the breezes it runs to the S. W Particular care should likewise be taken not to run toward the land by night, but on by day; for at such times it is hazy and the outlying shoals and islets are dangerous approach.

In working to windward on this coast, from Cartagena to Margarita or Trinidad, vessel should make the boards as long as convenient. The proper time for tackin ought to be decided by the daily variation of the trade-wind, which, at about midnig or somewhat sooner, comes off shore from about E. S. E. or even S. E., if it has be raining heavily before and the ground is soaked; and from nine to eleven in the fo noon the sea breeze comes in from E. N. E. At all distances from the shore these var tions take place, and the navigator may and ought to take advantage of them in wor ing to windward. If, on account of nearing the land, a vessel cannot continue on t same tack until the wind changes, short tacks should be made along shore until it aga veers to the S. E. and then again stand out to sea. By these means two long stretch may always be made, one to the N. E., the other to the S. E., that is to say both of the within eight points of the compass. By working to windward on short tacks along t shore this advantage cannot be obtained, because the wind always blows along t coast, unless sometimes there may be a light land wind in the night, and before the s rises during the season of the rains; but they do not last, and such variations afford b little assistance.

Small vessels cannot proceed upon this system when the breezes are very fresh, whi from Aguja Point to Fuerto Isle are like storms, with a rough sea, so that they cann make any way; in these cases it is most advisable for them to keep in near the coa where the water is smoother. But large vessels well equipped, and capable of resisti these gales, or when the winds are moderate, ought to make long stretches when t wind will admit of it, in the manner already pointed out.

The following are from observations by Captain Don Torquato Piedroba:

"On the coast of Cartagena the breezes do not begin until the end of November, a generally blow with little strength until the middle or end of December, from whi time they are powerful both day and night, only they frequently, but not always, mo erate a little between sunrise and nine or ten in the morning, when they recover th ordinary force. Very near the coast, especially if it be high, they are often fou moderate at the dawn of day, and at sunrise veer to E. N. E. until nine or ten o'cloc when they again blow in their usual direction, which on this coast is from N. N. E. N. E. Of these variations those who are acquainted with the coast, and sail near may take advantage, and it may be better at nightfall, even for large vessels, to anch at the various points that offer. A vessel which attempts to get to windward outsi will not accomplish it without great difficulty and damage, as much from the streng of the wind, as because the sea is very rough and short as far as ninety or one hund and twenty miles from the land, when it becomes longer; and because, being forced the night to reduce sail, and the current drawing round toward the N. W. quarter results that the little gained by working inshore will probably be lost."

Some authorities, however, state that, with violent trade-winds, it will be more vantageous to turn to windward close to the shore to avoid the heavy sea and N. current. But, with light variable winds, in the rainy season, it will be better to i the land twelve or fifteen miles distant, where an Easterly current may at times found.

Vessels bound up to Cartagena from the Westward should take advantage of strong eddy which runs to the S. E. and E. along the coast all the way from Greyto at the distance of about thirty miles, and which will enable them to work up rapi On the contrary, when bound Westerly to Aspinwall or Greytown, it will be more dent to avoid this stream by keeping to the Northward of the parallel of 10° N., w the breeze will also be more steady and regular, and the sea less rough.

Those coming from North America to any of the ports to leeward of Curaçoa sh enter the Caribbean Sea, by the Mona passage; and if to the ports situated to wind of that island, by the channels Eastward of the Virgin Islands.

From the Gulf of Mexico or Jamaica it will be necessary to beat well to windw according to the seasons. In that of the breezes, Cartagena may be fetched from Royal, Jamaica; but in that of the variables it will be more advantageous to wor to the W. end of Hayti, or even as far up as Alta Vela, if bound to Maracaybo, be attempting to stretch across.

Barbacoas Bay.

BARBACOAS BAY, or Little Gulf of Baru, is about twelve miles deep in a N

ierly direction, and the entrance is about five miles wide between the S. W. end of ru and Barbacoas Point. The shore all round is bounded by low mangroves, and e main land is intersected by numerous creeks communicating with large lagoons and all streams falling out of the Magdalena, navigable for large bongoes, which enter e harbor of Cartagena by means of the Caballos Channel, mentioned in page 703.

The soundings decrease inward gradually from ten to three fathoms, which latter pth will be found about three miles from the Eastern shore; and, the bottom being d and soft mud, affords good and well-sheltered anchorage.

BARBACOAS SHOALS.—Great care, however, must be taken when beating into rbacoas Bay, to avoid the shoals which run off from the Rosario Islands, and several iers lying off Barbacoas Point. One of these latter is as far out as the S. W. end of ru bearing W. ¾ S., Barbacoas Point E. S E., and the S. E. point of the main land S. E., and has fifteen feet water over it, with six fathoms close to.* Another of twelve t lies N. W. ¼ W. a mile from Barbacoas Point; and there is also one of nine feet by S. ½ S. two and a third miles from the same point. *Barbacoas Shoals.*

ATILLO and MATUNILLA SHOALS are situated farther in the bay. The first is ock with only a foot water over it, lying N. W. by N. three and a half miles from rbacoas Point; and the latter, which is also very shallow, bears N. N. E. ¼ E. nearly miles from the point. *Atillo and Matunilla Shoals.*

The coast from Barbacoas Point runs about S. fifteen and a half miles to the Morro bluff of Tigua, which is readily distinguished by the little hill that crowns the sum-, being higher than any other on this part of the coast. *Coast.*

From the Morro of Tigua the shore trends S. by W. ½ W. twelve miles to San Ber-do Point; a short distance inland will be seen the Cerros (high lands) de Chichiman, ich terminate to the Southward near the shore, at the Pico del Rincon, about six es from San Bernardo Point.

San Bernardo Point is the S. W. extreme of a drowned mangrove cay: and between cay and the coast there is a small channel called the Boqueron, navigable for canoes bongoes.

COMISARIO BANK.—From the Morro of Tigua a shallow bank stretches off in a by W. direction about four miles, and terminates at about two and a half miles from shore, abreast Comisario Point, which is the first small projection to the Northward he bluff. *Comisario Bank.*

JESUS AND CABRUNA ISLETS.—These two small cays lie at only a short dis-ce from the coast; the first about three miles to the Northeastward of San Bernardo nt, and the other about a mile farther on in the same direction. *Jesus and Cabruna Islets.*

PAJARITO (LITTLE BIRD) BANK.—S. S. E. ½ E. nearly two miles from San Ber-do Point, lies a rocky bank called the Pajarito, carrying from three and a fourth to and a fourth fathoms water. *Pajarito Bank.*

SAN BERNARDO ISLANDS are a cluster of small low rocks and wooded cays, sit-d on a shallow bank, about twelve miles in extent from E. to W., and ten miles N. to S. Salamanquilla, the Easternmost cay, lies N. W. by W. ½ W. about four s from San Bernardo Point; and Tintipan, the Northernmost, which is also the est, is about ten miles in the same direction from the point. Between the bank h borders the E. and S. E. sides of Salamanquilla and the bank bordering the W. of Cabruna Cay, there is a navigable but intricate channel about three cables wide e narrowest part: and there are various little cuts between the cays and rocks, may be threaded by those locally acquainted. The bank extends to the Westward Southward from the cays to a considerable distance, and is very dangerous, the y heads being steep to. *San Bernardo Islands.*

S. W. four or five miles from the cays, there is a sandy shoal with only three fath-water, and shallow spots are suspected to exist still further out.†

he San Bernardo Islets have been mistaken for the Rosario group, although they are ty-one miles apart: the latter, however, consists of only three cays, forming a tri-e while the former has eleven large ones scattered about in a much larger space; when seen bearing from E. to E. S. E. ten or twelve miles, several parts of them ap-like small rocks lying between the larger islets. At the S. end of Tintipan, the hernmost cay, are two remarkable trees which may be mistaken for the masts of a l at anchor. *Caution.*

e current is frequently found setting strong to the E. and N. E., close home to the Bernardo Islets. *Current.*

e course through the Salamanquilla channel is about S. W. ¾ S., and the depth in middle is from nine to twelve fathoms, with five fathoms on the edge of the banks. *Directions.*

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r. W. Jeffrey, Master, H. M. S. *Serpent*, 1837, which vessel grounded on it.
aptain H. Patton, H. M. S. *Isis*, which ship grounded here in 1826, but whether the bearing is the Northernmost or Southernmost cays, is not stated.

When bound through from the Northward, having passed to the Westward of the Ro rio Islands, a vessel should steer toward the Morro of Tigua, bearing in mind that t Tortuga bank bears W. by N. ¾ N. about twenty miles from that hill, which will be sufficient guide to avoid it. Having sighted the Salamanquilla Cay, and brought it bear S., steer S. S. E. until the morro bears N. E. ¾ N., and the morro kept on this bea ing will lead through the channel. The best part of the passage between Cabruna a Salamanquilla lies toward the latter island, and, should the weather be clear, the edg of the shoals on both sides may be seen from aloft, and the pilotage be made by the ey but, if otherwise, the lead will be the only guide.

When navigating outside the Bernardo shoals, great attention is necessary, and t islands ought to be kept six miles distant, until San Bernardo Point bears E. N. E.

Gulf of Morrosquillo

GULF OF MORROSQUILLO (OR BAY OF TOLU).—Between San Bernardo Poi and Mestizos Point, which bears S. by W. ½ W. seventeen miles from it, the coast swee inward, forming a bight from eight to ten miles deep, in which there is good anchora in every part of the season of light winds; and in that of the breezes under the N. sho within the Pajarito Shoal. On a line between the two points the depth is about fou teen fathoms, whence it gradually decreases to the shore, and the bottom, which is gre oaze, is everywhere clean.

Near the bottom of the gulf, and S. E. ¾ S. thirteen miles from San Bernardo Point, the town of Santiago de Tolú, which is situated close to the sea on a plain skirted by e tensive savannas, bounded on the E. by a chain of mountains. One of the peaks, ris above the others, forms two remarkable hummocks named the Tetas (paps) de To which bear E. ¾ N. twelve miles from the town, and are good guides for it, as well useful objects in navigating this part of the coast.

On the S. side of the gulf there are two more ridges of high land, which rise from t shore to a considerable elevation not far in the interior. The Easternmost heights, call Cerros de Santero, bear S. ¼ E. twenty-one miles from San Bernardo Point; the We ernmost, called Cerros de Cispata, which are not so lofty, bear S. by W. twenty-fi miles from the same point.

Port Cispata.

PORT CISPATA.—The low neck of swampy mangrove land terminating at Mesti Point, forms the W. side of the entrance to the harbor of Cispata, which, between it a Zapote Point on the E., is about a mile wide, with a depth of four and a half fathom Within this it opens into a secure basin extending to the Southwestward about sev miles, and from two to three miles in breadth, with a depth of from four and a half six fathoms. On the E. side, at the foot of the Santero Hills, about two miles inland, the village of Santero, and at the entrance of the valley, between the Santero and C pata ridges, is the village of Lobos.

River Sinú.

RIVER SINU.—At the N. W. end of the Port of Cispata are the mouths of the Riv Sinú, which, winding round the Southern side of the port and the base of the Cisp Hills, is navigable for canoes to a considerable distance. Within the bar there is a dep of three fathoms up to the town of Santa Cruz de Lorica, which stands on the right ba on the S. E. side of the Cispata Hills.

Directions.

Vessels bound to Port Cispata, having passed inside or outside the Bernardo Island will be guided by the Cispata Hills, which bear about S. of the entrance. Those p ceeding to Tolú will in like manner be guided by the paps of that name. The best a chorage in Cispata will be found under the N. W. shore, between Balandra and Nav points, which are about two miles apart; the latter point of the two is the Wester most, and is remarkable from its projecting some distance into the harbor. The on danger inside to be avoided is a small patch of nine feet off the S shore, the N. end which bears S. E. ½ E. a mile from Balandra Point, and S. W. by W. ½ W. from Zap Point.

Coast.

The coast from Mestizos Point trends W. S. W. ten miles to Viento (Wind) Point, is very low, but clothed with high mangroves. About midway is the entrance to Venados lagoon. The shore is all along foul to a considerable distance. N. three a half miles from Viento Point there are only three and a half fathoms, and at the distance to the N. W. of that point there are five fathoms water.

From Viento Point the shore curves slightly inward to Piedras Point, bearing S. ½ W., distant seven miles. This point is the Eastern extremity of a bold scarped be land of moderate height, which trends about S. W. by S. for three miles, and termin at Rada Point. Near Piedras Point a small bay is formed, and about two cables to Northward of it there is a small high rock, with some shoals half a mile N. W. These shoals extend nearly a mile N. E. and S. W., and have some rocks above with others which uncover only at low water; elsewhere the depth is from one half to two fathoms.

Fuerte Island.

FUERTE ISLAND.—N. W. by W. ¾ W. six and a half miles from Piedras Point S. W. ½ S. twenty-five miles from the Southernmost of the Bernardo Cays, is the N end of Fuerte Island, which is about a mile and a fourth long from N. to S. somewhat less in breadth; it is covered with trees, and the royal palms in the

rtopping the others, are visible from a distance of twenty miles. The island is surnded by reefs and scattered rocks, some of which appear above water, and on the ks outside them there are from two to four fathoms water over rock and sand. S. W. ½ W., one mile from the S. side of the island, there is a small sand-bank of four a half fathoms, and S. E. by S. about the same distance from Arenas Point, the theastern extremity of the island, there is another of sand and gravel, with five and alf fathoms water over it.

n the passage between Fuerte Island and the main there are from six to fourteen oms, but it must be navigated with great attention on account of the shoals off Pies Point.

Coast.

he coast between Rada Point and that of Broqueles, which bears S. W. by S., about and a half miles from it is low and sandy, and forms a shallow bay, having a depth hree and a fourth fathoms on oazy bottom, about three fourths of a mile from the re. Broqueles Point is a low rocky projection, from which a reef extends two cables' gth to the Northward, and a short distance from this reef is the Toro or Bull Shoal. W. by S., about a mile and a half from the point, there is a small rocky islet.

t four or five miles in the interior are the Cerros de Rada, a ridge of hills extending N. W. and S. E. direction, having three remarkable peaks, the highest and largest hich rises about five miles Southeastward from Broqueles Point.

he coast from Broqueles Point to the remarkable bluff or hill of Tortugon, trends y W. ½ W. fourteen miles, and is bold, low, and sandy, except about midway, where little hill of Cruz rises from the shore. A small, low, woody cay, named Tortuguilla nd. lies W. by S. four miles from Tortugon Bluff; a reef extends to the Northward n the cay, but between it and the bluff there are five and six fathoms.

rom Tortugon Bluff the shore trends, with a slight bend, S. W. ½ S. twelve miles to boletes (Little Trees) Point, which is low and woody; in this space the soundings be- e of less depth, and about three miles to the Northward of the latter point, and the e distance from the beach, there are only three fathoms. San Juan Point, the next jection, is high and scarped, and lies S. W. by S. eight and a half miles from Arbos Point; between them the low, sandy shore forms a deep bay, and abreast the mid- of it there are only three fathoms water at four and a half miles from the beach.

rom San Juan Point the coast takes a S. W. by W. direction for about nine miles avanilla Point, which is low. In the interior, however, there will be seen a low ge of hills, terminating at the Cerros de Savanilla, about four miles to the Southward of the point. A long mile to the Southwestward of Savanilla Point is the antones Shoal, but being near the shore, presents no danger.

Caribana Point.

ARIBANA POINT.—From Savanilla Point the coast takes a Southerly bend for ut five miles, and then trends about W. S. W. for twelve miles to Caribana Point, ch is low and woody. But at a short distance within the point is the Cerro Aguila gle Hill), which, although of only moderate height, is remarkable, from standing e in the middle of low land, and is a useful guide.

Caribana Shoals.

ARIBANA SHOALS.—A ledge of shoal ground runs off to the Northward from ibana Point, and terminates about N. W. four miles from the point, in about four and alf fathoms; not far from the point, in this direction, there is a rock which partly ws itself, and outside it there is another with very little water.

n the same direction, six miles from the point, there are nine and ten fathoms, on oazy d; at eleven miles twenty-one fathoms, oaze; and at fourteen miles thirty-two fath- , oaze. Soundings extend to some distance from the shore, between Fuerta Island Caribana Point, which renders it safely navigable with proper attention to the lead, it affords good anchorage in the season of light and variable winds.

Gulf of Darien.

ULF OF DARIEN.—The entrance to this gulf is formed between Caribana Point Cape Tiburon, which bear E. and W. of each other, and are twenty-nine miles apart; from this line the gulf is forty-six miles deep.

rom Caribana Point the shore bends abruptly to the Southward for about three miles, n it trends to the S. W. for about the same distance, to the N. W. point of a low, ly. peninsula about two and a half miles in breadth at the extremity, from N. to S. face of this peninsula is bold, and steep to, and may be safely coasted at the dis- e of a mile; the interior is cut up by the Aguila Lagoon, about five and a half miles xtent from E. to W., in which are many mangrove cays.

rom Arenas Point, the Southwestern extremity of the peninsula, the Eastern coast of gulf takes an Easterly direction for about five and a half miles to the entrance of the er Soldado, whence it runs S. E. by S. six miles to Urabá Point. In the latter space land is low, with a few small hillocks.

rom Urabá Point to the bottom of the gulf the shore trends nearly S. twenty-nine es, and is very low and swampy, the only remarkable object being the little hill that as Cayman Point, nine miles from Urabá Point. The soundings are everywhere n and regular, and this shore may be easily navigated with proper attention to the . The bottom of the gulf is about ten miles in breadth, and the river Suriquilla ties itself into the middle of it.

The Western shore of the gulf for the distance of about twenty miles to the Sou ward of the S. W. corner is low, swampy and irregular; being formed by the delta Atrato, which enters the gulf by numerous branches, eight of which are navigable canoes and bongoes. At the outermost part of the delta, twenty-five miles to the Sou ward of Arenas Point, the gulf is contracted to a width of only four miles.

River Atrato. THE RIVER ATRATO takes its rise in the Darien Cordillera, not far from Pacific, and enters the Gulf of Darien by eleven mouths.* The extensive delta proje far beyond the limits of the main land, and is composed of an alluvial deposit of softest oaze, forming a mud bank extending to the distance of about a mile outside bars; exposed, however, to constant changes, especially during the season of breezes.

The average depth on the bar is six feet, and within them it increases to twenty-t feet; but the branches are also liable to change, and two of them are closing up. Fo distance of about twenty miles the banks are overflowed during the greater part of year. About sixty miles from the sea it receives the Truando, which has an avera breadth of twenty yards, and a depth not exceeding ten feet: but its course is extreme tortuous, and its banks of rank grass are generally submerged.

Up to this tributary a depth of twenty-four feet may be carried: the chann however, in some of the bends, is narrow, and on either side the stream is full snags.

The lower part of the Truando for ten miles flows through a lagoon; and above t it runs for about sixteen miles through a labyrinth of well-timbered islands, the ban of which are generally inundated. This part is called the Pailos Caidos (fallen tree from its being obstructed by a complete mass of logs, over which canoes have to hauled, and which cause continual changes in the channel.

Near the upper end of this portion is the first habitation met with—a solitary h erected on poles about six feet above the ground, called Camp Bache. Above this t Truando winds, the banks are about eight feet above the bed, and the depth is twel feet. Some miles farther up there are a series of rapids and shallows, running over rocky bed. About three miles beyond these are the first falls, which are three miles extent. The river here rushes terough a tortuous mountain gorge about forty feet breadth, over a solid mass of basaltic rock, and the fall in this space is about twen feet.

Candelaria Bay. CANDELARIA BAY.—At the inner angle, on the N. side of the delta of the Atra there is a bight about two and a half miles in extent called Candelaria Bay. The la all round, however, is so low that the greater part is inundated even at low water. a it is bordered with mangroves, reeds, and ruches, so that only the N. W. part of t bay appears dry. A sand-bank skirts the whole circuit of the bay, and extends out a mi to the S. E. from the N. W. point, which reduces the entrance between it and the mou of the Little Faisan branch of the Atrato to scarcely a mile in breadth. Off the mou of the Faisan and all along the S. E. side of the bay, however, the bank does not reac to more than about one cable and a half from the shore, leaving a space of good ancho age about one mile and a third in extent.

Directions. The bar of the Little Faisan has three feet water upon it, and it is one of the b branches by which canoes enter the Atrato.

To enter Candelaria Bay, great attention is required to the soundings, care bei taken not to get into less than seventeen fathoms in the entrance nor twelve within This caution is absolutely necessary, for the sand-bank that skirts the shore is so ste that it shoals suddenly from thirteen to five fathoms, and from five to getting agrou By preserving a proper depth a vessel will pass about four cables from the S. E. poi and, having entered, the discolored water on the edge may be seen from aloft.

Tides. The tide in the Gulf of Darien rises two feet.

Revesa Bay. REVESA BAY.—From the N. W. point of Candelaria Bay, the low mangrove sh trends about N. by W. five miles to Revesa or Choco Point, which, projecting a li way to the Eastward, affords off its S. side good anchorage with Northerly winds. shallow sand-bank extends out a considerable distance, but gradually disappears Revesa Point is approached, so that vessels entering the Revesa anchorage may within one cable and a half of that point, and bring up as soon as it bears to the ward of N. in thirteen or fourteen fathoms.

West Coast of the Gulf of Darien. The W. coast of the Gulf of Darien from Revesa Point runs about W. for miles, forming the Northern boundary of the delta of the Atrato. The principal m of the river opens out about three miles to the Westward of the point, but bei exposed to the breezes, the commerce is more conveniently carried on by means of Little Faisan branch, which has the advantage of the adjacent anchorage in Candel Bay.

* From the report of Lieut. J. A. Craven, United States Navy, to Secretary of State, May, 18

The sand thrown out of the main branch deposits itself at a long distance, and this rt of the coast should be kept at least two miles off.

From the Northwestern extremity of the delta the shore trends about N. W. by N. rteen miles to Tripo Gandi Point, and becomes considerably elevated; and close off lies numerous small islets.

At the bottom of the bight between Revesa and Tripo Gandi points, a hill called the ak of Tarena rises near the shore, and thence a lofty ridge, having several remarkable aks, stretches in a N. W. direction as far as Cape Tiburon; the Southernmost is called adelaria, the centre one Gandi, and the Northernmost Pico de Cabo or Cape Peak, ich rises beyond Cape Tiburon.

The first group of islets on this part of the coast are the Tarena Cays, which lie close the shore about two and a half miles from the bottom of the bight. The next are lled the Tutumates, three in number, about four miles from the former, and half a mile m the coast. About four miles farther on is Tambor Islet, lying rather more than lf a mile from the shore; it is very clean, but N. by E. ¼ E. about half a mile from a rocky shoal shows itself, between which and the islet there is a clear passage; it is, wever, always better to pass outside. To the Westward of Tambor Islet the shore ms a bay called Port Escondido, which affords shelter for small vessels.

N. N. W. ½ W., about three miles from Tambor Islet, are the Bolanderos, which con- t of one large islet, with several smaller ones to the Southward of it; all of them clean d bold, and not farther than three fourths of a miles from the shore. N. W. by W. ½ three miles from the Great Bolandero, and half a mile from the coast, is the Pinton let, which is also steep to.

From Tripo Gandi Point, which is abreast Pinton Islet, a low sandy shore runs W. N. ½ N. about six miles to Gandi Point, forming Gandi Bay.

From Gandi Point to the entrance of the river of that name the shore trends N. W. by about one mile and two thirds, forming Estola Bay. The little river Estola disem- gues into it, but neither the river nor bay is of any importance. From the River ndi the coast takes a Northwesterly direction for about twelve miles to Cape Tiburon. dway, about a mile from the shore, lies Tonel Island, which is very clean, especially its E. side, where it is steep to.

As already stated, the whole of the coast between the Tarena Cays and Cape Tiburon high, bold, and clean, but it is very wild in the season of the breezes. At this period e Eastern shore of the gulf should be kept aboard, where excellent anchorage will be nd, if necessary, and a smooth sea for working to windward.

CAPE TIBURON, already mentioned as the Northwestern extremity of the Gulf of rien, is rocky, high, and scarped, and projecting boldly out to the N. E., forms on ch side a little harbor. That to the Southward of the neck is so narrow as to be of le use; but the other, on the W. side, called Miel Harbor, has good holding ground sand and clay, in eleven to twelve fathoms water. *Cape Tiburon.*

ANACHUCUNA BAY.—From Cape Tiburon the shore, consisting of a sandy beach, ends about W. N. W. thirteen miles, to the point at the foot of the peak of Carreto, d forms a bend about two and a half miles deep, called Anachucuna Bay. At the W. end of this bay, about two miles to the S. E. from Carreto Point, is the little har- r of Escondido, fit only for coasters. *Anachucuna Bay.*

PORT CARRETO.—On the W. side of Carreto Point, between it and some small ets lying about a mile and a half to the N. W. of it, the shore curves to the South- stward, forming a bay about a mile deep, in which there are not less than three and ourth fathoms nor more than eight fathoms water. Being exposed, however, to the avy sea thrown in by the N. E. breezes, it is only of use as an anchorage in the sea- n of light weather. *Port Carreto.*

CARRETO SHOALS.—To the Northward of this port, at the distance of a long mile, e two small rocky banks, near each other, on a N. E. and S. W. bearing, with five and half fathoms over them, and twenty to twenty-five fathoms close around; but they eak with fresh breezes. *Carreto Shoals.*

PORT ESCOCES.—Escocés Point, bearing N. W. by W. eight miles from Carreto nt, terminates at a small hill, two hundred and sixty feet high; but three and a half les to the Southward of it the mountain ridge, which runs parallel to the shore, rises the height of nearly twelve hundred feet, and about seven miles to the Westward of to the height of about two thousand feet. About three miles Southeastward of the int, and about a mile from the shore, are three small rocky islets, lying close together, lled Las Isletas, and within them is a cay of large dimensions. *Port Escocés.*

Escocés Point is the extremity of a narrow neck of land, about two miles in length, a N. W. direction, which forms the N. E. side of an inlet of irregular breadth, called rt Escocés. In the centre of the outer part there is a depth of six fathoms, whence gradually decreases to three fathoms at the head of the inner arm. It was here that Scotch settlement was formed in 1698, a few remains of which are still seen on the side of Escoces Point.

The entrance is about three fourths of a mile wide, but the outer part is obstructed b the Escocés Rock, a little rock three feet high, lying about three fourths of a mile to th Westward of Escocés Point; there is a channel on either side of it, but the Western on is the best. The W. and S. sides of the rock are bold, but about two cables N. E. by of it there is a small head with eighteen feet water over it. With a strong N. E. win the space between the rock and Escoces Point breaks right across, as does also the Mi dle Reef, Antonio and Harbor rocks, in the interior of the inlet.

Water. Several small rivulets of good water run into the S. side of Port Escocés, but they a sometimes dry, and landing is generally difficult. In a little sandy bay, about three mil to the Westward of Escocés Point, is the entrance of the River Aglatomate; and half mile far her on, in Surf Bay, is the entrance of the Aglaseniqua. These rivers are fro twenty to thirty feet broad, and never dry, and the waters in both are excellent, but di ficult to obtain in rough weather. When moderate, the best landing is under cover the little reef at the mouth of the Aglaseniqua; but the most convenient place for w tering is at the mouth of the Sasardi (page 713). On the W. side of the entrance of th Aglatomate there are a few bamboo-huts.

Directions. Vessels of a heavier draught than twenty feet must approach the entrance to Po Escocés with great care, for there are several coral banks in the offing, which, in hea weather, are dangerous. The outermost, which bears E. by N. ½ N. from Escocés Poi and N. N. W. ½ W. one mile and a half from the outer isleta, has four and a half fa oms; and another, N. one mile and three fourths from the point, has four fathoms. beating up, Carreto Peak kept open of the outer isleta will clear these and several oth patches to the Northwestward of them. Having rounded the Escocés Reef within th distance of about two cables to the Westward, the eye must be the guide, directing th course in mid-channel until nearly abreast the narrowest part of the entrance, betwe the old fort point and the opposite side, when the N. shore should be kept aboard, avoid the Middle Reef, which may be seen from aloft.

Anchorage may be taken up as soon as convenient within the middle reef; but if i tending to enter the inner arm, after passing Harbor Rock, the wind baffles so muc although a strong breeze may be blowing outside, as to make it very difficult and ha ardous to turn in.

Caledonia Harbor. CALEDONIA HARBOR.—N. W. about four miles from Escocés Point is Oro Islan the Easternmost and highest of a range of cays and rocks which lie scattered from o to three miles from the main land, and extend in a N. W. direction about five mil Between them and the main are two well-sheltered harbors, the Easternmost call Caledonia, the Westernmost Sasardi, which are only separated by a narrow bar of ma with twelve feet water over it.

Oro Island. ORO ISLAND is four hundred and seventy feet high at its Eastern extremity; t edges of the reefs which skirt it, and the little cays and rocks extending a mile to th Southward of it, to Piedra Isle, always show themselves, and are steep to. The O Shoal, of four fathoms, which lies two cables from the Eastern point of that island, a breaks in strong breezes.

Reventazones Shoals. REVENTAZONES SHOALS.—The entrance to Caledonia Harbor is about half mile wide, but the approach is obstructed by three dangerous coral shoals, lying sho a mile to the Eastward of the cays extending from the S. E. end of Oro Island, and wh break heavily in strong breezes. Mount Vernon, on the S. E. point of entrance to t harbor, and Piedra Isle, the Southeasternmost of the cays (which is very small), in li bearing W. by S. ¼ S., will lead just clear to the Northward of the outermost sho which has three and a half fathoms water. There are channels between the shoals, a between the Southernmost and the main, all of which are clearly pointed out on chart, but they are too intricate for a stranger to navigate.

Directions. Approaching Caledonia Harbor, and having brought Oro Island to bear about S. before Carreto Peak comes over the outer isleta (the line of the outer banks), Piedra I must be brought in line with a remarkable hill, bearing S. W. ¾ S., which mark will l between the outer banks; the reefs which skirt Oro Island must then be rounded at distance of two cables, passing between them and the Reventazones (breakers). Ba From abreast Rocky Cay a vessel will generally have to beat up, and in so doing S. end of the sandy beach in Surf Bay must be shut in with San Fulgencio Point a base of Mount Vernon, when standing to the Westward; nor must Rocky Cay be sha with Dobbin Cay, when standing to the Eastward.

These limits give a clear space of eight to ten fathoms water, on mud, in any pa which there is good anchorage. If desirable to go farther up, as far as Scorpion the eye must be the guide, observing that the bottom cannot be seen at a greater d than twelve feet.

An entrance can also be made as far to the Southward as to bring on the mark g before for clearing the N. end of the Reventazones; but great care must be taken open Mount Vernon to the Southward of Piedra Isle before these banks are pas the Oro Rock is in line with Crag Rock, the outermost islet, bearing N. W. ¼ N.

o sail out of the harbor, vessels will generally have a fair wind, either from E. N. E., he season of the breezes, or off the land, occasionally, in the wet months. It will be ely necessary to skirt the Rocky cay and reef at a safe distance, and, getting on the of Piedra Isle and Mount Vernon, proceed to sea on that mark. Should the wind admit of this, short tacks must be made toward and along the reef until past the r Reventazones Shoal. In the event of missing stays when standing close to the entazones breakers, a thing very likely to occur from the heavy sea, it would be bet- o keep away, and pass to leeward of the shoal, than attempt to tack again; for, get- upon them, immediate destruction would ensue. Vessels can also pass out along shore to the Southward of the Reventazones, taking care not to go outside the line een the W. extreme of Dobbin Cay and a remarkable solitary tree on Scorpion Cay, . ½ W., until the Aglatomate huts bear W. ¾ S., or the outer isleta is just shut in the Northern extremity of Escocés Point, when the vessel may haul out to the East- d of those shoals.

ASARDI BAY AND HARBOR.—The Sasardi Islands, the Westernmost of the , are separated from Sasardi Point on the main by an opening three fourths of a mile , and exposed to the N. E. From Sasardi Point the coast sweeps round to the hwestward forming a bay about three fourths of a mile in extent, near the centre hich there is convenient anchorage for watering, in from four to six fathoms. The r Sasardi, a little rivulet about ten feet wide, and with two feet water on the bar, ies itself into the Western side of this bay, and is the best place to obtain water; es manage to get up with some difficulty about two miles; on the N. side of the en- ce there is a village of fifteen huts. *Sasardi Bay and Harbor.*

the interior of the bay there are several shoals nearly awash, and consequently y avoided; and just within the line of entrance, about two thirds the way across Sasardi Point, there is a hard flat ledge about two cables in length, upon which ea generally breaks. The channel to the Eastward of this ledge is only two cables with a depth of four fathoms; to the Westward of the ledge in mid-channel there ine fathoms. The outermost of the banks in the immediate vicinity of the entrance hree and a half fathoms over it, and lies N. E. ¾ N., two miles from the Western emity of the Sasardi Islands, with the Northeastern extremity of Oro Island just in with the Crag Rock bearing S. E. ½ S. The land is here much lower than in eighborhood of Port Escocés.

approaching Sasardi Bay or harbor from the Eastward the mark already given for ing the outer banks should not be crossed until the Sasardi village is brought just ht to the Southward of Sasardi Point, W. by S. This latter mark will lead to the ward of the above outer bank; and when the W. end of Sasardi Island bears S. . ½ W., the course may be altered for either of the channels most convenient. If ding to enter the harbor between the cays and the main, and the Eastern channel en, the reefs which skirt the Sasardi Islands should be rounded within a cable's h; if the Western channel, the opening should be steered for about one third the ce across from Sasardi Point. After passing the shoal in the middle, composed rd limestone, Sasardi Island will be found steep to, and anchorage may be taken ywhere within a cable's length of it, in from five to seven fathoms. The shoals all the S. side of the harbor, and are easily avoided by the eye. To sail out is not y, except with a land wind, for the channels are narrow and the sea rough with ual sea breeze. *Directions.*

is high water, full and change, at Caledonia Harbor, at 11h. 40m.; the rise at s is a foot and a half, and at neaps six inches. The tidal streams are overcome current which sets through the Sasardi channel to the S. E. at about a third of a per hour. *Tides.*

Caledonia Harbor, as elsewhere on this coast, there are two seasons, the wet and y; the latter continues from January to April or May, when the wind blows and often violent during the day, from N. N. W. to N. N. E., accompanied by a heavy sea, and lulls on the shore to nearly a calm during the night. At this sea- he temperature is about 82°; the atmosphere is exceedingly moist, and so hazy, t times the land cannot be seen more than five miles; yet the climate is generally y. *Winds and Seasons.*

he rainy season, which occupies the remaining portion of the year, the breeze lulls comes variable, and a land wind blows off with occasional squalls from the S. W.

NOS ISLE, the Southeastern extremity of which lies N. W. by N. about two miles Sasardi Point, is about a mile in length S. E. and N. W., and a little less in breadth; parated from the main by a channel two cables wide in the narrowest part, with wo to three fathoms water on sand and grass. The island is high, but a little than Oro, and a hill runs through it, on which are two remarkable wooded peaks; E. and S. sides are scarped and bordered by reefs, which, however, lie near the *Pinos Isle.*

the S. side of Pinos there is a little rill of good water, which runs down a gully *Water.*

and into a small basin at the bottom of the declivity, but so near the shore, that an u usual rise of the tide washes away the sand and the sea flows into it.

Excellent firewood may be cut to the Eastward of the watering place, but great ca must be taken to avoid touching the manchineal tree, which abounds here and is p sonous.

Anchorage. There is anchorage off both the E. and W. ends of Pinos Isle, but exposed, the form from E. to N. E., the latter from N. to N. W.; and a constant ground swell rolls in, pa ticularly at the Eastern anchorage, which makes riding very uneasy. At the E. end berth will be found in nine fathoms, with the S. end of the island N. N. W., but vesse of light draught may go so far in as to bring it to bear N. N. E.; the point is so bo that a small vessel might heave down alongside it.

The Western anchorage is by far the best, being partly sheltered from the sea-breez both places, however, should only be used in a case of necessity.

River Navagandi. RIVER NAVAGANDI OR MONA.—W. by N., three or four miles from Pinos is t entrance to a little river called by the natives Mona. The water in it is excellent, b the narrow cuts leading in through the reefs are intricate, and the breakers so hea that it is extremely difficult and dangerous for a boat to get through them. Abreast t W. end of Pinos Isle is the entrance of the Navagandi lagoon, which is blocked up the reefs which skirt the shore all along.

On a sandy spit on the E. side there are a few huts, and six or seven miles up t river there is a settlement where vegetables and poultry may be obtained.

Mulatas Archipelago. MULATAS ARCHIPELAGO.—N. N. W. two miles from Pinos is Pájaros, or Bi Island, which is low, covered with brushwood, and surrounded by reefs having sev and eight fathoms, rocky bottom, close to. At this island commences the extens archipelago of the Mulatas, composed of cays, shoals, and reefs, which, sweeping rou to the Northwestward at a considerable distance from the main land, terminate off S Blas Point about eighty miles distant.

The cays are mostly low, flat, sandy, and thickly wooded, and lying in clusters, ha navigable channels between leading into secure anchorages within them all along t shore. Some of the cays have springs of good water, and convenient spots for landi and careening, and the fishing and turtling around them are excellent.

The main shore is full of sandy bays, with many small streams running into them, b the reef which fringes it makes them extremely difficult to get at.

The interior of the Main is high and mountainous, and there are many remarka peaks, which serve as guides to the anchorages and channels to those acquainted w them.

The principal channels are those of Pinos, Mosquitos, Cuiti, Zambogandi, Pun Brava, Cocos, Rio de Monos, Ratones, Playon Grande, Puyadas, Arévalo, Mangles, M ron, Caobos, Holandés, Chichimé, and San Blas; which are all more or less easily na gated.

A vessel being at the distance of about three miles to the Northward of Pájaros I and, and steering N. W. ½ W. for twenty-five miles; then W. by N. ½ N. for thirty-n miles will pass outside all, and be four or five miles to the Northward of the Easte most of the Holandés group. Great care and attention to the lead, however, are quired, for it is suspected that many banks lie outside the cays similar to those in neighborhood of the Sasardi Islands, which in heavy weather are dangerous.

Holandés Cays. HOLANDES CAYS.—This group is about seven miles in extent, from E. to W their Eastern extremity lies E. by N. ½ N. eighteen miles from San Blas Point. The side of the reef which bounds the cays is from eight to ten miles from the coast, and cays are separated from those immediately adjacent to the main land by a clear op ing three miles wide.

Gulf of San Blas. GULF OF SAN BLAS.—San Blas Point, which forms the N. E. point of the gulf that name, is low and skirted by a reef to the distance of a mile and three fourths which are several cays, the Easternmost called Cay Francés. From San Blas Point Mandinga Point, due S. of it, the gulf is six miles wide, and to the Westward of line it is about the same distance deep; the coast is low all round, and bounded by groves. In a S. W. and Westerly direction from Cay Francés, there are twelve islets, upon some of which are small fishing establishments; and to the Eastward them are many banks and islands, forming part of the Mulatas Archipelago, with ous channels between.

Chichimé Channel. CHICHIME CHANNEL, the Northwesternmost leading into the gulf, is three wide, and is bounded on the W. side by the cays which lie off San Blas Point; a E. by the reefs which bound the Chichimé Cays; and on the S. by those surrou the Lemon Cays.

San Blas Channel. SAN BLAS CHANNEL is bounded by the San Blas Cays to the N. W. an Lemon Cays to the S. E., and is a mile and three fourths wide.

Holandés Channel. HOLANDES CHANNEL, the largest of all in this direction, is two miles and fourths in width, with a depth of fourteen fathoms on sandy bottom. Its entra

rmed on the E. by the Western extremity of the reefs extending from the Holandés ays, which break heavily; and on the S. W. by Icacos Cay, which is high, and covered ith high icacos (plum) trees.

W. by N. ½ N. a little more than a mile and a half from the Holandés Cays there is rocky bank of six fathoms, half a mile long N. and S., which breaks when there is but tle swell, and should be left to the Westward in entering.

Directions.

To enter the Gulf of San Blas by the Chichimé Channel, which is the best, having pened out the mouth of the channel, and being in the meridian of the second islet ounting from the Westward) of the Lemon Cays, steer S. ½ E. toward it, until abreast, nearly so, of Cay Francés, the Easternmost of the San Blas Cays; thence the course ill be about S. W. through the middle of the San Blas Channel, between the reefs hich run off from Cay Francés and those from Gallo (cock) Cay, the Westernmost of e Lemon Cays. Being within the latter a vessel may direct her way as most conenient to an anchorage on the N. side of the gulf, or to Inglesa Bay, in the S. W. part it; or to that in Mandinga Bay, which is well sheltered, and adapted to those of any ass.

To proceed to Mandinga Bay, the cays which lie to the Northward of Mandinga oint will serve for a guide. Cabras, the outermost, lies a mile from the point, and N. W. ½ W. nearly the same distance from that islet, there is a little sandy cay, which ust be given a berth. W. by N. ½ N. a little more than a mile and a half from Cabras let, there is also a bank with one and one and a half fathoms on it, and the passage to e anchorage lies between this bank and the little sandy cay just pointed out.

Should the Holandés Channel be taken, the Eastern side is well marked by the edges the reefs extending from the Westernmost of the Hollandés Cays, and, as already ted, a vessel should pass between them and the six-fathom bank, which lies W. by N. N. a mile and a half from them, and which generally breaks. Then steer for the E. d of the Icacos reef, giving it a berth in passing, and having brought Icacos Cay to ar N., the route is about W. S. W. to the anchorages at the bottom of the gulf. The annel is clean all the way, with depths from twenty-one to twenty-five fathoms oazy tom, and from two and a half to three miles wide, between groups, detached cays, d reefs; and it is free and commodious to turn in, if necessary.

Piedras and Perro Cays.

PIEDRAS AND PERRO CAYS.—N. W. by W., rather more than half a mile from e extremity of San Blas Point, is the Northern part of its front; the land is low and vered with mangroves; off the intermediate space is a little cay called Piedras, and er shoals connected with Cay Francés. N. W. ½ N a fourth of a mile from the rthern part of the point there is another small cay named Perro, also united to the Francés Reefs, which latter terminate at an island in front of a lagoon a mile and ourth farther to the Westward.

Escribanos Harbor.

ESCRIBANOS HARBOR.—From Perro Cay the coast continues W. ¾ S. for nearly miles to Cocos Point on the E. side of the mouth of Escribanos Harbor; the interme- e shore is low, and forms something of a bay skirted by a reef. The most promit objects on it are Mogote Point, which is small, a little salient, and has a hillock on Cerro Colorado, round, scarped, and projecting but little; and Playa Colorada also nd, and skirted by reefs extending out a cable's length.

Cocos Point projects into the sea, and from it Escribanos Point bears W. by S. ½ S. a e and a third. In the middle of a bay formed between these points is Escribanos bor, extending to the Southward half a mile, and having only from six to nine feet er in it; without, on both sides, there are very shallow reefs; and in the channel, ned by them, there are from three and a fourth to six fathoms.

Escribanos Shoals.

ESCRIBANOS SHOALS.—About two miles Northeastward of Escribanos Point e are two rocky shoals lying close together, with very little water over them. The nearest the coast extends E. N. E. and W. S. W. about a mile, and has a small islet t; the other lies about W. by N. ½ N. from the above islet, and is nearly a mile in nt from E. to W.: both are steep to, with three and four fathoms on them, and eight welve elsewhere.

Escribanos Bank.

ESCRIBANOS BANK.—N. W. by W. ½ W. five and a half miles from the Escribanos als is the bank of the same name, which extends nearly two miles on that line of ction, and has from five to eight fathoms water over rocky bottom. To the North- of its edge, at about two cables' length, are sixteen to thirty-one fathoms; and its W. end bears N. W. ½ N. eight and a fourth miles from Escribanos Point. Heavy generally break upon it, and point it out; but otherwise a sharp lookout must be from aloft for the discolored water.

e channel between this bank and the Escribanos Shoal carries from eight to seven- fathoms water, on sand, gravel, and rocks.

Mountains.

e range of mountains which continues along this coast as far as Porto Bello are iently remarkable and useful objects; the Cerro de la Gran Lomo or Gordo, rising by S. seven miles from Culebra Islet, being rather more so than others in this borhood, and it serves as a mark for keeping clear of the Escribanos Bank and

Shoals; the former bearing N. by E. ½ E. from it, the cay on the latter N. E. ¼ E. T summit of this hill is large and of some extent, and appears a little higher than Cordillera in which it is situated.

Pescador or Terrin Point. PESCADOR or TERRIN POINT is fringed with reefs which extend to the Nor ward a cable's length and to the Westward half a mile; and continuing on in a Sou erly direction surround three islets lying between the point and the N. E. point of No bre de Dios Harbor about a mile and a half to the Southwestward. N. W. ½ W. dist two cables from Pescador Point is Pescador Islet; and W. N. W. nine tenths of a m from the same point is the Buey Shoal, between which and the reefs skirting Pesca Point there are nine and twelve fathoms.

San Cristóval Bay. SAN CRISTOVAL BAY.—W. by N. five miles from Pescador Point is Manzani Point, a mile to the Eastward of which is the Islet of Martin Pescador, and both f high and scarped. Between these points the shore recedes to the Southward, form a bight about three miles deep. W. ¾ S. three and two thirds miles from Pesca Point the shore projects considerably at Cristóval Point, and to the S. W. of this the bottom of the bight, is a small foul bay of the same name. N. E. distant about t cables from Cristóval Point is an islet called Juan del Pozo surrounded by rocks; about S. E. half a mile from the islet is the Vibora Bank. Between this bank and Ju del Poso, and between the latter and the point, there are nine, ten, and thirteen fathom water on gravel and coarse sand; and between the Vibora and Buey Shoals off Pesca Point there are about the same depths on sand and clay.

From the bottom of San Cristóval Bay, reefs extend nearly a mile toward Cristó Point, and render this part quite useless and dangerous in strong winds. The coast tween Cristóval and Manzanillo points is lofty and scarped.

At the E. side of San Cristóval Bay, about a mile and a half Southwestward of Pe cador Point is the small cove or harbor of Nombre de Dios. Its mouth has three a a fourth, four and five fathoms, but the entrance points are skirted by reefs, and so the greater part of the interior.

Caution. From the numerous shoals which have been pointed out, it will be quite evident to mariner that to navigate within this bight requires the greatest care and attention that the leeward part of it should be avoided altogether.

Mountains. Among the mountains in this neighborhood two are remarkable, named Saxine Nombre de Dios; the first is high, and terminates in two peaks near each other, Northeasternmost of which bears about S. S. E. ½ E. seven miles from Pescador Poi the latter mountain rises to a single peak about S. by W. ½ W. eight miles from the sa point, and is a guide for Nombre de Dios Harbor which is on its meridian.

Manzanillo Point. MANZANILLO POINT, the Northern extremity of the coast of Porto Velo or Po Bello is a high scarped projection, with two hummocks on it like a saddle. Near point are several islets and a shoal; Martin Pescador, the outermost, is about a cable extent from N. to S. and lies about a mile to the Eastward of the point. S. S. W. ab four cables from this islet and about three fourths of a mile from the point is Manzani Island, which is the largest of all; off the N. side of this island are three farallons (ro islets), the farthest out being distant a long cable's length. S. S. W. from the s island there are three more small islets surrounded by reefs and extending N. E. an W.; and also to the Eastward about a cable and a half there is another small one. these islets are high and scarped; between those of Manzanillo and Martin Pesc there are from ten to fourteen fathoms water.

Manzanillo Shoal. MANZANILLO SHOAL, lying N. W. ¾ W. distant four cables from Manzanillo Po has very little water over it, and five and six fathoms close to; between it and the p the depth is thirteen fathoms.

With Manzanillo Point bearing S. W. and Tamber Island W. ½ S. about four m distant, H. M. S. *Harpy*, in 1829, obtained six fathoms water over rocky bottom, deep ing to twenty fathoms in a N. W. direction.

Tambor Island. TAMBOR ISLAND, bearing W. by N. ½ N. about a mile and a half from Manza Point, is high, round, and scarped; and connected by a reef, two cables long, with Northernmost part of Venados or Bastimentos Island.

Bastimentos Island. BASTIMENTOS ISLAND is nearly a mile in length, N. E. and S. W., and fo with the main land, the N. E. channel of Bastimentos Harbor, which is about a and a half wide between the reefs, with five and five and a half fathoms water on The island is foul on its S. E., S., and S. W. sides; the latter, with Cabret Island, bears a little to the S. of W. forms the N. W. channel, three cables wide in the n est part between the reefs, and carries from three and a half to nine fathoms on

Bastimentos Harbor, although with depths of three and a half to seven fathoms sheltered, is of little importance. All its shores are bounded by reefs; and the tomary anchorage is to the S. W., S., and S. E. of the S. or sandy point of Basti Island.

Garrote Harbor. GARROTE HARBOR.—S. W. two and a third miles from the highest part of bor Island, is the entrance of Garrote Harbor, which is formed on the S. side

in land, on the E. by Great Garrote Island, and on the W. by Pelado, and other islets ich follow to the Westward for about one mile and a half to the mouth of the Bo-rones. The entrance is scarcely three cables wide between the reefs to the Westward Great Garrote Island and Pelado Islet; its first direction is to the S., and afterward to E., with depths from twelve to eighteen fathoms, mud, at the entrance to six and a half oms in the interior.

Mountains.

etween Garrote Harbor and that of Bastimentos is the hill of Garrote, of middling ght, and its summit terminates in a peak, about three fourths of a mile from the coast. y E. ½ E., three and a half miles from the little bay of Garrote, is the high mountain Capiro or Capira, almost always covered with clouds; it is situated nearly E. from town of San Felipe, at Porto Bello.

t a short distance to the Southward of Capira is the sierra or mountain ridge of Llo-a, extending nearly E. and W.; the Eastward part of its summit appears as if cut n vertically, forming a peak called the Campana, or the Bell; and from this peak ridge descends gradually to the Westward to near the peak of Guanche. The rona is the highest range on this part of the main, its summit reaching an elevation hree thousand feet, and its appearance is such that it cannot be mistaken for any r. In clear weather it may be seen at the distance of forty-five miles, but in the on of the fresh breezes it is generally covered with haze. In the season of the davales and variable winds it is often visible between eight or nine in the morning, four and five in the afternoon, but the remainder of the day it is covered with clouds.

Lavadera Shoal.

AVADERA SHOAL, lying N., nearly three fourths of a mile from the Northern ex-nity of Pelado Islet, and W. one mile from Cabra Islet, at the mouth of Bastimentos bor, is of rock, with very little water on it, and steep to, with seven and a half and fathoms close to a rock on which the sea breaks. The channels between it and Ca-and Pelado islets carry from fourteen to seventeen fathoms on mud.

Boquerones.

OQUERONES.—S. W. by W., about three and three fourths miles from Tambor is the high, salient, and scarped point of Boquerones, and about a mile to the hward of it a hill, named Casique, rises to a peak of middling height. N. E. by E. the point there are five small islets, called the Boquerones, in a space about three es in extent, which are the last of the reefs and cays that extend Westward from do.

Parallon Sucio.

ARALLON SUCIO is the name given to the Westernmost of a cluster of five small, ed rocks, which occupy a space of about a fourth of a mile from E. to W. It ap-s to be steep to, but from the Easternmost rock a foul ledge extends one cable and a to the S. E. The Northernmost islet lies W. ½ S. nearly four miles from Tambor Is-and in the space between there are from sixteen to thirty fathoms water, on clay sand, and sixteen, twenty-one, twenty-two, and twenty-five fathoms between the h Islet, the islets off the coast, and the Lavadera Shoal. The Farallon Sucio bears E. ¾ E. about three and one fourth miles from the Northern extremity of the te Islands, and N. W. ½ N. nearly two miles from Boquerones Point, the Cacique upon which may serve as a guide for it.

Duarte Islets.

UARTE ISLETS.—S. W. by W. ½ W., three miles from Boquerones Point, is the hern end of the Duarte Islets, which are four in number, and extend N. N. W. and E. nearly three fourths of a mile. From the Northernmost islet a reef runs off in direction about a cable's length. The Southernmost islet is separated from Du-Point on the main to the Southward of it, by a channel a little more than two ca-wide; and from Sabanilla Point, which bears E. by N. ½ N. from the islet, by a nel a little more than a third of a mile across: between these two channels there om two and three fourths fathoms water, close to the islet, to fifteen fathoms toward ain.

Sabanilla Point.

BANILLA POINT is fringed by a reef and some rocks; the adjacent coast is high carped, with some bays, and José Pobre Point N. E. ½ E. one mile and a half from illa Point, projects a short distance out.

ke or Porto Bello Point, the N. W. point of the entrance of Porto Bello, bears S. ½ W. two long miles from the Northernmost part of the Duarte Islets. The in-diate coast is also high and scarped, and forms a small harbor called Leon, of not importance, it being bordered by reefs which terminate at a little farallon N. by W. distant four cables from its mouth.

AST OF NEW GRENADA—PORTO VELO OR BELLO TO THE RIVER CHANGUENE.

Porto Velo.

RTO VELO, corrupted into Porto Bello, was first entered by Columbus, in 1502; e best, and indeed the only harbor found to the Westward of Cartagena. It is e of receiving ships-of-the-line in great security, and affords means of careening. sing such advantages, and lying so near the narrowest part of the isthmus of

Panama, it was early settled by the Spaniards, strongly fortified, and soon became place of considerable commercial importance. Being, however, enclosed to the N. a S. by hills ranging from six hundred to thirteen hundred feet high, shutting out t regular breezes, and bounded on the E. by dense swamps, the position is exceedin unhealthy; and at present the forts and government buildings are almost in ruins. T commerce is being transferred to Aspinwall.

The N. side of the port is formed by a narrow, irregular peninsula, or rather isla nearly one mile and a half from E. to W., of moderate elevation, and steep to. The shore is bounded by the base of the lofty mountains which rise not far inland to a heig of thirteen hundred feet, and are seldom unclouded. This side is foul, being skirted a coral reef to the distance of from one to two cables, within regular soundings some w way outside.

The town of Porto Bello is situated on the beach, in the S. E. corner of the port, a is protected by the Castle of San Geronimo; N. N. W., about a cable's length from t mole which runs out from the castle, there is a small sand-bank of six feet water. the N. shore, opposite the town, are the ruins of San Fernando Castle.

Off Cocol Point, the S. W. point of the port, are three small islets, the outermost a largest, called San Buenaventura, lying three cables' length Southwestward of t point. Foul ground extends out about three cables to the Westward and Northward these islets; and at this distance, with the N. W. point of the outer islet bearing S. ½ and Cocol Point S. E. by E., is the Farnesio Shoal, of four fathoms, within which th is no safe passage.

At the heap of the port a sand-bank stretches off about two and a half cables from mangroves, leaving a channel on the N. side into the careening cove, which has dep of three and four fathoms.

Between Porto Bello Point and San Buenaventura Islet the width of the entrance one mile and a fourth; but a short distance within this, between Todo Fierro or I Castle Point and the S. shore, it is about half a mile wide; this breadth is carried for about a mile to the head of the harbor and the depth gradually decreases fr seventeen to seven fathoms close up to the edge of the sand-bank.

S. W. ½ S., distant one cable and a half from Porto Bello Point, is Green Islet, li more than half a cable in extent from E. to W., and having a break in the middle wh appears at a certain distance to divide it into two parts; it is clean all around, but passage between it and the point is not safe for large vessels. W. ½ S. a fourth o mile from this islet is the Salmedina Bank, a rocky patch about half a cable in ext and some parts two feet dry at low water; it always breaks, and has six fathoms cl around it, and in the channel between it and the islet there are from sixteen to twen one fathoms water on clay.

Water. Numerous rivulets run down through the ravines on both sides of the harbor, but most convenient spot for watering is on the N. side, to the Westward of the Castle San Fernando. Here a vessel may lie alongside pipes which convey the water to shore, and fill five tons in an hour, but it is necessary to pay attention to the pipes, eels are apt to get in and choke them.

Directions. The wind generally blows out of Porto Bello, or is light and baffling, according to seasons; a vessel will therefore most probably have to work or tow in. In approa ing from the Northward it is advisable to leave the Duarte Islands about half a mil the Eastward, and steer so as to pass about a cable's length, or with a steady bre even as close as a ship's length, from Green Islet, to avoid the Salmedina, which, h ever, is also steep to. As already stated, the passage between Green Islet and P Bello Point is only fit for small vessels. Having passed the island the vessel may k close to the wind, with the N. shore on board, and in the season of breezes she fetch into the middle of the harbor. After passing Iron Castle Point, in working when standing to the Southward, no part of the tow must be shut in with the to the Westward, to avoid the ledge off the S. shore An anchorage may be taken as most convenient, for, with the exception of the ab e ledge, there is no danger w ever in the way.

When approaching from the Westward it is r ommended to keep the shore s three miles distant; and in the night the soundir s should not be neglected, as, betw Chagres and this port, they extend out from eigh to ten miles. From this directio entrance is made known by two remarkable trees on the top of a hill on the S. side; a signal post upon a hill on the N. side of the harbor; the existence of either, ever, is doubtful, but from this quarter the opening itself is sufficiently remarkable. standing toward the San Buenaventura Islands, Green Island must not be open the Westward of Porto Bello Point, or brought to bear to the Northward of N. and in standing toward the Farnesio Shoal from the Northward the Northernmo tremity of the lines of Fort Geronimo must not be shut in with the land.

From May to November light breezes from the S. W. and W., with heavy rain, p in the harbor, but toward morning a light air blows down it from the N. E.; there

eaving, vessels should be prepared to get under way at day-dawn with boats ahead ow.

t is also to be observed, that the Northeasterly current runs strong close off the en- *Current.*
nce of Porto Bello; and in the rainy season from one knot and a half to even three ts an hour, right home to the Farralon Sucio.

bout half a mile to the Southward of Cocal Point is Buenaventura Cove, so obstruct- *Coast.*
by reefs, as to be of little use. From this cove the shore trends about S. W. four a half miles to Gorda Point, near which may be said to terminate the high land of rona, already described, page 717. E. by N. ½ N. three and three fourths miles from point is Guanche Hill; and between Buenaventura Cove and the point the river nche disembogues.

rom Gorda Point to the entrance of the River Grande the coast runs S. W. ½ W. five a half miles. In this space the land gradually diminishes in height and to the West- d of the river becomes very low and bounded by mangroves. Near the entrance of River Grande are some small cays called Noranjos (Orange), covered with trees and ounded by reefs, to the Westward of which there is anchorage in four and a half to n fathoms, on sand. S. W. by W. ¼ W. four and three fourths miles from the Orange s is the fronton or projection of Longarremos, also formed of low mangroves and bor- d with reefs to the distance of somewhat more than a cable's length, having eleven oms on clay close to.

etween the above cays and point, the mangrove shore is very irregular, and forms bights or creeks called Minas; the Eastern extends inward to the S. S. E. about e miles, but varies in breadth; the Western one runs in to the Southward about ile, and is much narrower than the other, and the shores of both are fringed with d.

ANZANILLO HARBOR.—The fronton of Longarremos extends to the W. S. W. *Manzanillo*
t one mile and a half, when the coast line takes a Southerly direction for about *Harbor.*
e miles to abreast Manzanillo Island, at the entrance of Limon or Navy Bay. Be- n this island and the main a small harbor is formed, which has a depth of from four o fathoms in the interior. At the entrance which is three fourths of a mile wide, e is anchorage in five fathoms on sand and clay about a fourth of a mile from the ern shore, with the W. end of Margarita Cay just open to the Westward of Coco Point bearing N. by W.

ANZANILLO ISLAND, which is about a mile long N. and S., and three fourths of *Manzanillo*
e broad, is very low, and separated from the main by the Boca Chica, a narrow *Island.*
channel leading into the harbor. On the W. side is the new town of Colon or As- all, which is connected with Panama by the railroad across the isthmus. Several ves extend from the town to the depth of twenty-six feet of water, and, to protect ls lying alongside them, it is intended to run out a jetty one thousand five hundred n a S. W. direction from the N. W. end of the island.

the Northwestern extremity of Manzanillo Island, and S. W. by S. nearly three *Lights and*
from the fronton of Longarremos, a fixed white light is placed on the top of a *Buoys.*
ework of timber, at an elevation of sixty feet above high water, and should be e at a distance of about ten miles. A coral reef skirts this end of the island, and st the light frame, it extends out a cable's length. On the edge, in thirty-six feet , there is a large iron can-buoy, painted white, with a square vane, and a light attached to it, from which is suspended a lantern about six or eight feet above the howing a light which may be seen at about one mile and a half, to guide vessels wharves. On the edge of the ledge to the Southward of this there is also a barrel- in thirty-four feet water; and outside these buoys there is no danger whatever. al buoys are also placed off the wharves for the convenience of warping or moor-

VY BAY.—Navy Bay is two and a third miles wide and three and a half deep, *Navy Bay.*
to the Northward. Four fathoms of water can be carried two miles within the bay, bold shores on either side. Under Point Limon is a three-fathom anchorage, but e rest of the bottom of the bay is shoal water.

nt Toro to the W. and Manzanillo Island to the E., are the extreme points of land ng Navy Bay. A reef extends from Point Toro N. E. half a mile, upon which the ways breaks; beyond this, a cable's length, are a few detached rocks, upon which ers are visible during the ordinary trades. Manzanillo Island, which forms the E. f Navy Bay, is one mile N. and S. by half a mile E. and W. This island is owned e Panama Railroad Company, and is made the terminus of the railroad, connecting acific with the Atlantic. Several wharves have been run out to twenty-six feet of and others are in course of construction. The place is called Aspinwall. On the ne N. W. point of Manzanillo Island is a fixed white light, on a framework of iron, ed fifty feet above high water, visible ten miles at sea, at the ordinary elevation of e.

PINWALL.—Bound to Aspinwall, or any of the ports in the Caribbean Sea, *Aspinwall.*

through any of the windward passages, the course should be steered so as to allow tw ty miles Westerly drift in the twenty-four hours.

In running down for Aspinwall near a S. S. W. course, the high land of Porto B is first made, bearing near S. E. by S. some fifty miles. This high land slopes away to S. W. and disappears; immediately to the right the woody high land about Chagres comes visible. The gap between these high lands is Aspinwall harbor.

When off Porto Bello, and within five miles of the islands off the port, steer S. W. Aspinwall. Should the weather be thick, and it frequently is so, and you fall in Point Longarremos, you will know it by the mangrove cays and the breakers about th Do not go closer than twelve fathoms water.

The land to the Westward of the harbor makes like main land. It is low but enti unlike the cays about Longarremos. At the termination of Point Toro, when at the tance of five or ten miles, it makes as if there was a small round island near the point

In clear weather the town can be seen, and at night, the light. The bay is wide clear. Steer for the town, or light, from S. E. to S., or any point between them. Ru off the town, and anchor in six or seven fathoms water, a fourth of a mile off or clo

A coral reef makes out one cable's length distant from the light-house. Just bey its limits, in thirty-six feet water, is a large iron can-buoy, painted white, with an tation flag on top. S. of this, one hundred feet clear of the Western limit of the is placed, in thirty-four feet of water, a barrel buoy. Outside of these buoys, an front of the town in any direction, there are no dangers whatever. The United S Mail Steamship Company have several large buoys placed off their wharf for the pose of securing their steamers. The Panama Railroad Company has placed three ing buoys of the best description, at such points in the bay as render them very co nient and useful, and contemplate building a breakwater from the light-house, one sand five hundred feet in a Southwesterly direction. This will protect the wharves every wind. Now the front of the town is exposed to the N. W. gales, which ma expected during December and January. They are, however, of rare occurrence seldom violent. From May to December is the wet season. The winds prevail da this period from S. to E. to S. W. and W., light airs and frequent calms, with h showers of rain. From December to May is the dry season. The N. E. trade blow home a steady fresh breeze. As the shore line of Aspinwall inclines half a poi the W., the wharves and anchorage immediately in the front of the town are compl sheltered, the slightest swell scarcely ever being felt there during these winds.

Wreck of the European. The wreck of the British steamer *European*, recently destroyed at Aspinwall, lies dangerous position for vessels entering Navy Bay. Its position is S. 72° W. by com from the light-house, distant one and a half miles, in five and a quarter fathoms of w

Buoy. A red buoy marks the Northern extremity of the wreck, which lies with decks just water. Vessels entering the bay should keep Limon Point Westward of a S. b bearing.

Mean rise and fall of the tide, fourteen inches. Mean range of the thermo (yearly) 72° to 88°.

Chagres Bay. CHAGRES BAY.—From Toro Point the coast trends S. W. by W. ½ W. two mil Brujas Point; the shore here forms a low shelf of rock, intersected near the middle small sandy bay, and is skirted at a short distance by a ledge nearly dry at low wate

Point Brujas is a bold, rocky, wooded headland, whence rises the highest part peninsula mentioned above. At the foot of the cliff, and only a few yards distan small isolated rock with perpendicular sides crowned with bushes, called the Meg Brujas, which, when seen open of the bluff, is sufficiently remarkable. The rock nected to the bluff by a flat ledge dry at low water, extending outside it a cable's le and is steep to; there are six fathoms two cables from the rock.

From Brujas Point to the peñon or bluff at the entrance of the Chagres Rive shore runs nearly straight S. S. W. three miles, and is rocky and steep to. About way, however, there is a small rocky cove, into which a rivulet throws itself ove cliff from a height of about thirty feet; the water is excellent, but the heavy sur vents landing anywhere near it.

On the N. side of the peñon of Chagres there is also a small sandy cove named about a cable wide, and having a depth of fifteen feet close to the beach, into wh little stream disembogues at the S. E. corner, by the side of a precipice. The N. this cove is bounded by a bold, irregular, bluff headland, rising to the height of one dred and twenty feet; and being higher than the peñon, hides the castle of San L from the Northward, until the latter is brought to bear S. S. E.

Chagres River. CHAGRES RIVER.—The peñon or flat rocky promontory which bounds the of the entrance to the river Chagres, is two cables in length, E. and W., and abo broad. On the N. W. and S. sides it rises almost perpendicularly from the sea, height of eighty-two feet at the outer end, and to that of one hundred feet at the part. The Western half is occupied by the fortifications of San Lorenzo, diately in the rear of which there is a level plateau three hundred feet in length

ng at a little mound commanding the valleys on either side, and the only road to castle. On the walls of the sea face are eight brass thirty-two pounders, and on the r walls are two brass thirteen-inch mortars; but the works are everywhere in a e of decay, and the building almost in ruins.

he S. side of the entrance to the river is formed by a dark sandy beach, and from nas Point, the Northern extremity, to the base of the promontory opposite, the width e hundred and eighty yards. From the inner end of the promontory the shore turns denly to the Southward, and abreast Arenas Point the river is only one hundred and n yards wide.

he bar across from Arenas Point to the N. shore is about half a cable broad, and eleven feet water in the dry season, but the depth changes according to the state of river. The mouth of the river, outside the bar, is obstructed by the Laja, a rocky e about a fourth of a cable in diameter, which breaks in heavy weather, and is nearly with the surface of the sea. The inner edge lies a cable to the Westward of the n, and between them there are fifteen feet water close up to a little dry rock at the of the cliff. There is also the same depth for half a cable's length between the Laja the ledge skirting the bluff on the N. side of Laja Cove. To the Southward of the there is a small vein of the same depth, but too narrow and uncertain to navigate safety, except in cases of necessity when leaving the river. The S. side of the en- ce is bounded by a dangerous rocky ledge, which extends W. half a mile from Arenas t, to a patch of rocks nearly dry, breaking heavily in fresh N. E. breezes.

he town of Chagres is situated on the Eastern shore, between the base of the peñon, the Caño Rivulet, which enters the river abreast Arenas Point; the shore in front irted by a flat, rocky ledge, so that small craft find it more convenient to lie along- the bank, just above the Caño.

Anchorage.

he anchorage off Chagres is an open roadstead, exposed from the N. E. round North- to S. W.; in the latter direction, however, it is somewhat protected by the distant and bank of soundings; but in strong winds, between W. and N. E., remaining here ended with risk; and it will be better, when the weather threatens from these quar- to put to sea, or proceed to either Limon Bay or Porto Bello. It is stated by some rienced navigators that the river stream runs out to the N. W. with sufficient strength se the strain on the cables, and enable a vessel to ride out these gales, but nothing ore certain than the force and direction of this outset. Should the Easterly current rong, it will sometimes overpower the river stream only a mile from the mouth, urn it toward Brujas Point; the line of junction is generally well marked by the lored water. A good berth will be found with the bluff off the peñon, or castle of Lorenzo, bearing S. E. by E. ½ E. and the rock of Mogote de Brujas just open of the N. E. ½ E., in ten fathoms, on mud, about a mile and a half from the shore; but a ion farther in may be taken if necessary.

Directions.

pproaching Chagres or Limon Bay from the N. E. in the season of the breezes, from mber to May, the first land seen will be, most probably, the lofty flat mountain of Llorona, overlooking the harbor of Porto Bello from the Southward, at the t of three thousand feet. As before stated, the shore is very low to the Westward rto Bello, until it reaches the little flat peninsula of Chagres: and it is of the same cter to the Westward of that river, for a distance of about twenty-five miles; fore the locality is well marked by the peninsula, and easily made out. The inte- s so generally shrouded by the rains and deadly vapors arising from the swamps he inland chain of the Calderos Altos is seldom visible. The sierra of Llorona is requently obscured, but the irregular hills which enclose Porto Bello are generally aded, and being from six hundred to thirteen hundred feet high, are sufficiently kable to be distinguished from the much lower table-land of the Chagres Pen- .

he other part of the year, when calms and variable winds prevail, and the East- urrent is most powerful, it will be better to keep an offing from thirty to forty and to make the coast even to the Westward of Chagres. By doing this, a vessel ot only avoid the strength of the current, but in a great measure escape the heavy and violent squalls from the shore.

this case, the locality of the river is pointed out by a remarkable piece of flat, d table-land, about three miles in diameter, which lies not far inland, on the W. of the river; its N. side rises rather abruptly to a height of eight hundred feet, e elevation of its summit does not alter more than about thirty feet in its whole : there is nothing like it in the neighborhood. The land behind Chagres being than the peñon, the castle is not seen from the Westward until within a short ce.

Pilon de Miguel de la Borda.

ON DE MIGUEL DE LA BORDA.—This most remarkable isolated mountain bruptly, in the shape of a truncated cone, or flattened sugarloaf, to the height of hundred and seventy feet, and is a good guide for Chagres, whence it bears by S., distant thirty miles, and it is about thirteen miles inland of the sierra of

Miguel de la Borda; it is not, however, often visible, being generally concealed by dense vapors which hang over the extensive low flat plain surrounding it; still, it may be occasionally seen from the Chagres anchorage.

In quitting Chagres or Limon Bay, and bound to windward, it will be, of course, advantageous to work or run along shore in the influence of the great eddy stream, which generally reaches as far up as Cartagena. In the season of variable and hazy weather however, great care is requisite, particularly at night; for the stream runs close to to the islets off Porto Bello, and both hand and deep-sea leads should be well attended. It is also necessary to warn the navigator to be well prepared to meet the violent gusts from the high lands at this period, and to anchor should it fall calm.

Coast. From Arenas Point, at the entrance of the Chagres River, a low, dark, sandy beach trends, with a slight curve, about S. W. by W., for three fourths of a mile to Boca de Furnia Point, which is low and rocky. The ledge bounding the S. side of the channel into the river terminates in seventeen feet water, about a cable and a half to the Northward of this point. The shore continues rocky and foul for about two cables' length to a little rock called El Morillo, when it takes a Westerly direction for about half a mile, and becomes sandy as far as Point Morrito. This point is formed by a low red cliff, upon which are a few huts, and foul ground extends from it about two cables length.

From Morrito Point a sandy shore trends to the Southwestward about two and a half miles to Diego Point. This latter point is formed by a low rocky shore, and about a mile to the Westward of its extremity is a remarkable white cliff, with a small sandy beach on either side, above the Western end of which there is a cleared space and a grazing farm. From Diego Point the land gradually ascends to the base of the Chagres table-land before mentioned.

S. W. about four miles from Diego Point there is a little village on the beach consisting of about a dozen huts, called Lagarto.

From Lagarto village, the low sandy shore, thickly wooded in the rear, runs S. by W. four miles to the entrance of the river Indios, where it is formed of low red cliffs. In a small, sandy cove, about half a mile to the Eastward of the river, is the little village of Salud, with about fifty inhabitants; and about the same distance to the Westward of the river there is a remarkable cavern in the cliff.

From the river Indios the shore continues its S. W. by W. direction for fourteen miles to the river Mangalee. From the end of the Indios Cliffs a sandy beach extends about three miles to a rocky shelf, upon which will be seen a few huts. Thence the beach runs on for about two miles, when it meets with a remarkable ridge of low, indurated mud cliffs, which extend for about three miles.

At half a mile to the Westward of the above cliffs, on the beach which follows, the village of Gicacal, consisting of a few straggling huts, on the left bank of a small stream.

River Mangalee. RIVER MANGALEE.—From the village of Gicacal the sandy shore, backed by low rocks, extends for two and a half miles to the entrance of the Mangalee River, which is pointed out by two or three huts on the W. side, and a little low rocky point on the E. side.

The whole line of shore between these points is fringed with coral, to the distance from a cable's length to half a mile, upon which the sea breaks so furiously as to render landing extremely difficult and dangerous, except under most favorable circumstances.

All the streams just described, from the Indios to the Mangalee, are navigated by small canoes, conveying the sarsaparilla collected on their banks to the small trading vessels which occasionally call for it.

The Mangalee defines the Northwestern boundary between the provinces of Panama and Veragua.

Anchorage. There is anchorage all along the coast just described, in from six to eight fathoms, sand and mud, at about two miles from the shore.

Aspect. Near the entrance of the Indios, the land is about one hundred and fifty feet above the sea, and thence to the Westward it gradually rises. Abreast the middle of the cliffs, to the Eastward of Gicacal there is a conspicuous round hill, three hundred and fifty-six feet above the sea. Immediately behind the entrance of the Mangalee, the height of the Great Sierra of Miguel de la Borda attains, almost abruptly, the height of upon six hundred feet; whence it continues to rise, in irregular densely-wooded ridges to the summit, which is fifteen hundred and fifty-two feet above the sea, and S. S. E. miles from the entrance of the river. The Pilon de Miguel de la Borda lies on the meridian of Gicacal, and is not visible to the Westward of it.

Coclet River and Mountain. COCLET RIVER AND MOUNTAIN.—From Mangalee the coast trends about by S. ½ S. eleven miles, to the entrance of the Coclet, and is bounded by a sandy beach intersected occasionally by small patches of low rocks. About five miles from the Mangalee a slight bay is formed, for about two miles, into which the Plantain River

itself; the entrance is marked by a single hut on either side, and the deep valley in rear, through which it runs.

The Coclet River is pointed out by two huts on the W. point of entrance, and a house the middle of a small cultivated spot on the E. side. Behind it rises the Sierra of let, which, at four miles to the Southward of the river entrance, reaches an elevation ourteen hundred and thirty-two feet. This large mass of irregular hills is connected h the Sierra of Miguel de la Borda, by a wooded ridge from eight to nine hundred high. A little to the Eastward of the Coclet, the base of the sierra rests on shore, and continues to bound it, until interrupted by the valley of the Plantain er.

rom the Coclet the shore runs W. S. W. six and a half miles, to a rocky point, form- the E. side of a sandy bay, about one mile and three fourths in extent, which is nded on the W. by Rincon Point. At half a mile to the Eastward of this bay there small rivulet.

INCON (Corner) is a bold, scarped, rocky headland, reaching to the height of five dred and fifty feet, at the distance of three fourths of a mile inland. At three miles f it the elevation is eight hundred feet. Abreast this headland the edge of soundings nly two and a half miles distant, and the shore is so bold that there are twenty-four oms at half a mile off. *Rincon.*

rom Rincon Point, for a distance of six miles, a sandy beach, intersected by low, rocky ves, trends in a Southwesterly direction to the entrance of the Palmillo River; and land near the shore gradually declines in height. The entrance of this little stream inted out by two huts on the Eastern side, but so hidden by the dense foliage as to xtremely difficult to discover. About four miles farther on, in nearly the same di- ion, is the entrance to the Belen River, and the space between presents the same fea- s. This opening is so small that it is only discovered by the receding of the low hills ch forms its valley. *Coast.*

n the W. side of Belen River the shore is rocky for about half a mile, when a straight y beach runs Westerly for one mile and a half to Palisado Point. From Rincon t the shore is bold and clean, but from Palisado Point breakers extend out nearly a mile, and the edge of soundings is about five miles distant.

T. CHRISTOPHER BAY.—To the Westward of Palisado Point the shore forms a y bay two and a half miles wide and a mile deep; and the Old Veragua River dis- ogues in the middle of it. *St. Christo- pher Bay.*

e river has a single hut on the E. point of its entrance; and on the rising ground on W. side, in the centre of a cleared space, apparently of savanna grass, there is a con- ous white house.

rom the W. extreme of St. Christopher Bay the coast trends about W. S. W. four miles e Gold River; it is sandy and skirted by a ledge which breaks nearly half a mile off. ut midway the beach projects a little, and near this spot there is a solitary hut. At t half a mile to the Eastward of the Gold River the beach is interrupted by a small, rocky point; and at one mile and a half to the S. W. of the river there is a very re- able red cliff, one hundred feet high, on the Eastern side of which a small stream ars to enter the sea. *Coast.*

one mile and a half beyond the red cliff is Zapatero Point, low and sandy, and kers stretch off from it about half a mile. From this point the shore trends S. W. mile and a half, when it forms a small sandy bay about three fourths of a mile the W. side of which terminates in a high, rocky bluff. At the bottom of the bay e entrance to the Cocooyah River, which may be known by a hut that stands on ght bank, a short distance inland.

LD OR CONCEPTION RIVER.—There is said to be a gold mine near the source s river, which gives it its name. The entrance may be distinguished by a remark- mbrella-shaped tree standing on rising ground on the Eastern bank, to the East- of which, on a small cleared spot, there is a house, and below it on the beach are ocoanut trees at the mouth of the river; the opening of the valley is also very con- ous. *Gold or Conception River.*

RDILLERA OF VERAGUA.—Between the rivers Belen and Cocooyah the inte- comparatively low, forming a deep valley for some distance to the Southeastward, e land declines in height toward the coast, where it is elevated about one hundred fty feet; but only two miles to the Southward of the Cocooyah, the Northeastern nity of the base of the Great Cordillera of Veragua rises abruptly one thousand rty-four feet. The highest ridge of this immense mass of mountains traverses the s from E. to W. for about seventy miles, at the distance of about fifteen miles the coast. *Cordillera of Veragua.*

Silla de Veragua, the Eastern extremity of the ridge, rises from the low plain of a, S. about twenty miles from the entrance of the Coclet River, and when seen he N. W. forms a remarkable double peak or saddle, about three thousand three ed feet high.

Castle of Choco.

THE CASTLE OF CHOCO.—About fifteen miles to the Westward of the Sadd Veragua is a most remarkable height, rising almost perpendicularly on its Northern from the plain to an elevation of upward of six thousand three hundred feet; the tened summit has the exact appearance of a huge square castle, with a small towe one angle. It is, however, so constantly enveloped in clouds as to be seldom visi except at the break of day, just before sunset, or on a sudden cessation of heavy ra when the atmosphere will almost instantly become most remarkably bright and cle and these remarks are applicable to all the high lands on this coast.

When visible the castle is of course an excellent guide for the mouths of the su streams to the Westward of the Coclet. From the Belen it bears about S. ½ E., from Old Veragua S. by E. ½ E., from the Cocooyah S. E., and from Escuda de Veragua Isl S. E. by E. ½ E., from which latter it is distant fifty miles; it is also to be seen un favorable circumstances from the Castle of San Lorenzo at Chagres, whence it bear 50° W. (true) sixty-seven miles.

From the base of the Castle of Choco irregular masses of wooded hills begin to and, taking a N. W. direction, reach an elevation of three thousand one hundred only five miles S. of the Cocooyah. Thence the base of the Cordillera almost bounds shore, as far as its Northwestern extremity, near the meridian of the Chiriqui Ri thirty-five miles to the Westward of Zapatero Point.

Several more remarkable elevations present themselves in this space, which it better serve the mariner to describe as we proceed to the Westward.

Coast.

From the bluff which lies a little to the Westward of the river Cocooyah the curves slightly to the Southwestward for about two miles to the entrance of the W rah River, which is very small; the shore is a sandy beach divided in the middle small rocky point, near which there is a hut.

From the Wasorah, a rocky shore, intersected by two rocky shelves, runs on a W. S line for one mile and three fourths, when it terminates at the base of a range of remarkable cliffs, which rise boldly from the sea to the height of from one to two dred feet, and extend two and a half miles in a Westerly direction. These cliffs app to be composed of red, indurated clay, impregnated with minute metallic grains, w have become so highly polished by the attrition of the water, unceasingly trickling them from the highlands in the rear, that when the sun shines on them from a low tude a most dazzling appearance is produced; they sometimes look like the white of a vessel, and the Easternmost has been likened to the stern of a large ship; the certainly most striking objects, and valuable guides to the coasters.

To the Westward of these cliffs the shore resumes its usual features of dark, s beaches, separated by small rocky shelves for one mile and a half, where it termin at a high, bold, rocky headland, close under which lie two little rocky islets, having ground a fourth of a mile outside them.

The shore now becomes more elevated, and about three fourths of a mile to Westward of the above bluff, is the Candelaria River; on both points of the ent there is a single cocoanut tree, and on the Western point there are also two or huts; it is also further marked by a house standing on a slight elevation just abov mouth of the river.

Catalina Hills.

CATALINA HILLS.—The deep valley through which the rivers Candelaria Calawawa run is about four miles wide, and is also well marked; its Western side formed by the Catalina Hills, a large mass of irregular, rounded heights rising abr from the shore to an elevation of upward of seventeen hundred feet, and its Eastern by a ridge, with a gradual rise to the height of two thousand six hundred feet, S. miles from the Calawawa.

Calawawa River.

CALAWAWA RIVER.—The distance between the Candelaria and Calawawa one mile and three fourths, and between there is a small ledge of red cliffs. The stream disembogues through the beach, and the entrance is pointed out by two nut-trees on the Western point, and by some red cliffs topped with trees about fourths of a mile to the Westward.

The Calawawa is navigable for canoes about twenty miles, and beyond this path and bridle road leads over the mountains to San Jago, the capital of the pr The journey may be performed in about thirty-six hours, and the mode of conv is singular enough, being on the shoulders of Indians, who accomplish it with ease and rapidity, even in the midst of incessant torrents of rain, which prevail at all seasons.

The red cliff to the Westward of the Calawawa is skirted by a coral ledge to tance of about a fourth of a mile; round its Western end there is a hut on the and near it some cleared grazing ground. Thence a beach runs Westerly for t a half miles to Coaita Point.

A mile to the Westward of the above-mentioned cliff the sand projects out a a point, from which a ledge extends off a fourth of a mile, and shelters a landing to the Westward of it, near a hut on the beach.

OAITA POINT, which lies under the Northeast angle of Catalina Hills, is *Coaita Point.*
and sandy, and is also the most Southern point on this side of the Isthmus of
ma.

may be useful to repeat here, that from Chagres to this point, a distance of eighty-
miles, the shore runs nearly straight S. W. by W. ½ W., without any sheltered an-
ge whatever; and, indeed, without safe landing, except in native boats under favor-
circumstances, at spots known to the coasters and fishermen, for a heavy surf breaks
nually along the whole shore. Abreast Coaita Point the edge of soundings is
six miles distant, and anywhere throughout this space the depths will be found
arly decreasing inward to the shore, which is generally bold and clean.

e coast from Coaita Point to the entrance of the Passiowla trends Westerly six *Coast.*
, and the usual sandy beach is here intersected by two low rocky shelves. About
ay a coral ledge extends out about a fourth of a mile, and is steep to. In this
four small streams descend from the Catalina Hills, the Easternmost of which is
d by sarsaparilla pickers in small canoes. The Passiowla is also navigable for
l canoes, for a short distance, after the heavy rains, but at other times the mouth is
ed up by a dry sand bar.

om the Passiowla a ridge of red cliffs extends to the Westward about one mile and
rth, skirted by a beach, and crowned by a bunch of remarkable flat-topped trees,
t two hundred feet above the sea. To the Westward of the cliffs the shore forms
dy bay about two and a half miles in width, through the middle of which a small
m clears an opening for its exit in heavy rains.

UPPAN BLUFF.—The W. end of the above beach terminates at the base of a large, *Buppan*
promontory, formed by two bluff headlands close together, and a third about one *Bluff.*
and a half to the Westward of them, called Buppan Bluff. All three rise precipi-
y from the beach in rounded cones to an elevation of from seven to eight hundred
only a fourth of a mile inland.

om Buppan Bluff a small, dry ledge runs off about two cables' length, under the
f which, in moderate weather, there is a landing-place. On the E. side of the head-
on a slight elevation, is a fisherman's hut, and a little below it, above the beach, a
l space of cultivated ground.

ING BUPPAN'S PEAK.—The S. side of the Easternmost hill descends with a slight *King*
ual slope, to the distance of about two and a half miles to the S. E., when it springs *Buppan's*
enly up to the summit of a narrow conical hill nearly three thousand feet high; *Peak.*
en forms, between the summit and a much higher ridge in the rear, a deep, hollow
, which is a most remarkable feature, although backed by the loftiest part of the
illera, which reaches an elevation of upward of seven thousand feet, at about fif-
miles from the coast. The name of King Buppan's Peak has been given to this hill
e Mosquito Indians, who, it is said, penetrated thus far in one of their marauding
sions, accompanied by their king. From the island of Escudo de Veragua, it bears
E. ¼ E. distant twenty-two miles, and from this direction is a most conspicuous ob-
among the neighboring heights. The ridge also bounds the W. side of the valley
e Passiowla, which, between it and the base of the Catalina Hills, is from three to
miles wide, and sufficiently well-marked to guide to this locality.

om this elbow, the main ridge of the mountains takes a Southwesterly direction for
t twenty miles, when a small valley separates it from the Cordillera of Salamanca
Chiriqui.

GER HEAD.—W. by S. ½ S. about eleven miles from the Buppan Bluff, a large *Tiger Head.*
runs off in a N. W. direction, which gradually descends with a long slope into the
; a little below the summit, near four thousand feet above the sea there is a small
ction called the Tiger's Head—but more like the ear of that animal, which is most
rkable when seen from the N. W. and N. E. quarters; and being generally visible
the higher summits in the rear are clouded, it becomes a guide for Escudo de
gua, which bears N. by E., twenty miles from it.

om Buppan Bluff a low sandy shore runs on almost a straight line N. W. ½ W., *Coast.*
een miles to the Caña River. About three miles to the Westward of the bluff
e entrance of the Pedro River, and about the same distance farther on is that
e Chiriqui. Both are very small, and can only be entered by canoes after heavy

ÑA RIVER.—The Caña separates Veragua from Chiriqui, the Westernmost prov- *Caña River.*
of New Grenada. The entrance is S. W. ½ W. ten miles from the N. W. point of
do de Veragua, and readily distinguished by two huts, one on each side; that on
Western point is more like a house, and being generally whitewashed, is a conspicu-
bject seven to eight miles distant. About five miles from the mouth, in a Southerly
tion, and near the foot of the Tiger Spar, there is a small village, inhabited by
t twenty New-Grenadians and a few Indians, who are employed in grazing cattle
superior quality, collecting sarsaparilla, and washing for gold dust, which is occa-
lly brought down in small quantities. Small canoes can navigate the stream thus

far; but the N. E. swell rolls in so heavily that the passage of the bar is only a very favorable weather.

El Escudo (Shield) de Veragua.

EL ESCUDO (Shield) DE VERAGUA is an island two miles and a half from E. to W., and about three fourths of a mile broad; and its Southwestern extre lies N. E. by E. ten miles from Cocoa Plum Point, the nearest part of the main land is low and woody, and the trees grow so very regular in height, that when first it appears like a small island of table land, which, when approaching from the N ward, will be seen to slope down gradually to the Westward. The Eastern part of island is formed of a soft, reddish brown perpendicular cliff, from forty to fifty feet in which are imbedded several species of marine shells. From the destructive of the waves, however, the cliffs have been cut in two, and separated here and the very short distances from the body of the island, forming small islets; some of have been pierced through, and the arches being crowned by dense foliage and from seventy to eighty feet high, have a most remarkable and picturesque appeara when seen from a short distance. The W. end and S. side of the islands are very and swampy, and bounded by a dark sandy beach, similar to that formed on the main The Southwestern extremity is steep to, and affords the only landing-place, which ever, is at most times difficult of access, on account of the heavy surf. From the W a reef runs off about a cable's length, which also skirts the N. shore at the distance fourth of a mile, and the E. end half a mile, outside the little clay islets; from the dle of the S. side also, a ledge runs off about half a mile.

During the rainy season several small rivulets force themselves through the sand the S. side of the island, but the supply of good water is so scanty, that the few men who visit it in the turtling season are obliged to dig wells.

Anchorage.

A vessel may anchor off the S. W. end of Escudo de Veragua, but she will tremely uneasy, and not at all times safe, for although the soundings show a sandy gravel bottom, it is but a thin stratum over a flat shelf of coral, which, of course, not afford good holding ground. Should necessity force a vessel to take shelter the W. end should be rounded in a depth of not less than eight fathoms, and a taken up wherever the sea appears the most smooth, in about ten or twelve fath taking care, however, to leave plenty of room for dragging or weighing with the breeze, which sometimes comes off suddenly with considerable force.

Tides.

There is a rise of tide of from a foot to a foot and a half at the Island of Escudo Veragua, and high water appears to occur about 1 P. M. In the daytime, at the ang age, a vessel will generally tend to a Westerly set, which ceases at night.

Bank of Soundings.

The regular bank, which skirts the main, forms to the Eastward of Escudo de V gua a large tongue, extending from the island in an E. and N. E. direction about miles, and in the Northward five miles, with a tolerably regular increase in the de but to the Northwestward the coral soundings are irregular and alarming, as at three miles distant they change rapidly from thirty to ten and fourteen fathoms. are also irregular to the Southward, but there is no danger, and a vessel may wor the Westward quickly between the island and the main, by means of the eddy, w generally runs in that direction.

Coast.

From Coco Plum Point, which is about a mile to the N. N. W. of the entrance of Caña, the coast trends about N. W. three miles to Old Bess Point, and is fringed a reef to a considerable distance. About midway, close to the shore, there is a cluster of small islets, called the Tooley Cays, and abreast of them the wooded land to the height of four hundred and sixty feet.

Tobobo Bight.

TOBOBO BIGHT.—From Old Bess Point the shore recedes to the Westward and curves to the N. W., forming a deep irregular mangrove bight, terminating at a prominent headland, called Tobobo Bluff, which bears N. W. ½ W. five miles from above point, and W. fourteen miles from the Northwest point of Escudo de Vera The inner part of this bight is very shallow, and skirted by a dangerous reef breaks heavily about a mile from the shore, and is steep to. There are se small openings, however, forming boat channels into a snug creek in the Nort corner.

There are two huts on the S. side of Tobobo Bluff, and a spring of good water little sandy cove to the Northward of them.

Plantain Cays.

PLANTAIN CAYS.—N. E. by E. a mile from Tobobo Bluff lies the Plantain which is a small, but remarkable wooded islet, rising abruptly from the sea to the of two hundred and thirty feet, and between it and the bluff there is another and cay, called Tobobo, but only one hundred and fifty feet high. The Plantain has small rocks, steep to, close off its N. side; and there is a narrow channel for c between it and Tobobo Cay.

Tobobo Bank.

TOBOBO BANK.—E. five and a half miles from Plantain Cay there is a small bank of from seven to ten fathoms water, which tops with heavy rollers, and is ingly alarming; and N. E. five and a half miles from the cay, there are ten f on a narrow coral ledge, of from fourteen to twenty fathoms, which lies just

ge of soundings, and has thirty fathoms inside it. Vessels should approach this orhood with great caution.

LIENTE PENINSULA.—Tobobo Bluff is about five hundred feet high, and the Southeastern extremity of the Valiente Peninsula. On its Northern side, is a small cove whence the shore runs N. W. five miles to Chiriqui Point, with rregular hills rising from it all along; the beach is of white sand, skirted by islets and detached rocks and reefs to the distance of one or two cables' length, which the surf breaks most furiously. It is remarkable that this is the first clear sandy beach met with to the Westward of Chagres. Elsewhere, as far to the ward as Greytown, the beaches are composed of dark, almost black, ferruginous which is so impregnated with minute metallic particles, that a magnet thrust into frequently be brought out completely coated with them. The only exception is ove beach, and the sea or Northern sides of the outlying cays and islands, which unded by beaches of pure white calcareous sand. *Valiente Peninsula.*

s also remarkable, that the beach of the Mosquito shore to the Northward eytown, is in many parts very similar, except that the sparkling appearance here is owing to small particles of mica, which, at first sight, have been mis- for gold dust. Good coal has recently been found in this peninsula, near Sec- and Saddle Hill, which extends through Popa Island for fifty miles to the west.

LIENTE PEAK.—From Chiriqui Point, a rocky shore extends Westerly two half miles to Cape Valiente, the Northwestern extremity of the Valiente Promon- and bold, irregular, densely wooded hills rise abruptly from the shore to the of five or six hundred feet. On the Western shore of the peninsula, and about a S. E. of Cape Valiente, one of these hills terminates in a distinct peak seven hun- and twenty-two feet high, which being much higher than any other summit on this f the coast, is a most remarkable object, and excellent guide for a very long dis- *Valiente Peak.*

HIRIQUI ROCKS.—From Chiriqui Point a coral ledge runs off W. N. W. about a and a half and terminates at a small barren rock ten feet high and steep to, within are several more rugged rocky islets from fifty to one hundred and fifty feet water. *Chiriqui Rocks.*

LIENTE BREAKER.—N. W. by W. ½ W. six cables length from the outer qui Rock, and N. N. E. ½ E. a mile and a half from the extremity of Cape te, lies a very small head of three fathoms, steep to, which breaks heavily when s prevail, even in the finest weather, and is extremely dangerous. Between it he above rock there are depths of nine and ten fathoms, and between it and iger Cays, the channel is three fourths of a mile wide with from six to nine ns. *Valiente Breaker.*

le Toro Rock just open of Cape Valiente leads close to the Westward of the er. The Toro Rock is a most remarkable small sugarloaf islet, one hundred feet which, lying close off the W. end of the Bl[illegible]field Inlet, cannot well be mistaken; e current, aided by the outset from the lagoon, runs out so strong and the swell heavy, that it is by no means a safe channel to beat out of, nor for a stranger to for the rock only discovers itself by the breaker, which may not occur for long als. *Directions.*

E TIGER CAYS, which bound the N. side of the Valiente channel, consist of small low red clay islets in line about a mile from E. to W. The Easternmost, is the largest, lies N. ½ W. nearly a mile and a half from Cape Valiente, and is overed with brushwood, but on the others are trees, with their tops about thirty- eet above the sea; the cays are connected by a coral ledge, almost dry, which them all round at a short distance, preventing landing anywhere, although it is to. *The Tiger Cays.*

N. W. six cables' length from the Westernmost islet, lies a small detached rock, ix feet above the sea, steep to; and there are fourteen fathoms water between

GER BREAKER.—In the same direction, or W. N. W. four cables from the above there is a small isolated breaker, also steep to and extremely dangerous, for it does ways show itself. From it Valiente Peak is in line with the Cape bearing S. E., oro Cay S. ½ E. *Tiger Breaker.*

LIENTE CAYS.—From Cape Valiente the Western face of the promontory turns ly in a S. E. direction for a mile and three fourths, and is fronted by a shallow bank extending off a mile and a half; the N. side of this bank is bounded by a of small islets and rocks forming the Southern side of the Valiente channel, is here a mile and a half broad. Near the Western edge of the bank there is small low rock. *Valiente Cays.*

se islets and the Tiger Cays appear to be of precisely the same formation as we have described lying close off Escudo de Veragua; those off Cape Valiente

are equally remarkable, being perforated in the same way, and crowned with cocoa trees.*

Bluefield Creek.

BLUEFIELD CREEK.—The S. side of the Valiente bank and peninsula form, the opposite shore, the Bluefield Inlet, which is four and a half miles in extent, from to W., but the S. side, more particularly, is so indented that its breadth varies consi ably. In the narrowest part of the entrance it is only four cables across, but withi is nearly a mile and a fourth in breadth in some places, and has a depth sufficient to ceive vessels of the largest draught in perfect security.

The interior is exceedingly picturesque; the vessel will appear to lie in a deep ley, the gorgeous densely wooded hills rising on the N. side to the Valiente Peak, on the S. side to an elevation of from a hundred and eight to five hundred feet. Eastern end is swampy and bounded by low mangroves; from the N. E. corner a p way leads across the narrow is hmus which connects the peninsula to the main; an the S E. corner a small narrow ridge of irregular hills rises to the height of six h dred and forty feet.

On the S. shore of the creek, in a small plain to the Eastward of Carolina Point, by the side of a little stream of excellent water, there is, or was in 1840, an Ameri trading post, with a single resident and his family; and all around the Valiente pe sula may be seen detached huts of the Valiente Indians, with small cultivated spots h and there.

The huts of this tribe will be elsewhere met with, scattered about in the interior of adjacent lagoons, and at the entrances of the small rivers on the coast, but this is the spot where they appear to have formed a regular settlement; sometimes, however, peninsula will be found almost entirely deserted, for, in their long fishing and hun excursions they are accompanied by their whole families.

Scrubby Point, the Southwestern extremity of Bluefield Creek, is low and woody, the N. E. extremity of a narrow neck of land, three fourths of a mile in length, w terminates to the S. W. at Bluefield Point, the E. point of entrance to the Chir lagoon.

Supplies.

Water may be obtained from the stream by the trader's house. A shallow flat some distance off the shore, but by means of a long hose the water can be conveyed the boats. Wood will be found all round, but when time is not an object, it will be better to proceed to the Sapotilla Cays for this purpose, where there will be less ris the health of the crew. The seine may be hauled with great success in any of the sa bays, but it is necessary to be prepared to meet with small alligators, and to be car that the people are not electrified by the torpedo.

If the stay of a few days is intended, or the anchorage is about to be visited a after a short interval, the resident trader may be able to obtain a supply of cattle f the Caña settlement. The papau, a most excellent vegetable, grows almost wild around the islet; and the banks of several of the streams on the main afford an abund supply of bananas and plantains.

There is also fair sporting, but it is attended with some risk; the woods are inhab by the warri, a formidable and ferocious animal, and if but slightly wounded the escape is by ascending the nearest tree, and despatching him thence; the warri is eating, but it is necessary to extract a certain gland, known to the Indians, which the flesh. The dense rank underwood is also infested with snakes of the most venom description, and a season seldom passes without a fatal accident occurring among sarsaparilla pickers.

Bluefield Point.

BLUEFIELD POINT is a bold bluff wooded headland, a hundred and eighty feet h and consequently easily recognized. About a cable's length to the Westward there is a small black rock six feet out of water, the Western side of which, as we the extremity of the bluff, is steep to.

From abreast the black rock, a sandy beach backed by mangrove swamps trends N three cables, and from the N. end a dry coral ledge runs off about a cable to the l Toro Rock.

The Toro Cays.

THE TORO CAYS (corrupted to Tory) lie about half a mile to the Westward the Little Toro Rock; they are a cluster of small islets lying so close together they generally appear as one narrow island about a fourth of a mile in length North to South. They are formed of dark indurated clay in which are embe thin spiral layers of pebbles and stones, and their summits are clothed with w From a Northeast and Southwest direction the Southernmost of these cays are s rise perpendicularly from the sea, and have a similar appearance to those off Valiente. The ground is all foul inside of them, and a ledge runs off from the N

* From information received by Captain E. Barnett, R. N., in 1839, it would appear that fr friable nature of the indurated red clay of which these islets are formed, and the destructive w the waves and currents, one of the Tiger Cays has been washed away within a recent period.

ost N. N. W. ½ W. two cables' length; there are five fathoms at two cables to the ward of them.

LUEFIELD ROCK, a small perpendicular black rock thirty-two feet high, with r three remarkable trees on its summit, and easily recognized from the Westward, on the edge of the Valiente Bank, four cables' length to the Northward of Creek t, and marks the narrowest part of the channel into Bluefield Creek. *Bluefield Rock.*

e extremity of the Toro Ledge bears W. ¾ N. from Scrubby Point, and from it to earest part of the Valiente Bank the channel into Bluefield Creek is a mile wide, carries from eleven to eighteen fathoms, except about midway, where there is a l spot of eight fathoms. Both the edge of the Valiente Bank and the opposite bold ecting points, which separate the bays, are steep to, but the bays themselves are shallow within the lines of the points. *Directions.*

essels having occasion to visit Bluefield Creek had better enter by the Tiger Channel, g care in so doing to give the Tiger Breaker a wide berth, and not to haul in to Southward until the Toro Cay is to the Eastward of S. ½ E. By waiting until the breeze has established itself the channel may be navigated without the necessity of ing a board, and all that will be necessary is to steer toward Bluefield Point, taking not to bring it to bear to the Westward of S., to avoid the edge of the Valiente , until the hummock on the S. end of the Bluefield Ridge at the head of the creek line with Carolina Point E. ¾ S. This mark will lead up nearly in mid-channel to narrowest part, when a midway course may be pursued for the most convenient orage off the trader's house. It will be better, however, not to go farther in than ing Cape Valiente in line with a remarkable little bluff, called Observatory Point, h lies a short distance to the Southward of it, with a large hut on the summit bear- N. N. W., and Bluefield Rock about W. by N., in eleven fathoms. A position to the ward of this loses the advantage of the breeze, by no means desirable in so con- a valley, and in such a fearful climate as this.

will be difficult for a stranger to make out the leading mark into the creek, but by ing the S. side points on board, or by not bringing Bluefield Rock to the Eastward by N. there will be no danger; for the rock is very steep to off its S. side. Should necessary to make a board, in standing to the Northward the above rock must in manner not be brought to the Eastward of E. by N.; to the Southward the points h separate the two deep bays will be found steep to within a cable's length, but the of direction from one point to the other must not be passed.

is high water, full and change, in Bluefield Creek at 12h. 30m., and the rise is t a foot; there is no perceptible stream on the flood, but the ebb will assist a vessel ating out. *Tides.*

HIRIQUI LAGOON.—The Chiriqui Lagoon is thirty miles long from E. to W., e miles broad in the centre, five at its E. end, and ten at its Western extremity; s capable of receiving in security ships of the largest dimensions. The entrance een Bluefield Point and Water Cay is three and a half miles wide, and being open d S. is very easily recognized. Bluefield Point has already been described as a round headland. Water Cay is low, flat, and densely wooded, the tops of the trees e E. end reaching to the height of about one hundred and twenty feet above the sea. Eastern end of this cay is formed of low red cliffs, and very close off the Eastern mity there is a small dry rock, which, on the N. N. W. ¾ W. and opposite bearing, n just open of the point, and is the leading mark into the lagoon. A reef stretches m it a cable and a half and skirts the whole of the N. E. side of the cay, the surf ing furiously upon it; at the distance of three cables from the E. point the depth fathoms. The N. side of the interior of Chiriqui Lagoon is thickly fringed with hed shoals and coral heads, steep to; and the main entrance itself, although from a o a mile in breadth, is so intricate that its ingress and egress should only take place the sea and land breezes. These shoals extend to a distance of four and a half to the Southward of Bluefield Point, and so block up the E. end of the lagoon, hat part is only navigable for small handy vessels; the navigation by them, how- is not difficult, for the water is here so clear, that the eye alone will guide from The mangrove creeks at this end are so deep that they afford ready places for alment. *Chiriqui Lagoon.*

e Eastern and Southern shores of the lagoon, for a very considerable distance inland, as Man Creek, seventeen miles from the E. end of the lagoon, are low and py; and there are only a very few spots in this space where a landing can be ed.

Man Creek, the base of a great spur from the Cordillera reaches the shore, and wo miles from it has an elevation of about two thousand seven hundred feet. This ridge extends about five miles to the Westward, when the Chiriqui Valley, from to five miles wide, separates it from another ridge at the S. W. end of the lagoon, housand eight hundred and forty feet high, about two and a half miles inland. At ot of both these ranges there are British trading posts.

The S. side of the lagoon to the Westward of the Chirica-Mola is quite free of da and may be safely navigated by the lead.

The W. side is also low and swampy, and uninhabited; it is skirted by a coral le from one to three fourths of a mile distant, with six and seven fathoms close al side it.

The first stream that discharges itself into the S. E. corner of the Chiriqui Lagoo the Catabella Creek, probably the River Isabel of the old Spanish charts: it is s small, and will only admit canoes to a short distance. Not long since, at the distan about an hour's paddling, there was a trading post, whence a path led to the Chi Mola settlement.

Toro Creek, or San Diego River, disembogues about three and a half miles to the W ward of the Catabella, and communicates with the Chirica-Mola, just below its ra To the Westward of the entrance there are a few fishermen's huts.

Popa Island. POPA ISLAND, which forms the N. W. boundary of the lagoon, is of moderate vation, but at the N. end there is a very remarkable isolated hill, called Mount P with a rounded summit thirteen hundred feet above the sea, which is a servicea ject. The S. side of the island is clothed with trees, called by the traders Sum-w which grows to large dimensions, and is conveyed to Cartagena for shipbuilding. coal has recently been found on this island. There is a channel into the lagoon bet Water Cay and Popa Island, with not less than six fathoms in it, but it is too na and tortuous for a stranger to navigate. To the Westward of Popa Island, betwe and the main, there are narrow, deep channels leading into Almirante Bay, navig for large bongoes and launches.

Chirica-Mola River. THE CHIRICA-MOLA RIVER is the only stream of any magnitude in the la and enters it four miles to the Westward of Toro Creek. It has formed a small del its own, which projects out to a well-defined sandy point at the entrance, S. by E. nine and a half miles from Bluefield Point. On its Eastern side, about a mile and a from the entrance, the shore forms a small cove, called Irish Bay, which has thre four fathoms close up under the mangroves. Small trading coasters generally co their cargoes here from the small settlements around, and lie completely hidden b high trees.

A small, low mangrove island divides the mouth of the Chirica-Mola into two chan the Eastern one, however, is alone navigable, and on the bar, during the dry se there may be found a foot or a foot and a half of water. At this period the wat brackish about two miles above the entrance. The banks are low and inundated distance of about three miles, when they begin to rise, and at the first rapids are feet above the bed. To this point, a distance of about twelve miles, the stream vari breadth from one hundred feet to nearly as many fathoms, and in depth from tw twelve feet. About a mile below the rapids, on the left bank, there is a small cle spot and temporary hut; and a mile below there is another hut on the right bank, w affords shelter from the rains. As already observed, at the commencement o rapids a branch of the river turns off to the S. E., and forms the Toro Creek. Abov rapids the bed of the river is so encumbered with rocks, that its ascent can only b complished in small strong canoes, and with very great labor.

Coast. The coast to the Westward of the Chirica-Mola forms a large bight five and a miles wide, and about three deep; the interior is cut into by small mangrove lagoo which the Manati is frequently captured. The W. end of this bight terminates a sandy point at the entrance of the Warri or River Biarri, which forms a well-defined easily-recognized projection. The entrance of the Biarri is about twenty feet wide on the bar there is only a foot of water in the dry season. Canoes ascend to the first about eight miles from the mouth, where there is a small settlement, consisting of Indian families. From this river the mangrove shore of its delta again recedes in and curving to the Northwestward forms a large bay about eight miles wide and deep. About three miles from the Biarri, at the foot of the high lands already desc is the entrance of the Man Creek, which, in the rainy season, is navigable for canoe days' journey.

From the bottom of the bay a shallow bank runs out nearly two miles; and in W. corner, by the side of a rivulet at the base of the hills, there is a trading post, single resident.

Thence the coast again becomes low and swampy, forming the delta of the Ch which river enter the lagoon at the N. W. point of the bay. The shore in this s closely skirted by a coral ledge steep to. The entrance of the Chiriqui River is s that a stranger will have great difficulty in discovering it among the narrow open the mangroves. In the dry season the bar is impassable except by hauling over in the heavy rains the numerous rapids are too formidable even for canoes.

From the Chiriqui, the low swampy shore, which bounds the Chiriqui Valley Westerly five miles to Frenchman Creek. About midway is the Cabbage Creek is of no importance.

ENCHMAN CREEK disembogues at the base of the lofty ridge which forms the de of the Chiriqui valley; and although unnavigable, taking its rise in the adja- nountains, it is a constant running stream of excellent water. The land to the eastward and Westward of it is firm and wooded all the way to the S. W. corner lagoon, and, being free of morass, the locality has been well chosen for the es- hment of a trading post. The residence of the settler stands on the W. side of the ce of the creek, and around it is a small cultivated space, which is most fertile in roduction of all tropical fruits and vegetables. This end of the lagoon also ds in turtle at the proper season. *Frenchman Creek.*

position, indeed, has been found to be so favorably situated, and comparatively lthy, that a bridle path has been opened along the W. side of the Chiriqui valley, cross the mountains to Ciudad David, near the Pacific, by means of which cattle been brought thence to this spot, and then conveyed in canoes to the Boca del ettlement in three days. The shore here is quite clean, and there is excellent rage in seven fathoms about half a mile distant. Numerous small streams de- from the table ridge into the W. side of the lagoon, but the Robalo is the only avigated by small canoes.

BALO RIVER entrance lies near the S. W. corner of the Chiriqui Lagoon, on the e of a shallow mangrove bay, about two miles to the Westward of Frenchman Although very narrow, it is navigated by the sarsaparilla pickers, in their little s, two or three days' journey, according to the state of the river. At the end of ay's paddling, rapids are met with; and after two days' ascent it receives a small from the Southward, which throws so large a body of water into the main h as to render it almost impassable after very heavy rains. The banks are said densely clothed with trees of the largest dimensions. *Robalo River.*

best place in the lagoon to water is at Frenchman Creek. There is also an ent and convenient spring in the little sandy bay on the E. side of Bluefield off which there is anchorage; it is, however, so confined as to be very difficult to and so exposed as to be dangerous with strong Westerly breezes and land winds. *Water.*

sels bound into the Chiriqui Lagoon with the sea breeze should approach by the Channel, which, between the Tiger Breaker and the E. end of the Zapatilla Reef, miles wide. After passing to the Southward of the breaker, the opening into the is readily distinguished; and a course should be shaped so as to pass from three s to a mile from the E. end of Water Cay. From this a Southerly course must sued until the W. end of the Westernmost of the Zapatilla Cays comes in line he Eastern extremity of Water Cay, bearing N. N. W. ¾ W., taking great care to these marks on before Valiente Peak is on with the S. end of Toro Cays, bearing ½ E. Or, when the extremities of Water and Zapatilla cays are in line as above, small rock, three or four feet above the sea, close off the N. side of Water Cay will be seen just open of it; and this mark will lead between the shoals; when te Peak is over a hut at the E. end of a small sandy bay on the E. side of Blue- oint, bearing N. N. E. ½ E., a vessel will be inside them, and may shape her course venient. It is necessary, however, to observe, that it will not be prudent for a vessel to go to the Eastward of the Chirica-Mola, to the entrance of which the g mark, or the same course, will carry her. It is also necessary to state that the f Water Cay lies so close to the point, that it must be used very cautiously as a and only when the Zapatilla Cay is not seen; as the tops of the trees on the W. the latter cay are only eighty feet above the sea, it will perhaps be necessary fer to guide the vessel from aloft, so as to keep that mark in sight as long as pos- nstead of trusting to the rock and bearing. *Directions.*

great attention is requisite, for the water at the entrance of the lagoon is so that the shoals cannot be seen; and as they are steep to, with deep and exceed- rregular soundings, the lead is almost useless; and there is only a space of about bles' length to spare from the shoals on the W. side of the channel.

e is another channel to the Westward of the above full three fourths of a mile rom E. to W., but so difficult of access that, without the assistance of a pilot, it is ous to navigate. However, with some local knowledge, the following directions sist to guide safely into the lagoon, in a case of necessity.

ing, as before, at the same distance to the Eastward of Water Cay, and having t the E. end to bear W., steer about S. S. W., and, bring the E. point of Water bear N. ½ W., but the Valiente Peak must not be brought open to the Southward Toro Cays, N. E. ½ E. until the former bearing is on. The point kept on this , and a course S. ½ E., will lead through between the shoals at the distance of our cables. If bound to the S. W. part of the lagoon, when Valiente Peak comes e N. side of Bluefield Point, a course as most convenient may be pursued; but d to the Chirica-Mola, it will be necessary to stand on until Valiente Peak bears y N., or Popa Hill N. W., when a S. E. by E. course will lead to the entrance of er.

In leaving the Chiriqui Lagoon, it will be necessary to wait for the land wind in the evening, if it comes off early, which it frequently does, or in the morning after daylight. To run through the first or Eastern channel, the leading line must be brought on from a position well to the Southward, with Valiente Peak bearing Northward of N. N. E. ½ E. Steer out with the E. end of Water Cay N. N. W. and when Valiente Peak comes in line with the E. side of Bluefield headland by N., the outer shoals will be passed, and a N. ½ W. course will lead clear of sea.

To run out by the Western channel, the E. point of Water Cay must be brought bear N. ½ W., the course through, before Mount Popa is to the Westward of When Valiente Peak comes over the Little Toro Cay N. E. ½ N. the shoals will be clear and a course to sea may then be shaped.

Should it be necessary to work up from the W. end of the lagoon, the N. shore be approached very cautiously, for no marks can be given to avoid the shoals off side. As the S. side can be navigated by the lead, it will be better not to stand than about halfway across from that shore until the leading marks for the channel nearly on.

Tides. It is high water, full and change, in the Chiriqui Lagoon at about noon, and the is about a foot. In the interior of the lagoon there is seldom any tidal stream, but outset to the Northward, according to the state of the rivers. In the dry season, March to June, off the Chirica-Mola, and as far out as the entrance of the main channel the strength of the ebb is from half to a knot an hour, and there is sometimes a flood stream; but outside and in the little channels to the Westward, there is a constant outset running at the rate of one to two knots, and after long heavy rains even as as three knots in the main channel.

Zapatilla Cays. ZAPATILLA CAYS.—The W. side of the outer part of the Tiger Channel is bounded by two narrow sandy islets called Zapatilla, which appear as one island on the W. bearing. They are each a little more than half a mile long, and they are about ... bles' length apart, a ledge almost dry running across from one to the other. Both thickly wooded, affording excellent firewood, easily got at, and the tops of the trees about eighty feet above the sea. A reef entirely surrounds them, and runs off E. S. long mile from the Easternmost, the end being W. by N. four and a fourth miles the Tiger breakers; N. by W. from the E. end of Water Cay, and N. E. by E. ½ E. Mount Popa. Near the extremity, the reef is half a mile broad, and generally itself; but it skirts the N. and S. side of the cays at only a short distance. From Westernmost cay it stretches off a mile in a N. W. direction, and at this extremity mile broad; between it and the reef off Patiño Point there is an intricate channel coasters about three fourths of a mile wide.

Anchorage. The Zapatilla Cays lie about four miles from the islands to the Southward, and two miles from the E. point of Provision Island. In the space between there is good chorage, and the best shelter, and most convenient spot for wooding will be found the W. end of the Westernmost cay bearing N. about a mile distant in ten fathoms. soundings are very irregular, and vary suddenly in some parts from six to twelve oms, but the bottom is sand and mud.

Caution. The edge of soundings lies about six miles to the Northward of the Zapatilla East of the E. end of the reef the twenty-fathom line is about two miles distant; N. it is three miles off, and the soundings afterward decrease so rapidly to thirteen ten fathoms that in the night or thick weather it would not be prudent to approach nearer than twenty fathoms.

Crawl Cay Channel. CRAWL CAY CHANNEL.—At the bottom of the bight formed by the islands S. W. of the Zapatilla, between Popa and Provision islands, is the Crawl Cay channel leading into the Almirante lagoon. This cut has depths of not less than five and fathoms, between detached coral shoals, but it is so intricate and narrow, being in parts not half a cable's length wide, that it is quite impossible to give any safe direction for its navigation. The sea, however, is here so tranquil and clear, that every coral is easily seen; and the tidal stream being weak the pilotage may be effected by from aloft, provided the weather be clear and favorable, and the sun not ahead.

The entrance is about one cable and a half in width, but is so hidden by mangrove cays within, that it would be impossible for a stranger to make it out, and the is far too dangerous to run down upon with a certainty of hitting it. There is ever, a conspicuous saddle-shaped hill, six hundred and seventy feet high, about S. W. by W. of the anchorage off the Zapatilla, and the S. hummock brought to bear S. W. ½ W., will be seen in line with the Northwestern extreme Popa Island, which mark will lead to the opening. The N. part of Popa formed of lofty trees growing straight out of the water, appears from this direction bold and distinct; and the end of the reef, which runs to the N. E. off Cobbler three fourths of a mile and forms the E. side of the entrance is steep to, and heavily.

IRANTE BAY, or Columbus Lagoon, so named from the great discoverer of w World, who remained here ten days in 1503, is about thirteen miles in extent, to W., but its interior is crowded by small islands, and its shores are so irregu- from N. to S. the breadth varies from two to thirteen miles, and near the middle almost forms two basins. In consequence of this it may be said to possess har- thin harbors, in which vessels of the largest class may enter without much diffi- nd in many cases lie alongside the shore in security. *Almirante Bay.*

S. side of Almirante Bay is bounded by a remarkable ridge of table hills, lying base of the Great Cordillera, and extending S. E. and N. W. about fifteen miles; places it rises precipitately from the shore to the height of six hundred or seven d feet, and only to miles inland, reaches an elevation of one thousand seven d and forty-eight feet, which increases to two thousand feet at its Northwestern ity.

ral small streams descend from these heights into the S. W. and W. side of the but they are only navigable to a short distance by small canoes.

E. and W. sides are very low and swampy, and densely wooded. The N. side is d by Provision and Columbus islands, between which there are two entrances into oon which will admit vessels of every draught into all parts of the interior.

VISION ISLAND, the Easternmost of the two, is eight miles long from S. E. to and a ridge of irregular hills which bound its N. E. side is from three to four d feet high. On the S. side of this ridge the land is low and swampy, and skirt- umerous mangrove cays with boat channels between, which extend all the way Crawl Channel. The N. E. side is foul and the sea breaks on it with great violence distance of three fourths of a mile from the N. E. point. Cape Toro, the North- n extremity of the island, is a bold scarped headland, easily recognized. About ble and a half to the Northward of it there is a little black rock steep to, and a xtends W. nearly half a mile from the cape, which generally breaks, and is also o. *Provision Island.*

W. end of the island terminates at a low sandy point, upon which there is a small nent, and the land about it is so fertile in the growth of all tropical fruits and bles, that it gives the name to the island.

LUMBUS ISLAND is seven miles long N. W. and S. E. and from one mile and a four miles broad; flat and densely wooded, the tops of the trees being from two d to four hundred feet above the sea. The N. E. side of the island is bounded hite sandy beach which forms two slight bays, and from Long Bay Point, which tes them, a dangerous reef runs off to the N. E. one mile and a half, breaking y in fresh breezes. The outer end of this reef lies N. W. by N. three miles from oro, and the edge of soundings is only three fourths of a mile from it. *Columbus Island.*

Northern extremity of the island is low and rocky, and from it a ledge of rocks ff to the Northwestward one mile and a half, but being dry in places, and having ome remarkable islets which serve as marks, it is not so dangerous. Sail Rock, termost of the above islets, lies at the very extremity of the ledge, and rises t to a height of forty feet above the sea; it is a barren black rock, and steep to on and N. sides.

n Cay lies S. E. by E. ½ E. half a mile from the above, and is a narrow strip of bout seventy yards long, rising perpendicularly to an elevation of one hundred ighty feet, and crowned with brushwood and a few cocoanut trees. There is no ssage between these cays and North Point.

Western extremity of Columbus Island is low and sandy, and about a mile dis- rom the adjacent point on the main land; upon it there is a small scattered settle- The S. shore is low and swampy, and bounded by mangroves, which are closely d by a coral ledge, steep to.

principal settlement and seat of government on this part of the coast, is on the S. of Columbus Island. *Settlement.*

CA DEL TORO, between Provision and Columbus islands, is the principal chan- ding into the lagoon, and between Provision Island and Careening Cay, close off bus Island, it is about three fourths of a mile wide. Both sides, however, are d by a coral ledge, so that in the middle, in the narrowest part, it is only about d a half cables across. In the middle of the channel and across the Garcia Bank ddle Ground, which lies just within the lagoon, a depth of not less than five fathoms e carried; and if properly buoyed, six fathoms could be maintained. *Boca del Toro.*

edges of the reefs on the Provision Island side generally show themselves, but ater is so muddy at the entrance that the shoals there are not visible and as Long oint is dangerous, a stranger will require a pilot.

best water will be found at a well conveniently situated near the N. W. end of e Cay, but it is difficult to find without a guide. Poultry, turtle, and vegetables, e obtained from the settlements, but it is necessary to send to the Caña or Chirica- for cattle, which will take some days. *Supplies.*

Directions. In case of necessity, or with but little local knowledge, the following directions the Boca del Toro will be useful, and to vessels drawing under seventeen feet qu safe.

There is not much difficulty in recognizing the entrance, Cape Toro being a rema able bold headland, but it must be approached from a N. E. direction at a wide off and with the sea breeze. When the channel comes fairly open, bearing S. by W. ½ a very remarkable large tree on Christoval Island will be seen in line with an equa conspicuous peaked hill on the N. E. angle of the Table Ridge on the S. shore of lagoon, below the highest ridge of mountains. This mark will lead about a mile to Eastward of the Long Bay Reef, through the narrows, to within less than a cable's leng from the Solarte Shoal; and when the little fort at the settlement Point comes open the S. end of Careening Cay, a S. W. course will lead across the deepest part of middle ground, in from four to five fathoms. Within this, anchorage may be taken most convenient in twelve or thirteen fathoms, muddy bottom, provided Careening Po is not brought to the Eastward of N. by E.

The S. end of Careening Cay is sufficiently steep for a vessel to heave down alongs it; and between it and the Fort Point there is a twelve-foot channel, admitting coast to a more sheltered anchorage off the settlement.

In leaving the lagoon by the Boca del Toro it will be necessary to wait for the l wind. To attempt to beat out against the heavy swell, which usually rolls in, would attended with considerable risk, notwithstanding the assistance of the outset; and caught at the entrance by the sea breeze, it will be more prudent for a vessel of he draught to run back.

It is also necessary to be cautious not to haul out to the N. E. before Cape Toro be E., to avoid the reef from that point.

Tides and Current. It is high water, full and change, in the Boca del Toro at 12h. 15m., and the ris from a foot to a foot and a half. There is no flood stream, but a continual outset, pending upon the rains; in the dry season its strength is about a knot. The great E erly eddy sets right home to the cays off the N. side of Columbus Island at the rate from one to two knots, and it will be met with off the Boca del Toro, soon after bear to the Southward of W.

Boca del Drago. BOCA DEL DRAGO, the Western entrance into the Almirante Bay, is only and a half cables wide in the narrowest part and three and a half at the entrance; although affording a depth of nine fathoms, is so tortuous and exceedingly shar its turnings that it is too difficult for a stranger to navigate without the aid of a who will come off from the settlement on seeing the usual signal. Water is scarce, a small supply of vegetables may be obtained at the settlement, and there is exce firewood on the Western shore.

Tirbi or Terraba Point. TIRBI or TERRABA POINT forms, with Sarepta Point, the front of a small of low, woody land, about three fourths of a mile broad, and the W. side of the entr which is skirted by a reef that breaks heavily. As before stated, the Easterly cu rushes right against it, and in approaching the Boca del Drago, should it fall cal sailing vessel must immediately anchor, to prevent being thrown either on it or the islets to the Northward of Columbus Island. The following directions, however, the help of the chart, will be of service in a case of necessity.

Directions. The Boca del Drago can only be navigated with the sea and land breezes. To having brought the opening to bear S. ½ E., a remarkable large tree on the extrem Lime Point, Columbus Island, will be seen in line with an equally conspicuous cl like a tower, on the table ridge at the bottom of the lagoon, and a little below the Westward of it will be seen at the same time Tristan or Ponsock Point, although formed by tall, straight, flat topped trees, has the appearance of a low headland. Lime Point tree and Tristan Point, in line, bearing S., leads nearly in channel, but the same tree on with the clump on the ridge leads less than a c length to the Eastward of the Mandeville Rock, which is extremely dangerous, does not show itself, and is steep to. Proceeding in with either mark, it will be sary to bear up as short round as possible, when North Point is seen just open of Point, N. E. by E. ½ E., keeping it so, until within about one and a half or two length of the Western shore, which is steep to the edge of the reef, and then ha quickly S. ½ W. through the inner part of the narrows. When Cauro Point be E. ½ N., or Swan Cay is open twice its breadth to the Northward of it, the be Lime Point will have been passed, and a S. E. ½ S. course will lead into the lag not less than five fathoms, where anchorage may be taken up as most convenient Columbus Island.

Tides and Current. The regulation of the tide is the same at the Boca del Drago as at the Boca del but the Easterly current rushes against the ledge off the N. end of Columbus with such force that it is turned to the Southward, and, overpowering the ebb, to the lagoon at the rate of a knot an hour.

Caution. The circumstance just noticed adds to the dangers of the Boca del Drago, and

meeting with a calm or light airs between the Sail Rock and the entrance, or becom-
unmanageable, should anchor at once and await a commanding breeze. It is scarcely
essary to observe that, the turnings in the narrows being so sharp, the utmost atten-
must be paid to the sails to manœuvre quickly; and if time permit, it will be safer
ace a boat at the junction of the leading marks.

HEPHERD HARBOR.—Of the many small basins formed by the islands off the S. *Shepherd Harbor.*
e the largest and most favorably situated lies at the S. W. end of Almirante Bay,
is called Shepherd Harbor, the name of an English settler who established himself
about the year 1830. It is about four miles in length N. W. and S. E., and from a
to a mile and a half in breadth, with a depth of twelve fathoms on muddy bottom.
he N. E. side it is bounded by Shepherd or Iguana Cay, which is one mile and a
long E. and W., about half a mile broad, and in the highest part two hundred and
four feet high. From the S. E. end of the island a narrow coral ledge stretches off
e Southward about a mile, upon which are several islets, the two largest called
ia and Roldan. The channel between the S. end of Roldan and the main is nearly
a mile wide. From Snapper Point, which forms the S. point of entrance, a ledge,
ly dry and steep to, projects to the Northward one cable and a half, but Roldan is
to within half a cable's length; elsewhere it is quite clean, with a depth of fifteen
ms.

e Western Channel between Shepherd Cay and Iguana Point is half a mile wide;
ormer is clean to within half a cable's length, but from Iguana Point a coral ledge
s itself to the distance of a cable, and is steep to. All the dangers in the interior
e harbor are confined to the S. shore, and easily seen from aloft, and the coral
s, which fringe most parts of the mangrove shores to a short distance, are so bold
a vessel may lie close to them. Secure anchorage may be taken up anywhere, as
convenient for watering, wooding, or refitting, and in many parts vessels of the
st class may lie alongside the shore.

HEPHERD CAY, as already stated, is occupied by an English trader, who, in 1839, *Shepherd Cay.*
n his employ about twenty colored people and their families, natives of Jamaica,
of them good mechanics and ship-carpenters. The island is consequently in many
cleared and cultivated, and on the S. side there is a small building slip. The chief
ies of ground provisions, however, are reared on the banks of the streams on the
principally at Saurian and Cultivation creeks; here the land is of extreme fertili-
d produces all the tropical fruits and vegetables, cotton, coffee, and the sugar-cane
greatest perfection, and with very little labor.

e dense forest all around the lagoon also yields abundance of most excellent ship
r, which is used in the construction of coasters and canoes by the above settler.
most valuable timber is the eboe-tree, which has a diameter of from three to four
and grows straight from fifty to sixty feet, with large spreading arms and crooks of
ms and dimensions The sapotilla attains about the same height, and two to three
diameter, but being rather brittle it requires caution in felling. The sumwood,
also Spanish elm and caparo, is of the same dimensions, saws and works well, and
l adapted for planking, as it resists the trying effects of this climate better than the
generally used for this purpose; this tree is also found on Popa Island. Cedar
rows to great size and perfection, and is used for the construction of large canoes,
and pitpans.

r small streams empty themselves into the S. side of Shepherd Harbor, but they *Water.*
ly navigable to small canoes for a short distance. The largest is Saurian Creek,
is the best to water at; with the assistance of a couple of large canoes, which can
ained from Shepherd Cay, twenty-five tons may be filled in a day; and a vessel of
rgest class may be conveniently and safely moored for the purpose, within two
length of the mouth.

ing entered the lagoon, if proceeding from the Boca del Toro, the N. end of Cris- *Directions.*
r Coco Island, must be approached cautiously, to avoid a small coral ledge which
W. by W. ¼ W. three fourths of a mile from Cocoa Point, the N. extremity of the
and E. N. E. from Juan Point, the N. W. end. Therefore, in running down or
g up, Juan Point must not be brought to the Westward of S. W. by W. until the
s passed. It also bears from Mangrove Point, the S. end of Columbus Island, S.
W., which is steep to, and the channel is about one mile and a half wide, with
of fifteen fathoms.

N. W. end of Cristoval Island is foul to the distance of about two cables' length,
om Tristan Point, on the Western shore of the bay, a flat coral ledge dry in
extends one mile and a half to the Eastward, having three and four fathoms on
er edge, leaving a channel one mile and a half in breadth. The Cristoval side
herefore, be kept aboard; it is everywhere bold to within two cables, and should
ecessary to work through this part, the little white lookout hut on the highest
Shepherd Island must not be brought to the Southward of S. by W. when stand-
he Westward.

The S. E. end of the Tristan Reef lies with Mangrove Point just open of Juan Pe the latter bearing N. E. To the Southward of this there is no danger; either chan may be taken into the harbor, but the S. E. one will be the most convenient with sea breeze, and all that is necessary is to steer in mid-channel, or beat in by the eye.

From the Boca del Drago, after passing Lime Point Bank, care must be taken to k well to the Eastward, to avoid a coral bank extending gradually off from Duanato Pe on the Western shore, the outer end of which is S. nearly two and a half miles fr Lime Point. Tristan Point must also be very cautiously approached, and Juan Pe not brought to the Northward of E., or a depth of not less than ten fathoms be ma tained before Shepherd Hut bears to the Westward of S. ½ W. With the hut bear S. by W. the end of the ledge will be crossed in five fathoms.

Coast. On the W. side of Tirbi Point the shore forms a dangerous bight for about a m when it trends N. W. by W. in a straight line for twenty-two miles to Carreta or M key Point.

It is throughout low, swampy, and bounded by a dark sandy beach, and as far as Changuené River is fringed by a reef upon which the sea breaks with great fury.

Changuené River. CHANGUENE RIVER disembogues about seven miles from Tirbi Point, and is to mark the boundary between the republics of Costa Rica and New Granada: however, is disputed. On the E. side of the entrance there are two huts. It ha times eight feet water on the bar, and is navigated by large canoes several days' ney. The principal article obtained from this river is sarsaparilla, but fear of the Bla Indians has prevented the establishment of a regular trading post in the interior.

CHANGUENE RIVER TO CAPE GRACIAS A DIOS AND PATOOK RIV WITH THE OUTLYING BANKS AND ISLANDS.

General Remarks. The N. side of the Great Isthmus of Panama, from Porto Bello to San Juan de N ragua is one of the most inhospitable shores on the face of the globe. Throughou extent of three hundred miles Chiriqui Lagoon is the only secure harbor for vesse large draught, Greytown being, for the present nearly closed up, and rapidly decre both in extent and depth. Nowhere else is there safe anchorage, even for the c coasters which pay their periodical visits to the trading posts; and so furious a breaks upon the shore that landing is at all times difficult and often dangerous.

Climate. The temperature in the dry season seldom exceeds 80° Fahr., and in summer 86° the surface water seldom differs more than a degree from the air. The following periments were made near the edge of soundings, on the parallel of Greytown, in month of September, in lat. 11° 20″ N., long. 83° 15″ W., a current at the time se S. a mile an hour.

Air 86°, surface water 86°.

At a depth of 5 fathoms			83½°	At a depth of 50 fathoms			
"	10	"	82°	"	75	"	
"	20	"	81°	"	100	"	
"	35	"	75°	"	150	"	

The climate, even at its most favorable period, is of a character most unhea owing to the incessant rains which deluge the land, with scarcely a remission of a and that uncertain in its visits. March, April, May, and part of June, are generall driest months, but they are by no means certain to be fine.* This continual rain ever, appears to be confined to the coast, and probably does not extend more about thirty miles from it, the limit of the Easterly current; for at Corn I the dry and wet seasons are so regular, that cultivation is successfully conduc cordingly.

Winds. During the period from March to June, within a few miles of the shore, land a breezes alternate, but the former greatly preponderates, and comes from the S. W West, not directly from the land; so, in like manner the sea breeze blows slanti from the Eastward, and both frequently rush down in a sudden gust, which sho well prepared for. In the latter months of the year, fresh Westerly winds prevail by the old Spanish mariners Vendavales; and between November and February

* Captain E. Barnett, R. N., states that, in 1838, the middle part of the day in April was the nights were wet, and the three other months were wet throughout. In 1839, the whole m wet; sometimes for six or seven days together there was no opportunity of even airing sails health of the crew was only preserved by keeping them at all times clothed in blanket ha trousers. It is remarkable, however, that no serious sickness has as yet occurred among the Shepherd Cay; this is probably owing to its position, its freedom from swamps, and the i being seasoned Jamaicans. The estimated labor of these settlers is only about six hours a day able weather.

occasionally reach thus far, but their force is considerably moderated after passing to the Southward of the islands.

Hurricanes.

urricanes do not appear to visit this coast, but destructive gales happen in the rainy on, which destroy the ground provisions, even at the adjacent islands. It is also cted at this period to most violent tornadoes, to which no sail can be shown; but do not last long, and are generally preceded by faint sheet lightning on the East-orizon, which will give sufficient warning to seek shelter, when sailing among the hern cays.

the Mosquito Bank, to the Northward of Greytown, the seasons are more ted.

e rains commence in May, sometimes as early as the first week, and last until No-er. During this period the wind generally blows from N. E. round E. to S. E. Vendavales or Westerly winds gradually disappear and become land breezes, h decrease in strength and distance from the shore, as Cape Gracios à Dios is ap-hed. Sometimes, even this breeze will only blow over the lagoons to the shore, o farther.

e weather at this season is extremely uncertain: the wind is generally fresh, often mpanied by heavy squalls, equal to tornadoes, with torrents of rain, thunder, and ning; and occasionally small blue lambent lights will be seen flickering at the her yard arms and trucks; the wind at the same time flying about in all directions ious gusts. As stated above, hurricanes are said not to extend to this coast, but the eastern part of it certainly lies within the verge of their limits.*

m December to April is considered the dry season, but it is only comparatively so; the weather is somewhat more settled, and freer from intense electric phenomena. d N. W. winds will sometimes set in suddenly and blow with considerable force for r three days; they generally, however, give a few hours warning by dark masses of s collecting in those quarters; and it is observed that instead of the wind drawing d previously to the Southward, it veers from the Eastward by the N., and from N. ers back again.

ese winds seldom occur after the first week in March, when the turtling season ences, but they may be met with in the last week. The latter part of the month pril is the finest part of the year.

Currents.

may be useful to point out again, that the great eddy generally running to the ward along the Mosquito shore, and then following the curve of the land to the ard as far as the neighborhood of Cartagena, is here about thirty miles broad, s velocity from two to even three knots in the rainy season; and that to the ward of this limit, there is usually a Southwesterly set, varying in strength he breezes; and veering to the Northwestward, as the outlying islands are ap-hed.

Navigation.

navigation from E. to W., and vice versa is therefore easily conducted; in the case by keeping to the Northward of the eddy until well to the Westward of the of destination, or in the latter by means of its assistance and the land winds.

may also repeat that this Easterly stream runs close home to the shore, and with sed rapidity as it approaches it, until it reaches the neighborhood of Cape Valiente. t is checked by the projecting cays and streams running out of the Chiriqui La-and being diverted to a more Easterly direction, causes a slight Westerly eddy, a iles broad, to run inshore between Cape Valiente and Chagres. Consequently, a handy vessel missing the lagoon, instead of tracing her route to the Northward, with this assistance, be able to work back again.

Coast.

n Changuené River, the low, dark, sandy shore continues in a straight line N. W. fifteen miles to Carretta Point. About seven miles from the river is the entrance Sics or Banana River, which has two feet water on the bar, in the dry season, but vigable only a short distance. About three miles farther on, is a small stream Geddoco, which, however, only forces a channel through the beach after heavy nd is very difficult to discover.

Sansan Lagoon.

SAN LAGOON.—The whole of the interior is swampy, and between the rivers nené and Sics there is an extensive fresh water lagoon deep enough for canoes, ich is said to communicate with both streams.

ont of the lagoon there is an excellent fishing bank, and the fishermen,

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* E. Barnett states, that, "on Sept. 2, 1834, when lying at the Alargate Reef, the wind set in m the Northward, and drawing round to the N. W. blew a gale between that quarter and W., the same time a revolving storm was passing over the Grand Cayman." He also records that nchorage off the Pearl Cays, in the month of June, the land wind coming off suddenly, brought dense crowd of minute insects, which literally covered the deck of the vessel, insinuating them-t only into every crevice, but also about the person, and between decks. Wherever they alight-mmediately parted with their wings, and shortly after died. When the sails were loosed, they riads from the folds, and for a space of about two feet around the vessel, the sea was complete-d with their small shedded wings."

when driven from it by bad weather, beach their canoes, and haul them over into lagoon.

This part of the coast is quite clean, and regular soundings extend off from three five miles, but there is no safe anchorage, except with land winds.

Carreta or Monkey Point. CARRETA or MONKEY POINT is a conspicuous broad headland of white cl immediately behind it there is a ridge of irregular hills, separated from the lower of the Cordillera, which here approach within ten miles of the shore, and rise to height of nearly three thousand feet. Close off the N. E. side of the bluff there remarkable small rock ninety feet high, through which the waves have bored a hole.

From the Western extremity of the headland, called Manchineel Point, a reef run to a short distance, and affords shelter under its lee for canoes. When close to the sh a hut will be seen on the beach, on the E. side which points out the landing place a well of good water.

Grape Point. GRAPE POINT.—The sandy bay on the W. side of Carreta Point is about two m in length, and terminates at Grape Point, which is low and rocky.

Thence the shore trends Westerly about three and a half miles, forming a sh curve to another low rocky point, upon which there is a remarkable isolated hill, r abruptly from the sea to the height of seven hundred and fifteen feet. Close off Pipple Cay, a small, low, rocky islet, whence foul ground runs off a mile, upon w there are three and a half fathoms coral bottom, about two miles from the edg soundings.

Hone Creek. HONE CREEK.—From Grape Hill the low sandy shore trends N. W. six mile Coaïta Point, and is all along clean. About two miles from the former, at the bas the Negro Hills, is the entrance to Hone Creek. This stream is difficult of access ex under very favorable circumstances, but it is navigable for small canoes as far as lower settlements of the Blanco Indians, who carry on a small traffic in sarsapar with an English trading post at Coaïta Point. Two days' journey up, coals have found, and of so good a quality as to have induced the settlers at Boca del Toro t tempt to open a more easy communication with it thence through the swamps and san Lagoon; but the obstructions were too formidable.

Coaïta Point. COAITA POINT is a low, narrow, rocky neck of land, projecting about a mile to Northeastward, and on its Eastern side will be seen the house of the trader, which conspicuous object; near it there is good water. The extremity of the point is sk by a reef which always breaks; it extends out from the E. side, about three fourths mile, and under the S. side of it there is shelter for a coaster.

The land in the interior becomes considerably elevated, forming the lower chain of Cordillera, and only six miles from Coaïta Point reaches a height of upward of el hundred feet.

Lime Point. LIME POINT.—From Coaïta Point the shore still trends N. W. in a straight about twenty miles, to Lime Point, and is all along bounded by the usual dark, s beach, with deep regular soundings close up to it, the edge of the bank lying a seven miles distant. The coast is backed, at only a short distance, by the lower irr lar forks of the Matina Mountains, from which descend several small streams, w force themselves through the beach after heavy rains, but they are of no importan traffic.

Blanca Point. BLANCA POINT.—Lime Point forms the Southeastern extremity of a bold r promontory of white cliffs, about four hundred feet high, which, from its appearan called Blanca (white) Point. About half a mile from the N. E. side is a small named Grape Cay; there is a clear channel between, and anchorage will be found and a half or seven fathoms, about three fourths of a mile Southeastward of Lime P both of which may be used, but only in a case of absolute necessity.

Little Salt Creek. LITTLE SALT CREEK empties itself into the bay to the Southward of Lime P whence a path leads across to Salt Creek village, and to a well of good water.

Salt Creek. SALT CREEK.—The Blanca headland is about three miles in length from E. and the shore is clean, the edge of soundings lying about three miles distant. W. side a bay is formed about a mile deep; at the bottom of it is Salt Creek, the en to which lies opposite to a small islet, called Pumpkin Cay, and is readily discover the village on either side.

In 1839, there were residing here two American traders; and in the turtle season it is said to have about two hundred Indian inhabitants. The stream is n ble for large canoes for a considerable distance, to a point whence a mule-road to Cartago, the capital of Costa Rica, after a journey of three or four days. Th ports consist chiefly of indigo, cacao, sarsaparilla, turtle-shell, and a small quan specie, which, at the above period, employed four or five small English and Am vessels.

Anchorage. The most convenient anchorage lies about half a mile from the entrance of the in three and a half or four fathoms water; it is, however, extremely dangerous,

rent rushes into the bight and against the headland with a force of from two to even ee knots, and a heavy ground-swell rolls in upon the whole shore.

Directions.

Extreme caution must be observed in approaching this anchorage, and it should be e well to the Northward; there is very little space for anchoring, and no trusting to hors; and should the wind fail, a vessel will be swept past very rapidly, and find ch difficulty and delay in getting to the Westward again. Equal care is required en leaving, which ought not to be done without a good commanding land wind, to vent being driven on the bluff of Grape Cay.

Cordillera of Salamanca or Chiriqui.

CORDILLERA OF SALAMANCA OR CHIRIQUI.—The Cordillera of Veragua overlaps that of Chiriqui, on the meridian of Cape Valiente, that the valley which arates them is not easily distinguished, except when seen from the interior of the riqui Lagoon.

The highest ridge of the latter runs nearly parallel to the shore, at the distance of ut thirty miles, to abreast Blanca Point, a length of one hundred and thirty miles, en it takes a Westerly direction, separating the lake of Nicaragua from the Pacific.

From the summit of the Eastern part of the ridge rise two most remarkable peaks, ich, however, are seldom visible, except at dawn of day, or near sunset, or on the ation of very heavy rains, when the atmosphere becomes suddenly clear and bril- t, with a change of wind from the land.

Mount Chiriqui.

MOUNT CHIRIQUI.—Chiriqui Peak, or the Volcan, which is the Easternmost, bears W. ½ W. from Cape Valiente, and S. by W. from the Boca del Drago, and reaches an vation of eleven thousand two hundred and sixty-five feet. When seen from the rthward and Northwestward, its summit has a rounded, massive appearance, with gular heights on either side; but from an Easterly direction its peak and hollow ter are clearly defined and most remarkable.

Blanco Peak.

BLANCO PEAK rises about forty miles to the Northwestward of the Chiriqui, nearly the meridian of Salt Creek, and to the height of eleven thousand seven hundred and y feet. From all points it has the appearance of a rounded peak, the hollow of the ter being scarcely traceable, and the summit of the Cordillera is flat and table-formed some distance on either side of it.

Mount Cartago.

MOUNT CARTAGO.—Cartago Peak, the only remarkable elevation on the Western visible from this side of the isthmus, lies about sixty miles Northwestward from Blanco, S. fifty-five miles from Greytown, and W. forty miles from Salt Creek. m a Northerly direction, the summit of this immense mountain appears of a slightly nded form, whence it gradually slopes down to the Westward into the plain beneath; its Eastern face rises, almost perpendicularly, to the height of eleven thousand one dred feet, and from this direction the crater is hidden. When seen, however, from Eastward, the peak and crater are clearly defined, the hollow of the crater on the thern edge. As there is no secondary ridge below, the mountain appears to rise up ediately out of the long flat plain at its base, and, differing in this respect from the rs, is the more remarkable.

n the secondary ridge there are also several conspicuous heights, and being more uently unclouded, are more useful objects from the offing. The Easternmost are volcanic peaks, which rise from a flat ridge under the E. side of the Chiriqui Moun- about thirteen miles from the S. W. side of the lagoon. They are about eight miles t, and rise in the shape of pyramids to distinct sharp points, seven thousand four dred and fifty-two and seven thousand and seventeen feet above the sea.

Robalo Peak.

ROBALO PEAK is nearly on the meridian of Carreta Point, and nearly midway be- en Chiriqui and Blanco peaks. The summit of this isolated mountain presents a e rounded form, seven thousand and twelve feet high.

Matina Mountains

MATINA MOUNTAINS are a group of irregular heights, from five thousand to sev- housand five hundred feet high, one of which rises from the E. end of the range, in shape of a sugarloaf, S. about fourteen miles from Salt Creek, and is a guide for it. is somewhat remarkable how nearly the three highest peaks coincide in elevation, ell as those most conspicuous on the secondary ridge. They are all well-estab- d geographical points, and may be safely used as points for departure or lines of tion.

Coast.

he coast from Salt Creek is low, and densely wooded, the tops of the trees being one hundred to one hundred and fifty feet above the sea, and is bounded by a dark y beach. It trends nearly in a straight line N. W. for thirty-five miles, and then N. W. ½ W. thirty-two miles to Arenas Point, at the entrance of Greytown Harbor, and ugh it several streams enter the sea.

Matina River.

MATINA RIVER, the first of these streams, empties itself about ten miles from Salt , and is navigable for small canoes to a considerable distance; it is, however, ex- ely difficult to enter, and only made use of by the fishermen, to obtain water and ables, bananas and plantains growing in natural abundance on its banks, not far e interior. It is said to have its source more than eighty miles inland, and is d, at about thirty miles from its mouth, by a tributary stream, whence, for about

twenty-five miles, there is a road to an embarcadero on Salt Creek, about twelve mil from the mouth of the latter.

Swarree Landing. SWARREE LANDING.—About nine miles from the Matina River, the beach pr jects out a little, and being very steep to, forms a landing place for fishing canoes, whic is pointed out by a hut; not, however, easily discovered, and not always in existence.

Parasmina River. PARASMINA RIVER.—About ten miles from Swarree is the entrance of the Pa rasmina, which is pointed out by two or three huts. This stream is navigable for ca noes to a still greater distance than the Matina, but, like the latter, it is only visited b fishermen in want of water and vegetables, which are obtained after a day's paddling.

Parasmina Hills. PARASMINA HILLS.—About seven miles from the above river, and four or fi miles inland, there is a narrow ridge of irregular hills, five miles in extent from S. to N and eleven hundred and sixty feet above the sea at the highest part. They are, how ever, so continually shrouded by the dense vapors arising from the swamps at the base as to be seldom of use as guides.

Tortuga River. TORTUGA RIVER, about fifteen miles from the Parasmina River, is pointed out b one or two huts at the entrance, but it is of no magnitude, and only resorted to by fish ermen in a case of necessity.

Turtle Bogue Hill. TURTLE BOGUE HILL.—About a mile to the Northward of the Tortuga, close t the beach, there rises a little isolated hill, which, when seen from the Northeastwar resembles a wedge or gunner's quoin, with the thick end to the Eastward, where it four hundred and fifty feet high. From the E. and S. E. it appears a rounded lump, broad as it is high, rising almost perpendicularly on its S. side, but sloping gradual down to the Northward, and terminating at one or two little hillocks. This is the mo remarkable object on the coast, and a most useful guide to those looking for Greytow from the Southward, from which place it is distant twenty-two miles.

Colorado River. COLORADO RIVER, the Southernmost outlet of the San Juan de Nicaragua, di embogues about thirteen miles to the Northward of the Tortuga River. This ar branches off to the Eastward from the main stream, about seven miles from the entrance and it is said to be deep and rapid; the bar has eight feet water at times, but it break so heavily as to be dangerous to boats, except under favorable circumstances. The mu thrown out of the river discolors the sea to a considerable distance, even in the dr season.

The Taura Branch. THE TAURA BRANCH, another outlet of the San Juan, enters the sea about nin miles farther to the Northward. This arm is very shallow, but rapid; it has about tw feet water on the bar, and is equally dangerous to navigate.

Thence the Northern end of the delta of the San Juan sweeps round to the N. W for about three and a half miles, and terminates at Arenas Point, at the entrance Greytown harbor.

Morris Bank. MORRIS BANK lies about nine and a half miles to the Eastward of the Northe part of the Delta of San Juan; it is between four and five miles in length N. and S and carries from nine and three fourths to twelve fathoms of water over soft mud.

Directions. The whole of the above coast, from Salt Creek to Arenas Point, a distance of six five miles, is most inhospitable, and requires to be navigated very cautiously. It is a along steep to; in most parts there are three fathoms only half a mile off shore, where the depth gradually increases until soundings are lost from six to seven miles distan the bottom everywhere being light olive-colored mud. At all times a heavy swell ro in from the N. E. and breaks upon the beach with great violence.

The current sweeps along the shore to the S. E. with great strength, increasing fro one to even three knots as it approaches the bight of Salt Creek, and at the same ti inclines more toward the land. No vessel should therefore run the risk of anchori anywhere, except with the land wind, and in this case be sure to weigh and obtain wide offing before the sea breeze sets in.

From April until August this part of the coast abounds in turtle, especially hawk's bill species, which yields the shell of commerce, and is therefore at this per visited by large numbers of fishing canoes. It is stated that the shore at this period also visited by a large number of tigers, and that they attack the turtle as they proach the beach to deposit their eggs, and frequently succeed in bringing them to shore; and it is also stated as a curious fact that they satiate their appetites by the of the blood, leaving the carcase untouched.

Turtle Fishing.

When forced from the ground in heavy weather the fishermen are frequently obli to beach their boats, and by hauling them over find their way into the main branch the San Juan, through the lagoons which lie at the back of the shore.

Greytown Harbor. GREYTOWN HARBOR is formed by a low broken peninsula, which forms the coast, a sandy inlet or basin, about three fourths of a mile in extent, at the N western or principal entrance to the River San Juan de Nicaragua. In such a pos exposed to the varying effects of so large a stream, frequent changes naturally place, and not only is the depth of the harbor increasing, but Arenas, the Western point, which is formed by a deposit of ferruginous sand, has of late years so ra

vanced to the Westward as to close the harbor except to small vessels. The N. side the peninsula is bordered with shoals to the distance of about a fourth of a mile, and which the sea breaks heavily.*

Greytown is situated on the main, and there are a few buildings and a flagstaff on the iddle cay of the peninsula, but they are so hidden by the trees, and the land is so uni-rm in appearance for some distance on either side, that the place is difficult to make t from the Eastward until within a short distance.

Supplies.

The water is fresh at the entrance of the river, but it will be better to obtain it from e wells in the town. Vegetables are generally to be had, but other supplies are ex-emely uncertain. The seine may be hauled with advantage, but great care must be en of the alligators, which are apt to get in and damage the net. Jew fish or mana- are sometimes caught of an enormous size.

Directions.

The current is always running strong to the Southward of the port, but to the North-rd its strength is generally much reduced, and is sometimes checked altogether. vertheless it will at all times be better and easier to find the harbor, to make the d well to the Northward, and then coast it down in about ten fathoms, especially the season of northers, which generally bring down with them a Southerly cur-nt.

About thirty miles Northwestward of Arenas Point and twelve miles inland, there is a markable saddle-shaped mountain nearly two thousand seven hundred feet high; and se to the shore eighteen miles from the same point there is an isolated round double l over six hundred feet high, which at first sight makes like an island; both these jects are good guides. From this direction the town will be more conspicuous, which, th the low wooded land projecting to the Eastward, will readily point out the locality the harbor.

By reference to the chart it will also be seen that the soundings will at once show ether the vessel is to the Northward or Southward of the port in the daytime. reast Arenas Point and to the Southward of it there are thirty fathoms only five miles m the land, whereas, from ten to twenty miles to the Northward of that point, the e depth will be found at the distance of from ten to sixteen miles, so that in thick ather, or in the night, should the position be doubtful, a vessel may anchor or navi-te safely by the lead.

In the season of the breezes and northers the farther a vessel lies to the Eastward off eytown the better, as a heavy swell rolls into the entrance, which, with the current ning out, makes the riding very uneasy.

River San Juan de Nicaragua.

RIVER SAN JUAN DE NICARAGUA.—This so-called river is the channel by ich the waters of the lake of Nicaragua are conveyed to the Atlantic. The surface the lake is a hundred and twenty-eight feet above the Pacific in the dry season, and g said to be a hundred and thirty-four feet above the Atlantic, but no correct data be found for this latter statement. The difference of height between the dry and t seasons is about six and a half feet, so that, if the latter estimate refers to the wet iod, it would show that the two oceans are about on the same level.

The ascent of the river to the lake in a light canoe carrying only sufficient provis-s for the voyage, may be made in the dry season in two days. Bongoes, however, e sometimes fourteen or fifteen days to get up when the river is swollen; these large s carry from four to five tons, and have a crew of thirteen hands; but they only take ll cargo on the return voyage, on account of the difficulty in hauling up the rapids. the dry season, however, even in the descent, they have frequently to disburden at ion Island, below the Colorado, and even to have a channel cleared for them through sand ridges, which detains them ten or eleven days. Besides these flats, the river is navigated above and below the falls by small steamers of light draught, which are fly employed in the conveyance of passengers.

The river is generally at its lowest point in May, and at its highest in October, when difference of level at the entrance of the lake amounts to about six and a half feet. banks are so infested with reptiles and mosquitoes that it will always be better to ct for resting-places the sandy islets, or to anchor in the middle of the stream.

Fort San Carlos, at the entrance of the lake, lies W. ½ N. sixty-five miles from Grey-n, but the length of the river with its sinuosities is a hundred and four miles. Its dth in the dry season is from a half to a cable's length; but in the wet months, from Juanillo to the sea, and from the rapids to the lake, it is considerably increased by overflowing of its banks. It enters the harbor of Greytown by several small mouths, the main navigable channel is at the S. E. corner, between the coast and the adja- peninsula.

About three and a half miles from the mouth, the Taura or Jama arm branches off to

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*Between 1834 and 1839 Arenas Point advanced to the Westward in a depth of seven fathoms, about thousand seven hundred feet, or at the rate of four hundred and fifty feet a year. In 1859 the point eached to a depth of only fifteen feet, and about two hundred yards from the main.

the sea. For about nine miles the main stream runs nearly straight in a Southerly direction, when it forms a sharp turn, and takes its general Westerly course. About two miles below the elbow are the Cañon and Carlos islands, and upon the former there is a landing place in the dry season.

About nine miles above the bend, another much larger, deeper, and more rapid branch called the Colorado, threads its way to the sea, and with the Taura, carries off so large a portion of the main stream, that it has not sufficient power to convey to the sea the debris thrown into the lower part, which is consequently becoming much shallower.

About five miles above the Colorado, another outlet called the Juanillo takes its course to the Northward, and becomes almost lost in the lakes and swamps at the back of Greytown. Between these two branches are the Concepcion, Culebra, and Gigante islands; and abreast the former, the banks are about fifteen feet high, and densely wooded. Here also the stream is obstructed by large boulders of trap rock, which sometimes show themselves above water in the dry season.

About a mile above Concepcion two or three small rivulets enter from the Northward. The river is here increased in breadth to nearly a fourth of a mile, and runs at the rate of about two knots; and a depth of from eight to fifteen feet may be carried up to the Serapequi.

Serapequi River.

THE SERAPEQUI RIVER, the first tributary of any consequence, enters from the Southward, about thirty miles from Greytown; it is said to have a communication with the Colorado, and to be navigable for canoes thirty miles. The entrance is about three fourths of a cable wide, but nearly dry in the month of March. About three fourths of a mile below it there is a small dry sand-bank, which affords a convenient landing place, and about midway between the Juanillo and Serapequi is Antequera Island.

About eight miles above the Serapequi is Francisco Island, and a fourth of a mile from it, there is another dry sand-bank, and good resting-place for the night. About half a mile farther on the bank on the S. side is formed by three remarkable cliffs of red clay, from fifty to sixty feet high, and three miles beyond them there is a single ridge of similar character. The river is about one cable and a half broad, and its velocity about two and a half knots.

Machado River.

THE MACHADO RIVER, the next small tributary, enters from the right bank about eight miles from Francisco Island; and when near it, the San Carlos Mountain on the left bank, comes in sight. Between Francisco and the Machado are Ramillete and Careinga islands; there is a landing-place on the latter, and abreast the former there is a projecting point which, obstructing the stream, often causes a sort of whirlpool.

A short distance above the Machado is an island of that name, and abreast of the latter, not far from the N. or left bank, a hill rises to the height of about nine hundred feet.

San Carlos River.

THE SAN CARLOS RIVER disembogues from the S. or right bank, about forty-six miles from Greytown, and two and a half above the Machado; its entrance is about a cable wide, and its velocity is said to be equal to that of San Juan.

Between the San Carlos and the Machuca Rapids, a distance of about sixteen miles the river is about three fourths of a cable wide; it becomes deeper, and the stream is by no means so strong; the banks are from ten to forty feet high, precipitous, and is encumbered with decaying vegetable matter.

About two miles above the San Carlos the mountain of that name rises, at only a short distance from the S. or right bank, to the height of about two thousand feet.

A little farther on the river takes a sudden turn to the Northward for about four miles, and then resumes it general Westerly course. At the bottom of the curve the hills near the N. or left bank are about three hundred feet high, and the banks of the river from twenty to thirty feet above the bed. At the back of the Chorro Creek, which discharges itself from the Northward, about five miles below the rapids, a ridge of mountains, running from S. to N., rises from fifteen to twenty-seven hundred feet.

Machuca Rapid.

THE MACHUCA RAPID is about sixty-two miles from Greytown; the fall in the dry season is not more than about five feet, but the bed is so studded with rocks, and the channel so tortuous, that it is the most difficult and hazardous to navigate. Small light canoes, by keeping close under the N. bank, may haul over in about half an hour and shoot it safely by careful steerage; but laden bongoes have to be eased down by means of a rope.

A little below the rapid is Campana Island, and between them there is a sand-bank which affords landing.

About three hours' paddling from the Machuca is the Balos Rapid, and only a short distance farther on is the Mico Fall. Both of these may be passed by paddling without much difficulty or labor, as the beds are not so encumbered with rocks.

Between the Machuca and Balos the banks are from six to eight feet high, and the velocity of the stream is about two and a half knots. Nearly midway is Pillar Island

ARTOLO RIVER joins the main branch from the Northward, about an hour's ney from the Mico Rapid, but its stream is scarcely perceptible. The velocity of San Juan is here from a knot to a knot and a half, and the banks from eight to thir- eet high, with a few hummocks on the S. side, which reach an elevation of about one dred feet. *Bartolo River.*

ASTELLO VIEJO (Old Castle) RAPIDS are about six miles above the entrance of Bartolo. The river is here about a cable wide; the rapids extend from side to side has a fall of eight feet, with a velocity of eight knots. Bongoes are obliged to ten before hauling over, but light canoes, by tracking along close under the S. bank, get over after about a quarter of an hour's labor. The ruins of the castle stand on uff, about forty feet above the ledge of the fall, but they are completely hidden by jungle. A short distance below it is Joan Island, where a temporary hospital was ted in Nelson's memorable expedition. *Castello Viejo Rapids.*

etween the above rapid and that called Toro, which is about six miles farther on, banks are very low and in some places nearly level with the bed, and afford no land- In the centre of the river the stream runs at about a knot, and close under the. s it is scarcely felt. A mile above the old castle two small rivulets, called Santa Chica and Grande, add their waters from the Northward, and here the main branch s a sudden turn to the Southward for about two miles, when it as sharply alters its se to the N. W. to the Toro Rapid.

ORO RAPID is the smallest and least violent of the whole, and is about a cable e; very few rocks show themselves, and the strength of the fall in the centre is not e than four knots, so that it is ascended without much difficulty. *Toro Rapid.*

he Toro and Castello Viejo rapids should be descended close over toward the N. k.

AVALOS RIVER disembogues from the Northward only a short distance above Toro Rapid. Beyond this the San Juan is disencumbered of rocks, and becomes very le; the banks are all along low, the trees in many places rising out of the water; the depth is about twelve feet. *Savalos River.*

bout six or seven miles above the Savalos is Chica Island, and about two and a half s farther on Grande Island; abreast the latter there is a ridge of hills about eight dred feet high, not far from the N. bank.

bout five miles beyond Grande Island two small creeks enter from the Northward, on their banks, close to the river, there are small settlements of the Palo Arco or Indians, who consider themselves independent of the Nicaraguans. A mile farther Mosquito Island, and abreast of it a small tributary of the same name, which dis- ges itself from the Southward. Here the San Juan takes another sharp bend to Northward for about three and a half miles, when it runs W. for seven miles to the ance of the lake.

ELCHOREZTO RIVER disembogues from the N. bank at the N. end of the above e. About five miles beyond this is Canon Island, and an hour's paddling more hes Padre Island, which is about three miles from San Carlos Point. This part of San Juan is about a cable in breadth, and the force of the stream about three fourths knot an hour; the banks are low and swampy, and should it be necessary to rest, ll be better to anchor in the middle of the river, to avoid the mosquitoes, which are erable near the land. *Melchorezto River.*

he ruins of the Castle of San Carlos stand on the N. side of the river, a short dis- e from the point, upon a mound about one hundred feet above the lake. At its base are a few huts.

he depth at the entrance of the lake, off the Morro Point, is from nine to twelve but for a considerable distance into the lake there are not more than six feet e dry season, and the channel is said to lie on the line between the point and the hern extreme of the Solentinane Islands, which bears W. by N. about fifteen miles it.

he coast from Greytown trends, with only a slight curve, N. N. W. thirty miles, and l along low and woody, and bounded by a dark sandy beach upon which there is ys a heavy surf. About five miles from Greytown is Indian River, and twelve miles er on is Spanish Creek, neither of which is of any importance. About four miles d between these two streams a ridge of wooded hills, five hundred and twenty feet runs parallel with the shore; and two and a half miles to the Northward of Span- reek is the remarkable isolated round hill before mentioned. *Coast.*

rn River empties itself about five miles to the Northward of the above round hill; es navigate this small stream, but the bar breaks so heavily with the least swell that eldom accessible.

e sandy beach terminates at a bold, rocky point five miles to the Northward of River, and thence the coast bends round to the Northeastward for about six miles orda Point, and becomes considerably elevated. The space is formed of small

sandy bays separated by rocky bluffs, close off which are several small, wooded is from thirty to one hundred feet high, steep to.

From Gorda Point the coast trends about N. E. by N. for twelve miles to Mon Point, and presents similar features, but the beaches are longer. About four and a miles to the Northward of Gorda Point is the entrance of the Rama River, which five feet water on the bar, but it generally breaks. This river is reported to flow ward of eighty miles, and it is navigable to a considerable distance by the canoes of Rama Indians, whose settlements reach far in the interior; there is also a small vill just within the mouth of the right bank.

The Rama Indians were formerly very numerous, but in 1820 they were said not exceed five hundred, and they pay a tribute to the King of Mosquito. They are sidered mild, inoffensive, and faithful, and most expert in the management of their noes, which are better formed for landing in a heavy surf than those of the Mosq men.

Water. About two miles to the Westward of Gorda Point there is a little rivulet of g water.

Paxaro Bovo. PAXARO BOVO (Booby Bird), the largest of the islands off this part of the co lies E. four miles from the mouth of the Rama, and S. S. W. ½ W. five and a half m from Monkey Point; it is thickly wooded, one hundred and fifty-five feet high, steep and between it and the main the depths are from six to three fathoms. When seen fr the Eastward it has the appearance of a small, green, conical hill, but from the So ward it forms like a wedge, with the thin end to the Westward.

Monkey Point. MONKEY POINT is the S. extreme of a bold, rocky promontory, about two m in extent, N. and S., at the base of the saddle ridge of mountains, and formed by th remarkable headlands. The Northernmost of these headlands is a black bluff, ni feet high, whence red cliffs extend in a N. W. direction nearly a mile. The centre forms a red conical hill about one hundred feet high; and the Southernmost is rocky, somewhat lower than the other two. E. by S. half a mile from the middle bluff th is a small, woody cay, about six feet high at its N. W. end, whence it shapes down a wedge; it is steep to all round, and there are four fathoms between it and the m Between the middle and Northern headlands the coast is foul to the distance of ha mile.

Anchorage. About a mile to the Southward of Monkey Point there are two more similar is with three fathoms water inside them.

To the Westward of Monkey Point the shore forms a bay or cove, which exte Northwestward about two miles, and carries a depth of three and a half fathoms muddy bottom. There is good anchorage in it, with Monkey Point bearing N. E. and the Southernmost cay off the point E. ½ S. Several small streams of excellent w easily got at, run through the beach to the Westward of the point.

Matina Bight. MATINA BIGHT.—The shore between Greytown and Monkey Point is gene known to the coasters as Matina Bight, which, with the exception of the little above described, is everywhere steep and clean, and safely navigable by the Abreast the Round Hill, the edge of soundings is about seventeen miles distant; th it takes a Northeasterly direction, and on the parallel of Monkey Point it is tw eight miles off. The depths are regular, gradually decreasing toward the shore up muddy bottom, with the exception of a small knoll lying about five miles from the and N. E. by N. eight miles from Arenas Point, where the depth suddenly changes thirty to fourteen fathoms, and again deepens inside to twenty-two fathoms, which be a useful guide in the night, or thick weather.

Anchorage. In moderate weather, vessels of too large a draught to enter Greytown Harbor, anchor anywhere, as most convenient; but in northers, or strong N. E. winds, so h a short-topping sea rolls in, that it will be better to remain under sail, or proceed either Great Corn Island, or to an anchorage under Pearl Cay Point.

Coast. The coast from Black Bluff trends N. by W. ½ W. twenty-three miles to the entr of Blewfield Lagoon, and is all along very low and swampy, the tops of the trees from forty to sixty feet above the sea; about ten miles to the Northward of the however, is a small ridge of low red cliffs. At five miles farther on there is a sh opening a mile wide, through which canoes pass into the Blewfield Lagoon, although bar generally breaks heavy.

For a distance of about six miles from Black Bluff the coast is clean and but thence to Blewfield Bluff it is skirted by cays and reefs, which are extr dangerous.

French Cay. FRENCH CAY, the Southern and outermost of these islets, lies N. by E. seven a half miles from Black Bluff, and four miles from the main, and is very small woody, with a flat summit about ninety feet high. It is bold on its N. and E. side a reef runs off three fourths of a mile to the Southwestward, between which and coast the soundings are from seven to nine fathoms.

Sister Cays. SISTER CAYS are two small islets lying nine miles from the bluff, and only

s of a mile from the beach, near the red cliffs; but there is a dangerous breaker mile and a half to the Eastward of them.

GEON CAYS lie about two miles farther to the Northward, and about one mile and f to the Eastward of a remarkable green point. The largest is about a fourth of a in extent; its saddle-shaped summit is one hundred and ten feet high, and at its base is a well of good water. A small detached breaker lies about a mile to the East- of this cay; and half a mile to the Northwestward there is a remarkable white fifty feet high, crowned with trees. *Pigeon Cays.*

ANO CAY, lying about four miles to the Northward of the above white rock, and two and a half miles from the opening into the Blewfield Lagoon, is small and forty feet high, with sides of red cliffs clothed with vegetation; the space in-shore o the Southward is full of dangers. N. two and a half miles from the cay, there is very dangerous breaker; and another two and a half miles farther on, in the same tion, with eight feet water, which bears S. by E., two and a half miles from Blew- Bluff. *Guano Cay.*

EWFIELD LAGOON is of considerable extent, but so cut up in the Southern part ngrove islands, that its dimensions are extremely variable; and this portion of it ed by the settlers Hone Sound. The Eastern side of the lagoon is bounded by Island, which is about eight miles long, N. and S., and terminates at the latter the shallow opening already described. The E. side of the Northern entrance is d by Blewfield Bluff, a remarkable bold promontory a little more than half a n extent, one hundred and eighteen feet high, thickly wooded, and standing prom- y out from the adjacent low swampy lands; it has from a wide offing the appear- f an island, and consequently at once points out the locality of the lagoon. On astern side of the bluff are low cliffs of red indurated clay, having three fathoms from one to one cable and a half off, and five fathoms at the distance of about three . *Blewfield Lagoon.*

mouth of this entrance, between the N. end of Deer Island and the bluff, is three s of a mile wide, but in the middle there is a small low wooded cay called Casava, g a navigable channel between it and the promontory, from one to two cables On the bar which runs across from the Southwestern extremity of the bluff, in W. direction toward the main, there are only from ten to thirteen feet water, ac- g to the state of the rivers which empty themselves into the lagoon; but inside pth gradually increases to as much as thirty feet off the N. W. end of the prom- .

whole of the Southern part of the interior is filled with shallow oyster banks, n which are canoe channels, very difficult, however, for a stranger to trace out. f them, deep enough for a gig or light boat, leading up to a large settlement, ily situated on a high bank under a hill on the main, two and a half miles to the rard of Deer Point, and a little to the Southward of the entrance of the Escon-

EWFIELD RIVER.—The largest stream that enters the lagoon is the Blewfield ondido River, which disembogues at its N. W. end, and is navigable for small craft g ten feet for some considerable distance, and for large canoes three or four days' y to the settlements of the Wolwa or Cookra Indians. This stream takes its along the N. side of the lagoon and close under the W. side of the promontory, hen full runs out through the entrance at the rate of from one knot and a half to ots; but when low the flood is able to overcome it, and run in to a short distance ut three hours at the rate of one knot and a half an hour. *Blewfield River.*

e is a well of good water in the Southern sandy bay, on the W. side of Blewfield nd the land around it is cultivated by the settlers at the bank, but supplies are in.

he parallel of Blewfield Bluff, the edge of the Mosquito Bank lies forty-three miles e land, and between this parallel and that of Monkey Point, the soundings are ely irregular, and in places very alarming; for by reference to the chart it will that the depth will suddenly decrease from twenty to ten fathoms, and to even as five from seventeen fathoms. The largest of these patches is about three and a les in extent, and lies E. by N. about twelve miles from French Cay, and has from ive fathoms, coral bottom. The twenty-fathom line, however, is generally from o eighteen miles from the land; and within this the depth is more regular, de- g to eleven and twelve fathoms close up to the cays and reefs, over a bottom of nd, shells and coral. As already stated, the coast to the Northward of French extremely dangerous, and must be approached with the utmost caution, for the gs afford but little warning. In approaching from the Northward, or from Great land, the S. end of which bears E. N. E. thirty-seven miles from the bluff, the gs will be found far more regular, and everywhere under twenty fathoms over d with a few patches of coral. *Directions.*

nearest anchorage to the entrance of the lagoon, for vessels of large draught,

should be with the Eastern extremity of the bluff bearing N. N. W. distant one mile a half, and Casava Cay just open of the S. W. end of the promontory N. W. by W five fathoms. It is, however, completely exposed to the usual wind, and when it blows fresh from the N. E. a high swell rolls in and breaks heavily on the bar.

Vessels of ten feet draught intending to enter the lagoon, had better sound and the bar previously; for not only the depth, but the line of deepest water, varies with change of weather and state of the Escondido. The best berth for small craft is under the N. W. end of the promontory.

Tides. It is high water, full and change, in Blewfield Lagoon, at 1h. 50m.; the rise at springs is about two feet, and at neaps sixteen inches: but the tide generally rises six inches higher in the night than in the daytime. In the dry season the flood runs three hours and the ebb nine hours, but in the rainy months the latter always prevails.

False Blewfield. FALSE BLEWFIELD.—From Blewfield Bluff a sandy shore runs nearly in a straight line N. twenty-one miles to the entrance to Pearl Cay lagoon; it is everywhere low and swampy, except at a spot ten and a half miles to the Northward of the bluff, where, on a slightly projecting point of low red cliffs, there is a little green mound about sixty feet high, called False Blewfield, from its having, at a distance, somewhat the appearance of the bluff.

Cayman Rock. CAYMAN ROCK.—About six miles to the Northward of Blewfield Bluff, and [illegible] miles from the main, there is a small barren rock twenty-five feet high, steep to, with six and seven fathoms water all round, and a clear channel inside carrying from [illegible] three fathoms. All elsewhere the coast is clean, with five to six fathoms at the distance of about one mile and a half.

Cookra Hill. THE COOKRA HILL, five hundred and eighty-seven feet high, is the most remarkable object on this part of the coast. It is completely isolated, and rises six miles in N. N. W. ¼ W., sixteen and a half miles from Blewfield Bluff, and W. ¼ N. from [illegible] house, at the S. end of Great Corn Island, whence it is visible, under favorable circumstances, although forty miles distant. There is also a hill of similar appearance, [illegible] hundred and eighty-three feet high, about fourteen miles to the Southward of the Co[illegible] at the back of the Blewfield Lagoon, but it is not so often in sight, and therefore [illegible] useful a landmark.

Pearl Cay Lagoon. PEARL CAY LAGOON, although of great extent, is so cut up by mangrove is[illegible] that it is quite impossible to give its dimensions. It is said to be from twenty to [illegible] miles in extent N. and S., to reach within eight miles of the Rio Grande, and in [illegible] rainy season to communicate with the Blewfield Lagoon. There are several small [illegible]tlements or trading posts on the Western shore, the nearest of which and the la[illegible] called English Bank, is situated about four miles to the Southwestward of the entr[illegible] another lies about four miles farther to the Westward, and there is one at the Nor[illegible] extremity, about twenty miles distant, called Old Bank. They are formed of In[illegible] with a few British traders, but not so numerous as at Blewfield; at English Bank [illegible] are about forty huts. Several rivers and considerable streams fall into the lagoon, [illegible] principal of which, called the Wawashan, enters at the N. W. end about twenty [illegible] miles from the entrance.

The mouth of the lagoon is about half a mile wide, but a short distance within [illegible] contracted to not more than two cables' length, and in this narrow part there is a [illegible] of five fathoms. A bar of sand runs across from S. E. to N. W. at the distance of [illegible] half a mile from the entrance, leaving a small channel of eight feet water at the [illegible] end, and a passage for canoes at the other. These openings, however, shift both [illegible] rection and depth, and the bar breaks heavily right across, except in fine weather; [illegible] the S. E. channel is pointed out by the smoothness of the water. The interior is [illegible] with shallow oyster banks, between which are intricate boat channels, leading up [illegible] settlements, but extremely difficult to find out. Just within the N. point the shore [illegible] sandy and very steep, and is generally strewed with alligators, which abound [illegible] lagoon.

Tides. It is high water, full and change, in Pearl Cay Lagoon, at 1h. 45m., and the [illegible] springs is about two feet.

Anchorage. From the entrance of the Pearl Cay Lagoon the coast curves round to the East [illegible] forming a slight bay about eight miles in extent, which terminates at Parati, or [illegible] Cay Point. There is good and tolerably smooth anchorage all along, in whatever [illegible] most convenient. The soundings decrease gradually toward the shore, on mud [illegible] tom, and the three-fathom line is from a mile and a half to two miles distant.

Pearl Cay Point. PEARL CAY POINT, when seen from the Southward, appears to form a [illegible] projection. It is bounded by a white sandy beach which forms the shore all [illegible] from the lagoon, but the trees behind it are from ninety to one hundred and [illegible] high. A coral ledge runs off to the Eastward about two miles from the point [illegible] by S. three miles from the point is the Maroon Knoll, about half a mile in extent [illegible] three fathoms water on it.

Pearl Cays. THE PEARL CAYS extend out to the Eastward about twelve and a half [illegible]

d, and from S. to N. about eleven miles. The whole of this space is filled with lusters of cays and reefs of the most dangerous character; and although there eral convenient anchorages for wooding and watering, or even to clear out and lown in case of necessity, it requires the utmost caution to navigate among them. undings in many places show a muddy bottom, which is only a thin covering over and without taking the precaution of having the buoy rope stopped to the crown anchor, and of sufficient strength to trip it, there will be great risk of losing it. ter is also so turbid that the shoals are not seen, except those which break on allow ledges, and the consequence is that small rocks are continually being dis- , especially between the Westernmost group and the land.

Maroon Cay.

OON CAY, the Southwesternmost of the Pearl Cays, lies E. N. E., two and a les from Pearl Cay Point, and is separated from the outer edge of the ledge by a hannel of three fathoms water. The cay is small, and the trees upon it are one d and ten feet high; its S. E. side is steep to, but from its Northern side a reef, breaks, runs off half a mile. On its Western side is a well of good water.

Colombilla Cay.

OMBILLA CAY, the Southernmost of the islets, lies E. ½ N. six and a half miles earl Cay Point; it is about a cable and a half in extent, very low, but covered markable topped trees one hundred and ten feet high. A coral reef, steep to, t all round, and extends from the N. side a cable and a half. On the W. side a clear spot for landing; and off it there is exposed anchorage in ten or twelve at about a fourth of a mile from the cay.

Seal Cay.

L CAY, the Easternmost of the group, lies E. by N. ½ N. twelve and a half miles earl Cay Point, and N. E. by E. ½ E. six and a half miles from the Colombilla. is only a small low strip of coral and sand covered with dwarf trees to the height y-two feet above the sea. A coral ledge, upon which are several small dry rocks, nearly a mile from it in a N. E. direction, and foul ground in a S. by W. direc- out the same distance from its S. end; the E. side is bold, and the depth is four at three cables from the W. side.

islet bears N. W. ½ W. nineteen miles from Great Corn Island, and the same W. by N. ¼ N. from Little Corn Island, and the soundings between vary from sixteen fathoms, clean sand and coral. Between Seal Cay and the Colombilla h is still more irregular and suspicious, and there are many coral spots of only oms.

and Thomson's Cays were washed away in the hurricane of October, 1865.)

N. E. Cays.

THEAST CAYS lie N. N. W. ½ W. eight and a half miles from Seal Cay, and of three small low rocks, occupying a space scarcely three cables in extent in a d N. E. direction. They are steep to on the E. side, but to the Westward a bro- e nearly connects them to Askill Cay, which bears from the centre one S. W. bout a mile and three fourths, and is eighty feet high. N. W. ½ N. nearly a m Northeast Cay there is a dangerous breaker.

Boden Reef.

EN REEF.—In a direct line between the Northeast Cays and Seal Cay and five m the latter, with Askill Cay bearing N. W. ¾ W., there is a dangerous ledge, s long E. and W., with only thirteen feet water on it, called Boden Reef, which always break.

Wood.

st all the cays to the Westward are covered with wood, and the trees vary in rom fifty to one hundred feet. Water Cay has recently become the residence of trader.

Water.

may be found on most of the Pearl Cays by digging wells, but the best is on ay, where about nine tons may be obtained in five hours; the wells are there ully situated, but they should be bailed out before use, as the Indians wash their and persons in them. Good spars will be found on some of the S. W. cays, and Cay coral fit to be burnt for lime. A narrow vein of six fathoms water runs the centre of this cluster from N. to S., which is so sheltered that vessels might own to clear out alongside Forster Cay, but it is quite impossible to give safe s for entering it.

Caution.

ference to the chart it is evident that the space to the Westward of the S. W. xtremely dangerous, for the small spots named Orion, Brunswick, Leopard, and were only discovered by those vessels in 1857. In fact, as before stated, the s everywhere so suspicious that in proceeding to the Northward or Southward e better to avoid these cays altogether by passing between them and the Corn giving the former a very wide berth.

Tides.

igh water, full and change, at the Pearl Cays, at 2h., and the rise at springs is o feet.

Great Corn Island.

T CORN ISLAND lies E. by S. ¾ S. twenty-nine miles from Pearl Cay Point, dge of soundings E. of it is eighteen miles distant. It is three and a half miles N. E. and S. S. W., and nearly two miles broad at its N. end, whence it tapers a bluff rocky headland half a mile broad at its Southern extremity. A ridge land runs through the greater part from N. to S., and at the distance of about

three fourths of a mile from the N. end of the island Mount Pleasant rises rath ruptly to a wooded peak three hundred and seventy feet high; thence it slopes gradually to the Southward of the bluff, where it is about one hundred feet abo sea, and between the base of the ridge and the Western shore there is a plain half a mile in breadth.

This island has no springs, and bears evident features of volcanic origin, large ders of porous lava being strewed about the beaches and in several parts of the rior. A bridle road leads round the island; and it is a most convenient spot to refreshments, and recruit the health of a vessel's crew.

Nearly half the Eastern shore of Great Corn Island is occupied by a sandy called Long Bay, off which there is anchorage with N. W. winds. In front of it ever, about three fourths of a mile from the shore, lies a narrow ledge, with from teen to twenty-one feet water on it, about four cables long from N. E. to S. W., th tre of which bears S. S. E. from Mount Pleasant, and S. S. W. from the Eastern ext of the island; there are eight fathoms close outside it, five fathoms inside it; and fathoms within almost a cable's length of the beach.

The Northern shores of the island are chiefly formed of low shelves of rock small sandy beaches, which are skirted by a coral ledge, extending three fourth mile from the N. end of the island; the ledge is steep to, and N. E. from this point island there is a narrow, intricate cut, which admits coasters into shelter in Sa Bay.

The above ledge terminates at the N. W. end of the island, about two cables the shore, at the N. end of Brig Bay. This bay is about half a mile in exten quite clean, deep, and bold, but so exposed to the N. E. roll as to afford no shelter

The S. end of Brig Bay terminates at the Western extremity of the island, be which and Quin Bluff the shore forms Southwest Bay, a mile in extent, in which is excellent anchorage with the usual winds, but not when blowing hard from the From this quarter, however, it is somewhat sheltered by a coral ledge, running little more than a mile, in a S. W. direction from the W. end of the island, and breaks when blowing strong. A small cut separates it from the point, in which are eighteen feet water close to the latter, but elsewhere there are only from twelve feet, and the outer end bears W. by N. ¾ N. from Quin Bluff, S. W. by W from Mount Pleasant, and S. W. ¼ S. from the Northwestern extremity of the and being steep to, must be approached with great caution.

Supplies. The island being free of swamps, is considered remarkably healthy and most all the tropical fruits and vegetables, cotton, corn, coffee, and the sugar-cane, g in the greatest perfection, with the exception, however, of the yam, which is de before it ripens by a peculiar species of ant; but eddoes and sweet potatoes abundance. There is also plenty of poultry, pigs and cattle, and a few horse cattle, however, are mostly grazed on Little Corn Island.

The greater part of the shores is also fringed with a deep grove of cocoanut which yield so abundantly that the nuts and oil form an article of export togethe turtle-shell, cattle, and a small quantity of cotton.

Water is readily obtained from a well a short distance from the S. end of the in S. W. bay; and wood in the neighborhood; but the latter is not so plenti may have to be purchased. There is no button-wood here, and the only tree burning is the sea-grape; it should, however, be barked and dried before it is away, as a precaution against sickness.

Anchorage. The Southern extremity of the island is clean and bold, and the whole bay b it and the ledge is also clean, with a depth of seven fathoms, over a sandy bottom ually decreasing to three fathoms within two cables of the beach. A convenie for vessels of large draught will be found with the W. end of the island N. Bluff E. S. E., half a mile distant, in four and a half fathoms.

Directions. The W. side of Great Corn Island must be approached with much caution working into the anchorage in S. W. Bay from the Southward, Mount Pleas not be brought to the Eastward of N. E. by E., to avoid the ledge. In the months, should the warnings of a N. W. wind make their appearance, it will b to weigh at once, and if necessary, take up a berth off Long Bay, or remain u until the wind resumes its general direction.

Blowing Rock. BLOWING ROCK.—The only danger in the way, and this only in the n in approaching Great Corn Island from the Southward, is a small, black, bar about ten feet high, lying S. S. E. seven miles from Quin Bluff, and about six m the edge of soundings. Its rugged summit, at a certain distance, has the appe three men sitting in a boat; and it receives its name from the sea throwing i casionally through a large hole, like the spouting of a whale. There are thirty-five fathoms outside it, thirty to fifteen between it and Corn Island fathoms close around it.

Little Corn Island. LITTLE CORN ISLAND lies N. N. E. eight miles from Great Corn Island

the bank of soundings E. of it is seventeen miles distant; the depths in that direc- regular, from twenty-seven to twenty-two fathoms close up to the shore; and the two islands, from twenty to fourteen fathoms.

island is a mile and a half long, in a N. W. by N. and S. E. by S. direction; the rn part is about half a mile broad, and the Southern only a fourth of a mile. pres, in most parts, are fringed with cocoanut trees, and rise with a gentle slope in of savanna land, about fifty feet above the sea, clothed with long rich grass, g excellent pasturage to stock and cattle belonging to the inhabitants of the ring island, and which are grazed here under charge of a single settler.

f extends about a fourth of a mile from the E. side of the island, and about three of a mile from the N. end; a coral ledge, with from two and a half to three water on it, also runs off a fourth of a mile from Gun Point, the Northwestern ty of the island.

Anchorage.

een Gun Point and the S. end of Little Corn Island the shore is clean and bold, ns a slight curve, called Pelican Bay, about a mile in extent, off which there is e anchorage with the prevailing winds. The best shelter will be found in six , with the S. end of the island bearing E. by S., and Gun Point N. N. W.

Coast.

oast from Pearl Cay Point trends N. about one hundred miles, nearly on a straight Brangman's Bluff, without any indentation whatever. It is all along bounded by micaceous sandy beach, upon which the surf breaks with such violence as to ren- ling difficult, and often dangerous, to well-handled canoes.

nterior is low, and cut up by many extensive swamps and lagoons, which drain sea; the tops of the trees are from eighty to one hundred and twenty feet above Numerous streams, also, discharge themselves in this space; and about seven- es to the Northward of Pearl Cay Point, there is a haulover for canoes into the of Pearl Cay Lagoon. As far up as abreast the Rio Grande, and ten miles to the ard of it, the coast is still skirted by clusters of small cays and dangerous shoals, ender it quite inaccessible to anything larger than a trading canoe or coaster quainted with the inshore navigation. To the Northward of Man-of-War Cays, e exception of the Fox Reef, at the S. point of the Wounta River, the shore is ere clean, and safely navigable by the lead; the soundings gradually decrease it, and there are from four to six fathoms, over very fine white sand, within less o miles from the beach. About twenty-four miles to the Northward of the Rio there is a small ridge of wooded land, one hundred and fifty feet high, which, ping the neighboring trees, is a conspicuous object; and about twenty-eight rther to the Northward are several remarkable mounds, eighty feet high, and on rthern side is a low neck of land, over which canoes are hauled into the Ton- goon in bad weather. At nineteen miles to the Northward of these mounds is an's Bluff.

Rio Grande.

GRANDE, the first stream met with of any importance, empties itself about iles from Pearl Cay Point, abreast the Tyra Cays. It has six feet water over its ch, being slightly sheltered by the adjacent cays, is more frequently easy of an those situated farther to the Northward. There are several Indian settle- its banks, at only a short distance from the coast, the principal of which, and ence of a Mosquito chief, stands on rising ground, in the midst of an extensive about eight miles from its mouth. The course of the river is unknown to the but it is said to be navigated nearly two hundred miles.

North Creek forces its way through the beach seventeen miles to the Northward rande, but it is of no importance.

King Cays.

CAYS, the nearest to the Pearl Cays, lie about twelve miles to the Northward E. cays of the group, and from eight to twelve miles from the coast. This onsists of four small cays, occupying a space of about three miles; three and a es to the Southward of them, however, there is a dangerous rock, with only two r on it, which bears S. W. by S. from the Easternmost Cay, and S. E. ¼ S. from cay. The latter cay is sandy, and between it and the main the depths are six athoms, but there are several foul spots between it and the Pearl Cays.

Tyra Cays.

CAYS.—These three little islets lie on a coral ledge, eight miles in extent d S. W., the latter extremity being about six miles from the main, and there are eight fathoms between. The Tyra Rock, at the Northeastern extremity of the a small barren rock, eight feet high, steep to on its E. side, lying N. by E. nine f miles from the Northernmost King Cay, S. E. seven miles from the Man-of- s, and E. by N. thirteen miles from the entrance of Rio Grande. S. W. by S. four f miles from this rock is Great Tyra, which is a little larger, and clothed with vated sixty feet above the sea. S. S. E. three fourths of a mile from the Great he Southernmost islet, called Seal Cay, which is a little barren rock, only ten of the water. E. a mile from this cay there is a dangerous breaker.

Man-of-War Cays.

OF-WAR CAYS.—This cluster consists of four small low islets, covered with brushwood. The three Easternmost lie close together, and form between them

a little harbor for fishing vessels. The fourth lies a mile to the Westward of leaving a clean space between, with ten fathoms water. At half a mile to the N ward of the latter lies a small barren rock; and N. E. one mile and a fourth fr Eastern cays there is a similar one, called the Egg Rock, which is six feet out water, and steep to. A dangerous isolated breaker also lies S. W. ½ S. one mi three fourths from the Western islet, and seven miles from the main land; the ings are from five to seven fathoms inside it.

Rivers. RIVERS.—The Walpasiksa enters the sea thirty miles to the Northward of th Grande, over a bar of three feet water, which breaks heavily. At three and a half farther on the Prince Apulca disembogues, which has a dangerous bar of only thre but it is ascended by large canoes to a considerable distance. An Indian settlem formed about seven miles from its mouth, on the left bank, and about ten miles up there is another, on the banks of a small lake, whence a slight traffic is carr with the Woolwas and Dongolas, for large canoes, dories, and pitpans, in exchan cotton and hardware goods. About five miles to the Northward of the Prince A is the Wounta, which has a bar of four feet water. The entrance is about a mile and abreast the S. point, one mile and a half from the shore, there is a rocky ledg mile and a half in length N. and S., called Fox Reef, which breaks, and is ste Between the Wounta and Prince Apulca are some remarkable lofty palmetto The Wava, which empties itself twenty-one miles to the Northward of the Wount twelve and a half miles from Brangman's Bluff, falls out of a large lagoon, lying to the shore, into which a considerable stream discharges itself, that is reported upward of one hundred and fifty miles in the interior. A bar of four feet water across the entrance, and after rains the muddy water from the lagoon discolors th to some distance. To the Northward of the Wava Lagoon is the Para Lagoo there is a communication for canoes from one to the other.

Brangman's Bluff. BRANGMAN'S or BRAGMAN BLUFF is a bold headland, about one hundre fifty feet high. About two miles to the S. W. of it there is a remarkable ridge clay cliffs, about half a mile in extent, which rise to the height of sixty feet abo level of the sea.

About twenty-five miles to the Westward of the bluff the mountains of the in reach an elevation of one thousand feet, but they are seldom visible. The co abounds in deer, and from the last quarter of the ebb to the first of the flood th quently graze on the shore, a little above high-water mark.

Water. Close to the S. end of the above red cliffs there is a little rivulet of good water depth is three fathoms within half a mile of the beach, and five fathoms two mi tant, and the shore is all along equally clean and bold.

Coast. The coast from Brangman's Bluff runs in a N. E. direction for seven miles River Hueson, which has a dangerous bar of only two feet water, and is of no tance. At ten miles to the Northward of it is Owasterra Creek, pointed out by village of huts at the entrance.

From the River Hueson the shore curves gradually to the Northward for the fifteen miles to Gorda Point, which is merely the outer part of the curve, and is covered by a few huts on the beach. Here it takes a N. by W. ½ W. direction, on almost a straight line for twenty-five miles, when it trends N. by E. nine miles entrance of Gracias Harbor. At two and a half miles to the Northward of the Duckwara Creek, which has a shifting bar of only three feet, and is but a mile fourths in length, when it enters the Duckwara Lagoon. The N. point of the is sandy, and on the S. point there is a clump of trees sixty feet high. An Indi lage is formed on the S. bank, in the midst of a small cultivated savanna. At farther on is Sandy Bay River. This little stream enters the sea over a bar of water, and communicates with a small lagoon about two miles from the entrance shore of which there is a considerable Mosquito village.

The entrance to Wano Lagoon is about twenty miles from Sandy Bay River, miles to the Southward of Cape Gracias Harbor, and being a mile wide is readi guished. This extensive lake will admit small canoes, and communicates with the River Lagoon. The Mosquito Cays are the Southernmost of the numerous r islets which fringe the Northeastern extremity of the delta of Mosquitia.

Throughout this long line of fifty-six miles the shore offers precisely similar to those to the Southward of the red cliffs, except that the small openings, leading into rivers, serve as drains to shallow lagoons of great extent, navi small canoes. The coast is everywhere clean and bold, and there are five fath within about a mile and a half of the beach.

Cape Gracias Harbor. CAPE GRACIAS HARBOR.—Cape Gracias à Dios is the N. E. extrem the Mosquito coast, and of the great delta of the River Wanks. The land everywhere low and swampy, and the tops of the trees are about eighty feet sea.

From the statements of early Spanish navigators in 1788, it appears that on

entrance to the River Wanks there were three small low cays, the Southernmost ch, called San Pio, was a mile long from N. E. to S. W., and separated from the the Northward of it, called Troncoso, by an opening a mile wide, in which the sea lly broke across, leaving only a channel for canoes, in favorable weather. The rnmost was conducted to the main by a sand ridge. To the Westward of these e coast then formed a bay four miles wide, with a depth of sixteen feet between end of San Pio and the main, and twenty feet in the interior, which afforded shel- corvettes from S. S. W., by the W. and N. to S. S. E. A manuscript sketch of the , made by Captain G. Countess, of H. M. S. *Porcupine*, in 1787, shows a depth of nd a half to four fathoms at the entrance across from the W. end of Pio to the and there were from three to four fathoms in the interior. Some time previous the English woodcutters settled on the banks of the river, for the greater conve- of rafting and shipping their timber in the bay, instead of carrying it across the t at all times passible) cut a narrow canal of twelve feet water through the s at the N. W. corner of the bay. In 1793, this canal had naturally increased its o much as to become a branch of the river, and had brought into the bay so large unt of debris and driftwood, which it had not sufficient power to carry out to t at this period the depth had diminished three feet in the vicinity of San Pio, ar had been thrown up in front of the canal. It will now be seen that in 1834, greater deposit had been added; that the islands had grown into one, and had ad- to within a fourth of a mile of the main, five and a half miles to the Southwest- f the cape; that the canal was nearly blocked up by a bar, leaving only a chan- large canoes or light gigs at high water; and that a shifting bar of soft mud had rown up at the entrance of the harbor, on which there were only seven or eight ter, with fifteen to eighteen feet in a narrow channel for a short distance within nd of San Pio.

e above statement as to dimensions can be depended on, it would also seem that adth of the harbor had decreased from four to two and a half miles.

all Indian village is scattered along the Western shore of Cape Gracias harbor; *Supplies.* 1834 there was residing here a single British trader, from whom might be ob- a small supply of cattle, poultry and vegetables. Wood may be cut on the cay, ter obtained, by digging wells on the main; but the latter is not very good, ex- the rainy season.

principal settlement of the Mosquitoes and the residence of the king, is situated banks of the river, about four or six days' journey from the harbor, whence are t for barter, gums, sarsaparilla, ground provisions, hides, and canoes in the rough. abitants at the harbor are generally engaged in fishing in the neighboring la- and at the cays in the turtle season.

Gracias harbor is now only accessible to coasters, and they must not depend *Anchorage.* e depth or position of the channel across the bar, for in 1830 it was close S. point of San Pio, and four years afterward it was a mile to the Southward of

is good holding ground for large vessels off the entrance in four and a half or oms, muddy bottom, about a mile and a half from the shore, with the Eastern of San Pio bearing N. E. ½ N., and the S. W. point of the island N. W.

mud bank runs gradually off from the E. side of the island into three fathoms istance of about a mile, when it increases to four and five fathoms, and the ground where clear with regular soundings up to the cays in the offing.

igh water, full and change, in Cape Gracias harbor, at 10h. 30m., and the rise is *Tides.* o feet, but uncertain.

RIVER WANKS, called also Yankes, by the traders Cape, and by the old *River* ds Segovia, is the largest river of Mosquitia. Its red mud banks become firm *Wanks.* er leaving its mouth, and it is navigable for large canoes, to the first falls of any ence, which are about one hundred and fifty miles up. The entrance is half a de, and open to the N. E., but very soon contracts to a fourth of a mile, and to cable's length only half a mile to the Westward of the cape. A bar sweeps off th entrance points in a semicircular form, convex to the N. E., to the distance of hree fourths of a mile, and generally breaks, leaving a channel of from three to water according to the state of the river, to the Northward of a small dry sand ng E. about a fourth of a mile from the cape; but canoes almost always enter by the branch of the harbor.

FALSE bears from Cape Gracias à Dios N. W. ¼ W. distant seventeen miles. *Cape False.* re between forms a slight curve, and is everywhere low, swampy, bounded by a each, and covered with stunted trees and low brushwood; the soundings are oms about five miles off.

False, however, requires to be approached with caution, for a hard sand-bank, s than three fathoms on it, runs off three miles to the Northeastward, and gen- reaks. The soundings outside it deepen gradually, and by keeping in five or six

fathoms it will be rounded at the distance of about two miles. There are a few huts the neighborhood of the Cape and Croach River.

Croach River. THE CROACH RIVER empties itself N. W. by W. about four miles from Ca False, and has a bar of four feet water, with four fathoms a mile N. of it. The tr near the entrance are high and have the appearance of a bluff; and from the Westw may be mistaken for Cape False; it will be observed, however, that the land at the l ter, turns abruptly to the Southward, which at once points it out. To the Eastward the above trees, there are two huts on the beach and a few cocoanut trees around the there are also on the coast two wooded hillocks which serve to distinguish this local from the general uniformity of the coast.

Coast. The coast from the Croach River runs nearly straight, N. W. by W. ½ W. sixty mi to the entrance of the Patook River, and presents all along the same general features those just described.

Carataska Lagoon. CARATASKA LAGOON.—The entrance to this lagoon is three fourths of a m wide, and lies about eighteen miles from the Croach. It may be known by a la clump of trees on either side, about ninety feet high, and will be distinctly made when bearing between S. by W. and S. W. by S. A bar runs across the opening the distance of about three fourths of a mile, upon which there are eight feet water the deepest part; and within it for about two miles the channel carries from nine eighteen feet; but beyond this, in the interior, the depths are only from five to se feet.

This immense lake runs parallel with the shore for about forty miles, and is ab eight miles in breadth, and only separated from the sea by a narrow low ridge of s thinly wooded, with here and there a few sand hillocks about twenty feet high.

About seven miles to the Westward of the entrance there is a remarkable grove cocoanut trees, and a mile and a half farther on a little wooded hillock one hundred twenty-eight feet high, named Auburn Hill, under which are some deserted huts.

Tobacoonta Creek. TOBACOONTA CREEK, which is open only in the rainy season, is thirty miles f the entrance to Carataska Lagoon, and is said to be only two miles from its N. W. About two and a half miles to the Eastward of the entrance, and about half a mile land, there is a remarkable large tree, which when first seen appears like a sail.

Patook River. PATOOK RIVER.—From about six miles N. E. of Cape False in five fathoms, similar position abreast Patook River, the course is N. W. by W. ¾ W. and the dista sixty-eight miles; the depths from seven to twelve fathoms with regular soundings, the coast is everywhere clean. The East point of entrance to the Patook is sandy a large clump of trees on it, the W. point is also sandy and has a few huts on it. mouth is three fourths of a mile wide, and as the land turns from it abruptly to Westward the E. side forms a prominent point, readily distinguished from the E ward or Westward. On the bar there are six feet water in the dry season, and f eight to ten feet in the wet; the stream is so rapid that even in the dry month runs out at the rate of one knot and a half; and although the rise of tide exte up it some miles, the water is fresh and drinkable just within the mouth in the r season.

From the Eastern point a shallow spit runs off a mile to the Northwestward, so the channel over the bar generally lies on the W. side, but it changes with the wea and the state of the river.

This river is said to rise in a ridge of mountains which separates it from the R Wanks, and, receiving several large tributaries, flows one hundred and fifty m Small canoes reach its source after six or seven days' journey in the dry season, and also able to communicate with Brewer's Lagoon; and it is navigable for large tra canoes upward of fifty miles.

About forty miles up there is a large Mosquito village near the right bank in a savanna, and a day's journey from the mouth of the river there is another settle where are reared poultry, cattle, and horses, the latter running wild in vast numbe the neighboring savannas. The banks are extremely fertile; and produce abunda ground provisions, tobacco, and rice; the two latter articles are bartered with the n boring Carib Indians for export to Honduras, and numbers of the largest sized c are cut and carried to Jamaica and elsewhere in the rough.

Mosquito Bank. MOSQUITO BANK.—Between the parallels of Little Corn Island and Cape Gr à Dios, a distance of one hundred and sixty-three miles, the edge of the great ba marine delta of Mosquitia, runs about N. by E.; and on the parallel of the Cap ninety-three miles from the land. Everywhere it is steep to, so much so, that th cast obtained will most probably be twenty fathoms not more than five miles with edge, and in many parts at even a less distance.

On the outside of this enormous wall, where soundings of great depth have be tained, the bottom is composed of white sand, very much finer indeed than that o bank; and sometimes contains a few small broken shells, generally bivalves (b bank, the bottom is mostly coral sand more or less fine. In a few places the

rse ground formed of what appears to be small flat white stones about two tenths of inch in diameter, with rough corrugated edges, which are found to be portions of a rine plant completely incrusted with coral, to which the term coral crust has been en. Where the depth suddenly decreases to less than ten fathoms on small patches, bottom is generally rocky.

By an examination of the chart, it will be seen, that until within about twenty-five les of the main, the depths are extremely variable, and in many places very suspicious alarming, especially to the Southward and Southeastward of the Mosquito Cays, ere the bank has not been closely sounded.

From lat. 15° N. the edge of the bank trends N. by W. ½ W. for thirty miles, when it roken by a narrow vein of deep water for about eight miles, and then continues on the same direction about sixty miles to the Northeastern extremity of the bank, in 16° 38′ N. long. 81° 45′ W. The remarkable vein of water just noticed, forms the per part of what may be termed a deep gorge, carrying one hundred and five to one dred and fifty fathoms, which nearly separates the main bank from an extensive sub-rine plain of coral sand, seventy miles long N. and S., and above forty miles broad at S. end, which is so flat that the depth over the greater part only varies from thirteen eighteen fathoms; and the edge is so steep, that in standing toward it from the thward or Eastward, the first cast will most likely be sixteen fathoms.

The Eastern extremity is in lat. 15° 30′ N., long. 80° 56′ W., and lies E. N. E. one dred and thirty-two miles from Cape Gracias à Dios, and W. S. W. fifty-eight miles the S. end of the Serranilla Bank.

About eight miles in a N. E. direction from the N. end of the above flat there is a ll of coral sand eight miles in diameter, named Thunder's Knoll, carrying from fif-to twenty fathoms water; and in the space between the depths are from one hun-d and twenty to one hundred and fifty fathoms.

From the position given above of the N. E. extreme of the main bank, the edge curves d to the Northwestward for about twenty miles, when it reaches the Northern ex-mity in lat. 16° 49′ N., long. 82° 6′ W., N. N. E. one hundred and twenty-five miles Cape Gracias à Dios, and N. ¾ E. sixty miles from Gorda Cay, the outermost of the s.

Thence the Northern edge of the bank runs with a few slight undulations S. W. by ½ W. one hundred and twenty-eight miles, when it comes within only eighteen miles e coast, on the meridian of Patook Point. This side is by no means so abrupt as Eastern face. The first soundings may be from forty to thirty fathoms about five s on the bank, and the depth will afterward gradually and regularly decrease to ty fathoms within about five miles of the outer cays.

In the N. E. part of the bank, the bottom is formed of finer sand, which is sometimes ed with small black specs and minute shells. As the cays are approached, the sand ually merges into blue mud, which, off the N. W. end of the Hobbies becomes pale, so soft that it is often washed off from the arming before the lead reaches the see.

Mosquito Cays.

OSQUITO CAYS.—As already stated in page 749, from the Man-of-War Cays to parallel of Brangman's Bluff, a space of sixty miles, the Mosquito Bank appears to se of danger, although the soundings in many places are extremely suspicious. To Northward of the parallel of lat. 14° N. commences the foul ground that extends out the Mosquito Cays, which occupy a space of about forty miles N. and S., and from y to thirty miles E. and W.

S. E. Rock.

E. ROCK.—The Southeasternmost danger is a small rock, which only sometimes s, bearing E. by N. ½ N. fifty miles from Brangman's Bluff, and thirty miles from dge of the bank in lat. 14° 11′ N. It has nine fathoms close to, but the ground to outhward is very foul; and S. E. by S. ten miles from it, just within the general of ten fathoms, there is a small coral head of five and a half fathoms with thir-fathoms close to the Eastward of it.

Ned Thomas Cay.

D THOMAS CAY, the Southwesternmost of the Mosquito Cays, is only a little of sand two feet out of the water, lying W., eighteen miles from the S. E. rock, E. thirty-two miles from Brangman's Bluff, and twenty-five miles from the nearest of the main. To the Eastward of this cay for the space of five miles the ground is foul, and there are some heads awash, called the Yellow Witties, the Southernmost ich lies S. E. by E. six miles from the cay, and about nine miles within the ten-m line.

coral ledge, awash, with seven to ten fathoms close outside of it, lies about three s of a mile to the Westward of the cay, and the foul ground extends two miles to orthwestward from the cay.

Nassa Cays.

SSA CAYS, the next met with on the inner edge of the group, lie N. W. ¾ W. e miles from Ned Thomas, and fifteen miles from the main. This cluster of little ocks occupies a space of about a mile from N. to S. and the Southernmost is cov-ith bushes to the height of ten feet above the sea. There are six and seven

fathoms water within half a mile round them, but S. by E. ¾ E. a mile and a h from the S. cay, lies a small coral patch of four and a half fathoms; and N. W. by four and a fourth miles from the N. cay, there is a dangerous head of only three fa oms water

Mosquito Cay. MOSQUITO CAY, the largest of the group, lies E. N. E. eleven miles from the Na Cays, and the same distance N. ¾ E. from Ned Thomas Cay. This island is formed indurated mud and sand, and is two miles long N. E. and S. W. and about three four of a mile broad. It is bounded by mangroves, but in the centre it is clothed with tr that grow to a height of sixty feet above the sea, and may be used for firewood. Th is a well at the S. end of Mosquito Cay but the water is brackish, except after he rains. The mangroves, however, grow so closely that the landing spot leading to i very difficult to discover.

Anchorage. Good anchorage for small vessels will be found off the S. W. end of Mosquito C in sixteen feet water, about a mile from the cay; but it is only the fishermen who thread their way into it.

Waham Cay. WAHAM CAY.—This little islet, called also Stoney Island, is about a cable in tent, and lies N. W. ¼ W. seven miles from the Nassa Cays. It is covered with bru wood and trees, the tops of which are about twenty feet above the sea. To the W ward of this cay there are several small coral patches of three fathoms water, with and seven fathoms close to them; the outermost patch bears S. W. by W. from the c distant a mile and a fourth, and in standing toward it Toro Cay should not be brou to the Northward of N. ½ E.

Toro Cay. TORO CAY, the Westernmost of the Mosquito Cays, lies N. N. W. ½ W. a mile an half from Waham Cay, and E. by N. ten miles from the entrance of Duckwara Cre the nearest part of the main. This little islet is merely a collection of rough piece bleached coral thrown up by the waves, to the height of about three feet above the To the Westward of it to the distance of about three fourths of a mile, the soundings w from seven to four and a half fathoms, but beyond this they become regular, increas to ten and eleven fathoms over a crust and muddy bottom about mid-channel, and the decreasing to three fathoms to within about a mile of the shore.

To the Eastward of the Toro the ground is full of dangers and offers no safe pass N. E. by E. one and a half miles from it there are three more similar little rocks ab five feet high, called the Kissoura Cays.

N. W. Knoll. N. W. KNOLL is a pear-shaped coral shoal about one mile and a half in extent and S., and about a mile broad, with irregular soundings of from four and a half eight and a half fathoms on it, and ten fathoms on the edge. It lies six miles from T Cay, with it and Waham Cay in line, S. S. E. ½ E., and four miles from the main ban the Mosquito Shoals. In beating up this channel in the night, it may serve as a us warning, for the depth to the Eastward of it is from nine to ten fathoms.

Caution. In daytime, when standing to the Eastward, in this neighborhood, a vessel should go so far inside this knoll as to bring the Westernmost of the Kissoura Cays in line Waham Cay, bearing S. ½ W., to avoid the Indian Shoal, which is four miles from Kissoura Cays.

Ham Cays and Mosquito Shoals. HAM CAYS AND MOSQUITO SHOALS.—From the Kissoura Cays the Northw ern edge of the Mosquito Shoals trends about N. ½ E. eight miles, where it terminate the Northwesternmost of the Ham Cays, which is about three feet above the sea, an a similar size and formation to the Kissoura Cays. Thence the edge trends N. E. and a half miles to the extreme N. W. point, which lies S. E. by S. twenty-seven m from Cape Gracias à Dios, between which there is no danger whatever, and depths f eight to thirteen fathoms on a muddy bottom.

From the N. W. point, the Northern boundary of the Mosquito Cays and Shoals in an Easterly direction twenty miles. About halfway, however, there is a cha from one to three miles wide, carrying from nine to twelve fathoms, cutting the b into two parts, well known to the fishermen, but no safe directions can be given strangers.

The Eastern boundary of these cays, between Martinez Reef, at the Northea extremity, and the S. E. rock, trends about S. by E., thirty miles, and is skirted detached rocks and reefs so extremely dangerous, that too wide a berth cann given to it, more particularly as the equality of depth gives no warning whatever o proach.

To the Northward of the Mosquito Cays and Shoals, for a distance of forty miles merous small islets and detached reefs present themselves, between which are clear deep channels, which might save a vessel accidentally getting among them; but b entirely out of the general track, they need no particular description.

Alargate Reef. ALARGATE REEF is the Easternmost danger on the Mosquito Bank; its N eastern edge lies E. by N. ½ N. fifty miles from Cape Gracias à Dios, and forty-five from the outer edge of the bank. This is a solid semicircular reef nine miles in e N. and S., convex to the E., and upon which the sea breaks with great violence.

stern face has fifteen fathoms alongside it, and from this quarter the soundings give warning. The space on the W. side is full of detached coral shoals, and about six les from the centre of the crescent there is a little sandy cay with a single cocoanut e upon it, which serves as a guide to the fishermen.

A space of twenty miles to the Westward of the Alargate is filled with small cays, rted by similar reefs, which approach to within twenty-eight miles of the main land; ving a clean navigable channel between, carrying from ten to thirteen fathoms.

MAIN CAPE BANK.—This extremely dangerous reef, four miles in length, N. and and slightly convex to the Eastward, is nearly awash in many places, seldom breaks d is steep to; the discolored water, however, may be seen from aloft in clear ather. *Main Cape Bank.*

The S. end of this bank bears N. E. by N. eighteen miles from Cape Gracios à Dios, ½ N. twenty-one miles from Cape False, and nearly W. fifteen miles from Logwood y, the Westernmost of the Alargate group.

FALSE CAPE BANK.—This equally dangerous ledge is only two miles long N. W. d S. E., convex to the N. E., and being completely exposed from that quarter, generally aks. It lies N. N. W. fourteen and a half miles from the main Cape Bank, and N. E. N. twenty-five miles from Cape False, the nearest part of the main; and all around it re are fourteen and fifteen fathoms. *False Cape Bank.*

COCOROCUMA CAYS.—N. ½ E. eleven miles from the above bank there is a cluster even small islets, occupying a space a little more than a mile in extent, but neither them more than two feet out of the water. They are all fringed with a border of al, dry in many places, which extends a cable's length from them to the Westward to Northward two cables, to the Eastward about one cable and a half, but to the South- rd scarcely half a cable's length. *Cocorocuma Cays.*

The largest cay is about a cable in extent from E. to W., and about half that in breadth; E. end is covered with bushes, and upon it are five cocoanut trees, the tops of which about twenty feet above the sea; at the Eastern extremity there are also two other arkable trees. The W. end of the cay is sandy, and affords a landing place, but the le intricate opening through the reef to the Southward, which leads to it, is only dis- ered from the smoothness of the water.

n the month of July the island is covered with young egg birds; and among the cays re is excellent fishing with the line, but no fresh water.

The Northernmost islet lies a mile from the largest, and is called by the turtlers on's Bush or cay, from its having upon it a remarkable square clump of brushwood, ch grows to the height of about fifteen feet above the sea, and at a distance looks a large isolated rock. From this cay a solitary reef runs off four miles in a N. N. irection, which breaks heavily in the finest weather; it has the usual curve to the ward, and is in every respect similar to those already described. W. three fourths mile from the N. end of the reef there is a dangerous detached breaker.

nchorage will be found under the W. side of the above reef, but not good, as the om is a flat shelf of rock called barry. The best ground and shelter lies about half le to the Northwestward of the largest cay, in six or seven fathoms. *Anchorage.*

IGEON CAYS.—The Westernmost of the three Pigeon Cays is a little islet lying N. y E. ½ E. four and a half miles from the Cocorocuma, at the S. end of a dangerous moon-shaped reef, about half a mile in extent N. and S., and is nearly a heap of l and sand, over which the sea breaks in heavy weather. It is bold to, and between d the above cays there are fourteen fathoms water. *Pigeon Cays.*

by S. ½ S. two and three fourths miles from this cay are the two Easternmost. These ow islets are each about a cable long, N. N. E. and S. S. W., and only separated by allow ledge, twenty fathoms broad, and they are not more than one foot and a half f the water. The Southern cay is formed entirely of sand and coral stones, but on Northernmost there are a few low bushes. A reef extends a good cable's length both ends, and to a short distance from the E. and W. sides, so that landing is not y effected. In 1834, a beacon, formed from the trunk of a large tree, was placed on N. cay, which bears E. by N. seven miles from Cocorocuma.

ere are twenty fathoms close up to the N. and E. sides of these islets, and twelve ms between them and the Western Cay.

Y GORDA, the Northeasternmost islet on the Mosquito Bank, lies in lat. 15° 52′ ng. 82° 24′ W., E. N. E. thirty miles from the Pigeon Cays, and S. by W. sixty from the Northeastern extremity of the Mosquito Bank. This little barren islet ut a cable in diameter, and formed of sand, broken pieces of coral, and large brain s, thrown up by the violent action of the waves to the height of about twelve feet. the N. end a reef extends from it to the Northwestward one mile and three fourths. very steep to on its E. and S. sides, and in favorable weather a landing may be ed at its N. W. end, but even then it is attended with risk, for a heavy swell rolls en it at all times. *Cay Gorda.*

E FARRALL ROCK, lying E. ½ S., five and a half miles from Gorda Cay, is an *Farrall Rock:*

exceedingly dangerous coral ledge, nearly half a mile long N. and S., which breaks in heavy weather. It rises, however, from a clear white sand-bank, so the dark discolored water over it may be seen from aloft in favorable weather, not far off.

By reference to the chart it will be seen that these two dangers lie at the N. a a curious flat tongue of coral sand forty miles in length, N. W. and S. E., which serve as a good guide to vessels necessitated to pass to the Eastward of the Mo Cays. In the centre the tongue is only five miles broad; but thence it spreads and is seventeen miles across at both extremities. The depth only varies from six fathoms, and the bottom is distinctly seen. The S. E. end lies N. E. about miles from the nearest part of the Alargate Reef, and there are from thirteen to fathoms between them. Farrall Rock is on the Northeastern extremity, and the is thirteen fathoms at two miles to the Northward of it; twenty fathoms at nine to the N. E. and N. W. of it, and fourteen fathoms at the same distance in a S. E. tion, over fine white sand. On the Northern portion there are many patches of flat covered with dark weed, but with no material alteration in the depth.

Caxones or Hobbies.

CAXONES or HOBBIES, the Northwesternmost danger on the Mosquito Bank, broken reef extending in an E. by S. ½ S., and W. by N. ½ N. direction, twelve The Eastern extremity lies N. W. by N. fifteen miles from the N. end of the Co cuma Reef, and about twenty-seven miles within the Northern edge of the bank, on meridian of long. 83° 7′ W. This end has the usual curved face, and is about two a half miles broad; but to the Westward of this it becomes narrower, and the opp extremity terminates at almost a point.

The Eastern portion of the reef is much broken, and has upon it several small cays and sand-bores, of the same character as those described elsewhere, and only of which is clothed with stunted bushes to the height of five or six feet above the and a single cocoanut tree. This islet, called the Grand Hobby by the fishermen, about three miles from the E. end; it is nearly a cable's length in diameter, a position is often pointed out from a distance by a cloud of birds hovering ove Abreast it, both to the Northward and Southward, there are intricate but deep ope through the reef, leading into small snug anchorages well known to the Cayman I men, but far too dangerous for a stranger to navigate without their assistance. ever, in a case of danger occurring on the N. side of the reef, by bringing the G Hobby to bear S. S. E. ½ E. before it is within the distance of one mile and a half, sel may enter through a clear opening three fourths of a mile wide, with not less five fathoms on it. The E. side of the opening is formed by the end of the reef, generally breaks; on the W. side there are two little cays and a sand-bore, lying dry ledge about a mile in length S. E. and N. W. The Southeasternmost of these may be passed within one cable and a half, and anchorage taken up within it in fathoms under the Eastern reef, with the Grand Hobby bearing S. S. E., distant fourths of a mile, or midway between it and the reef.

There is also a clear opening to the Westward of the above three cays, one mil a half wide, which might be used in a case of necessity, and anchorage taken up under the cays, in ten fathoms.

To the Westward of this the reef is narrow and unbroken, and though nearly does not always break, which renders it extremely dangerous.

Caution.

In approaching the Caxones from the Northward in the night, or in hazy we be most careful not to come into a less depth than twenty fathoms, which is about miles off; and it must be borne in mind that outside this line the bottom is muddy inside coral and sand, which is also a good warning. As stated before, off the N. W the mud is so soft that it is often washed off the arming before the lead reaches surface; and too much caution cannot be used when nearing this extremity, wh eighteen miles from the edge of the bank, and N. N. E. forty-eight miles from entrance of Carataska Lagoon; and there are thirty fathoms water within miles of it.

There is excellent fishing all around the cays, and good seining at the Grand H

Tides.

It is high water at the above cays, full and change, at 9h. 20m., and the rise is two feet.

Carataska Cays.

CARATASKA CAYS.—These two cays are merely narrow, barren sand-ridges, one foot and a half out of the water, one mile and a half apart, bearing from each S. S. E. ½ E. and N. N. W. ½ W. The Northernmost cay is about a cable long S.; it lies S. ½ W. four miles from the W. end of the Caxone, and there are fathoms in the space between. The Southernmost cay is not so long but semi in form, convex to the N. E. Both are steep to on their Eastern sides, to within length of a dry reef, which surrounds them, but from the outer ends this reef out more than a fourth of a mile, and to nearly the same distance from their W The channel between them is clean, and well defined by the dry rocks on either which are steep to.

re is good anchorage under the W. side of the Carataska Cays, in four and a half fathoms water, with the S. cay bearing about E. and the ends of the reefs form- e channel in line, which shelters from the prevailing winds.

Seal Cays.

AL CAYS.—S. E. ½ S., five miles from the Southern Carataska Cay, will be seen ash on the Northernmost of the Seal Cays (which, from the anchorage on the W. f that cay, appears like a small rock), and about a point farther to the Southward coanut trees on the Great Seal. This group consists of five small islets, lying on en coral ledge, three and a fourth miles in length N. W. and S. E., and about fourths of a mile broad.

o of the cays are at the N. end of the ledge, and have small bushes on them; the lie more toward the S. end. On the largest islet there are some mangroves, and coanut trees which attain a height of about thirty feet above the sea. This islet tected on the Eastern side from the violent action of the waves by a breakwater ge masses of broken coral and brain-stones, thrown up to the height of about or four feet. At the Western side of the cay is a boat-channel, leading to a safe g-place, where, in the rainy season, fishermen are able to obtain a small supply of

Seal Rock.

AL ROCK.—A coral ledge, with from six to eight fathoms water on it, and four- nd fifteen fathoms near its edges, extends four and a half miles to the Southeast- from the South Seal; but S. E. by E., three miles from the Great Seal, and N. E. rom the North Vivorilla Cay, lies a dangerous small rock, nearly awash. When it, the Seal Cays appear as only two islands.

Vivorilla Cays.

VORILLA CAYS.—These two small cays are distant from each other one mile ree fourths, on a S. by E. ½ E., and opposite bearing.

e Northernmost cay lies S. W. by S. four and a half miles from the Great Seal, S. nine and a half miles from the Southern Carataska N. by W. ½ W. fifty-three from Cape Gracias à Dios, and N. E. by N. thirty-six miles from the entrance of arataska Lagoon, the nearest part of the main. It is clothed with a few mangrove- s, which, at a distance, have the appearance of a house, and in 1856 there was a g cocoanut tree upon it, which had grown to the same level as the tops of the s. From this cay a solid reef, contrary to the usual form, extends in nearly a ht line, S. E. by S., to abreast the Southern Cay, leaving a boat channel between ; it is steep to; and the sea breaks against it with great violence; at the S. end are some dry sand-bores.

the Southern cay there are six cocoanut trees, about twelve feet high, which, from ght of twenty feet may be seen six or seven miles in favorable weather.*

Anchorage

ooth anchorage, with the prevailing wind, will be found in five fathoms, with the ern Vivorilla Cay bearing N. ½ E., and the Eastern cay E. by N.; but it will be sary to look out for a sandy spot which is easily done by the eye, and to bear in that the depth decreases suddenly from seventeen to seven fathoms.

Western Shoals.

ESTERN SHOALS.—From the Northern Vivorilla Cays, a coral bank, about four s broad, stretches off in a Northwesterly direction eight miles, and upon it the gen- depths are from six to ten fathoms; but W. N. W. six miles from the cay lies a l head of three and one fourth fathoms water; and W. by N. seven and a half from the cay, there is another, with a similar depth, lying at the S. W. point of bank, with twenty-three fathoms close outside it and all around the other edges. e are the Westernmost shoals on the Mosquito Bank.

Western Knoll.

ESTERN KNOLL.—At about thirty miles to the Westward of the Vivorilla Cays an oval-shaped coral knoll, nine miles long N. and S., and four miles broad in the le, with depths from seven to nine fathoms over it, and seventeen fathoms close to dges. Its S. end bears E. by N. ½ N. twenty-six miles from Patook Point, and ty miles from the nearest part of the main; and the depth decreases very gradually it to the shore. Its N. end is twelve miles within the edge of soundings, and there twenty-six fathoms within a mile of it. Between the E. side and the Vivorilla the depths are from twenty to twenty-three fathoms; and when beating up in the it may be a useful warning of approach to those dangers.

Directions.

e range of cays and reefs between the Mosquito and Vivorilla cays may be said to an impassable barrier to the coast; for although there are many wide navigable ings, which might lead to saving a vessel in case of accident, and which are gener- well defined by the steep reefs breaking on either side, the current and the nature e soundings forbid the approach of strangers.

e neighborhood, however, is well known to the Cayman fishermen who visit the

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Remarks by Commander H. Coryton, H. M. S. *Hermes*, 1856. Captain Barnett, R. N., states that 34, there were only a few bushes and grass in these cays, and a single cocoanut tree on the North- me. It is to be observed that as the cocoanut trees are destroyed by the wind or the insects, they mmediately replaced by the Indians, in order to guide them from one group of cays to another; o dependence can be placed in the number, and they take some time to grow up

Directions. cays in the turtling season, and they are consequently good pilots for it. At this peri the masts of their little sloops at anchor and the tops of their crawls may be seen befo the reefs. These crawls are square pens for confining the turtle as they are caught the nets, and are constructed of piles driven into the mud, leaving the tops about six eight feet above the sea.

The only safe way, therefore, of navigating the coast, from Greytown to the Nor ward, is by passing between the Corn Islands and Pearl Cays, which are eighteen mil apart, and well outside all the others, as far to the Northward as the Man-of-War Ca As already pointed out, at page 747, the approach to these islets is extremely dangero as the regularity of the soundings gives little or no warning; and a sailing vessel ca not give them too wide a berth.

From abreast the Man-of-War Cays, which lie on the parallel of 13° N., the soundin within thirty miles of the coast are very regular, and decrease from seventeen to eig teen fathoms gradually toward it. The shore may now be safely navigated to within t depth of ten fathoms, which will be found at about the distance of seven or eight mil and skirted along thus far off all the way to abreast the river Wava, fifty miles to t Northward of the cays. Upon this parallel the depth will decrease to less than ten fa oms, to the distance of twenty miles from the land; and to eight fathoms about fi miles to the Eastward of the red cliffs near Brangman's Bluff. A sailing vessel, ho ever, with the prevailing wind, after passing the Man-of-War Cays, had better keep w to windward, but not run to the Northward of the bluff without sighting it, in order avoid the dangers at the S. W. end of the Mosquito Cay. The soundings here will of great assistance, for the depth of nine fathoms for a short distance will give a su warning of being from ten to twenty miles from the bluff, and its bearing between and N. W.

To the Northward of Brangman's Bluff the shore must be kept aboard, and not lo sight of, to avoid the Mosquito Cays; and should night intervene, with a foul wind, would be better for a sailing vessel to remain at anchor until daylight, as the chann between the Toro Cay and the main is only nine miles wide, and the bottom is so f that the lead is scarcely a sufficient guide.

After passing to the Northward of the Ham Cays, a clear space opens out, which about twenty-five miles wide abreast Cape Gracias à Dios; and the depth increases fro ten to fourteen fathoms, close up to the Eastern cays and reefs, on a muddy bottom. Ha ing rounded the cape, should it be necessary to stand to the Northeastward, great ca must be taken to avoid Main Cape Bank, which lies N. E. by N. eighteen miles fro it, and E. ½ N. twenty miles from the end of the False Cape Reef. This reef is the mo dangerous as, lying under the shelter of the Eastern cays, it seldom breaks, and t soundings up to it for some distance are so regular as to give no warning. The dept in mid-channel are from ten to twelve fathoms, whence they gradually decrease to t coast; but toward the reef there are regular soundings of twelve to thirteen fathoms, fine sand close up to it.

To the Northward of False Cape the channel again opens out to a breadth of twent three miles abreast of False Cape Bank, where the depth in mid-channel is fourteen fa oms; and between the entrance of the Carataski Lagoon and the Vivorilla Cays it is th ty-five miles wide, and the depth in midway is seventeen and eighteen fathoms over pa blue mud. At the distance of about ten miles from the coast there are ten fathoms, a seven miles from the cays there are twenty fathoms, so that a vessel may here safe trust to the lead.

Care, however, is necessary not to haul out to the Northward until the Vivorilla Ca are ten miles to the Eastward, except in vessels of light draught, which may cross t Vivorilla Ledge in daylight, and take their departure from the cays, so as to steer cl of the W. end of the Caxones.

A vessel bound to Greytown from the Northward, intending to pursue the in-sho channel should by no means strike the bank to the Eastward of the Carataski Lago in long. 83° 45′ W., nor come within the depth of thirty fathoms in the night, except a is sure of being to the Westward of the Caxones, and the cays and shoals in its neig borhood; and should she unexpectedly find herself in a less depth, her head should i mediately be put to the Northward.

Approaching from this quarter, it would be extremely advantageous to sight the Sw Islands in order to obtain a correct departure, with a view to detect the force of the c rent, which here generally runs between W. and N. W. These two islands occup space of about three and a half miles E. and W., and half a mile broad; they are thic wooded and about sixty feet high, and lie N. N. W. ¾ W. eighty-six miles from the W. s of the Caxones Reef, and N. by W. one hundred and twenty miles from the entrance the Carataski Lagoon, which line leads just to windward of the Western knoll.

Current. On the chart to the Northward of the Pearl Cays, the current is marked as runni to the Northward and Northwestward at a velocity of from a half to a knot an hou but this must only be considered as its general course, for, except on the E. side of t

nk, it is subject to great and very sudden changes; indeed, several navigators assert at it more generally runs to the Southward; this, however, was not found to be the se during the survey of these cays.

Among the islets and reefs there is very little stream of any kind, except on the outer ges, where in the season of fresh N. E. winds, especially on the Eastern face of the largate Reef, and on the N. side of the Caxones, there is often a strong set toward em, which adds considerably to their danger. Inshore, to the Northward of Greyown, it is greatly influenced by the winds and weather; and after heavy rains in the mmer, or northers in the winter, it will suddenly rush down from the Northward at e rate of two and even three knots, bringing with it large quantities of logs and driftood, and rendering it almost impossible for a vessel to beat to the N. E. against it.

To the Northward of Cape Gracias à Dios it will also often run with such velocity to e Northwestward as to make it equally difficult to beat up from that quarter.

OUTLYING BANKS AND ISLANDS ON THE COAST OF MOSQUITO.

EL COMBOY BANK.—This bank still holds a place on the charts of this sea in lat. 0 42′ N., long. 77° 52′ W.; but no detailed account can be found of it, and the Brit- surveying vessels have repeatedly examined the locality without even obtaining undings. *El Comboy Bank.*

BAJO NUEVO or NEW BORE, the Easternmost of the outlying banks is oval- rmed, about fourteen miles in extent E. N. E. and W. N. W., and four and a half miles oad. Its Eastern extremity presents a solid semi-circular reef, convex to the Eastrd, dry in some places, and steep to; the edge of soundings being about a fourth of mile off.* This reef continues along the N. and S. edges of the bank for about four les, where a break or opening is formed about one mile and a half wide separating it om a similar formed reef, which runs along the Southern edge of the bank for seven les to a dry sand-bore. A shallow ledge, however, with ten fathoms close to it, runs to the Westward of the bore about two miles, to within about two miles of the S. W. d of the bank, which makes this termination, if possible, more dangerous than the er. Small ridges of sand are occasionally formed on other parts of the reef, but they appear in heavy breezes. *Bajo Nuevo.*

At the W. side of the above opening, five and three fourths miles from the E. end of reef on the N. E. point of the leeward reef, in the middle of the bank, there is a ren cay, composed of sand, broken coral, and driftwood, thrown up by the waves to height of five feet above the sea. It is one cable and a half long, and about a fourth a cable broad, and lies in lat. 15° 53′ N., long. 78° 38′ 33″ W. At the S. end there is mall pond, which is resorted to by seals, and in the months of March and April the nk is visited by fishing vessels from St. Andrew's and Old Providence for the purpose taking them.

To the Westward of the E. reef the N. side of the bank is clean for about a mile with- the edge, as far as about two miles to the Westward of the cay, when there is a clean ce of about three miles to the S. W. end of the bank. The depths vary from eight to enteen fathoms, over coral and sand; great care, however, must be taken when ding toward the broken ground on the N. side of the leeward reef, and to avoid a al head which lies W. by S. ¾ S. two miles from the cay.

The Northern edge of the bank is also so steep that the first cast of the lead may probby be twelve or fifteen fathoms, and the bottom is quite visible.

Anchorage may be taken up in moderate weather in eight fathoms, with the above bearing E. by S. about one mile and a half distant, but it is quite exposed to the ter breezes. *Anchorage.*

RONCADOR BANK is a pear-shaped coral bank, seven miles in length from N. W. S. E., two and a half miles in breadth at its S. E. or thick end, three and a half miles oss at the middle part, and terminates almost in a point at its Northwestern extrem- At the latter spot, about half a mile from the edge of soundings, in lat. 13° 34′ 30″ long. 80° 5′ 39″ W., there is a cay three cables long and one cable and a half broad, mposed of sand and blocks of broken coral heaped up into a wall on the N. E. side, out seven feet above the sea. On the S. end there are some bushes and three or four arf palm-trees, which afford shelter to large flocks of boobies and man-of-war birds; re is also generally a fisherman's hut at this end. *Roncador Bank.*

From the Roncador Cay a barrier reef runs straight to the Southeastward for about ee and a half miles to some dry rocks, whence it curves slightly to the Southward to S. E. end of the bank, and presents no opening whatever, even for a canoe. At half

* It appears that, with the N. E. point of the reef bearing W. N. W. distant one mile and a half, there twenty fathoms, at S. W. two and a half miles, thirty-four fathoms, fine sand and coral. Mr. J. Na- , master, H. M. S. *Winchester*, 1834.

a mile from the cay, just within the edge of the reef, there is a small isand-bore, a about a mile farther to the S. E. there is another similarly situated. There are also t more of these dry ridges, one about half a mile, the other three fourths of a mile fr the S. E. end of the bank, which lie N. W. and S. E. of each other, about four cab apart.

The N. E. side of the reef is skirted by a bank of soundings about half a mile bro with depths varying from twenty to five fathoms over sand and dark coral. At t S. E. extreme, however, the edge is only the fourth of a mile distant. The W. side the reef is, as usual, filled with detached shoals to the distance of one mile and th fourths.

Water. Water may be procured by digging wells near the centre of the above cay, but it very brackish, and only used by the fishermen for culinary purposes.

Anchorage. On the Western edge of the Roncador Bank there is good anchorage, with the us trade-winds, with the dry rocks on the middle of the reef from N. E. by N. to E. by and Roncador Cay as far to the Westward as N. N. W. in six or seven fathoms, avoidi the coral spots which are easily seen.

Tides and Current. The time of high water at the anchorage is irregular, and greatly depends on t strength of the prevailing wind. It rises about eighteen inches, but there is no perce tible stream. The current in the neighborhood generally runs strong to the N. W.

Alburquerque or S. S. W. Bank. ALBURQUERQUE or S. S. W. BANK, the Southernmost of the outlying banks, li on the parallel of the Great Corn Island, sixty-eight miles to the Eastward of it, and thirty-eight miles from the nearest part of the Mosquito Bank; it is nearly circular form, and about five miles in diameter. Its Northern and Eastern sides are bounded a solid reef about a fourth of a mile within the edge of soundings, which is so steep th the first cast of the lead will probably be less than ten fathoms, which renders the sides extremely dangerous in the night. At the N. E. elbow, however, there are t small boat channels, available in fine weather in a case of necessity.

Nearly midway between the N. and S. ends of this reef, and a mile and a fourth fro the Eastern edge of soundings, there are two cays composed of coral blocks and sa each about a cable and a fourth in extent, with some cocoanut trees and samphire gr upon them. The Northernmost is six feet above the sea, the Southernmost only fo feet, and lies S. S. E. ½ E. from the former one cable and a half. The latter islet is lat. 12° 10′ N. long. 81° 50′ 28″ W., S. by W. twenty-two miles from St. Andrew's land, which is just visible from it in favorable weather. The fishermen from that isla visit them in the turtling season, but they are obliged to come furnished with water, none is to be found on the cays.

The centre of the Alburquerque Bank is full of detached coral shoals, in some pa dry, with veins of deep water between them, leaving a clear space about half a mile breadth along the Western edge of the bank.

From the Southwestern extremity a spit of soundings runs out nearly a mile from t shoals, with depths from ten to six fathoms on sand and coral, which may serve a warning in the night.

Anchorage. Anchorage will be found in seven or eight fathoms, with the Northernmost of t above cays bearing between E. by N. and E. S. E., about a third of a mile within t edge of the bank.

Courtown Bank or E. S. E. Cays. COURTOWN BANK OR E. S. E. CAYS.—This coral bank is irregular in shape, so what resembling a foot and ankle, with the bend about the middle to the Southe ward, forming a deep bight on the Eastern side; it is seven and a half miles long fr N. N. W. to S. S. E., from one and a half to two miles broad, and its N. and S. ends ter nate in points. About a mile and a half from the N. point a barrier reef, convex the Northeastward, runs across the bank and along the E. side for about four miles the bottom of the bend, where it is very steep to; the edge of soundings being scarc a fourth of a mile off. From the N. side of the reef to the end of the spit of sounding the depths are regular from five to eighteen fathoms, on coral and sand. From t bend a broken reef continues all along about half a mile from the edge of the bank within a mile of the Southern extremity. On this spit the soundings are equally re lar, increasing from six fathoms close to the reef to thirteen fathoms over a similar b tom.

The centre and W. side of the bank are full of shallow rocky patches, with veins of d water between them.

Cays. CAYS.—At the S. end of the Courtown Bank there are three small cays compose sand and coral stones, lying nearly E. and W. from each other. The Easternmo about a mile from the edge of the bank, and two miles from the S. end; it is abo fourth of a mile long, a cable broad, four feet above the sea, and clothed with samp and dwarf bushes. The middle cay lies W. by S. ¼ S. about a mile and a half from above; it is six feet high, and besides bushes, has upon it a grove of cocoanut t This cay is in lat. 12° 24′ N., long. 81° 28′ 27″ W. and lies E. by S. ¼ S. sixteen m from the S. end of St. Andrew's. The Western islet lies W. by N., about four ca

h from Middle Cay, and about the same distance from the edge of soundings; it is small and low, and covered with dwarf bushes.

W. ½ W., a mile and a fourth from the Easternmost of the above cays, there is also all dry sand-bore.

ater may be procured by digging wells on the middle and E. cays; it is, however, er brackish, but made use of by the fishermen, whose temporary huts will be seen ll the cays during the turtling months, from March to August. *Water.*

nchorage may be taken up on the edge of the Courtown Bank, but extreme care is ired not to shoot in more than a cable's length.

T. ANDREW'S ISLAND lies E. N. E. eighty miles from Great Corn Island, and miles from the edge of the Mosquito bank; the Entrance Island at S. W. cove be- n lat. 12° 10′ N., and long. 81° 50′ 28″ W. *St. Andrew's Island.*

Andrew's Island is considered very healthy and extremely fertile; cattle, poultry, tables, and fruit, are in great abundance. It is remarkable that there are no run- streams, but excellent spring water is obtained by digging wells on any part of the d.

e island is nearly seven miles long from N. to S., and from three fourths to a mile a half in breadth. A ridge of hills commencing about half a mile from the N. runs through the island to within nearly a mile and a half of the S. point, which rather abruptly on the W. side. Upon it, three flat elevations rise somewhat above main ridge to the height of three hundred and forty feet above the level of the sea, h upon a N. and S. bearing appear as two hills.

e N. end of the island is very foul to the distance of a mile; but a spit of bank runs tside the foul ground to the distance of a mile, upon which the depths are from six enty fathoms on coral sand.

LOWING ROCKS.—N. by E. ½ E. about three fourths of a mile from Pull Point, . extreme of St. Andrew's Island, is a small cluster of low rocks, about a cable in t, called the Blowing Rocks, from the great height the waves break over them in herly winds. A shallow ledge runs off N. E. from them three cables, and extends the same distance. There are five fathoms water two cables to the Westward hem, and the edge of the bank is about four cables distant. Between the S. of the ledge and Pull Point there is a clear channel for coasters about three cables *Blowing Rocks.*

HNNY CAY.—S. E. by E. half a mile from the Blowing Rocks is a small low islet a cable's length in diameter, called Johnny Cay. It has upon it a remarkable e of cocoanut trees, the tops of which are about fifty feet above the sea. Between ay and the Blowing Rocks there is another good channel for coasters drawing less twelve feet. *Johnny Cay.*

AST REEF.—From Johnny Cay a dry reef sweeps round the Northeast extreme Andrew's Island, at a distance of about three fourths of a mile from Lawrence , and thence trends Southerly, skirting the shore a mile and a half off until Lever's bears W. ½ S. It is all along so steep that the edge of soundings is not a fourth of e distant. At the above point it becomes broken and the edge of the bank turns enly toward the shore, which it skirts all along to the S. point of the island at the nce of about half a mile. This part is also very foul to within three cables' length e beach; but from the S. point a narrow spit of bank runs off to the S. S. W. a mile, with depths from eight to twenty fathoms, which affords a slight ng. *East Reef.*

e Northern portion of the reef is so dry and solid that it forms a breakwater to ent anchorage between it and the island, for vessels of eighteen feet draught. On ner part of the reef, nearly a mile from the beach (which nearly bounds this side island) S. ½ E. from Lawrence Point, and E. ¾ S. from May's Hill, there is a small ushy islet called Haine Cay. Close to the Northward of this cay there is also w ridge of dry sand called Rose Cay. The channel into the harbor lies about fourths of a mile to the Southward of these cays; it is about three cables wide, eing obstructed by two shoals, is very intricate and dangerous to a stranger. the assistance of a pilot, however, a vessel will carry three and a half fathoms over r into secure anchorage in six fathoms. *Anchorage.*

approaching the harbor from the Southward, stand in with Lawrence Point just o the Eastward of Haine Cay N. ½ W., until a remarkable cliff at the N. end of gh lands comes a little open to the Eastward of a low mangrove point, upon which are a few cocoanut trees, bearing N. N. W. This course will then lead over the etween the edge of the Eastern reef and the detached shoals, which may be seen aloft; and when Haine Cay bears N. E. anchor in six fathoms, sandy bottom. In aching from the Eastward with the wind well to the Northward, run down with s house W. ¼ S., and striking the tail of the bank, in five fathoms, with Johnny st open to the Eastward of Lawrence Point N. by W. ¾ W. (very close marks), radually up until the leading mark given above comes on. *Directions.*

S. W. Cove. SOUTHWEST COVE.—The S. end of St. Andrew's is of moderate height woody. Thence the shore presents very little feature, being composed chiefly of ro ledges and cliffs forming several rounded headlands. The soundings do not re more than a fourth of a mile from the shore; it is all along clean and bold with to twelve fathoms, over dark coral bottom, to within about a cable and a half of shore.

The only indentation of any importance is about two and a half miles from the S. po Here, under Lever's Hill, the shore forms a small bight, in which there is good tem rary anchorage in seven fathoms on clear sandy bottom; the Western extreme of land bearing N. by W. ¾ W., and the entrance of a cove from N. E. by E. to E. about one and a half or two cables' length from the shore.

The entrance of the little cove above mentioned is only one hundred and twenty wide, but it opens into a basin nearly two cables in length, where a vessel may lie al side the Northern shore and careen in safety. It will of course be necessary to war and it will be better to do so by the stern; dropping an anchor just within the entra and mooring with hawsers to the shore on either side. In this way two or three sm vessels may lie here in safety, lashed alongside each other.

Supplies. There is a well of good water about two hundred yards from the landing-plac Southwest Cove, where water may be procured in any quantity; it is, however, atten with considerable labor, for the casks have to be rolled nearly a fourth of a mile al the road. Very good firewood may be cut close to the beach. Stock and vegeta are in great abundance.

Tides and Current. We have no account of the tides at this island. Off the N. end the current gener sets strong to the Westward except, during and subsequently to northers, when it r to the Southward. Occasionally it turns to the Northeastward, but we are still muc the dark as to the cause which produces this unusual change.

Old Providence and Sta. Catalina Islands. OLD PROVIDENCE AND STA. CATALINA ISLANDS.—Old Providence, the neighboring island of St. Andrew's was an early possession of the Buccaniers; a most remarkable black rock, forty feet high, off the W. side of Sta. Catalina, re bling a colossal human face, bears the name of Morgan, one of their most sangui chiefs.

The island, including Sta. Catalina, which is only separated from its N. end by a row wadable channel, is of an oval form, four and a half miles long from N. to S. two and one fourth miles broad about the middle. Its centre is mountainous, and w a short compass rises into three peaks nearly of the same altitude, the highest i nearly twelve hundred feet above the sea, and visible in clear weather at forty m From these heights large rugged irregular spurs branch off to almost all parts of island, terminating at the shore in peaked hills from three to seven hundred feet h Toward the N., one of these ridges descends somewhat more gradually on almost a str line to that extremity of the island. Nearly a mile from Jones Point a peak rises this ridge to the height of five hundred and fifty feet above the sea, called Split Hill its having been rent asunder by some violent action of nature; and which when from the N. W. or S. E. shows a rocky chasm sixty feet wide and eighty feet deep, w is a most remarkable and useful object. The only indentation of any importance the N. W. end of the island. Here, between Morgan Head and the N. W. point of Providence, a bay is formed, three fourths of a mile wide and the same deep, which protected by shallow ledges to the Westward as to make a secure harbor for a few sels of fifteen feet draught.

The chief settlement on the island is scattered along the shore of this bay, wher side the civil magistrate and officer of customs with two assistants. The largest h in the village of Isabel is situated in lat. 13° 22′ 54″ N., long. 81° 22′ W. Then rough bridle road runs round the island.

Wood. The mountains and hills being of rocky formation are but scantily clothed, and co quently afford no wood of sufficient size or quality for spars or ship building; but is no difficulty in obtaining firewood, which may be conveniently cut and embarked Sta. Catalina by permission of the owner of that island.

Water. A spring, taking its rise in the upper peaks, descends to the shores in four str two emptying themselves on the E. side of the island, and two on the W. In the season, however, they have not sufficient strength to clear a passage to the sea, a this period their mouths are generally closed up. The best watering place for ves at the Southernmost stream, near the middle of the W. side of the island, half a m the Southward of some remarkable white cliffs; but to obtain good clear water dry season, it will probably be necessary to cut a small pathway in order to roll the up about a cable's length.

Bank. BANK AND REEF.—Old Providence lies thirty-eight miles from the Mosquito upon a distinct bank of its own, eighteen miles in length from N. N. E. to S. S. W about six miles in breadth, of the most dangerous character. The S. end of the about two and a half miles from the S. end of the island, and the edge runs to the

at the distance of from one and a half to two miles from the E. and W. sides. At *Reef.*
a mile and a fourth S. of the S. hill a solid barrier reef commences, which, skirt-
he E. side of the island at the distance of about a mile, runs Northerly from abreast
Catalina about three and a half miles to a patch of dry rocks. Here it curves to
astward for nearly a mile, forming a bend, at the bottom of which there is a small
ate opening, which might save a vessel in a case of accident. Thence it again takes
therly direction for three and a half miles to the angle of an elbow nearly eight
half miles from Sta. Catalina, the High Peak of Old Providence bearing S. by W.
e it turns sharply to the Westward, and at the distance of two and one fourth miles
nates at a little cay composed of coral and sand, two feet out of the water, from
the High Peak bears S.

W. side of the reef, from abreast Low Cay, trends S. by W. ½ W. for about seven
in a waving line. Here, with Crab Cay, which is seventy-five feet high, in line
Basalt Cay, S. E. by E., the latter distant about two and a half miles, it forms a
which brings the edge to within about a mile of Sta. Catalina Island. Thence it
s off to the S. W. to abreast Catalina Bay, when it again runs Southerly at the dis-
of a mile and a half from the land, and terminates at a rounded point S. W. three
from the S. hill. The whole of this side is very foul, with the exception of the
rage under Low Cay, and a space about a mile and a half in extent to the West-
of the harbor.

the Northern part thickly-clustered shoals come, in some places, to within
mile of the edge of soundings; and abreast the islands to within even two
length, which, of course, renders the approach to the island in the night ex-
y perilous. In the daytime the water is so clear that the eye will greatly assist
otage.

bank extends out about a mile and a half from the S. end of the reef, with depths
ix to sixteen fathoms on dark coral bottom. Abreast the middle of the island the
about a mile off. Thence the distance gradually increases until off the elbow,
it extends three miles to Eastward, with depths from six to sixteen fathoms over
bottom; and two and three fourths miles N. E. by it, with depths of fourteen to
en fathoms on coarse coral sand. Thence the edge curves to the Westward
he reef, and comes within less than half a mile with Low Cay. On this latter
lso, the soundings only vary from ten to fourteen fathoms at a fourth of a mile
he breakers to sixteen and nineteen fathoms close upon the edge, over the same

m Low Cay a coral ledge, dry in places, runs off S. S. W. six cables' length,
has seven fathoms close to. For the space of about a mile to the Southward of
bank is quite clean, with a clear sandy bottom, which affords good anchorage in
ix to ten fathoms. Care, however, must be taken to keep the cay to the East-
of N., to avoid getting entangled among the detached shoals to the Westward of
f.

KHAM'S CUT.—Between the barrier and the island there is a vein of deep water, *Tinkham's*
e to four cables in breadth, carrying from three and a fourth to six fathoms water, *Cut.*
although obstructed by shoals here and there, is easily navigated by an experi-
ye, and affords good sheltered anchorage for coasters. Indeed, a vessel of eighteen
ught can lie up under the Brothers, and refit with great convenience and security.
he S. W. extreme of the island bearing N. W. by W. ½ W., and the E. extreme N.
E., there is a narrow, intricate cut through the reef, carrying eighteen feet water,
might be made use of in case of necessity.

e visit is to be short, vessels of heavy draught will find a smooth, convenient an- *Anchorage.*
e for communicating with the village, on the edge of the bank, in five fathoms;
Head, S. E. ¾ S., a mile distant; and Basalt and Palm cays in line, bearing E.
cays are very small; the former forty-five feet, the latter thirty-five feet high, with
ocoanut trees upon it; and they lie close together at the distance of about a third
le to the Northward of the N. E. point of Sta. Catalina.

anchorage must be approached under easy sail, as there is little room to shoot.
ending to water, the anchorage about a mile and a half to the Southwestward of
ve will be found more convenient. In this case it will be best to approach the
om the Northward, taking care to keep Alligator Point, the W. extreme of Prov-
to the Eastward of S. by E., to avoid the shoals off the W. side of the island. A
erth will be found in six or seven fathoms, with Basalt Cay N. E. by E., and
or Point S. by E. ½ E. to S. S. E. ½ E. Should it be necessary to make a board
Southward, on the bank, Basalt Cay must not be brought to the Northward of

pproaching the islands from the Northward, having made the end of the reef— *Directions.*
breaking heavily, may be seen at a considerable distance—should daylight fail,
e better to anchor under Low Cay for the night.

gers intending to enter the harbor should take a pilot, and great care must be

taken in running along the Western edge of the bank for this purpose. To enter harbor in a vessel drawing fifteen feet, the wind should not be the Eastward of E. N Standing in on the port tack, the edge of soundings must be struck with Morgan H in line with Fairway Hill, S. E. This mark will lead in between the outer shoals from seventeen to twenty-three feet water, and must be steered on until Palm Cay co just open to the Southward of Basalt Cay, N. E. The course must then be quickly tered to S. by E., to avoid the Cat Rock, which lies one cable and a half off shore (p ing it, however, close aboard by the eye), until Split Hill comes just open of Fort A S. E. by E. Now luff up to S. E. ½ S., running parallel with the shore; and when large house at Isabel comes in line with Fort Aury, anchor in three or three and a fathoms, on sand and grassy bottom, about a cable and a half from the shore.

It is to be observed that, under Sta. Catalina, which is four hundred and fifty high, the wind baffles about in all directions; and if thrown at all to leeward, the chor should be dropped immediately, and the vessel warped in. The Cat Rock only nine feet on it, and the channel abreast it is only a cable wide, and the poin Lawrence Reef is extremely dangerous. As already stated, the shoals are easily in clear weather, and the eye will therefore greatly assist the pilotage. With the w well to the Southward, the sea will be so smooth that a vessel may warp in the wh way.

Vessels drawing not over twelve feet may run out of the harbor with the largest h in Isabel in line with Hill house until Black Point bears E., when a W. ½ N. course lead out between the shoals to sea. In approaching Old Providence from the So ward in the night, it should be kept at a wide offing. In the daytime it may be nea so far as to gain soundings on the S. W. end of the bank, with the Spanish Saddle in line with South Hill N. N. E. ½ E., in eleven or twelve fathoms; but after it is cro to the N. W., the Western edge must be very carefully skirted.

Tides and Current. The tides are irregular, but there is generally a rise of six or eight inches, and northers it is said to amount to two feet. There is no perceptible tidal stream. current in the neighborhood usually runs to the N. W., but it is greatly influenced by prevailing winds.

Quita Sueño Bank. QUITA SUENO (shake off sleep) BANK well deserves the name from its extr danger. It lies N. twenty-nine miles from Low Cay, at the N. end of Old Provid Reef, twenty-six miles from the nearest part of the Mosquito Bank, and forty-one m from the S. W. Cay of the Serranas.

It is of oblong form, thirty-four miles long N. and S., about eight miles broad near N. end, and thirteen near the S. end, and is so steep that the first casts of the lead be from fourteen to nineteen fathoms. About a mile within the Eastern edge a c reef, dry in many places, runs along the face of that side, curving out a little near middle, for a distance of twenty-three miles, leaving a portion of the bank at both e about five miles in extent, with depths from ten to seventeen fathoms, on coral s The only break in the reef lies near the middle, where, by chance, a boat might through in safety.

Several large trunks of trees have been drifted on it in several parts, and a spit a N. W. end, lying somewhat sheltered by the reef, seems to be accumulating diffe substances, so as to render it probable that a cay will be formed there at no very re period. This spot lies in lat. 14° 29′ N., long. 81° 8′ W.

The space to the Westward of the reef, for a distance of two and a half miles, is of dangerous rocky patches, and abreast the middle part a spit of shallow rocky gr extends off nearly six miles, to within three miles of the Western edge of sound Within this part it is not safe even for a boat, for the heavy surf so disturbs the sa the bottom that the shoals are not easily seen.

The bank to the Westward of the shoals is quite clean, with depths from ten to s teen fathoms, over clear coral sand, which affords good anchorage, the sea being br by the reef.

Current. In the month of April the current was observed to run to the N. W. at the r three fourths of a mile an hour, but the fishermen remarked that it was unusually s for that period.

Serrana Bank. SERRANA BANK.—The outline of this most dangerous bank is very irregular general direction, however, is N. E. and S. W., upon which line it extends about teen miles. Near the centre it is about eight miles broad, and its S. W. end term at almost a point.

Its extreme E. end presents a solid half-moon reef, convex to that quarter, a miles in diameter, upon which the sea breaks with such terrific violence that, fro Eastward it is sighted before the cays, and may be seen three or four miles off. steep that, at the distance of a fourth of a mile, no bottom is found at one hundr twenty fathoms. On the W. side of both horns there are intricate channels, which be the means of saving a vessel in a case of extreme danger.

The N. channel is S. W. by S., one mile and a fourth from the N. point of th

is only half a cable wide, but it carries a depth of seven fathoms, and has the advan-
e of being quite straight.
The space within is crowded with detached shoals, steep to, having from five to ten
homs almost alongside them. They are, however, easily seen and avoided.
From the W. side of the channel, the reefs runs on unbroken, in a Westerly direction,
r and a half miles, when it curves outward again to the N. E., in a semicircular form,
about five miles, forming to the Southward a dangerous bight.

NORTH CAY.—At the N. W. end of this reef, W. by N. about eight miles from the *North Cay.*
horn of the E. reef, is a cay one cable and a half long and three fourths of a cable
oad. It is formed by the broken coral, sand, shells, and driftwood heaped up on the
f by the violent action of the waves and current to the height of three or four feet,
n which the ordure of sea-birds affords sufficient nourishment for stunted bushes
ut five feet high. At the N. end there is generally a hut; on the W. side there is a
ding-place.
There are twelve fathoms about two cables' length from the W. side, but there is no
e anchorage, on account of the heavy swell that rolls round the cay.
From the cay the reef trends S. W. by S. three miles, close upon the edge of sound-
s. This port is broken, but offers no safe channels, and it only shows itself in North-
y winds or heavy trade-breezes.

NORTHWEST ROCKS.—Abreast the end of the reef the edge of the bank is nearly *N. W. Rocks.*
f a mile off; and thence it trends S. S. W. ½ W. about twelve miles to the South-
tern extremity. S. W. by S., three and a fourth miles from the above reef, is the
rest of two small patches of rock and sand, three fourths of a mile apart, and about
feet dry, over which the sea breaks in stormy weather. The edge of the bank
ves outward a little here, and there are fourteen fathoms three fourths of a mile out-
e the rocks.
To the Southwestward of the rocks the bank is also quite clear inward for about three
es, up to the back of the Southern reefs, and carries the same depths.
Between the rocks and the end of the reef the opening is quite clear, and leads into *Anchorage.*
ellent anchorage on the bank; the bottom at the entrance is dark coral, and looks
picious, but there are not less than seven fathoms water. A berth may be taken
where, and as far up under shelter of the Eastern reef as to bring North Cay to bear
by W., distant about three miles, in from five to seven fathoms, on clear sand. Some
al patches will be met with in beating up, but they are so discolored as to be easily
n and avoided.

SOUTHWEST CAY lies close to the Southwestern point of the bank, S. ½ W. seven *S. W. Cay.*
es from the nearest of the N. W. Rocks, and S. W. by W. ½ W. sixteen miles from
outer extremity of the E. reef. It is the largest on the bank, being four cables long
and W., one cable and a half broad, and thirty-two feet high. It is composed en-
ly of sand, clothed with grass and stunted brushwood, and has upon its summit a
gle cocoanut tree, which may be seen some time before the island. At the S. W. end
ge masses of broken coral have been thrown upon the beach to the height of three or
r feet. The cay is entirely surrounded by broken water, and in rough weather the
y landing is on the N. side, through intricate channels, near the E. end. To the
thwestward of this cay, to the distance of one mile and a fourth, there are seven
homs water, when the depth suddenly and rapidly increases to the tail of the bank,
ich has not yet been accurately determined; there are forty-five fathoms at the dis-
ce of about two and a fourth miles.
Not far from the E. end of the cay, in a dry part of the reef, there is a curious blue
e, or well, similar to those seen at the Bahamas; it is twenty feet in diameter, with
pendicular sides, and thirty-six feet deep.
The coral ledge extends to only a very short distance from the W. end of the cay;
from the E. end a barrier-reef, dry in places, trends about N. E. by E., with a slight
ard curve, nine miles. It is exceedingly steep to, and being some what protected by
windward reefs, it does not show itself at all parts.
Water may be obtained by digging wells at a short distance from the shore, and an-
rage may be taken up about a mile to the Northward of the S. W. islet, in seven or
t fathoms, but a clear sandy spot must be looked for.

SOUTH CAYS AND CHANNEL.—At the E. end of the above reef, with North Cay *South Cays*
by W. ¾ W., distant seven and a half miles, there is an opening three cables wide, *and Channel.*
inctly pointed out by three small cays, one lying on each side of it, about half a
e apart on an E. and W. line, the other facing the opening about three fourths of a
e to the Northward. The Westernmost is a narrow strip of broken pieces of coral,
t two cables long E. and W.; the others are about the same length, and formed of
clothed with grass, neither of them being more than three feet above the sea.
Northernmost, called Little Cay, is in lat. 14° 21½′ N., long. 80° 15½′ W.
n the edge of the reef, W. S. W. about a mile from the West Cay, is a dry sand-
e; and about two and a half miles from the cay, in the same direction, a ledge of
s four cables long, and two feet dry.

In the channel between the cays the depths are from five to seven fathoms close to the West Cay, and to within one cable and a half of the South Cay; and from five to seven fathoms may be carried to the Eastward inside the reef, avoiding the dark coral patches.

Anchorage. In the channel to the N. W. between Little and West cays, the depths are only five and a half and three fathoms.

Should a vessel be forced into the above channel, the best anchorage will be in about four and a half fathoms, with Little Cay W. by N., and South Cay S. S. W., the latter about three fourths of a mile distant. In a case of necessity, however, she may be up just within the entrance in seven fathoms, about midway between the cays.

East Cay and Channel. EAST CAY AND CHANNEL.—From the South Cay, a solid reef again runs about E. by N. for three miles along the edge of soundings, when it is again broken by opening round the S. W. horn of the East Reef. Near the extremity is a small cay of coral blocks and sand about three feet above the surface of the sea, that marks the W. side of the channel, and is steep to. N. N. E. about half a mile from it is a small cluster of dry rocks, and three fourths of a mile to the Northward of them a dry sand bore.

The opening at the entrance is about half a mile wide, and carries from seven to [illegible] fathoms, avoiding the coral heads, which are steep to alongside.

On the Eastern part of the bank fish are most abundant, and seals visit the cays, but not in great numbers. In the turtle season, the bank is visited by small fishing vessels from Jamaica and the neighboring islands; and at this period their masts and temporary huts on the cays may be seen before the reefs.

Anchorage. Should a vessel be forced to run in through this opening for safety, she may be up just within the hook, in eight or nine fathoms with the Eastern Cay bearing about S. W. three fourths of a mile off, taking care to leave room between the shoals in weighing.

It is high water, full and change, at 2 P. M., and the rise about two feet. On the Western part of the bank there is no perceptible stream, but through the channels in the reefs, it runs in and out at the rate of one knot and a half to two knots.

Doubtful Bank. DOUBTFUL BANK.—A bank of danger still holds a place on the charts in lat. 14° 53′ N., long. 30° 21′ W., N. by W. ½ W. twenty-five miles from the North Cay of the Serrana bank; but nothing was found of it by the British surveying vessels, which crossed the spot with that view. Nor has anything been seen by the fishing vessels which continually traverse this part.

Serranilla Bank. SERRANILLA BANK.—The S. extreme of this bank lies N. ¾ E. seventy-six miles from the North Cay, on the Serrana; its W. side is fifty-two miles from the East extreme of Mosquito Bank; and its E. side is S. W. by S. seventy-five miles from the S. W. end of the Pedro Bank. With the exception of a small bend at its S. W. end, it is somewhat circular in shape, being twenty-four miles long, E. and W., and about twenty miles broad in the widest part N. and S.

The W. side of the bank, from the S. W. extreme runs about N. N. W. nine miles, then N. by E. seven miles. It is everywhere clean, with regular depths from fifteen to nine fathoms, at a distance of two miles to the Eastward at the S. edge, to about [illegible] miles at the N. edge of the bank. At the bend the edge is composed of fine white [illegible] and shells; elsewhere the bottom is coral sand.

The N. side sweeps from the N. W. extreme in an Easterly direction, curving outward very slightly, and gradually to the Southward, to the Northeast Breakers, which lie [illegible] by S. twenty-one and a half miles from the N. W. point of the bank. For about [illegible] miles from the W. end this part is quite safe, but to the Eastward of this line at [illegible] about one mile and a half from the Northern edge, is a broad coral ledge extending to the Southeastward to the reefs, with very irregular depths from nine to five fathoms and it would be better not to come within it.

The edge of the bank is everywhere wall-sided, the depths increasing very abruptly from twenty fathoms to upward of one hundred fathoms; and at many parts of it the first soundings will probably be no more than twelve or thirteen fathoms. In depths more than one hundred fathoms the bottom is very white sand, quite free from all coralline particles, with sometimes a few small broken half-bivalve shells, while on the [illegible] the sand is coarse and coralline.

It has upon it three small cays, of the usual character of all those described on adjacent banks, and they are similarly situated to those on the Pedro Bank, being confined to the S. E. side.

Northeast Breaker. NORTHEAST BREAKER.—At the Eastern extremity of this bank, about half a [illegible] from the edge of soundings, is a dangerous detached coral ledge, one cable and a [illegible] in extent, with a rock awash at its S. end, which breaks heavily. Around it are [illegible] and ten fathoms water; seventeen at three cables' length to the Eastward of it; [illegible] at a mile to the Southeastward; and sixteen at the same distance to the North[illegible] over dark bottom.

East Cay an Reef.

AST CAY AND REEF.—W. by S. ½ S. nearly one mile and a fourth from the ve rock awash, commences a chain of narrow reefs and shallow ledges, which trend he Southwestward ten miles. For a space of from one mile and a half to two miles ide them, to the edge of soundings, the bank is quite clean, with depths from teen to ten fathoms, to within about half a mile of them. From the N. E. extreme, olid reef runs about S. S. W., with a slight outward sweep, two and half miles, n it terminates at the Easternmost cay. About halfway on the reef is a small dry d-bore.

ast Cay is three cables long N. E. and S. W., and about half a cable broad; and the rf bushes upon it grow to the height of about seven feet above the sea. At about cables from it there are seven fathoms water, and to the Westward of it there is an cate cut three and a half cables wide leading on to the bank.

Middle Cay and Reef.

IDDLE CAY AND REEF.—At the W. side of the above opening there is another l dry sand-bore, whence the Middle Reef trends about W. S. W. one and a half s to Middle Cay.

his islet is nearly of the figure of a half moon, convex to the E.; it is about two a half cables in diameter, and some bushes upon it reach a height of about seven above the sea. A dry ridge of rocks runs off from it to the Westward about three es; whence a shallow ledge of coral and sand-bores trends to the S. W. about a which has six fathoms about three cables S. of it.

the Westward of it is another intricate opening one mile and a fourth wide, which unded to the leeward by the Western reef.

Beacon Cay and Reef.

EACON CAY AND REEF.—The N. end of the Western Reef lies W. ½ S. two half miles from Middle Cay, whence it takes nearly a S. by W. ½ W. direction miles to Beacon Cay, at its Southern extremity. The reef, however, is broken into parts by shallow cuts about two cables wide.

acon Cay is the largest of the three; its shape is that of a quarter-moon, convex e S., and from point to point it is about half a mile in length. The sand and coral hich it is composed, is merely clothed with samphire grass, and stands eight feet e the sea; but in 1835 a rough beacon of coral stones, twenty-five feet high, was ed on its W. end, in lat. 15° 47′ 45″ N., long. 79° 51′ 12″ W. The bank from abreast on Cay runs out in a spit which terminates at a point, with the beacon bearing ¾ N. distant eight miles. It is quite free of danger, with regular depths from the thom line outward, to seventeen fathoms on the very end of the tongue.

s spit forms the E. side of the bend before mentioned. The edge of the bank s from the point about N. four and a half miles, then curves to the Westward bout six miles, to the S. W. extreme of the bank, W. ¾ S. twelve miles from the n.

e fishermen say, that indifferent brackish water, strongly impregnated with lime, e obtained on Beacon Cay, by digging wells.

Anchorage.

e ten-fathom line of depth comes to within about three cables of the S. E. side of n Cay and its reef; at the same distance to the S. and W. there are eight to six ns, and in the former direction the edge of soundings lies two miles off the bank, Westward of the islet is quite clean for a space of about two miles, with regular s of six and seven fathoms on a clear sandy bottom.

d anchorage will be found here with the usual trade-breezes, in six fathoms with y bearing about S. E. three fourths of a mile distant.

West Breaker.

ST BREAKER.—Nearly at the bottom of the bend, and less than half a mile he edge, is a dangerous ledge of rocks about a fourth of a mile in extent, showing bove water, with the sea breaking over it; from which the beacon bears E. ½ N. eight miles, and the end of the spit S. S. E. ¾ E. six miles. Around it on all except to the Southward, there are six fathoms half a mile off, and the depths ally increase to ten fathoms at the distance of about two miles to the Westward orthward of it. To the Eastward, between it and the Beacon Shoals, the ground r of danger, but the soundings vary from four and a half over dark coral patches uch as nine fathoms on clear sand.

Northern Shoals.

RTHERN SHOALS.—Off the N. side of the chain of reefs, from a point lying N. one mile and a fourth from the N. E. breaker, to the distance of two and a iles all along them, are numerous coral patches, with one fathom and a half to athoms over them, and five or six fathoms between on clear sand. The Northern- es with Middle Cay bearing S. S. E. ¼ E., and East Cay S. E. by E. ½ E.; the nmost with the Beacon Cay S. E. distant four miles.

Tides.

time of high water at the Serranilla Bank is irregular, being influenced by the h and direction of the prevailing winds. At the springs it rises about two feet. s no perceptible tidal stream, but in general a current setting to the W. N. W. fourth to a mile an hour.

Rosalind Bank.

ALIND BANK, called also Arrowsmith Bank, the name of the discoverer, lies rteen miles to the Westward of the Serranilla, thirty miles from the N. E. part

of the Mosquito Bank, twenty-two miles from the Thunder Knoll, and W. by S. a miles from the S. W. end of the Pedro Bank. It is somewhat oval or pear-shaped ing sixty miles long from S. S. E. to N. N. W., fifteen miles broad near its S. end, thirty-five at its N. end. The N. W. extreme lies in lat. 16° 54′ N., long. 80° 52 and is consequently about five miles to the Northward of the N. extreme of the quito Bank. The only shallow ground of any consequence lies at the S. E. end. about a mile from the edge, a coral ledge nearly three miles broad trends from the point N. by E. ½ E. four miles; upon which the general depths are from ten to six oms, but toward the N. part of it there are a few small patches with four fathoms

N. N. W. about thirteen miles from this ledge there is another of similar char close to the edge of soundings, which is eight miles long in the above direction four broad, but it has not less than eight fathoms.

Elsewhere the depths are from ten to twenty fathoms, with but little irregul over a bottom of coarse coral, sand, and shell, which swarms with fish.

Current. The current generally sets strong over this bank to the Northwestward, sometim the rate of one knot and a half, and on striking the S. E. end causes so violent a over the ledge as to give the appearance of breakers.

Swan Islands. SWAN ISLANDS.—These two islands are situated N. N. W. ¾ W. sixty-eight from the nearest part of the Mosquito Bank, and N. ½ E. ninety-seven miles from took Point, the nearest part of the coast, and lie upon a narrow bank about ten in extent E. and W.

The Eastern island is one mile and a half long, and bounded by a bold, rocky very difficult of access. The Western island is separated from the above by a sha coral bar, about two cables in extent. This islet is two miles long; on its N. an sides are several sandy bays; close off its S. W. point there is a small rocky cay; on the N. side of the island are several conspicuous cocoanut trees visible at twel fifteen miles. The N. W. point of this island lies at lat. 17° 24′ 30″ N., long. 83 30″ W. Both are about half a mile broad, very flat, thickly wooded, and of a uni height of about fifty-five feet.

The bank extends out from the Easternmost in that direction about two miles, depths from six to thirteen fathoms, but its limits have not been exactly determ From the N. and S. sides of the islands it runs off about a mile; from the W. the Westernmost it extends in a Westerly direction four miles, and here the sound increase from seven to forty fathoms at the extremity.

Water was not found during the survey, but as the islands are visited by the tur during the fishing season, it may probably be obtained by digging wells on the be above high-water mark.

Anchorage. Off the sandy bay which forms the W. end of the Western Island, at about h mile from the shore, there is anchorage in about seven fathoms. It will be necess however, to pick up a clear spot, which is readily done by the eye, and care mu taken not to bring the N. W. end of the island to the Eastward of N. E. ½ E. to a foul ground on the Northern edge of the bank, upon which there are four and a fathoms.

Misteriosa Bank. MISTERIOSA BANK.—The exact position of this bank, so long doubted, and after all correctly placed by so early a navigator as Don Tomas de Villa, in 17 now found to be about eighty-five miles to the Northward of the Swan Island; its point lying in lat. 18° 56′ N., long. 83° 41′ W. W. by S. ½ S. one hundred and th three miles from Fort George at the Grand Cayman.

It is somewhat oval shaped, twenty-four miles long in a S. W. by W. direction the above point, and seven broad at the middle. It tapers off to a narrow spit at end, which for more than five miles from the S. W. extreme is not quite one mile half in breadth. The general depths are from ten to twelve fathoms over reddish but on the S. W. spit there are from fifteen to twenty fathoms, and on the middle Southern edge there is a small ledge of nine fathoms.

COAST OF HONDURAS—PATOOK RIVER TO CAPE CATOCHE, WITH OUTLYING ISLANDS.

It is difficult to define the exact limit of the Mosquito Territory. It is, howev marked that the Mosquito men are not met with to the Westward of Cape Camaro seldom beyond the Patook, although they claim a boundary so far W. as the La River. We shall therefore include in this division a description of the coast wi outlying banks and islands, from Patook Point to Cape Catoche.

Coast. The coast from Patook Point trends W. ½ N. forty-five miles to Cape Camaro is all along very low, thickly wooded, and bounded by a sandy beach. It curves ly inward, and at the bottom of the bend W. twenty miles from Patook Point is trance to Brewer's Lagoon.

EWER'S OR BRUS LAGOON.—The opening to this lagoon is at the W. end and e W. side there is a clump of trees much higher than any other on this part of the . It is also pointed out by a remarkable piece of elevated land, two hundred and feet high, which resembles a gunner's quoin, and bears from it S. by W. eight and f miles. About seven miles to the Eastward there is also a small village of huts. e bar which runs across there are six feet water, but in the rainy season the depth d to increase to ten feet. *Brewer's or Brus Lagoon.*

om the entrance the lagoon stretches to the Eastward about twelve miles, at a very distance from the sea, and is about four miles broad, except at about four miles the W. end, where a tongue of land stretches out to within about two miles of the ore. S. ½ W. two and a half miles from the entrance are two small islets, which, seen from the offing, appear as two hills; the Southernmost, which is the largest, nposed of white stone like marble clothed with wood, and is one hundred and sev- feet high.

e depths are from four to eight feet, but there are many shallow oyster banks, and it nds in fish.

ar the S. W. end two small rivers enter the lagoon, the Sinkra on the E. side of the e of land, the Towas on the W. side.

RAPA LAGOON.—At the S. E. corner of Brewer's Lagoon a small opening leads nother sheet of water, about three and a half miles in extent, called Oorapa Lagoon. uch of the Patook River enters its E. end, which is navigable for canoes, but is said dangerously rapid in the rainy season. *Oorapa Lagoon.*

of the entrance of Brewer's Lagoon the edge of the bank is about sixteen miles dis- whence the depths gradually decrease from thirty to ten fathoms at about two and f miles from the beach.

UNTAINS OF LA CRUZ.—After passing Patook Point there comes in sight a rregular chain of mountains, which skirts the shore as far as the bottom of the f Honduras. At some parts it forms the boundary of the coast, at others it recedes to the distance of twenty miles. Many of the peaks are remarkable and useful ob- in the navigation of the coast, and vary from two thousand to upward of eight thou- feet in height. *Mountains.*

W. by W. seventeen miles from the entrance of Brewer's Lagoon, on the meridian 56 W., the E. end of the range rises almost abruptly from the low land to the Peak three thousand seven hundred feet above the sea, which is most frequently clouds. Below it, on the N. side, however, is the Sugarloaf, upward of two thou- feet high, which, being generally visible, is a more useful guide.

ANTAIN RIVER disembogues over a very dangerous bar, about four miles to estward of the entrance of Brewer's Lagoon. It is said to be navigable for canoes source, which is reached in about five days. There is a small village on the left *Plantain River.*

ACK or TINTO RIVER enters the sea about fourteen miles farther on, and eight to the Eastward of Cape Camaron. It is reported to flow one hundred and twenty and a short distance from the sea takes the name of Poyer, Poyas, or Polyer. e bar, in the dry season, there are six feet water, but the rains scour it out to the of nine feet. It is, however, so exposed, that, except in native canoes, well han- it is only passable in ordinary boats in moderate weather, during the land wind, or lull between the breezes. The opening is readily found by bringing the Sugarloaf tain to bear S. by W. *Black or Tinto River.*

river is navigable by canoes for about sixty miles, or four days' journey, by of which considerable traffic existed some time back with the Spanish settle- and Poyas Indians in the interior. In 1765, English woodcutters from Belize ished themselves along its banks, which are extremely fertile, and left it generally 6, on their return thither, but the remains of their buildings and forts may still be

present the principal settlement is situated on the S. side of the lagoon, which com- ates with the river from the left bank, not far from the entrance. The straggling occupy a line of street about a mile long, protected at the E. end by a battery of guns, mounted en barbette.

re is also a large lagoon, with a deep channel leading into it from the right bank river, navigable for large canoes. In it are several small islands, which, at the of the English settlers, in 1802, were well cultivated.

d water may be obtained a short distance up the river, and firewood in abundance, ne and risk will be saved by employing canoes for the purpose. *Water.*

edge of soundings lies about eleven miles to the Northward of the entrance of ack River, whence the trees on the shore are just in sight. The depths gradually e to the coast, which is everywhere clean, and with the Sugarloaf S. ½ W. and Camaron W., anchorage may be taken up in twelve fathoms, on dark mud, about and a half from the bar. *Anchorage.*

Caution.

The roadstead is completely exposed to the sea breeze, but the holding is good, with proper ground tackling a vessel will ride safely. In the season of northers, however, it is by no means secure, and the moment the usual warnings appear a ve should move off to sea, before being obliged to slip, which frequently happens. fact the ground is strewn with anchors lost in this way, and are apt to be hooked w weighing.

These indications have been given in page 737, but we may as well repeat that a sh time previous to the change a heavy swell rolls in from the Northward—the wind f light, and veers to the S. and S. W.—dark masses of clouds rise rapidly in the West horizon—soon after the wind rushes down suddenly from that quarter, and grada veers to the Northward. So that if a vessel prudently quits in time, she will be to gain an offing to the Northeastward, ready to return when the wind lulls at the u quarter.

These winds occur between October and February, and during the period the ab remarks apply to all the anchorages off this coast.

Cape Camaron.

CAPE CAMARON is a low rounded woody point, the tops of the trees about eig feet above the sea, and the land is flat for some distance within it. At about th fourths of a mile to the Eastward of the cape is the entrance of a small stream, wi shallow dangerous bar, called Cape River. The coast from the cape curves to Southwestward for about fourteen miles to Little Rock Head. At about nine m from the former the Poyas River disembogues, which is of no importance.

The edge of the bank lies about six and a half miles to the Northward of the c and there are sixteen fathoms about a mile from it. The nature of the bottom in vicinity varies considerably, being composed of transparent gravel, dark sand, and ken shells.

Little Rock Head.

LITTLE ROCK HEAD is remarkable as forming a small rocky cliff, the shore e where being sandy; near it will be seen the scattered huts of the Carib Indians, an the E. side of the head a large village.

At the back of the Poyas, and thence to Great Rock Head, the lower ridge of mo tains nearly reaches the shore; and S. S. E. seven miles from Little Rock Head a markable conical peak rises to the height of upward of three thousand feet. Al five miles to the Southwestward of the peak is a saddle-shaped summit.

Great Rock Head.

GREAT ROCK HEAD.—From Little Rock Head the coast trends W. by S. two miles to Great Rock Head, which forms a still more remarkable bluff, rocky headl half a mile in extent, and about four hundred feet high. Between the heads the sh is still sandy and dotted with huts.

About a mile to the Eastward of Great Rock Head a shoal spit runs off abou cable and a half's length.

The edge of soundings lies about twelve miles N. of Great Rock Head when it swe outward, taking a N. W. direction for about eighteen miles to abreast the Romano Ri whence it is distant sixteen miles. Here it again runs Westerly and comes wi about seven miles of Cape Honduras.

The bank is quite clean, with depths decreasing from thirty-eight to twelve and fathoms over sand and mud, at about three miles from Romano River; to the W ward of this they are twenty to sixteen fathoms at that distance from the shore nearing Cape Honduras, when they become irregular; and at five or six miles to Northeastward of the cape there are ten fathoms coral and gravel.

Coast.

The coast to the Westward of Great Rock Head forms a bight, trending first to S. W. for about four miles, and then W. N. W. thirteen miles to the Eastern mout the Romano River. From Romano River its trend is about W. by N. ten miles, then W. nine miles to Cape Honduras; it is all along low, and bounded by a be with some small sand-hills here and there, from forty to sixty feet high, scat wooded.

The mountain chain from the head takes a Westerly direction about thirteen m where it appears to terminate rather abruptly, forming with the Truxillo range, a ley about twelve miles wide. Near the Western extremity of the first range, at a eight miles inland, S. by E. ½ E. from the Eastern entrance of the Romano River, remarkable saddle-shaped summit, about two thousand five hundred feet high; Eastern part of it has a rounded form, and is lower than the Western, which latter pears broken off, and forms a piece of table-land. To the Westward of it is a sm loaf peak of much less elevation, which leans to the Eastward.

Lammas or Limehouse River.

LAMMAS OR LIMEHOUSE RIVER.—Near the bottom of the bight, W.S about five miles from the head, the Lammas River enters the sea, the entrance of w is made known by a large Carib village on the E. side.

Romano or Aguan River.

ROMANO OR AGUAN RIVER enters the sea by two mouths about two a apart, and the branches unite at about two and a half miles up. Taking its rise in Sulaco Mountains, its length is said to be a hundred and twenty miles. Its largest utary is the River Mangualil, celebrated for its auriferous sands and extensive

hings. In its course it flows past the town of San Jorge Olamchito. The bar car- from five to seven feet water, and it is navigable for canoes eighty miles. The E. of the Eastern entrance forms a distinct sandy point; S. E. by E. about three miles m it, and near the beach, is a remarkable piece of land about eighty feet high, which, en seen from the Eastward or Westward, has the appearance of a round hill; but m the Northward the Western part shows a flattened summit, with a sugarloaf hill he E. end, and a chasm between.

RUXILLO BAY.—Cape Honduras, or Castillo Point, is the extremity of a narrow k of low land, about four miles in length, that bounds the N. side of Truxillo Bay. m the inner part the shore curves to the Southward and round to the Westward, ning, between the cape and Camaron Point, which is S. W. by S. ten miles from it, a ht eight miles deep. S. ½ W. about six miles from the cape and two miles from the re is a small, low islet, called St. Luke, which, lying under very high land, is not ly seen; it is, however, clean, and within it there is a channel carrying four to five oms. *Truxillo Bay.*

t the E. end of the bay a channel leads into a spacious lagoon, which forms a good t harbor; and at the N. E. corner of the bay a small bight affords shelter during hers for coasters.

o the Southward of the lagoon commences the town, which is scattered along the re to a considerable distance, and defended by a small fort at the E. end. Immedi- y behind it the great mountain chain rises to the peak of Guaimoreto, three thousand hundred feet high; and to the vigia, or lookout hill, two thousand five hundred feet ve the sea, at the N. E. end of the ridge. The former bears S. E. by S. from the cape, both are useful guides to the bay.

small stream, called the Cristales River, enters the bay near the town, which sup- good water. The casks may be rafted, and rolled over a narrow neck of land, or d in the boats by buckets. *Water.*

nchorage, with the usual breezes, may be conveniently taken up in about six fath- a mile from the shore, abreast the river, with the cape bearing N. N. W. ½ W.; but not safe in northers. *Anchorage.*

he bay is clean, and the cape may be passed within a cable's length; at the distance fourth of a mile there are thirty fathoms water. In the outer parts the depths are gular from twenty-five to ten fathoms, but within the last line they gradually de- se to the shore. In standing toward St. Luke Island a vessel should not come with- e depth of five fathoms. *Caution.*

EOPARD BANK.—In beating up from the Westward great care must be taken to d a sand-bank on which H. M. S. *Leopard* grounded in June, 1858. The bank lies Camaron Point, with that point bearing S. by W. ¼ W., and Cape Honduras N. E.; s these bearings were taken from a boat, the exact position of the bank is doubtful. *Leopard Bank.*

ONACCA OR GUANAJA ISLAND.—The nearest point of this island lies N. ½ wenty-three miles from Cape Honduras; at the S. W. extreme of an oval-shaped k of coral and sand, fourteen and a fourth miles long N. E. and S. W., and six miles eadth at the middle. The island itself is eight and a half miles long in the same ction; at the middle it is three miles broad, whence it gradually tapers to a bluff land at the S. W. end; but the shores of the Northern part are irregular and in- ed. It is composed of a mass of rugged, densely-wooded hills, which rise from hundred feet at the extremities to twelve hundred feet in the centre; the upper being clothed with pine and cohun ridges, through which peep out bare spots of granite. The woods are overrun with wild hogs. *Bonacca or Guanaja Island.*

1840, the only inhabitants were two Englishmen on Sheen Cays; but in the sum- months it is visited by the Carib fishermen for the purpose of taking the turtle h abound at that season, as well as fish.

e N. E. end of the island forms a bold peninsula about a mile broad, and one mile half long E. and W., which terminates at some remarkable cliffs, one hundred feet of a yellow-ochre color.

om it the bank stretches out to the Northeastward five miles, carrying depths from fathoms, at the distance of only half a mile from the shore, to fourteen fathoms on dge of soundings. The S. E. side of Bonacca is skirted with dangers; at some to within a very short distance of the edge of the bank, which is from two to two half miles distant. From the E. end of the peninsula a dry reef trends about S. three miles, with a slight curve; and upon the edge of it are ten small low clothed with palm and other trees to the height of from forty to seventy feet above a.

e S. W. end terminates at a bluff headland, one hundred feet high, composed of a r ochre-colored cliff to that at the opposite extreme of the island. Foul ground ds out from it a mile, with depths of only two and a half to four fathoms to within rth of a mile of the edge of soundings; it must, therefore, be approached with very

great care. The N. W. side of the island is also extremely dangerous, being fr with coral shoals to the distance of a mile in some parts, and close to the edge o bank.

Water. It is so well watered that, in the rains, little rivulets descend from the heights th most of the valleys on either side of the island. The most convenient watering p however, is abreast the anchorage at Sheen Cays.

Half-moon Cay. HALF-MOON CAY, the Southernmost and largest, is a fourth of a mile long cable's length broad, and lies three fourths of a mile from the shore. Comm from the Northward, the islets are numbered on the admiralty chart from I. to the last two, however, with several more similar ones, lie between Half-moon Ca the shore.

Inside the reef there is a clean lane of anchoring ground, half a mile in width depths from six to eleven fathoms, which may be entered by two channels, by those have some knowledge of the navigation.

The first opening lies between the first and second cays, and carries six to fo fathoms on a W. line. The channel lies close to the first cay, but it is only sixty wide, and the swell is so heavy as to render it extremely dangerous to a stranger.

The other cut lies between Half-moon Cay and Cay IX., which are about a c length apart, and steep to. The depths are here from nine to sixteen fathoms, en by N. ½ N. course, which will have to be gradually altered to N. N. E. into the an age abreast Cay V. Detached shoals lie in the way within both channels; but th lotage is easily conducted by the eye from aloft. They are, of course, too narr work out of, and a vessel will have to thread her way to the sea between the Sou ledges and Southwest Cay, or the Southward of Half-moon Cay.

Sheen Cay Anchorages. SHEEN CAY ANCHORAGES.—To the Westward of Half-moon Cay the sp nearly filled with cays and ledges steep to; and between them are two more cha equally deep, leading into snug anchorages, somewhat more easy of access.

The first passage is between Cay XII. and Pond Cay, and about two cables wide to the Westward of the former, and may be entered from the Eastward or South If entering from the Eastward, pass the S. W. end of Half-moon at the distance of one cable and a half, and thence steer W. ½ S. for Cay XII., keeping it about point on the starboard bow. After rounding this cay gradually at the distance of half a cable's length, with Tree Peak just open to the Westward of a dry sand close to the shore N. by W., anchor two cables to the Northward of it.

To enter from the Southward, steer in with Dunbar Rock, which lies a little Eastward of the dry sand-bore, just open to the Westward of Cay XII., N. ¾ W. round the latter as above directed. Observe, however, that the sand-bore is very cult to make out.

Pond Cay Channel, the other, is about a cable and a half wide, and is best e from the Eastward. In this case, leaving the S. W. end of Half-moon at the sam tance as before, steer down about W. by S., keeping Pond Cay about a point on the board bow. The borders of the dry reefs forming the channel will be easily seen passing midway between them, anchor as soon as shelter is obtained under that runs off from Pond Cay. Vessels must run out by threading their way betwe reefs and ledges to the Southward.

Water. The first of these anchorages is the most convenient spot for large vessels to at; for they can sail in and out with the usual breezes without much risk. The r will be found by bringing the S. W. end of Half-moon just open to the Southw Cay XI.

Swift Ridge. SWIFT RIDGE.—The only danger of importance in the approach to the above nel is a narrow ledge of coral, a little more than a mile in length N. E. and S. W middle of which is not half a mile from the edge of soundings. At about a length from the S. W. extreme are two patches nearly connected, occupying a sp about half a mile, with only nine feet water, which break in heavy weather, a easily seen from aloft when they do not. From this end of the ridge, Southwe bears S. W., distant three fourths of a mile; and the leading mark for the S. e passes about a cable to the Westward of it. From the E. end of the patches, the est peak bears N. W. by N. To the Eastward of this line the depths on it are th a half to four fathoms; and the N. E. end of the ridge terminates with the highe in line with the W. side of Cay XI., N. W. ¼ N., and the E. end of Half-moon Ca E., at about three fourths of a mile distant.

S. W. Cay. SOUTHWEST CAY lies only about two cables' length within the edge of the it is three cables long, but very narrow, and the trees upon it are about fifty fee the sea. A rocky bar runs out from it to the Eastward a mile, with depths fro to six fathoms; and to the Westward of the cay there are several shoal patche three to five fathoms, making the soundings extremely irregular and alarming, suddenly from the latter depths to twenty fathoms.

Anchorage. With northers, however, smooth anchorage will be found on this part of the

g the S. W. end of Bonacca to bear about W. ½ N. and Southwest Cay N. E.

HAEL ROCK CHANNEL, the only opening that might be used in a case of need N. W. side, lies nearly abreast the middle of the coast, with the highest peak S. E. ½ E.; it is about a cable and a half wide, and quite straight upon the above rrying irregular depths from six to thirty fathoms water. Within it, to the South- here is a little basin about three cables in extent; but there are several rocky n the way. *Michael Rock Channel.*

tides are much influenced by the winds; but in calm weather, it is high water, d change, at 9h., and the rise about a foot and a half. *Tides.*

TAN OR ROATAN.—This island is twenty-seven miles long from E. N. E. to W.; at about three miles from the Eastern extreme, however, there is a very nar- noe channel, not visible from the sea; and this small portion is therefore called Island, which is about a mile broad. To the Westward of this the breadth in- to two miles. Its general height is from three to five hundred feet; but at about miles from the E. end Barra Hill rises to the height of seven hundred and thirty- t, and guides to Port Royal; and at about the same distance from the W. end of nd another summit reaches an elevation of eight hundred feet, pointing out Cox- ad. *Rattan or Roatan.*

everywhere densely wooded and well watered. Until within a very recent peri- as inhabited by English settlers from Belize and the Grand Cayman, but it is now ession of the neighboring state of Honduras.

bout a fourth of a mile to the Eastward of Helena Island is a small cay about half in diameter, called Murat. A mile farther on is Borburata Island, which is very , but nearly three miles long E. and W., and at its Eastern end about five hun- et high. Its E. end lies W. ten miles from the S. W. end of Bonacca, and N. by W. twenty-five miles from Cape Honduras.

N. side of Rattan presents no indentation whatever; and the whole of it, and the ides of the Eastern islets are skirted by a reef at a distance of about half a mile. Borburata it curves to the Eastward, forming a half-moon face, which reaches off and a S. E. direction two miles, when it inclines to the Westward, and comes the S. end of Helena Island. Between the outer extreme of the Half-moon nd the Shoals off the S. W. end of Bonacca, the channel is about six and a half ide.

bout one mile and a half to the Southward of Borburata, on the edge of the reef, small cays, between which is an opening leading into a clear sheet of water in- e reef. From the S. point of Helena the reef still skirts the shore at about half a or a distance of four miles, when it connects itself to the cays which form Port Harbor.

T ROYAL HARBOR.—George Cay, the largest of the above islets, lies about mile from the shore, and the N. W. point, is in lat. 16° 34′ 20″ N., long. 86° 19′ It is nearly half a mile in length, E. and W., and about a cable broad; it is wooded, and at its W. end there are the ruins of a fort. The reef connects the to the shore near a very small islet, and thence, skirting the S. and W. sides at ance of about a cable and a half, comes close home to the N. W. point of the *Port Royal Harbor.*

e Westward of George Cay a narrow ledge, nearly dry, called Long Reef, trends Westward three fourths of a mile. Between the E. end of this reef and the George ef is a channel nearly a cable wide, carrying ten to thirteen fathoms in a N. W. n; and between the W. end of Long Reef and the reefs which skirt three more ays there is an intricate opening, about half a cable wide, with similar depths, in direction.

asin formed between the reefs and the shore is about a mile and a fourth long E. and from a fourth to half a mile wide, with a depth of from five to ten fathoms, nd. There are two small patches of three fathoms at about two cables' length e N. W. shore; but in several parts the coast is so bold and so well sheltered, essel of the largest draught may clear out or careen alongside it.

ral small rivulets run into the N. W. corner of the harbor convenient to water wood is in abundance. *Water.*

position of the above harbor is pointed out from the offing by Barra or Port Hill before mentioned. The Eastern Channel is alone safely navigable for large ; being, however, so very narrow, it requires a leading wind, which the usual reezes afford. Still it is so short that with a scant wind, by hugging the E. side board, a vessel may shoot through into anchorage and warp up. The borders of s are steep to, and easily seen. *Directions.*

most convenient berth for watering is with the N. W. end of George Cay bearing E., and Cossack Cay just open to the Southward of Cow and Calf cays, in six s; but to clear out or refit it will be better to warp up to the E. end.

A vessel may run out through the Western Channel, guided by the eye; but it very intricate, and there are patches of three fathoms water which it is scarcely p sible to avoid.

Falmouth Cove. FALMOUTH COVE.—The shore for about thirteen miles to the Westward of P Royal or Dixon Cove is clean and bold. At five miles from George Cay is a small i called Falmouth Harbor, which offers exposed anchorage.

Dixon Cove. DIXON COVE is situated on the W. side of the second prominent point after leav Port Royal, and is protected from the Southward by a broken reef, upon which three small cays. The channel lies between the two Easternmost cays, and is clea pointed out by the edges of the reefs on either side, which are steep to; it lies N. S. and carries fifteen and twenty fathoms water into the anchorage in the middle of cove abreast a small creek at the E. end. The shores are quite bold with three fathe at half a ship's length, and the bottom is clay and mud, so that a vessel in distress h ing lost her anchors may run upon the ground at the N. E. end of the cove. The sp is so confined that it will be necessary to moor with a kedge.

Coxen Cay. COXEN CAY.—At about two and a half miles to the Westward of Dixon Co abreast the highest peak in the island, a cable's length from the shore, is Coxen C which is two cables long, one cable broad, and seventy-five feet high; and on East side of the South extreme are some huts. From the East side a solid reef c nects the cay to the shore, and shelters a small cove fit for coasters drawing eight water.

The reef skirts the S. end of the cay, at the distance of about one cable and a half, thence gradually comes home to the N. W. extreme of the cay, leaving a channel the cove on either side of a little rock.

From abreast the cay the shore curves to the Southwestward to some dark c about twenty feet high, forming a bay one mile and a fourth wide and half a mile de The shore is bold and steep, and in the middle of the bight there are upward of fo fathoms water. The shore from the dark cliffs on the S. W. end of Rattan, five m distant, and thence for about two and a half miles to the N. W. extreme of the islan clear and steep to. From the S. W. point the N E. end of Utilla bears S. W. ¼ W. tant sixteen miles; and the edge of the mainland bank is thirteen miles off.

Seal Bank. SEAL BANK.—Just outside the line of the bay, about four cables' length to Southwestward of Coxen Cay, is the Seal Bank, which is a fourth of a mile long E. W., and one cable and a half broad. Near the middle of it, with the dark cliffs be ing W. by S. it is nearly awash; and the depths elsewhere are only two and two a half fathoms. The huts on Coxen Cay bearing N. E. ¾ E. clears its N. W. s the Eastern extreme of that cay N. N. E. clears the E. end; and a remarka small peak three hundred feet high close to the shore at the Western base of highest peak N. ½ E. clears the W. end. The channel between the bank and the ground off Coxen Cay Reef is one cable and a half wide, and carries five to thir fathoms.

Smith Bank. SMITH BANK.—This coral bank lies S. by W. about a mile from Coxen Cay, E. the same distance from the dark cliffs; it is four cables long E. and W., and cable and a half broad, with depths from three to four fathoms. The remarkable p just described, bearing N. by W. ½ W., leads close off the E. end, and on the N. line clears the W. end. Between it and the Seal Bank the depths vary from twelve to fi fathoms.

Daring Bank. DARING BANK.—At about two and a half miles to the Eastward of Coxen C nearly abreast Dixon Cove, lies a detached bank, which the cay bearing W. by N. has as little as two and a half fathoms; and there are six fathoms inside it. It is to extend four miles to the Southward of the above spot, and the shoal placed at a that distance in this direction on the charts is probably a part of it.*

Another detached shoal, with as little as five feet water, is said to lie to the Se eastward of Coxen Cay, at about a mile from the shore, the highest peak in the is bearing from it N.

Anchorage. The best anchorage will be found in about ten fathoms, at a cable's length from N. W. end of Coxen Cay. Further out the depths are so great and a vessel will b exposed as to be scarcely safe, even with the usual trade breezes.

Directions. Vessels may enter the roadstead in the above bay by the channel between Coxen and Seal Bank, which may be done by the eye, or to the Westward of the outer b From the uncertainty, however, in the positions of the dangerous banks which lie to Southward and Eastward, it will be necessary, from abreast Dixon Cove to apro this part of the island with great care, until in the fairway of the Western Ch with the highest peak in the island bearing about N. by E.

In approaching the Western passage from the Southward, the remarkable p

* Remarks by the masters of the British ships *Daring* and *Arachne*, 1854. The former vessel on the shoal spot.

Westward of the highest peak must not be brought to the Northward of N. ½ E. be-
the huts on the S. end of Coxen Cay bear N. E. ¾ E., to avoid the Seal and Smith
s. Should it be necessary to make a board to the Southward, care must be taken
o cross the latter line.

Coast.

he coast from Camaron Point trends W. S. W. about seven miles, and is quite clean.
nce it curves to the S. W. two and a half miles to Quemada or Rocky Point, upon
h are some huts. Abreast the latter space a narrow spit of hard sand runs out in
esterly direction, six miles from the land, with depths varying from six to three and
rth fathoms, over which there is generally a very heavy swell.

Quemada Bight.

UEMADA BIGHT.—The coast from Rocky Point still curves to the S. W., and
tward, for about thirteen miles to the point and river Catabutan, forming the bight
uemada. It is all along clean, but from the last point foul ground runs off to the
hward upward of a mile; and the soundings thence are irregular, and vary from
to twenty fathoms out to the Hog Islands.

Anchorage

the Southward of the hard spit the depths are eight to ten fathoms, and they grad-
y decrease to the shore, offering good temporary anchorage. The bight is known as
resort of vast numbers of turtle and manati.

Hog or Cochinos Islands.

OG or COCHINOS ISLANDS lie eight and a half miles from the shore, on the me-
n of Catchabutan Point, W. by S. twenty eight miles from Cape Honduras, and five
s from the edge of soundings. The N. E. island, which is the largest, is one mile
a half long, N. and S., half a mile broad and four hundred and thirty feet high, and
ely wooded. The Northern side of it is steep to; there are twenty-three fathoms
e distance of half a mile; but from the E. side a spit of coral runs out in that di-
on one mile and a fourth, with depths from four to six fathoms. At a short dis-
e from the S. side of the island is a cluster of small cays and rocks lying close to-
er.

t half a mile to the Westward of the above lies the next island in size, which is
t half a mile in diameter, and rises up to a conical wooded peak five hundred feet
e the sea. The channel between these two islands carries fourteen to sixteen fath-

om the Western islet a coral ledge runs to the S. W. two miles, upon which are
y small cays and dry sand-bores. With the above peak N. E. distant three miles,
e is a small detached shallow patch, called the Providence Shoal. These cays re-
e to be approached very cautiously.

Water.

a little cove on the W. side of the N. E. island there are wells of good water.

Anchorage.

ith the usual breezes, temporary anchorage may be taken up in six or seven fath-
close under shelter of the N. W. end of the N. E. island, but a clear sandy spot
be picked out.

Coast.

he coast from Catchabutan Point trends W. by S. seventeen and a half miles to Con-
oy point and river, and thence with a slight bend W. thirty-three miles to Bishop
Clerk's Head. It is all along low and woody, the tops of the trees from fifty to eighty
above the sea, and bounded by a sandy beach.

veral small unimportant streams discharge themselves in this space, and in the
y season their muddy waters discolor the sea to a considerable distance. The shore
ean and bold, with depths of ten and twelve fathoms, over sand and mud at a dis-
e of about two miles, with the exception, however, of the space between the shore and
almedina Bank, sixteen miles to the Westward of Congrehoy Point. Here, for about
miles, the coast is skirted by a foul ledge at the distance of a mile; and outside this
oundings are very irregular and alarming, shoaling suddenly from five to eleven
seventeen fathoms.

Salmedina Bank.

ALMEDINA BANK.—This most dangerous coral bank lies ten miles from the coast
ast the above ledge. It is nearly one mile and a half long N. N. E. and W. S W.
half a mile broad; and near the E. end it breaks in any swell, there being only two
water. From this spot Congrehoy Peak bears S. E. ¼ S., the Utilla Peak N. N. E. ¾
nd the Salmedina Rocks off the S. W. end of Utilla Island, N. N. E. ¼ E., distant ten
s. There are ten miles close round the edges of the bank, but S. E. about a mile
it there is a patch of four fathoms water.

Congrehoy Mountains.

ONGREHOY MOUNTAINS.—At a short distance to the Eastward of Congrehoy
t, not far inland, the great mountain chain elevates itself abruptly to the height of
thousand and four hundred feet; and S. S. W. ten miles from Congrehoy Point its
est summit rises to a conical peak of that name, eight thousand and forty feet above
ea. Viewed from the N. E. this peak rises above the neighboring heights to a well-
ed sharp cone; but from the N. W. a small flat shoulder is seen to project out a
way to the Eastward, at a short distance below the summit. From Half-moon
at Bonacca, it bears S. 51° 15′ W., from George Cay, at Port Royal Rattan, S.
39′ W., and from the E. point of East Harbor at Utilla S. 2° 30′ W., all true bear-

the meridian of Bishop's Head, about twenty-five miles inland, these mountains

form a sharp elbow, and turning to the Southeastward connect themselves to the Sa co range. The extensive low, flat, densely-wooded delta which lies between their b and that of the Omoa Mountains, thirty miles to the Westward, is called the plain Sula.

Utilla Island. UTILLA ISLAND.—This island lies on the edge of the bank, twenty miles from coast, on the meridian of the Congrehoy Peak. It is eight miles long E. N. E. and S. W., and two broad. A narrow ridge of hills runs across the E. end, and at the N. extreme a conical hill rises from the shore to the height of two hundred and ninety fe elsewhere it is only from sixty to seventy feet high, and cut up by swamps. The de woods with which it is clothed are overrun with wild hogs, and the mosquitoes are sufferable.

The N. shore is bold, the soundings not reaching more than a fourth of a mile off, it affords no shelter whatever. There are two small bays near the E. end, protected reefs, but they are only admissible to coasters.

The E. end is equally clean; there are twenty to thirty fathoms at only a fourth o mile; and the edge of the bank is three fourths of a mile from the N. E. extreme the island.

E. Harbor. EAST HARBOR.—The S. extreme of the E. end of the island is composed of bl and red cliffs, about twenty feet high. At half a mile to the Westward of them the mangrove shore receding to the Northward forms a bay nearly a mile wide and hal mile deep. From the E. point of it a coral reef and shallow ledge run off W. S. nearly half a mile; and another curves off to the Eastward three cables' length fr the Western shore, which so shelter the bay as to make it a safe harbor for two three vessels of the largest class.

The channel is a cable and a half wide, and carries five to six fathoms water to middle of the bay, whence the depths decrease to four fathoms at about two cables fr the N. shore. It lies N. and S., and must be navigated by the eye, taking care avoid two small coral heads which lie three cables from the E. shore, easily seen fr aloft.

The most convenient anchorage will be with South Cay just shut in with the West shore, S. W. by W., and the E. point S. E., in five fathoms, muddy bottom. A ve will sail in and out with the usual breezes, but with Northerly winds she will have warp in.

There is a well of good water on the N. shore of the bay, near a path that le across the island.

S. W. Cays. SOUTHWEST CAYS.—From the E. bay the shore trends S. W. by W. about th miles to the S. extreme of the island; it is quite clean, and there are sixteen fath water within almost a cable's length. Abreast the latter point the ground becomes ceedingly foul, and a cluster of eight small low wooded cays extend out from the sh on a S. W. line one and a half miles, the innermost lying about two cables from beach. In 1835, the second from the shore, called Sucsuc, was occupied and culti by an American settler.

The only opening is between the third and fourth cays, where there is a narrow tuous channel, carrying six to ten fathoms water; but it is only available to the fish men who resort to the island in the turtle season.

Salmedina Rocks. SALMEDINA ROCKS.—S. by W. ½ W., a mile from the South Cay, are three small, flat, barren rocks, four feet high, lying close together, from which the Ut Peak bears N. E., and the Congrehoy Peak S. S. E. A shallow ledge runs off fr them N. E. nearly half a mile. At about the same distance N. W. by N. is a coral b a fourth of a mile in extent, with only nine feet water; and to the S. E. and Southw within a mile of the rocks are foul patches with three and a half and five and a fathoms.

Caution. A vessel approaching these rocks and cays from the Southward or Eastward, sho not bring the Utilla Peak to the Eastward of N. E. by N.

Western Cays. WESTERN CAYS.—At about a mile and a half to two miles to the Northwestw of the S. W. cays are three more similar small islets clothed with bushes and coco trees, named Ragged, Middle, and West Cays.

The first lies half a mile from the W. end of Utilla, and there is no passage tween; the second is a mile farther to the Southward; and West Cay is W. S. W. fourths of a mile from the latter. Between them the ground is everywhere foul an nearly the edge of soundings, which lies a mile and a fourth to the Westward of Cay.

S. Ledges. SOUTH LEDGES.—To the Southward of West Cay, a mile from the edge of bank, lies a coral ledge a mile long N. and S., and three cables broad, nearly dry. the S. end West Cay bears N. by E. ¼ E. distant two and a half miles, and the Sal na rocks E. N. E. the same distance. To the Eastward of it as far as a mile are ledges with depths of two and three fourths and three and a half fathoms; the far lying with Ragged Cay just open to the Westward of Middle Cay N. ¼ E., and

edina rocks E. N. E. The latter rocks bearing N. E. by E. lead over the outer or d of these ledges in four and a half fathoms, which has twenty-three fathoms close

tween the Easternmost of the above ledges and the Salmedina rocks there is a clean *Anchorage.*
e for more than a mile wide as far to the Northward as Middle Cay, which, being ected on the E. by the S. W. cays, and to the N. and W. by the cays and ledges in quarter, affords good sheltered anchorage.
is open to the S., but those winds never blow hard. The depths are regular, decrease gradually inward from twenty-five to sixteen fathoms, over sand and . This is a very convenient place for wooding; and with the assistance of a fish- n to pilot, a vessel may go so far in as to bring West and Middle Cays in line, and W. end of Utilla N. N. W., about half a mile distant, where she will have ten ms.
e reefs and shoals abound in fish and turtle.
vessel approaching the above anchorage from the Eastward should steer down so *Directions.*
pass at least a mile to the Southward of the Salmedina, and until Ragged Cay s in line with the E. end of Middle Cay N. ¼ W. This mark, or Ragged Cay just to the Eastward of Middle Cay N. ¾ W., leads in; and when South Cay bears E., hould haul up to the Eastward, and anchor in about sixteen fathoms, with Middle W. by N., and the W. end of Utilla N. by W.
working up from the Westward, when standing toward the Southern ledges, care be taken not to bring the Salmedina rocks to the Eastward of N. E. by E. before ged and Middle Cays are in line bearing N.
ISHOP AND CLERK'S.—Resuming the description of the coast from Bishop and *Bishop and Clerk's.*
k's Head, which is a bluff rocky headland, and close off it lies a cluster of little s about twenty feet high, which are so steep to that there are twenty fathoms water ss than half a mile from them.
e coast from the head curves suddenly to the S. W. for three and a half miles to a ar bold projection called Cape Triunfo, or Triumph of the Cross; thence it turns ply to the Southward for about a mile and a half, when it assumes a Northwesterly ction for twelve miles to Sal Point. It is all along low and sandy, but backed by lofty mountain ridge running Westerly, which, only eight miles S. from Bishop's d, rises abruptly to the height of two thousand and four hundred feet. At about sev- iles to the Westward of Cape Triunfo is the entrance to an extensive lagoon, called aparilla, which is navigable for canoes.
e large bight formed between Bishop's Head and Sal Point, is everywhere clean *Anchorage.*
bold; and with Cape Triunfo, E. about a mile distant, there is anchorage in twelve ms. It must be left, however, immediately on the approach of a norther.
S. W. two miles from the cape a river disembogues, which has a small settlement s banks, where cattle may be obtained.
AL POINT is a bold rocky promontory about two miles in extent E. and W., *Sal Point.*
ned by irregular hills of considerable height, which lying in front of the plain of appears like an island at first sight and until within a short distance from it. bout half a mile from the E. extreme are three or four rocks similar but much er than those off Bishop's Head. Between them and the point there is said to be a nel for coasters; and at a mile to the Northward of them there are twelve fathoms r.
n the meridian of the Sal Rocks the edge of soundings is about six miles distant, and steep that the depth increases suddenly from twenty-three fathoms to no bottom one hundred fathoms. Between this point and Utilla the outer limits of the bank ery irregular and form two deep curves. The soundings are also very variable seven to upward of forty fathoms. About N. by W. eleven miles from Bishop and k's Head there is a detached bank about five miles in extent, with depths of twenty- and twenty-seven fathoms.
the Westward of Sal Point the edge seems to curve suddenly to the Southward, o come within a mile of the Ulloa River, but the bank to the Westward of Utilla d and the Salmedina Shoal has not been examined.
L COVES.—On the W. side of the Sal promontory are two coves separated by a *Sal Coves.*
bluff, which are said to be admissible to coasters. In front of them, about half a from the shore, there is good anchorage in moderate weather, in eight fathoms, dy bottom. Farther out the ground is rocky. Sal River empties itself into the m of the bight a little to the Southward of the coves and two miles from the prom- y. Thence a low sandy shore trends N. W. by W. four miles to a well-defined point at the E. side of the Ulloa River.
LOA or ULUA RIVER is of considerable size, and its muddy waters discolor the *Ulloa River.*
o some distance. It is said to take its rise near Comayagua, the principal town nduras, which is about one hundred miles in a direct line from the sea, and in was said to contain between seven and eight thousand inhabitants. Its bar is

reported to have at times nine feet water on it, but generally seven feet. Its princi tributaries are the Santiago, from the left bank, about thirty-five miles from the mou the Blanco, from the same side, a short distance farther on; and the Sulaco, from t opposite bank, about thirty miles higher up. It is also said to be navigable for li draught river steamers as far up as the Blanco branch, and when swollen in the ra season, to the Sulaco. Above the Blanco it is called Humuya.

As stated above, the shore is here very steep, and after northers the Easterly curr runs close home to it with great strength.

Coast. From the Ulloa the sandy beach runs W. S. W. five miles to Chimlico or Chamala Point and river, whence it trends S. W. by W. ½ W. nine and a half miles to Caba Point. The locality of the entrance of the Chimlico is pointed out by a very rema able, isolated, conical hill, over six hundred feet high, which rises close to the shore miles to the Westward of it. The coast elsewhere is all along low and woody but bac at a short distance by the Omoa Mountains.

To the Westward of the hill foul ground appears to extend out some distance, whi has not yet been clearly defined. At the distance of upward of a mile from the bea the hill bearing about S. E., there are only three fathoms water

Point Caballos. POINT CABALLOS is the extremity of a low, narrow neck of wooded land wh forms the N. side of a bay about three miles wide and two miles deep. At the head this bight is the entrance to a lagoon called Port Caballos or Cabellos, which is ov shaped, about two and a half miles long E. and W., and one mile and a fourth bro In the middle it has a depth of ten fathoms, whence it gradually shoals to the shor the narrow, short channel leading into it, however, has only six feet water. It abou in fish, and at the E. end it communicates, by means of a small creek, with the Cha lacon River.

The N. shore of the outer bay is clean and very steep to; there are four fathoms wa at only a short distance all the way in, but from the S. side a sand-flat stretches gra ally off, and the three fathom line runs about S. W. by W. from the mouth of the lago Several small streams enter the S. side of the bay, which afford good water.

Anchorage. Caballos Point is clean, and has six fathoms close to it. Inside it there is good chorage, sheltered from northers, in from ten to seven fathoms, on sand, at half a m or less from the N. shore. There is a rise of tide of about a foot.

Red Cliffs Bank. RED CLIFFS BANK.—At the Western extremity of the above bay, S. by W. ½ three miles from Caballos Point, and three and a half miles to the Eastward of Om are seven small, low, yet remarkable red cliffs, visible at four or five miles. Fr abreast them a shallow bank runs out a considerable distance, which must be approach very guardedly, for its limits are not exactly known. Between the cliffs and Om Point it is said to extend out two miles; and N. N. E. ½ E. one mile and a half from latter there are four and a half fathoms on the outer part, whence it gradually proaches that point.

Omoa Bight. OMOA BIGHT.—The N. E. extreme of the bight of Omoa forms a low but m prominent point, whence the coast suddenly curves to the Southward about nine mil and then to the Northwestward eleven miles to the entrance of the Motagua Riv which is W. ½ S. fifteen miles from the Castle of Omoa. This extensive bend, which six miles deep, is everywhere clean and steep, with depths of twenty to upward of thi fathoms at the distance of a mile from the shore, and sixty at its outer limit, close to edge of soundings. So heavy a swell rolls into it, however, that there is no safe anch age except off Omoa.

The E. side is bounded by the base of the Omoa Mountains, which terminate S. nine miles from the bottom of the bight, at the Motagua Peak, upward of seven th sand feet above the sea. This lofty ridge decreases somewhat gradually in height to Northeastward, and presents three more remarkable summits.

Omoa Peak, the nearest to the Motagua, about three miles inland, and S. by W. ½ nine miles from Omoa Castle, rises to a small, sharp-pointed cone, which is very steep its W. side.

The next is a sharp-pointed peak, rising to the height of three thousand two hund and seventy feet S. S. E. three and a half miles from the castle; but, when viewed fr the N. W., a small shoulder is seen projecting out a little below the summit.

The other which is situated at the N. E. extreme of the range, about five miles to Eastward of the castle, is seventeen hundred and sixty feet high, and when seen from Northward forms a saddle.

The Motagua and Omoa peaks, being so lofty, are seldom visible, except in the season, at the dawn of day, when the former may be seen from Belize, one hundred fifteen miles distant. The two others are generally unclouded, and will be found useful guides, especially the Saddle Hill.

The Western side of the bight is low and swampy, and bounded by a dark sa beach, fringed with cocoanut and other trees, which reach to a height of about hundred feet above the sea. These features extend all the way to Cape Three-Pa thirty-three miles from the bottom of the bight.

MOA.—From the N. E. point of the bight of Omoa a narrow elbow of dry sand, *Omoa.*
t three feet above the sea, extends out S. W. two cables' length, and then S. two and lf cables. At the bend is a small mangrove cay, upon which some sapote trees h a height of about fifty feet. From the S. point of the sand-spit a bar runs across e land, protecting a caldera or small basin within, which is about one cable and a in extent, with six and a half fathoms water in the middle. The depths on the bar, ever, vary considerably, according to the state of the weather, winds and currents; e latter part of 1840 there were eighteen feet over it, but in 1841 there were only ve feet.

om the N. E. point the sandy coast trends S. nearly a mile to the bar of the Omoa r, which has only six inches water. Nearly midway, on the shore, is the Castle of Fernando, commanding the caldera and anchorage. The outer walls are about n feet high, on which are mounted, en barbette, ten or twelve brass twenty-four thirty-two pounders; within is a barrack or keep forty feet high, its base on a level that of the outer walls. At the S. angle of the fort is a light-tower sixty feet high, the whole of the works are in a state of dilapidation and decay.

ater and wood are to be procured at a short distance from the mouth of the Omoa r, but the water is said not to keep good for any long period. *Water and Wood.*

ood anchorage will be found in four fathoms, sandy bottom, the castle bearing about fourth of a mile distant. By coming to within half a cable's length of the end of and-spit, in three and a half fathoms, a vessel may ride out a norther. It will be ssary to warp into the caldera, and it will depend upon the depth on the bar as to draught a vessel must have to enter. *Anchorage.*

he current on this shore is so variable, and yet so strong, that a vessel bound to a or the anchorages in Honduras Bay, should by all means endeavor to sight either outlying islands to windward, to avoid the Honduras reefs. *Directions.*

oming from the Eastward, after sighting the Swan Islands, vessels often pass inside acca and out between Ruatan and Utilla, but the positions of the shoals to the thward of the S. W. end of Ruatan are still so doubtful that it will be far more dent to pass to the Northward of these islands.

rom abreast Utilla a course should be shaped for Caballos Point, which will sight Saddle Hill, the highest peaks being seldom visible in the rainy season, and only sionally in the dry. From Caballos Point the shore should be kept at a distance bout three miles, to avoid the shoal ground off the red cliffs.

he N. E. point of the Omoa bight, though very low, is so prominent that it cannot mistaken; and when within four or five miles to the N. E. of it the vigia and the le will be seen through a gap in the mangroves.

he point must be rounded gradually by the lead; at half a mile to the Northward there are five fathoms, whence the depth decreases to three fathoms to within about cables of the Western side of the cay; a cable farther out there are seventeen oms. Being abreast the end of the spit a vessel should haul in quickly, and anchor bout six fathoms, abreast of the fort, with the Western extreme of the cay bearing W.

hen bound out a vessel will generally receive great assistance from an Easterly ent, which at times is found to run along the shore to a considerable distance, even r as Truxillo, and to a wide offing, especially after northers and heavy rains. In winter months, when the trade-wind hangs to the Northward of E., it would be er for her to keep this advantage until well to windward, so as to be able to give Honduras Banks a wide berth.

his eddy stream runs strongest near the shore, and its outer limits are uncertain; the navigation within the islands is attended with great risk, especially abreast la and in the night.

IVERS MOTAGUA AND TINTO.—At about two and a half miles from the bot- *Rivers Motagua and Tinto.*
of the bight of Omoa the Cuyamel River disembogues, and four miles farther to the V. is the entrance of the Tinto. The former is of little importance; the latter forms boundary between the states of Spanish Honduras and Guatemala. It is said to be gated by canoes to a considerable distance; and just within its mouth a small branch nunicates with the Motagua.

he Motagua takes its rise about twelve leagues to the Westward of the city of temala, and by its means a considerable commerce is carried on between several e towns in the interior and Belize. There are five or six feet water on the bar, and navigated by large bongoes to a town called Guelan, situated about ninety miles in rect line from the entrance. The voyage upward occupies about fourteen days, and e dry season is attended with great labor. The first rapids are met with at the tion of the River Nuevo, about forty miles from the mouth.

lthough completely exposed to the sea breezes, there is good holding ground in *Anchorage.*
een fathoms, with the entrance of the Motagua River bearing about S. W. a mile nt.

The edge of the bank lies only three miles from the shore, whence it trends about N. by W. sixteen miles to the Southwesternmost of the Zapotillos Cays.

River San Francisco. RIVER SAN FRANCISCO empties itself by two mouths, about a mile apart, five miles to the Westward of the Motagua. There are some huts at the Eastern entrance and the locality is further pointed out by a somewhat remarkable piece of table-land six hundred feet high, S. W. seven miles from the mouth. The bars have only two feet water, and at a short distance within them the river communicates with the head of Hospital Bight by a branch navigable for canoes.

Cape Three-Points. CAPE THREE-POINTS, the N. E. extreme of the Bay of Honduras, being the termination of a low neck of land about ten miles in length, forms a prominent, unmistakable rounded point, three fourths of a mile broad, the trees upon which are about eighty feet above the sea. Foul ground runs off from it to the Westward about half a mile which generally breaks; and S. W. by S., about three fourths of a mile from the cape, lies a small shoal of two and a half fathoms water; both of which are steep to.

There are seven fathoms inside the latter, and fifteen close outside it. The coast from the cape trends S. S. E. ½ E. a mile and a half to Monavique Point, whence it curves to S. E. for five and a half miles to Firewood Point, at the entrance of Hospital Bight.

Anchorage. With Monavique Point bearing N. W. by N. about a mile from the shore, there is a well-sheltered anchorage in thirteen fathoms, muddy bottom. Care, however, must be taken not to bring Firewood Point to the Eastward of S. E. by E. to avoid the Ox-Tongue Spit.

Hospital Bight. HOSPITAL BIGHT—so named from the extreme unhealthiness of its position, being surrounded by swamps—is about four miles deep from W. to E., two miles in extent in its broadest part, and at its entrance a mile wide. A sand bar runs across the opening upon which there are fourteen feet water; and within it there is a space of about a mile, with depths from three to four fathoms. Outside the bar the ground is also shallow, which renders the approach intricate and difficult to a stranger; it is, however, seldom visited.

Ox-Tongue. OX-TONGUE.—From the above bar a ledge of hard black sand, about a mile in breadth, runs off to the Westward seven miles, called the Ox-Tongue. The general depths upon it are two and a fourth to three fathoms; but with Cape Three-Points bearing N., there is a spot of about a mile in length, with only nine feet water. From a depth of two and three fourths fathoms on the W. extreme of the ledge Cape Three Points bears N. E. by N. five and a half miles; Mangrove Point, at the entrance of Hospital Bight, E. ¾ S.; and the mouth of the Rio Dulce, S. S. W. ½ W., five miles.

St. Thomas Bight. ST. THOMAS POINT.—From Mangrove Point an irregular mangrove shore trends to the Southward about seven miles to the entrance of St. Thomas Bight. This snug inlet lies at the foot of the Trepong Mountains, which reach their highest elevation about ten miles to the S. W. of it. It is about three miles long N. and S., a mile and a half wide at the entrance, and about two and a half miles across at the inner end. Its shores are skirted all round by a mud flat, leaving in the middle a lane from three fourths of a mile at the entrance to a mile and a half wide at the S. end, with depths from three and a half to five fathoms, over mud.

Although open to the N., it is quite safe, for these winds do not blow home to this part of the coast; and being comparatively healthy, it is by far the best place to water at in this locality.

Water. On the S. shore is a small Belgian settlement, through which runs a rivulet of good water. The most convenient place for watering a vessel, however, is at a small creek at the base of the mountains on the Western shore, where large boats may pull up to the inner end and fill their casks with the greatest ease.

Directions. The above inlet will admit vessels of the largest class, and the only danger in the way is the Ox-Tongue. Great care must be taken not to haul up too quickly round the W. end of this shoal, for it is doubtful whether the trees on Mangrove Point, which bear E. ¾ S. from it can be seen at that distance. From the end of the ledge a S. E. ½ S. course will carry a vessel up to the entrance in five fathoms, when all that is necessary is to steer in mid-channel and anchor as most convenient. If intending to water, three fathoms will be found at only a cable's length from the entrance of the creek pointed out above.

In working up to the Southward of the Ox-Tongue the shore may be approached to the lead into four fathoms; but in standing to the Northward, Mangrove Point must not be brought to the Southward of E. ½ S.; for the Ox-Tongue Ledge is so steep that the soundings give no warning.

Coast. The coast from Palma Point, the N. W. extreme of St. Thomas Bight, trends W. N. W. seven miles to the E. point of entrance to the Dulce River. At a mile and a half from Palma Point is the little village of Sta. Maria. The land in this space is of moderate height, but S. three miles from the entrance point of the Dulce, it reaches an elevation of over eleven hundred feet.

RIVER DULCE.—The mouth of this river is S. S. W. ½ W. five miles from the W. d of the Ox-Tongue. The opening forms a small funnel or bight, about a mile wide d a mile deep, and it is readily discovered by a small village of about one hundred dian fishermen on the W. side; there is also at the mouth on the Eastern side a re- rkable hill six hundred and seventy feet high. *River Dulce.*

The bar fills the whole bight, and extends out about a mile beyond the points, and s upon it six feet water; generally, however, there are six or eight inches more ter in the evening than in the morning, owing to the river streams being checked by e sea breeze.

The mouth of the river lies at the S. W. corner of the bight, and is scarcely a cable de. Thence it winds its narrow tortuous course in a S. W. direction between pre- pitous densely wooded hills from three hundred to four hundred feet high, for about e miles, in a direct line from the sea, when it enters the Golfete. The soundings in is branch are generally deep, but irregular, varying from two and a half fathoms to much as eighteen fathoms. Near the inner end two small streams enter opposite to ch other.

El Golfete may be described as a salt-water lake nine miles long N. E. and S. W., one d a fourth to two and a half miles broad, and from two to two and three fourths fath- s deep; all its shores being low and swampy, and bounded by mangroves.

The Western branch of the Dulce is generally much wider than the Eastern, being m a cable and a half to half a mile wide. The course of the stream is also less tor- ous, and confined between low mangrove, swampy banks. Its whole length is about ven miles, and carries from two to five fathoms. At the inner end a small tongue of d about forty feet high projects out from the W. side, and upon it is Fort St. Philip, ich, however, is merely a wall about fourteen feet high, with a barrack for the ac- mmodation of a commandant and twenty soldiers. The channel is here about a ble and a half wide, and the above point must be passed within half a cable's gth.

THE GULF OF DULCE (so-called from its waters being always fresh and pure) about twenty-three miles long, E. N. E. to W. S. W., and six to ten miles wide, with pths from six to eight fathoms on soft mud, which are increased about three feet in e rainy season. *The Gulf of Dulce.*

It is remarkable that, although receiving the waters of many streams, there is no per- ptible current on the surface of the gulf. In the lower branch the river stream runs t at the rate of one and a half to two knots according to the season.

From the entrance the N. shore begins to ascend to the Santa Cruz Mountains, which, out seven miles inland and N. by W. from Isabel, reach to a peak over three thou- d four hundred feet high, visible from off Cape Three-Points. Large quantities of hogany are cut on this side of the lake: and the land is partially cultivated.

The E. and W. ends are low and swampy. The S. side is for the greater part nded by the Mico Mountains, which at only three miles from the shore reach an ele- ion of nearly three thousand feet. At about twenty miles to the Northeastward the pong range rises to the height of seven thousand seven hundred feet.

Manati and alligators are abundant in the rivers, and the woods abound with wild sts and snakes of enormous kind.

ISABEL.—On the S. shore S. S. W. sixteen miles from Fort St. Philip, on the rise of hills, is the village of Isabel or Yzabel. The largest house nearest to the Moro Riv- t is in lat. 15° 24′ 20″ N., long. 89° 9′ 15″ W. It is a place of rising importance, ng the Northern port of entry for the commerce of Guatemala, to which European ods brought chiefly from Belize are conveyed on mules. From the village the jour- y to Guelán on the Motagua is made in about three days, and thence to the city of atemala in ten or twelve days; the roads, however, are execrable. *Isabel.*

The navigation to Isabel is conducted in small schooners, and is easily accom- shed in about two days, by taking advantage of the sea breezes. The wind generally ws up through the narrow valley which encloses the lower branch, but in some parts may be necessary to warp up alongside the banks, especially if the breeze is light side.

RIVER POLOCHIC.—Several small streams enter the Gulf of Dulce from the South- rd; but the only one of any magnitude is the Polochic, which empties itself into the W. corner by several mouths, over bars of three feet water. *River Polochic.*

The river takes its rise on the table-land of Guatemala, and about thirty miles from mouth receives from its left bank the waters of the Accajaben. It is navigated by ge bongoes of two feet draught as far as the village of Taleman, about ninety miles m the gulf, whence their cargoes are conveyed to the interior on mules.

The coast from the Dulce River takes a W. N. W. direction, for five and a half miles, Cocalli Point; and is of moderate height. At about three cables to the Northwest- rd of the W. point of the entrance of the river is a small rocky islet. *Coast.*

A flat runs off to the Northward of this islet one mile and a half, with depths from

one to two and a half fathoms. With the islet bearing S. E. ¼ S., and Cocalli Point W. ½ S. about a mile from the shore, there is a detached shoal of two and a fourth fathoms which has four and a half fathoms around it. To the Westward of this the shore is bold there are three fathoms water at three cables' distance, and the depths gradually increase outward.

Kowich Creek. KOWICH CREEK.—At about one mile and a fourth to the Westward of the islet a small creek of excellent fresh water, called Kowich, which is pointed out by a few huts on the W. side of it. About a mile farther on there is a remarkable waterfall.

Cocalli Point. COCALLI POINT is a prominent round bluff. At the distance of half a mile to the Westward of it is a ledge, with only two fathoms water, which has four fathoms close outside it. From the point the shore trends S. W. three fourths of a mile to Cocalli River which has three feet on its bar, and is a good watering place.

Anchorage. Anchorage should be taken up for this purpose, with the entrance of the Cocalli River S. S. E. ¾ E. and the bluff E. S. E. a mile distant.

Coast. The coast from the river runs Westerly two miles to San Martin Point, which has some huts upon it; whence it trends N. W. ½ W. three miles to the Sarstoon River. At this part is low, but at the distance of about two miles it is backed by the Sarstoon chain of mountains, which, rising gradually from the Dulce River, reach an elevation of nine hundred and ten feet S. of Cocalli Point, and one thousand three hundred and ninety-five feet on the same bearing from the entrance to Sarstoon River; thence it takes a direction Southward of W. continuing nearly of the same altitude for some distance.

Sarstoon River. SARSTOON RIVER is of considerable magnitude, and forms the Southern boundary of British Honduras. The entrance is about three cables wide, and on the bar there are six feet of water. In the rainy season the stream runs out at the rate of about a knot.

Anchorage. The depths gradually decrease from five fathoms at the distance of about two and a half miles, to three and a half fathoms one mile and a fourth from the shore, where anchorage will be found with Cocalli bluff E. S. E. and the W. point of the Sarstoon River W. S. W. A large vessel must anchor farther off.

Coast. The coast from the Sarstoon River runs N. N. W. ½ W. four and a half miles to the entrance of Tomash, whence it curves to the Northeastward five miles, to a remarkable high bluff called Mother Point, which is visible at fifteen miles. From this projection it takes a Northerly direction two miles to the Moho River when it again curves to the Northeastward for about three miles to Punta Gorda.

Punta Gorda is W. N. W. thirteen miles from Cape Three-Points, and may be described as the N. W. Point of the Bay of Honduras. On the N. side of the point there is a Caribb settlement of about four hundred inhabitants, who cultivate the adjacent land and supply Belize with cattle, fruit, and vegetables.

To the Southward of Tomash river the shore is clean with regular depths, decreasing inward from Cape Three-Points, off which there are seventeen fathoms. The only exception is a small spot three fourths of a mile in extent with three and a half fathoms whence Cape Three-Points bears E. ¾ N. distant ten miles, and Cocalli Point, S. by W. five and a half miles. The ten-fathom line is one and a half miles to the Eastward of it and the bottom is everywhere muddy.

The bars of the Sarstoon, Tomash, and Moho, generally break heavily. Their banks are swampy and fringed with impenetrable mangroves to a long distance; but after a journey of three or four days, probably at the distance of forty or fifty miles from their mouths, the land becomes firm and clothed with mahogany, which is cut and shipped either off their bars, or conveyed to Belize for that purpose.

In the space between the above rivers the coast is generally low and flat to a considerable distance inland; it is densely wooded, and the tops of the trees are about two hundred feet above the sea. W. six miles from Mother Point there is, however, a small isolated hill, four hundred feet high; and N. W. by N. about three miles from Punta Gorda is a remarkable saddle hill seven hundred and twenty-eight feet high. About eleven miles to the Westward of the saddle the interior again becomes mountainous, and reaches an elevation of one thousand and sixty feet. In a N. E. direction, about six miles from the saddle, there is also a small but conspicuous ridge called the Seven Hills, which rises from the shore to the height of four hundred and seventy feet.

The coast to the Northward of the Tomash River as far as Negro Head, which is a conspicuous bluff, N. E. twenty-eight miles distant, is exceedingly foul and dangerous, being skirted by detached shoals and cays which extend out from two and a half to five miles from the land. The Southernmost danger lies E. about four miles from the Tomash, the Northernmost terminates at the Easternmost of the Snake Cays, which lies S. E. by S. four and a half miles from Negro Head, and N. by E. ½ E. sixteen miles from Cape Three-Points.

Several channels leading into the anchorages off the mouths of the rivers are pointed out on the chart, but they are so intricate, though deep, that no safe directions can be given and the water is so muddy that no vessel ever attempts them without a pilot.

There is no regular tide on this shore, but in general there is about a foot more water the bars of the rivers in the evening, according to the strength of the sea breeze. *Tides and Currents.*
e accumulated waters from the rivers spread themselves out in a Northerly and rtheasterly direction, and meeting with those coming to the S. E. from the Northern eams combine outside Cape Three-Points to form an Easterly current which, as be- e stated, sometimes runs up as far as Truxillo. The breadth and velocity of this eddy of course very variable, depending upon the force of the wind and the state of the ers. In general it does not extend out so far as Utilla, and its strength is much in- ased after northers. To the Northward and Eastward of this the great Carribean rrent runs to the Westward at the rate of from a half to a knot an hour. On reach- the outlying reefs of Yucatan, and striking the edge of the bank, it is suddenly erted to the Northward, increasing its velocity to two knots, and even more, in the inity of Cozumel Island.

The prevailing winds are the periodical land and sea breezes; the latter sets in at out ten A. M. and continues until late at night in the dry months, but in the rainy sea- n it is very light, and seldom blows home to the shore. Northers are said not to come the Southward of Placentia Point; on the contrary, when they occur, a strong S. W. nd blows off from the bay shore, which is preceded by the usual appearance of a ther. The Trepong Mountains being free of clouds is considered a sure warning, d the barometer will fall from 29.94 inches, the general height, to 29.80 inches. *Winds.*

ICACOS ROAD.—S. W. three and a half miles from Negro Head, a neck of land thed with pine trees, projects out to the Southward about a mile, and close off the d of it is a small cay, the S. W. end of which is called Icacos Point. Off the W. side the neck, about three cables from the shore, there is well-sheltered anchorage in three d a half to four and a half fathoms. At the inner end of the above tongue is a small e with depths from nine to fourteen feet, and close to the Westward of the cove is a oon with seven feet water at the entrance. *Icacos Road.*

The navigation between the outlying cays, however, is so intricate, that we only ice these places to point out some wells on the end of the tongue which might be eful in a case of need. *Water.*

THE SNAKE CAYS are four in number, and lie with the numerous shoals in the y of approach to Icacos road; the cays are clothed with trees, the tops of which, on East Cay, are about ninety feet above the sea. *Snake Cays.*

In working out of the Bay of Honduras, when standing to the Northward, the East ke ought not to be brought to the Eastward of N. E. ½ N.; when within four and a f miles distance of the cay, this line of bearing will carry a vessel over several ches of three and a half fathoms of water; a large ship must not, therefore, bring cay to the Northward of N. by W. The Northeasternmost of these patches lies h the cay N. by E., one and a half miles distant, but to the Eastward of this the k is clean for a space of seven miles to the W. side of the outer shoals. *Caution.*

GRANDE AND DEEP RIVERS.—The rivers in the bight to the Northward of ta Gorda, whence mahogany is shipped, are the Rio Grande and Deep River. The ner disembogues five miles from Punta Gorda, and vessels receive their cargoes from t a snug anchorage off the W. side of the Moho Cays. The Deep River enters the about four miles from Icacos Point, and both have only two feet on their bars. *Grande and Deep Rivers.*

BORDER CAYS AND REEFS.—From the bottom of the bight which the bank ns at the entrance of the Gulf of Honduras, on the parallel of 16° N. the edge of dings trends N. N. E. thirty-seven miles to a sharp elbow, called Gladden Spit, in 16° 31′ N., long. 87° 58′ W., twenty-three miles from the main. Here it curves he N. W., and round to the Northward to another elbow not quite so sharp, N. by thirty-three miles distant, and fifteen miles from the coast; whence it takes nearly same Northerly line of direction for fifty miles to the S. end of Ambergris Cay, ch lies adjacent to the shore. *Border Cays and Reefs.*

The whole of this line, which is one hundred and ten miles in extent, is skirted at the y edge by small low cays and reefs of the most dangerous character, which in most s break heavily. Several openings are clearly delineated on the present charts; the features of the cays are so similar that, without the assistance of a pilot, or an t knowledge of the latitude, to attempt to navigate them would be extremely peril- A description of them will follow, but only with a view of assisting the mariner case of imminent danger.

APOTILLOS CAYS.—This cluster of five low islets, lying in a space of about three a half miles, is the Southernmost on the bank. The S. cay has some cocoanut trees n it, and is in lat. 16° 5½′ N., long. 88° 18½′ W. To the Southward and Westward to a distance of four and a half miles, the depths are extremely irregular, varying denly from upward of thirty to as little as three fathoms. *Zapotillos Cays.*

W. LEDGE.—With the S. Zapotillos Cay E. N. E., six and a half miles distant Cays N. N. E. ¾ E. five and a half miles, and E. Snake Cay N. W. eleven miles e is a very dangerous small ledge, with depths of only two and three and a half *S. W. Ledge.*

fathoms, leaving a clear space of eleven miles between it and the main to the Sou ward.

Seal Cays. SEAL CAYS, two in number, lie close together, N. W. by W., three and a half mi from S. Zapotillos Cay, and have upon them some cocoanut trees and fisherme huts.

Lawrence Rock. LAWRENCE ROCK.—This is the Westernmost danger, and may be said to form E. point of entrance to the inside ship-channel to Belize. It has only four feet wa and is the more dangerous as the water over it is not sufficiently discolored to poin out. From it the Seal Cays bear S. E. by E. ½ E. four and a fourth miles, the cocoa trees on a small cay two and a half miles to the Northward of the Seal Cays E. ½ and E. Snake Cay W. ¾ N. seven miles.

Zapotillos Cut. ZAPOTILLOS CUT.—Close round the N. end of S. Zapotillos Cay there is a cl opening nearly half a mile wide, through which a vessel of the heaviest draught mi thread her way into the main channel.

Nicolas Cay. NICOLAS CAY, the third from S. Zapotillos Cay, is occasionally inhabited, and a well of good water upon it.

Tom Owens Cay. TOM OWENS CAY.—This islet lies N. N. E. about eight miles from the S. Zapoti Cay, and in 1846 there was a single cocoanut tree upon it. Both N. and S. of it channels nearly half a mile wide, carrying four and a half and five fathoms into the ner passage. On the S. side of the S. channel, three fourths of a mile from Tom Ow Cay, are two small islets clothed with bushes.

North Spot Cut. NORTH SPOT CUT.—At about three miles to the Northward of Tom Owens small sandy cay covered with grass; and close to the Northward of it there is an op ing carrying three and a half fathoms.

Ranguana Cay. RANGUANA CAY.—This islet lies about five and a half miles from the above in lat. 16° 20′ N., long. 88° 7½′ W., and the edge of soundings E. of it is distant miles. It is a little larger than either of the Zapotillos, and the tops of the trees it are fifty feet above the sea. Close to the Southward of the cay is a channel abo fourth of a mile wide, carrying three and a half fathoms in a N. W. direction.

At four and a half miles N. E. by N. from Ranguana Cay is Pumpion Cay. At two miles farther on are the two Round Cays, and the same distance beyond the Samphire Cay. The latter is composed of sand, upon which bushes grow to the hei of six feet. The others are clothed with trees forty to forty-five feet high. This sp is very foul and dangerous.

Queen Cay Cut. QUEEN CAY CUT.—At about a mile to the Northward of Samphire Cay are th small, low, sandy islets, covered with bushes about ten feet high, called Queen C They lie about five miles from the end of the Gladden Spit, one mile and a half fr the edge of soundings E. of them, where there is an opening carrying three and a fathoms into the Victoria Channel. The bank within, however, is here so studded w cays and shoals as to render the navigation extremely difficult.

Gladden Spit Cut. GLADDEN SPIT CUT.—This opening is about a mile to the Southward of the of Gladden Reef, and is one mile wide, with depths from three to four fathoms.

The reef from Gladden Spit, for a space of thirteen and a half miles, presents a w barrier, bare of cays. To the Northward of this, for a distance of about six miles to S. Water Cay, it becomes broken, and has upon it some dry rocks and small sand-bo between which are several little openings for coasters of ten or twelve feet draught.

South Water Cay. SOUTH WATER CAY.—The trees upon South Water Cay are about sixty feet ab the sea. On the W. side are some wells of good water.

Tobacco Cay Cut. TOBACCO CAY CUT.—From the above cay, a reef, nearly dry, trends N. ½ E. and a half miles. Here there is a narrow cut, carrying thirteen feet into the Victo Channel. On the N. side of it is Tobacco Cay, with trees upon it, the loftiest of wh is a very remarkable large fig tree, seventy feet high. The locality is also poin out by the Tobacco range of cays, two miles in extent, which lie at the back of opening.

The reef from this point to English Cay, twenty-six miles distant, forms again a w barrier, dry in many parts, and so steep that there are upward of fifty fathoms w within a fourth of a mile of it. The current generally sets strong toward it, acc panied by a heavy swell, so that too much caution cannot be observed in this neigh hood.

Glover Reef. GLOVER REEF.—In front of the bight between Gladden Spit and Columbus C and about twelve miles distant from the edge of the bank, is Glover Reef. This ba fifteen miles long N. by E. and S. by W., six miles broad at the N. end, and four m at its S. end. With the exception of the E. side, which curves slightly inward, it sents everywhere a straight barrier-reef, impassable to anything larger than a co or fishing-vessel.

At the Northern edge there are said to be two white sand-ridges, visible at some tance. At the S. end are four small cays and some dry sand-bores, which are inhab by fishermen, and furnish water. The N. E. of these islets lies on the edge of the b

bout three and a half miles from the S. E. extreme. The two S. W. cays lie on the iddle of the S. edge, and N. E. about ten miles from Gladden Spit; they are wooded, d have upon them some conspicuous cocoanut trees.

At the W. end of the S. W. cays there is an opening which will admit vessels not draw- g more than twelve feet into good shelter. In case of need, large vessels will find mporary anchorage under the S. W. end of the reef, in six or seven fathoms, with the W. cays bearing E. ¾ N., one mile and a half distant. Elsewhere the bank is so steep at the lead gives scarcely any warning. *Anchorage.*

From the N. E. point of the bank the S. extreme of Hat or Light-house Reef bears N. E. ½ E., fourteen and a half miles distant, and Cay Bokel N. W. eighteen miles.

LIGHT-HOUSE REEF, called in old charts Southern Four Cay and Eastern Reef, is e outermost of the outlying banks, its N. end being about forty-three miles from Belize, e nearest part of the coast. It is twenty-four miles long N. N. E. and S. S. W., but ng slightly irregular in outline, it varies from two to about five miles in breadth. It everywhere bounded by a barrier-reef, which at the N. end forms a half-moon curve tward, about four miles in diameter. The E. side of the reef, from the N. end, trends out S. S. W. for twelve miles, and then S. seven miles, to Half-moon Cay, without any ening, and steep to. *Light-house Reef.*

NORTHERN CAYS.—Close to the Northern extremity of the bank is a little islet, out half a mile in length N. and S., and a short distance to the Southward of it is a oded cay, one mile and a half long N. W. and S. E., and three fourths of a mile oad. *Northern Cays.*

SADDLE CAY.—About two miles to the Northward of Half-moon Cay, and a mile m the Eastern edge of the reef, is a small rocky islet with a clump of trees on it, ich form a saddle-shaped summit, hence its name. *Saddle Cay.*

HALF-MOON CAY is a narrow islet about three fourths of a mile long E. and W., h a curve to the Northward; it is from ten to thirty feet high, covered with trees and shes, and its S. side is bounded by a sandy beach. From the S. E. end of the cay a t of the bank runs off S. S. E. for about a mile, with depths from seven to ten fathoms. half a mile and also at a mile to the Westward of the cay, there are small openings rying twelve feet water into snug anchorages for vessels of ten feet draught. *Half-Moon Cay.*

The reef from the cay takes a Westerly direction for three and a half miles, and then ves suddenly to the Southward for four miles, to the S. extreme of the bank, forming angerous bight.

The extremity of the reef terminates almost in a point S. W. ¾ S., six miles from the ht-house, whence it takes a Northerly direction for about six miles, so that this end the bank, for this space, is only about two miles broad, and is sometimes called the Cay Reef. The course and distance from the S. end of it to Cay Bokel, at the S. end Turneffe is W. ¼ S. seventeen miles.

The inhabitants depend on rainwater caught in tanks, but they have only sufficient for r own consumption.*

At the S. E. point of Half-moon Cay, in lat. 17° 12¼′ N., long. 87° 32½ W., there is iron light-house, painted white, which exhibits a fixed light, eighty-eight feet above h water, visible in clear weather at eighteen miles. *Light.*

Near the light-house on Half-moon Cay is the old wooden light-house, which is now lookout station and residence of the Belize pilots. Vessels bound to Belize gen- lly make the light-house in order to obtain a pilot. Should this be done in the night, ought by no means to run on after sighting it, but keep well to windward under cient sail to prevent drifting toward the reef, bearing in mind that the current gen- lly sets strong to the Westward or N. W., and with strong Easterly winds there is a y sea. Should the weather be unfavorable for seeing the light from a wide offing, the reckoning at all doubtful, especially the latitude, it will be more prudent to haul and await daylight. *Pilots.*

s stated above, if necessary to stop for a pilot, which, however, is seldom the case, hey are always on the lookout, it will be safer to do so at the anchorage off Hat

AT CAY lies on the Western edge of the reef, about three miles from its S. end. small, and covered with bay cedar-trees, one of which in the centre rises a little e the rest, giving to the clump somewhat the appearance of a hat. *Hat Cay.*

ONG CAY lies also on the Western edge, about two miles to the Northward of the Cay. This island is very narrow, but about two miles long N. and S., and clothed trees skirted by mangroves. The reef from abreast the N. end of Long Cay forms dden bend to the Eastward for about two and a half miles, and then takes a North- direction for seven miles to a dry sand-bore. About two miles farther on it trends by N. ten miles to the cays at the N. extreme of the bank. Off this latter part *Long Cay.*

* It is proposed to enlarge the tanks, for the purpose of relieving vessels in distress.

there are depths from six to ten fathoms over rocky bottom, at the distance of ab half a mile from the reef, but elsewhere the edge is steep to.

Anchorage. In the event of having to wait for a pilot, instead of beating about in so danger a neighborhood, a vessel will find temporary anchorage under the lee of the W. side the reef, to the Southward of Hat Cay, in four and a half fathoms, with Hat Cay in with the E. extreme of Long Cay, and the angle from them to the light-house 45°.

Great care, however, must be taken not to steer too far in, for the reef is steep, and narrow strip of soundings extends to only a short distance.

Turneffe Islands. TURNEFFE ISLANDS.—This extensive cluster of mangrove islands lies on a ba of coral and sand thirty miles in length N. and S., and from four to nine miles in bread From near the S. end to within six miles of the N. end of the bank they are so clos grouped, that at a distance they have the appearance of being one flat island. Th are, however, several bogues or openings leading into large lagoons, having from fi to eight feet water, and abounding in turtle and fish. The only one inhabited is Indi Cay, situated on the E. side of the group, which is partially cultivated, and from artic occasionally dug up, it would appear to have been settled at some period by the ab rigines of the adjacent continent.

They are all skirted by a barrier reef at only a short distance from the E. and W. sid but from the N. end, as before stated, it extends out six miles from the main body of islands. Upon this part there are three detached cays, called Three-Corner, Crawl, a Mauger.

Lights. Mauger Cay, the outermost and much the smallest of the above cays, lies about a m and a half from the N. E. point of the bank; and upon its N. W. end, in lat. 17° 36′ long. 87° 46′ W., there are three fixed white lights exhibited on a triangular frame, t upper one ninety-five feet, the two lower ones seventy-five feet, above the sea, visible clear weather at thirteen miles.

From them the N. end of Light-house Reef bears E. by S. ¼ S. twenty miles, and George's Cay W. by S. ½ S. eighteen miles. From the N. W. point of the bank to nearest part of the Honduras Reef W. of it the distance is eleven miles.

Anchorage. There is said to be anchorage for small vessels to the Westward of Mauger Cay; a under the W. side of Crawl Cay is six or seven fathoms on the edge of the bank, the end of the cay bearing E. ½ N. about a mile distant. Vessels leaving Belize general discharge their pilots here.

Cay Bokel. CAY BOKEL.—Close off the S. end of the main group are three or four small detach islets, the Southernmost of which is Cay Bokel. This little low islet is composed of sa clothed with bushes, and has upon it some conspicuous cocoanut trees.

From the cay the bearing and distance to the S. end of Hat Cay Reef is E. ¼ N. sev teen miles; to the end of Glory Cay Spit S. S. W. ½ W. five and a half miles; and to lights on English Cay N. W. ⅓ N. thirteen miles. The distance between the W. extre of the Turneffe Reef and the sand-bore at the entrance of the Belize ship-channel is o four and a half miles, and this is the narrowest part of the passage.

Anchorage. The edge of the bank lies close to the S. side of the above cay; but soundings a off about a mile to the Westward of it, where anchorage will be found in five six fathoms, the cay bearing E. by S. or E. S. E., and the first opening in the main gro N. E.

Caution. Vessels proceeding to Belize, overtaken by night, will find it more advantageous a prudent to lie at the above anchorage until daylight than beat about in so dangerou locality.

Those of moderate draught will find a clear anchoring spot off Joe's Hole, about miles to the Northward of Cay Bokel, and at several other places under the W. side the reef, where soundings extend out from half a mile to a mile. It requires, howev very great care to steer clear of the numerous rocky patches, and not to shoot wit the depths of five or six fathoms.

River Belize or Valiz. RIVER BELIZE or VALIZ, the Spanish pronunciation of Wallis (the name an English buccanier who discovered the river), takes its rise in the mountains wi bound the Honduras territory at the distance of about a hundred miles direct from shore. Its general course is about E. N. E., but it is very tortuous, and empties itself two mouths, one about three and a half miles N. W. of the other; the S., however the principal entrance, and is navigated by large pitpans to a great distance. Gold is said, has been found in a branch of this river, called Roaring Creek. There depth of about four feet at the entrance. The town of Belize, and seat of governm of British Honduras, stands at the Southern mouth of the river of that name, wh divides the town into two parts, and is crossed by a wooden bridge of two hundred twenty feet span, and twenty-six feet in width. The land being very low and swam the houses are constructed of wood, and raised about ten feet from the ground on pil mahogany.

Fort George, which protects the town and anchorage, lies on the N. side of the trance to the river, in lat. 17° 29′ 20″ N., long. 88° 11′ 53″ W.

Water is obtained from tanks, with which every house is furnished. In the rainy sea- the water of the river becomes drinkable at a short distance above the bridge, but he dry months it is not wholesome within fourteen miles of the town. There are some wells on Water Cay, at the entrance of the ship channel, about nine miles n the town. Other supplies are not certain at all times. *Water.*

n front and to the Southward of the town is a sheet of water, about ten miles in ex- E. and W., and three miles in breadth, protected to seaward by the main reef and nerous mangrove islands, called Drowned Cays and Triangles. In the Western por- are several small detached patches with depths of four and three and a half fath-, and one in the middle of the basin with three fathoms; but in the Eastern part for pace of four miles from the cays, there are regular depths of six and seven fathoms sand and mud, affording secure anchorage for vessels of the largest class. *Harbor.*

he Northern part of the harbor is bounded by the bank thrown up by the sand and is from the rivers. On the edge is a narrow ledge about a mile long E. and W., ed the Stake Bank, the centre of which is nearly dry, and there is here a stake bea- with a cask on the top, twenty feet above the sea E. S. E. three and a half miles n Fort George. There are five fathoms two cables to the Southward of it. *Beacons.*

t two and a fourth miles to the Westward of the stake, on the edge of the three-fath- line, is a small patch of six feet water, called the Middle Ground, upon which there floating beacon, with Fort George bearing N. W. ½ N. a mile and a half distant, and e beacon E. ¾ S. *Middle Ground.*

nglish Cay is similar in formation to Goff's Cay, and has upon it three fixed lights triangular frame; the upper one is ninety-five feet, the two others seventy-five feet e high water, and they are visible at three miles. From them Cay Bokel bears ½ S. thirteen miles; the N. W. point of Turneffe N. N. E. ¾ E. twenty-two miles; the church at Belize N. W. twelve and a half miles. *Lights.*

HE SHIP CHANNEL, leading into the harbor from the Eastward, lies between lish Cay and a small sand-bore just above water a mile and a half N. E. ¼ N. of it, half a mile S. E. of Goff's Cay. The latter is very small and sandy, and upon it are e bushes.* *The Ship Channel.*

he channel is from four to six cables wide, with depths from eighteen to even thirty oms, but it is so extremely tortuous and sharp in its turns that safe directions can rcely be given for a stranger, who ought, therefore, to obtain a pilot from the station Half-moon Cay. However, with the assistance of the chart and some local experi- the following directions may be useful in case of need.

essels approaching from the Northward should keep an offing of at least two miles n the cays to avoid the main reef which skirts them. The sand-bore at the entrance uld also have a berth of at least a mile, to avoid the doubtful shoals to the S. E. of Coming from the Southward, which is the general route, and being a mile to the tward of Cay Bokel, the course and distance to a mile E. of English Cay is N. N. ½ W., twelve miles. When English Cay bears W. by S., steer for it until Goff's Cay es open to the Eastward of Water Cay N. W. by N., when alter course to W. by N. When Spanish Lookout Cay comes open to the Westward of Water Cay N. ½ E., up N. N. W. (taking care before this not to shut Serjeant's Cay in with Water Cay . by N.) to clear Water Cay spit. Continue on the N. N. W. course until Goff's Cay line with the S. extreme of Water Cay S. E. by E., which mark will carry a vessel ss the flats in fourteen feet water at the lowest time of tide. The shallowest part with Curlew Cay just open to the Northward of Water Cay E. ¼ S., and the bot- is so soft that a vessel will receive no damage if she touches. The lead will tell n the flat is crossed, whence a course toward the church will direct to anchorage convenient. Vessels of heavier draught than fifteen feet must continue on through Grennel's Channel, the pilotage of which must depend on the eye and local know- e, for no safe marks can be given. *Directions.*

essels of large class overtaken by the night, or wanting a pilot, or wishing only to municate, instead of remaining under sail, will find temporary anchorage in five oms on the N. side of the entrance to the channel, with Goff's Cay nearly in line Curlew Cay N. by W., and the sand-bore N. E. half a mile distant. *Anchorage.*

e time of high water is uncertain; the rise is about one foot and a half, but is much enced by the winds. There is no tidal stream, but generally a slight outset. *Tides.*

INNER OR MAIN SHIP-CHANNEL.—Vessels leaving Belize for the purpose of ng off any of the rivers to the Southward or Eastward, proceed by a freely navi- e channel between the cays on the outer reef and the main, passing out in the lat- ase to the Southward of the Zapotillos. *Inner or Main Ship-Channel.*

e coast from Belize trends with but a slight inward curve S. twenty-four miles to on Point. At about seven miles from Belize the land becomes firm and reaches the hern boundary of the pine-barrens, which are never overflowed. The shore is low, the tops of the trees are from sixty to eighty feet above the sea; but at about twelve *Coast.*

* The cocoanut trees, described by some navigators, are said to have been destroyed.

miles it begins to rise in rounded hummocks, and at the distance of fifteen miles fr Belize, four miles from the shore, is a hill called the Dolphin Head, which is a conspi ous object from the offing.

All along, from abreast the Grennel Cays, which lie about four and a half miles fr the coast, the three-fathom line is about one mile and a half distant, whence the dep gradually increase to nine and ten fathoms in mid-channel, and up to the W. side of t cays on the reef twelve miles distant.

Colson Point is a round prominent bluff headland, on the parallel of Glory Spit, wh is fifteen miles distant.

River Sibun or Sheeboon. THE RIVER SIBUN or SHEEBOON empties itself from a large lagoon to the Nor ward of it, about six miles from Belize. This stream is of considerable magnitude next in commercial importance to Belize; its banks being extremely fertile and stud with plantations.

Manati, Mullins, and Salt Rivers. MANATI, MULLINS, AND SALT RIVERS.—At twelve miles to the Southward the Sibun, S. E. ½ E. from the Dolphin Head, is the entrance of the Manati. Ab seven miles farther on the Mullins River disembogues; and two and a half miles beyo this, at the bottom of a small bight one mile and a half to the Westward of Colson Poi is the mouth of Salt Creek.

North Standing Creek. NORTH STANDING CREEK.—From Colson Point the coast trends S. S. E. ab seven miles to North Standing or Indian Creek. There is here a settlement of Car which in 1841 numbered one thousand; and is divided into three villages nearly c nected, the Northernmost called Scotsman Town, the Southernmost Man-of-War Tow This stream is generally so full and rapid that the water is fresh just within the mou it is therefore, a good watering-place; it must be taken, however, above the wash and bathing places, and the casks must be rafted. A vessel may anchor in four fa oms, within less than half a mile of the entrance of the creek; still it is not so convenie as the South Standing Creek farther on.

Tobacco Channel. TOBACCO CHANNEL.—Abreast the North Standing Creek, at the distance of tw miles, are the Sand-Fly and Garbutt Cays, between which and the Tobacco range the Southward of them is the Tobacco Channel, carrying thirteen feet water. The spa between the cays and this part of the main is quite clean with eight to eleven fathe waters.

Coast. The coast from the creek continues on the same line of direction about two mi whence it curves to the Southwestward, forming a bay about two miles deep, which t minates at the entrance of the Sitte River, S. ten miles from the creek.

Cockscomb Mountains. COCKSCOMB MOUNTAINS.—The Dolphin ridge of hills terminates abreast Sta ing Creek. To the Southward of this there is an extensive plain of pine-barrens fr fifty to one hundred feet high, bounded by the Cockscomb Mountains, which, at the d tance of fifteen miles to the Westward of the Sitte, reach an elevation of about f thousand feet.

Sitte River. SITTE RIVER.—The entrance of the Sitte is readily discovered by the land proje ing out to a well-defined point, close off which is a small islet. In front of the entra is a dry sand-bank, and the river disembogues by a channel to the N. and to the S it; the former has five feet on the bar, the latter is only passable to canoes; inside bar there are from twelve to fifteen feet water. On the N. side of the point there some huts, and two and a half miles to the Southward of the islet is a village. Abre the Sitte the Blue Ground Cays are about five and a half miles, distant, but some shall ledges to the Westward of them contract the channel to three and three fourths m There is good anchorage in four fathoms, with Sitte Island N. about three fourths o mile distant.

Zapotillos Lagoon. ZAPOTILLOS LAGOON.—From the Sitte River the shore curves to the South ward, and three and a half miles from Sitte Island is the entrance to Zapotillos Lag which will admit coasters. A small river discharges itself into the S. end of the the water of which is fresh not far up. On the W. side of a creek at the N. end of lagoon, at the back of the village before mentioned there is a well.

South Standing Creek. SOUTH STANDING CREEK empties itself about two and a half miles to the So ward of the entrance to Zapotillos Lagoon. There is a large settlement of Caribs at entrance and along the banks.

Water. This river discharges so large a body of water that at times it is fresh just within mouth; and it is the most convenient place to water at on the coast, when wanti large supply. The bar, however, is too shallow for large boats, and the casks m therefore, be rafted.

Anchorage. Anchorage may be taken up in four fathoms about half a mile to the Eastward of entrance.

Coast. The coast from the South Standing Creek trends S. four miles to Jonathan Po whence it takes a S. W. direction for three miles, and then S. four and a half mile False Point, forming False Cay bight, which is about one mile and a half deep.

The main channel between Jonathan Point and the Quamino Cays is five miles w

eleven fathoms in the middle. The five-fathom line is about a mile from the coast; ays are steep to.

ALSE CAY.—Near the middle of the above bight, three miles from Jonathan Point about a mile from the shore, is False Cay. This narrow low islet is about half a long N. E. and S. W., covered with bushes and cocoanut trees, and at the N. end ome huts. Off the E. side foul ground extends out about half a mile, but the W. is steep to, and the channel within it carries five and a half fathoms. *False Cay.*

ug and well-sheltered anchorage will be found close off the W. side, and abreast it water may be obtained by digging wells. *Water.*

HE LARK ROCK is a little coral head of four feet water which lies a mile from Cay, with the Southwest Bugle Cay bearing S. by W. ¾ W., and the Northeast me of Lark Cay S. E. by E. ½ E. It has ten and twelve fathoms of water close d it. *Lark Rock.*

ACENTIA POINT is on the parallel of the Gladden Spit, which is twenty-three distant. About two cables to the Eastward of the point is a low swampy cay half e in extent, the trees upon which are about fifty feet above the sea. Here the cays e main reef approach so near the coast as to leave the channel only two and a half wide; and between the two Bugle Cays and the Potts Shoal one mile and a half e Southward of Placentia Point it is only one mile and a half in width; this is the west part. *Placentia Point.*

TTS SHOAL is a coral bank one mile and a half in extent N. and S. At the r end there are three fathoms with False Point N. by W., and S. W. Bugle Cay d at the opposite end are only two fathoms, with Harvest Hill W. ½ S., and False just open to the Eastward of Placentia Cay N. *Potts Shoal*

chorage will be found in four fathoms with the W. side of Placentia Cay N. and W. Bugle Cay E. ¾ S. The trees on the latter are seventy feet above the sea. the huts on the beach at Placentia Point there are wells of good water. *Anchorage.* *Water.*

working out of the above anchorage in a vessel of heavy draught do not bring the Bugle to the Northward of E. until False Point bears N. by W. to avoid the Potts l. *Caution.*

ACENTIA LAGOON is about nine miles long N. and S., and is only separated the sea by a very narrow ridge of low land, over which canoes can be hauled into s breadth varies considerably. The entrance lies a mile and a fourth to the West- of Placentia Cay, and carries seven to ten feet water into the interior, where the s are four to six feet. *Placentia Lagoon.*

coast from Placentia Lagoon to Monkey River trends S. S. W. ten miles, and is where low and swampy, and cut up by small creeks skirted by cays. From Mon- River to Negro Head it trends, with a slight curve, S. S. W. ½ W. six and a half It here becomes more elevated and bounded by a beach; and Negro Head rises onspicuous bold bluff. *Coast.*

shore is foul at the distance of about three fourths of a mile; and outside this oundings are everywhere very irregular. N. N. E. a mile and a fourth from the lies a very small islet called Bushy Cay; and S. E. by S. four and a half miles the head is the East Snake Cay.

RVEST CAY, about two miles from Placentia Lagoon, has upon it a conspicuous wooded table hill, eighty-two feet high. Elsewhere the trees are fifty to sixty bove the sea. *Harvest Cay.*

DDLE SHOAL.—At about two miles to the Southward of the Potts Shoal is a about half a mile in extent with fifteen feet water, from which Harvest Cay hill N. W. ½ N. two and a half miles, and the Bugle Cays in line with the W. end of Cay N. E. ¼ N. *Middle Shoal.*

NGUIN SHOALS, which lie about a mile to the Southward of the Middle Shoal, out a mile in extent N. W. and S. E., with depths from three and one fourth to d three fourths fathoms at the former end, Harvest Cay hill bearing N. N. W. ½ W. Cay kept just open to the Eastward of Placentia Cay bearing N., passes well o the Eastward of Middle and Penguin Shoals, and alongside the shallowest part tts Shoal. The channel between the Penguin and Pantile Shoals is three and one miles wide, the depths in which are very irregular, varying from four to fourteen s. *Penguin Shoals.*

NKEY SHOAL.—This small head of two and one fourth fathoms water lies about miles to the S. S. W. of the Penguins, with Harvest Hill N. ¼ W., and the huts at trance of the Monkey River W. S. W. four and a fourth miles distant. *Monkey Shoal.*

NKEY RIVER, which has two feet of water over its bar, is a rapid stream in the eason, and the water is fresh near the mouth. Wood is shipped from an anchor- it, but the neighborhood is dangerous to vessels drawing over fourteen feet. A foul ground runs off to the Eastward of the huts at the entrance a mile and a d at this distance there are only two and a half fathoms with Harvest Hill just in th the E. side of Palmetto Cay N. by E. ¼ E. Between the river and Monkey *Monkey River.*

Shoal there are also two banks with three and three and a half fathoms water, and sev fathoms between them.

Directions. The navigation of the inner channel, from Belize to Placentia Point, both ways, pr sents but little difficulty or danger, for the land and sea breezes are leading winds; it therefore, only interrupted in the season of northers.

Vessels generally leave Belize in the evening in order to reach Placentia Point ea in the following morning, so as to have full daylight in threading their way through narrows.

From abreast Grennel's Cay, at the distance of about a mile, the course and distan will be S. by E. twenty-seven miles, which will carry a vessel in mid-channel to wit three and a half miles of the W. side of the Cocoa-plum Cays, in lat. 16° 53′ N. T depths ought to be eight to ten fathoms; if she is to the Eastward of the course, depth will be eleven fathoms, and continue so close up to the cays without any alte tion; if to the Westward, the depths will be less than eight fathoms, and gradually crease to the shore.

From the above point the course will be S. by W. twenty-three miles to the entra of the narrows, about two and a half miles E. N. E. of Placentia Cay. On this line depths ought to be ten and eleven fathoms, muddy bottom, observing in this part of channel that there will be twelve to thirteen fathoms up to the cays, and gradually creasing depths to the shore, which should nowhere be approached in the night-ti within the depths of seven fathoms.

It will not be safe to proceed farther to the Southward without the advantage broad daylight to see the shoals. The last course brings a vessel to within a mile the Lark Rock, which is so dangerous that it will be far from prudent to bring up or three miles short of it, especially if the weather is unfavorable, for the soundings g no warning.

From the entrance of the narrows, with Placentia Cay W. S. W. distant two and a h miles, the course and distance is S. by W. ½ W. about twenty-five miles, and when East Snake Cay will bear N. N. W. ½ W. four and a half miles; and by keeping it this line for six miles, a vessel will pass three miles to the Westward of the S. W. r of the Zapotillos, and may then haul to the Eastward.

After entering the narrows the soundings are so extremely variable as to be of no sistance in the navigation. Should the wind be scant, after passing to the Southward Placentia, the E. side of that cay must not be brought to the Northward of N. by W W. until past the Potts Shoal; and then False Cay must not be shut in with Place Cay, N. ¼ W., before Harvest Hill bears N. W. by N., to avoid the Middle and Peng Banks. In standing to the Eastward toward the Pantile Heads, the S. W. Bugle must not be brought to the Westward of N.

Victoria Channel. VICTORIA CHANNEL.—By referring to the chart it will be seen that a ve bound Northward, and being abreast East Snake Cay, may haul to the N. E. into Victoria Channel. This route is safe for vessels of large draught, with room to wo although full of detached coral patches, carrying three and a half to four fathoms wa it is, however, so tortuous, and out of the direct line to Belize, as to be only service in a case of necessity.

Tides and Current. There is no tidal stream in the inner channel, but generally a Southerly current, wh after northers or heavy rains, runs at the rate of a mile an hour or more. The rise fall are irregular, and seldom exceed a foot.

General Directions. Vessels bound from Europe or North America to Belize, having entered the Carib sea through the channel to the S. of Antigua or the Mona passage, will run along th sides of the Great Antilles.

Taking a departure from Jamaica at the Pedro Bluff, a course should be taken to pass to the Southward, and in sight of the Swan Islands, which are visible at tw to fifteen miles. The current in this track will, in general, be Westerly, at the ra a half to a mile an hour, as far as about the meridian of 81° W. off the Rosalind B Here it will most probably diverge to the N. W. with increased strength, which wi readily detected by close attention to the latitude, which must be continually che in approaching the islands.

From the Swan Islands the track lies directly on the parallel of the Half-moon L house, which must be strictly maintained by the same means. The current will resume its Westerly direction until within fifty or sixty miles of the Light-house when it will draw again to the N. W. and N.; and too much pains cannot be take trace its deviation and strength, for if the light is not made, very great risk and venience may ensue.

Having sighted the light, and received a pilot from the station at Half-moon Ca failing this on account of bad weather, the navigation to English Cay will be fou page 787.

Vessels bound Northward, to Europe or North America, having discharged their off Mauger Cay light, should shape their way so as to pass to the Westward of the

orro, and in daylight. Should the wind be scant, it will also be safer to pass between zumel and the main, for there is always a dangerous indraught on the E. sides of both ese places. Indeed, an advantage will be gained by keeping in the Northerly inshore eam, which runs off to the N. E. part of Yucatan, and along the Eastern side of that nk, at the rate of two knots, and at times even three knots. Thence the route lies rough the Florida Strait.

If proceeding to the Eastward, especially in the rainy season, a vessel will, of course, ul out of Mauger Cay, and work to windward, according to the state of the winds d current; but no risk whatever should be incurred in attempting to weather the hinchorro.

In the season of the breezes, when the trade-wind hangs to the Northward of E., and rthers prevail, it will be more advantageous to pass out between Turneffe and Glov-'s Reef, and work up off the main in the eddy stream; but this requires very great re.

The coast from Belize takes a Northerly direction for about fifty-two miles to Rocky int; here it trends Westerly for sixteen miles to the River Nuevo, whence it runs N. E. thirty-eight miles to the head of Chetumal Bay. *Coast.*

CHETUMAL BAY or Bacalar Sound, from its entrance abreast the S. end of Amber-is Cay, twenty-five miles from Belize, is about fifty-eight miles in extent N. and S., but ly from seven to twelve miles wide. The land round is everywhere low and swampy, d densely wooded, except between the San José and Hondo rivers, where there are ne cliffs of indurated red loam and moderately elevated land. Not far from the coast, arly midway between these rivers, lies Tamalca Island, inside which there is good elter for boats. At the head of the estuary there is a stream of fresh water, which is d to communicate with Ascension Bay. Between the S. end of Ambergris and the in a mud-bar runs right across, called the Bulkhead, from its perpendicular sides, ich has only five feet water over it. Within it are channels carrying from eight to elve feet water into the interior of the bay, which are pointed out by stakes, so that s only accessible to large flat-bottomed bongoes, which convey the wood cut on the nks of the rivers to Belize. *Chetumal Bay.*

HONDO RIVER.—About ten miles to the Northward of the Nuevo is the Hondo ver, which is reported to have a course of thirty leagues, and marks the Northern ndary of Honduras. The bar has five feet water, but is obstructed by many rocky ds which are not visible when the water is thick, and are dangerous in the night-time. short distance from the mouth, on the left bank, there is a small military post off catecos; and about seven miles up an arm of the river branches off to the Northward, d communicates with the Bacalar Lake. *Hondo River.*

SAN JOSE RIVER enters the bay about seventeen miles to the Northward of the ondo. It is said to take its rise thirty leagues from the coast, and drains the Bacalar ke. The bar has a depth of only two feet, and the entrance is discovered by some w cays, covered with rushes which lie close off it. Outside them there is a curious, p hole of five fathoms water. *San José River.*

OUTER CAYS.—From the sand-bore at the entrance of the main ship-channel to lize, the edge of the bank runs N. by W. thirteen miles to St. George's Cay, skirting Drowned Cays at from one to two miles, and is everywhere foul and steep to. *Outer Cays.*

ST. GEORGE'S CAY lies about two and a half miles to the Northward of the Drowned ys, N. E. ½ E., eight miles from Belize Church, and one mile and a half from the edge the reef. It is half-moon shaped, nearly three fourths of a mile long and a cable oad, low and sandy, and readily distinguished by the houses and cocoanut trees upon Being free of swamps and exposed to the pure sea breeze, it is a comparatively lthy spot, and consequently resorted to by invalids from Belize; but it has no fresh ter. *St. George's Cay.*

Abreast the S. end of St. George's Cay there is a break in the reef, which affords an ry to anchorage close up under the W. side of the reef for two or three vessels of derate draught. It is exposed to the S. E., but partially sheltered from that quarter the Turneffe Reef. *Anchorage.*

n approaching the anchorage from the Northeastward, run down from Ryder's Bluff e Northernmost cay of the Drowned group) just open to the Southward of the S. end St. George's Cay, W. by N. Haul close round the S. end of the reef and bring up in ee and a half fathoms, with the extremity bearing E. S. E. about two cables distant. working out, care must be taken to avoid a small patch of only seven feet water, ut three fourths of a mile to the Southward of the anchorage, from which the S. end St. George's Cay bears N. W. by W. ½ W., and Shag Bluff the E. extreme of the owned Cays, S. ¼ E. *Directions.*

CORKER CAY.—The reef from St. George's Cay takes a N. ¾ E. direction twenty es to abreast the S. end of Ambergris Cay, without any opening whatever, and is p to. At about ten miles from St. George's is Corker's Cay, and between them are k's and Long cays. Corker Cay is about four and a half miles long from N. to S. *Corker Cay.*

but very narrow, and has upon it some wells of good water. Between Corker and Ambergris, about one mile and a half from the latter is Cangrejo Cay. The edge of the reef is nearly two miles outside Corker Cay.

Ambergris Cay. AMBERGRIS CAY is nineteen miles in length N. and S., two miles in breadth at the S. end, and four at the other extremity. It is very low and swampy, and only separated from the main by a narrow boat channel carrying two and a half feet water, which is so tortuous that the island appears as part of the main land.

From the S. extreme of the island the shore runs N. N. E. seventeen miles, and then turns sharp to the N. N. W. ½ W. three and a half miles to the boat-channel. The angle forms Rocky Point, which projects out very prominently and distinctly.

The reef skirts the shore at the distance of from half a mile to a mile and a half off Reefs Point, whence it gradually approaches the land again; and at about ten miles to the Northward it comes to within a fourth of a mile of the coast.

Coast. The coast from Ambergris Cay to Herrero Point, at the entrance of Spiritu Bay, trends N. by E. seventy-four miles, without any indentation whatever. It is all along steep to, and at no part does the reef extend off more than a fourth of a mile. It is everywhere low and flat, and the tops of the trees are from sixty to eighty feet above the sea.

Chinchorro or Northern Triangles. CHINCHORRO, OR NORTHERN TRIANGLES.—This very dangerous bank, lying immediately in the track of the homeward-bound vessels from Belize, is twenty-six miles long N. and S.; at about three miles from either end it is six miles broad, whence it tapers to rounded points at the extremities. At the N. W. spit, ten miles from the N. end of the bank, it is eleven miles across in an E. by N. direction, and the spit is fourteen miles from the nearest part of the main land. The greater part of the bank is bounded by a barrier reef, which, on the E. side of Great Cay, forms a most dangerous bight, as the current sets strong into it and over the whole of this side of the reef. At the N. extreme of the bank there is a break in the barrier, and soundings extend off about half a mile from it.

At the S. extreme of the bank there is also a ledge of soundings for a mile to the S. W. of Sandy Cay, with depths from seventeen to five and a half fathoms within a fourth of a mile of the islet. For a space of three and a half miles to the N. W. of the cay the reef is broken, and leaves several openings leading into the interior, which are navigable by the eye for fishing-vessels. More accidents occur on this bank than on any other part of the coast of Honduras.

North Cays. NORTH CAYS.—At the N. end of the bank, one mile and three fourths from the edge of soundings, are two low, narrow islets lying close together, which occupy a space of about three fourths of a mile N. and S., and the trees upon them are about fifty-five feet high.

Great Cay. GREAT CAY.—In the middle of the bank, on a direct line between the cays at the extremities, five miles from the Western edge and one mile and three fourths from the Eastern, is Great Cay. This islet is merely a narrow, low ridge of sand, two and a half miles in extent N. and S., clothed with buttonwood, mangroves, and cocoanut trees which reach the height of about fifty-six feet above the sea, enclosing a salt-water lagoon, about one mile in length.

Sand Cay. SAND CAY.—At about three fourths of a mile from the extreme S. point of the bank is a barren cay, about half a cable in extent and five feet high, composed of indurated sand and bleached coral, in lat. 18° 23′ 20″ N., long. 87° 23′ 41″ W., N. N. E. fifty-two miles from the N. W. point of Turneffe Reef.

Sand-Bores. SAND-BORES.—On the N. W. part of the bank are numerous shallow sand-bores visible at a considerable distance, and may be seen even at night in favorable weather.

Anchorage. In moderate weather, and in case of necessity, a vessel may anchor in five fathoms between the Skylark and Blachford ledges, the latter of which is dry, with Sand Cay E. ¾ S. about one mile and a half distant. There is also a small clear space between the Blachford Ledge and Wreck Reef, where anchorage may be taken up in six fathoms with Blachford Ledge S. E. distant half a mile, and the Sandy Cay about E. S. E. The edge of the bank must be approached very cautiously, for there is no room to shoot. Elsewhere the reef is so steep that the lead will give no warning.

Spiritu, or Santo Espiritu Bay. SPIRITU, OR SANTO ESPIRITU BAY.—The entrance to this large bight is funnel-shaped, and four miles deep, the outer part between Herrero and Fupar points on a N. ¼ W. line, being eleven miles wide, and the inner part, between Owen and Lawrence points, only two miles across. From Fupar Point a narrow reef, steep to, extends Southward upward of five miles, leaving between it and a similar reef, running Northerly from Herrera Point, and opening one mile and a half wide, carrying from five to six fathoms into anchorage for small vessels in fifteen feet water. The interior runs in S. W. by S. direction for about twenty miles. A bar, however runs in front of the inner points, over which, at one spot, may be carried eight feet water, but in a heavy swell it is not safe for boats; inside it the depths are sixteen to eighteen feet, and they gradually decrease to the shores.

On the S. E. end of Owen Island, near a conspicuous cocoanut tree, there is a well of d water; and on the main, one mile and a fourth to the Southward of it, is a small ing establishment. *Water.*

Run in with Owen Point W. S. W., and, hauling short round either end of the reefs, hor as soon as shelter is obtained. If to the Northward—which will be the best in season of the breezes—with Lawrence Point W. S. W., and Fupar Point N. by E. in een feet about three fourths of a mile from the reef. If to the Southward, for the pose of watering, bring up in the same depth with Owen Point W. ½ N. and Herrero nt S. by E. *Directions.*

ASCENSION BAY.—From Fupar Point the coast trends about N. ½ E. eight miles Bird Point, and then N. W. ½ W. three and a half miles to Wilson Point, at the en- nce of Ascension Bay, which has four remarkable coacoanut trees upon it sixty feet h. This bight also extends in a S. W. direction about eighteen miles: and the swampy res of the interior come so close to Spiritu Bay that, on the W. side of Fupar Point, y are only separated by a sandy haulover three hundred yards broad. *Ascension Bay.*

The entrance between Wilson and Allen points is eight and a fourth miles wide in a N. W. ¼ W. direction, but nearly in the middle is a narrow cluster of mangrove cays ut forty-five feet high, called Culebra, occupying a space of about four miles in a W. W. line, which serves to distinguish this opening from Spiritu. At the N. side of m there is a single cocoanut tree.

The opening to the Southward of these islets is one mile and three fourths wide, and to the Northward of them three and two thirds miles across; both of them are ob- cted by a bar, over which eight feet may be carried between the cays and Allen nt, but with much swell it is dangerous to boats; in the centre of the bay the depths eleven and twelve feet, decreasing to the shores. A broken reef also runs to the thward and Southward from the outer points, leaving a clean opening a little to the hward of Allen Point two miles wide, carrying three to three and a half fathoms anchorage for vessels of light draught in fifteen feet water, under shelter of either

here are several wells and ponds of good water at Allen Point, and most excellent ng and sporting. The largest fishing establishment on this part of the coast is about e and a half miles to the Westward of the point, and the huts are conspicuous ob- at a considerable distance. *Water.*

The anchorages here are more confined and more exposed than those at Spiritu; it is, ever, a more convenient place to water at. With this view, all that is necessary is n in with the fishermen's huts just open to the Southward of Allen Point W. ¾ N.; hauling up close round the end of either reef, anchor in fifteen feet as soon as the er is obtained from the prevailing trade breeze. *Directions.*

The tides are extremely irregular at both these places, but it appears to be high water nd change at about 8h. and the rise a foot. *Tides.*

The coast from Allen Point trends about N. by E. for nineteen miles to Blossom Point oca de Paila. Here it forms a slight bend to the Westward. and then takes a herly direction fifteen miles to the Kilbride or Ynan Cliffs. This spot is very re- able, being the only part composed of cliffs on the whole of this coast line; they bout three miles in extent, and eighty feet high. and at the N. end is the ruin of a square watch-tower resembling the turret of a castle. Several more of these ngs will be seen between this and Cape Catoche. *Coast.*

m the Ynan Cliffs the shore runs N. N. E. ½ E. sixty-two miles to Nisuc Point, the remity of Cancun Island, with scarcely any curve whatever. It is all along so low he tops of the trees are only about fifty feet above the sea, and a broken reef skirts the distance of about a fourth of a mile, with ocean depths almost alongside it; the reef, however, is a channel for canoes.

ZUMEL.—The N. W. end of this island lies only nine miles from the main land, s S. end is twenty miles distant, in lat 20° 16′ N., long. 87° 0′ W. It is every- low, and has a flat appearance, the uniform height of the trees being about seven- above the sea; and it is uninhabited. *Cozumel.*

m the S. end the E. side runs on a straight line N. N. E. ½ E. twenty-four miles, composed of small sandy beaches intersected by rocky points, from which sound- xtend off about three fourths of a mile. At about four miles from the N. point island, close to the beach, is one of those remarkable stone buildings similar to n the main, and apparently in good preservation, but it is seen at only a short ce; there are also two more a little farther to the Southward, but completely in-

m North Point a reef runs off to the Northward one mile and a fourth. This end island is about ten miles broad from E. to W. and the shore forms a sandy bay one and a half miles deep, backed by swamps and lagoons of brackish water. At W. point there is a fresh-water pond. From this end a large bank of sand and tretches off to the Northward, the outer extreme of which lies N. E. ½ N. ten and

a half miles from the N. W. point, and N. N. W. six miles from the N. point. T depths at the outer part are very regular, decreasing from seventeen to five fathoms the distance of about two and a half miles from the middle of the bay; but within the bottom is studded with small rocky heads.

The Eastern edge of this bank is clearly defined by the current ripplings which times have the appearance of breakers. The W. side of the island runs nearly strai S. S. W. for twelve miles, when it curves to the Southward two miles, and then runs S. E. ½ E. seven miles to the S. point, which is low but well defined. Capt. W. Sand H. M. S *Espiegle*. 1828, states that the edge of soundings runs along this side at the tance of about three fourths to a mile and a half, and is pointed out by the discolo water, and strong eddy ripplings, which are alarming. There is, however, no dan and anchorage may be taken up anywhere on sand and stiff clay. He also states about eight miles from the N. W. end there is a small lagoon, in the entrance of wh are five and six feet water, but it is not easily discovered until very near it; there small islets all about it, and it abounds in fish of the finest quality. In many of places the seine may be hauled with success, but the beach is generally skirted small rocky patches near the edge of the water.

There is also a large lagoon at the S. end of the island, but the entrance is not poin out. Water was sought for but not found.

Anchorage. There is good anchorage in six fathoms, protected from the Easterly swell, and out the influence of the current, with the N. W. extreme of the island S. W. by W. and point E. The water is so clear that the anchor may be seen lying on the sand.

Arrowsmith Bank. ARROWSMITH BANK is oval shaped, fourteen miles long, N. by E. and S. by and about five broad, and the depths are from twelve to twenty-five fathoms on e bottom. The S. end of it lies twenty-seven miles N. N. E. of the N. point of Cozu and eighteen miles E. ½ S of Nisue Point. The N. end is in lat. 21° 12 N., long 23' W., eleven miles from the edge of the Yucatan Bank, and nineteen miles E. ½ the S. end of Mugeres.

Current. The current runs over Arrowsmith Bank to the Northward at the rate of two, even three knots, and the S. end is discovered by the strong ripplings.

Cancun Island. CANCUN ISLAND.—This island is merely a narrow ridge of sand hills, from fi to sixty feet high, seven miles long, N. and S. and a fourth of a mile broad. From N. end it trends to the Westward, enclosing a lagoon with from three to six feet wa leaving a narrow canoe entrance at either end. Several fishermen's huts are scatte about the Northern arm, and at the N. E. point there are some wells.

Mugeres Island. MUGERES ISLAND.—The S. end of this island lies about four miles N. by E. from the N. end of Cancun, and five miles from the nearest part of the main. It is and a half miles long, about N. W. and S. E.; in the middle it is scarcely half a broad, and the extreme ends terminate in distant points. The Southern portion slightly elevated, and the tops of the trees are about ninety feet above the sea. At extremity of the island there is one of those remarkable towers about ten feet sq before noticed; and at the opposite end there is a very conspicuous square black six feet high, called the Anvil. The E. side is composed of rocky shelves, so steep there is no reef, and six fathoms water within a fourth of a mile of the shore. A the middle there are some white cliffs.

Becket Rock. BECKET ROCK.—Very nearly midway on a direct line between the ends of geres and Cancun Island, is a very small black rock only two feet out of the w called Becket Rock. It is steep to on its E. side, but to the N. E. and S. W narrow coral ledge runs from it about half a mile, with depths of three and a fo fathoms.

Mugeres Harbor. MUGERES HARBOR.—With Becket Rock N. E. ½ E., and the N. E. point of cun Island S., is a small coral patch of fourteen feet, leaving a passage between the reef which runs off from the point three fourths of a mile wide, carrying four half fathoms. Between the N. end of the Becket Ledge and Mugeres the passage mile and a half wide, and quite clean, with depths from four to five fathoms, le into anchorage off the W. side of Mugeres. Indeed, in case of necessity, a vessel of class might be warped into a secure pool near the middle of the island, where th twenty feet water, almost alongside the shore.

Water. There are some wells at a sandy point at the N. W. end of the island, and goo wood may be obtained at the S. E. end.

Directions The opening is so conspicuous that there is no mistaking it, and there is nothi the way but the Becket Rock, which is soon seen. The S. end of Mugeres is st but it will be better to run down with a ruin near some small sand hills on the n W. by W. ½ W. These sand hills are only fifteen feet above the sea, but about mile W. S. W. of them there is a clump of trees eighty-five feet high. The above will lead in midway, and when the S. end of Mugeres bears E. by N., and the point of Cancun Island S. by E., anchor in four fathoms. If intending to refit until the Anvil Rock is in line with Wells Point N. ¼ W., which line will lead

pool. Bear in mind, however, that the channel though straight is only two cables e, where depths of from seventeen to twenty-seven feet can be carried.

n working out, when Becket Rock bears S. by E. ½ E. a vessel should not stand far- to the Northward than to bring the S. E. point of Mugeres N. E. by E. ½ E. If draw- over eighteen feet she ought not to bring the Western sand-hill ruin to the North- d of W. by N. ½ N. to avoid the Becket Ledge, until the S. E. point of Mugeres bears E.

is high water, full and change, at 9h. 30m., and the rise one foot and a half. The therly current runs through the opening, and between Mugeres and the main, at the of a knot and a half. *Tides.*

HE YUCATAN BANK may be said to commence abreast Nisuc Point. The edge about two miles distant, whence it takes a N. N. E. direction for thirty-two miles to 21° 30′ N., nineteen miles E. of Contoy Island, and then trends Northerly, as has n described on a previous page. For about twenty miles from Nisuc Point it is very p, and the first cast will be less than twenty fathoms; but to the Northward of this ill most probably be thirty fathoms, and the twenty-fathom line is about twelve miles n Mugeres and Contoy, over fine white sand. *Yucatan Bank.*

he coast from abreast the N. W. end of Cancun Island, trends about N. by W. teen miles, and is composed of sand-hills scantily covered with brushwood, from nty to thirty feet above the sea. At about eleven miles from Cancun there is a ow ridge of sand only seven feet high, almost separating a narrow neck of land, lar to that which forms Cancun, and which is generally called Blanquilla Island. rom the N. W. end of Mugeres, a shallow ledge of coral and sand trends N. by W. t five miles, to within one mile and a half of Blanquilla, leaving a narrow channel le, carrying five fathoms. The current running out over it causes a ripple like kers; but it has from ten to fourteen feet water. From the S. end of Blanquilla a runs all the way to Contoy, leaving one or two openings for boats *Coast.*

ONTOY ISLAND.—The Island of Contoy may therefore be said to form the N. E. eme of the Yucatan peninsula, the N. W. point of which lies in lat. 21° 31¾′ N., long. 48¾′ W. It is four and a half miles long N. N. W. and S. S. E. and half a mile across s broadest part. The E. side runs straight, and is composed of a narrow ridge of l-hills clothed with bushes and small trees to the height of about sixty-five feet e the sea, to within one mile and a half to the N. W. point, when it forms a low ow ridge of land, off the extremity of which are two small rocks. The shore is ted at the distance of about a cable's length by a reef nearly dry, which connects f to the Blanquilla Reef. From the N. W. rocks a narrow ledge of coral runs off W., with depths from three to three and a half fathoms. *Contoy Island.*

he greater part of the W. side of the island is cut up by numerous little lagoons with fish.

here is a well at the broad beach near the N. W. end, but the water is not so good at found at another, at the S. end of the island, which is used by the fishermen. firewood may also be obtained on the E. side. *Water.*

fter the season of northers, good anchorage will be found under the W. side, in e and a half fathoms, sand and weed, with the N. W. point E. about a mile distant. It posed to the N. E. breeze, but the ledge shelters it in this direction. *Anchorage*

approaching the anchorage from the Eastward, in a vessel of heavy draught, care be taken to avoid the Northern ledge, for the soundings give but little warning. ten-fathom line comes close up to it; and when to the Westward of it the depths be six and seven fathoms, the W. extreme of the island bearing S. S. E. ½ E. *Caution.*

is high water, full and change, at 9h. 30m., and the rise is about a foot. *Tides.*

AS BLANCAS LAGOON.—The soundings gradually decrease to the Westward Southward, until they reach, in the latter direction, numerous shifting sand-ledges, y dry in many places, leaving narrow channels, carrying ten to twelve feet, into the Blancas Lagoon. *Las Blancas Lagoon.*

is inlet, which lies between Blanquilla and the main, is ten miles long, from two to miles in breadth, and affords secure shelter to vessels of eight feet draught. A stream, called the Blancas River, empties itself into the S. end, which admits small s to a short distance, where the water becomes fresh. At the W. side of the en- e, close to the main, is Lucio Cay.

e coast from Lucio Cay trends N. W. ½ N seven miles, when it runs Westerly about miles, to the E. end of the Yalahau Lagoon. This part is more elevated, and ly wooded, the tops of the trees being from one hundred and twenty to one hun- and thirty feet above the level of the sea; it is also fringed with mangrove cays, een which are canoe channels, leading to little fishing villages, both on the cays and ain. *Coast.*

the angle, where the coast trends to the Westward, there is the ruin of a large h, which is the only remarkable object in this neighborhood, and very conspicuous the sun shines upon it from the Eastward. It bears W. by S., distant nine miles

from the N. point of Contoy; and from this quarter the chimney, which is forked at lower part, will be seen just above the trees. From the Northward it is visible when brought to bear S. S. W., when it is hidden by the wood; and from this direction it the appearance of a hipped-roof building with a high chimney at its W. end.

Cape Catoche. CAPE CATOCHE.—About three and a half miles to the N. W. of the ruin there a large opening, called the Bocas de Joujon, leading into the E. end of the Yalahau goon. The cay to the Westward of this is fifteen miles long, and is probably the Jo or Jolvos Island of the old Spaniards, but it is not known under that name by the ent inhabitants at this part of the coast.

The entrance of the Bocas is pointed out by some cocoanut trees on the E. side some huts on a little sandy cay just within it. About five miles from it, and six miles W. ¾ N. from the N. point of Contoy, the shore forms a rounding, tolerably dark sandy projection, which has been called Cape Catoche; it is the extreme N. E. point the coast, and in lat. 21° 36′ N., long. 87° 4½ W. Variation 7° E. in 1861.

TABLE OF LATITUDES AND LONGITUDES.

The Longitudes are reckoned from the Meridian of Greenwich.

e positions in the Table of Latitudes and Longitudes are from the following authorities:—
ose of the United States are from the U. S. Coast Survey,—the remainder are from the British
iralty publications.

PLACE.	*PARTICULAR SPOT.*	*Latitude, North.*	*Longitude, West.*
		° ′ ″	° ′ ″
Belle Isle	North-east point	52 01 08	55 15 30
"	Magnetic Lighthouse	51 53 00	55 22 15
Offer Wadham Light	On the island	49 36 00	53 46 00
Bonavista Light	On the extremity of the cape	48 42 00	53 08 00
Trinity Bay, Catalina Harbor, south side Light	Green Island	48 30 45	53 06 18
Bacalhao or Baccalieu Island Light	North part	48 08 30	52 51 00
Harbor Grace Light	On the N. island, at the entrance, 1 mile from the mainland, 3¼ miles from the town, 110 yards S. W. of the White Rock, on point of beach, entrance of harbor	47 42 40	53 07 02
St. John's Harbor Light	Fort Amherst, S. entrance	47 33 50	52 39 58
Cape Spear Light	On the cape	47 30 20	52 36 40
Cape Race Light	On the cape	46 40 00	53 04 30
Cape Pine Light	On the cape	46 37 04	53 31 45
Cape St. Mary Light	On the cape	46 49 34	54 11 34
Great Burin Island Light	On Dodding Head	47 00 26	55 08 43
St. Pierre Island Light	Gallantry Head	46 46 03	56 09 07
	Canon Point, St. Pierre Harbor	46 47 02	56 09 38
Cape Ray	South extreme	47 37 02	59 18 15
Cod Roy Island	South side of Boat Harbor	47 52 30	59 23 52
Red Island	Shingle S. E. Point	48 33 50	59 13 23
Port Saunders	North-east point of entrance	50 38 28	57 18 00
Rich Point	Western extreme, high water	50 41 39	57 24 20
Ferrole Point	Cove point, N. E. extreme	51 02 14	57 02 45
Green Island	1¼ cables from north-east end	51 24 10	56 33 50
Cape Norman	North side of point of cove, south of east extreme	51 37 57	55 53 25
Cork Point	East extreme	51 57 53	55 52 50
Forteau Bay	South-west extreme of point.	51 25 29	56 56 30
Amour Point	Lighthouse	51 27 35	56 50 53
Mecattina Harbor	South point of Dead Cove	50 46 44	58 59 20
Grand Mecattina Point	South-east extreme	50 44 02	59 00 10
Natashquan River	Southern point of entrance	50 06 57	61 47 55
Mingan Harbor	Sandy Point	50 17 24	64 01 53
Mingan Island	Summit	50 12 48	64 07 28
St. Margaret Point	Extremity	50 02 25	66 44 40
Point de Monts	Lighthouse	49 19 35	67 21 55

TABLE OF LATITUDES AND LONGITUDES.

	PLACE.	PARTICULAR SPOT.	Latitude, North.	Longitude, West.
			° ′ ″	° ′ ″
St. Lawrence, South Shore.	Cape Despair	Extreme point	48 25 22	64 18 29
	Cape Gaspé	Flower Pot Rock	48 45 02	64 09 26
	Cape Chatte	Extreme	49 05 52	66 45 13
	Bicquette Island	Lighthouse	48 25 18	68 53 00
	Macquerau Point	North-east extreme	48 12 18	64 46 11
	Miscou Island	Lighthouse	48 01 00	64 29 25
	Escuminac Point	Lighthouse	47 04 32	64 47 33
	Richibucto River	North Beacon, at entrance	46 43 04	64 47 48
	Cape Tormentine	North-west extreme of the Joureman Islands	46 10 06	63 49 23
	Pictou Harbor	Lighthouse	45 41 25	62 39 26
	Cape George	Station in Ballentine Cove	45 51 49	61 54 48
	Antigonish Harbor	North Beacon	45 41 49	61 53 12
	Gut of Canso	Lighthouse, north entrance	45 41 42	61 28 58
	St. Paul Island	On a rock 26 feet from the island	47 13 50	60 08 20
		On the south-west point	47 11 20	60 09 36
	Magdalen Island	Bird Rocks	47 50 57	61 09 15
	Cape Rozier	On the cape	48 51 37	64 12 00
	Anticosti Island	Heath Point	49 05 20	61 41 48
	West Point	South-west extreme of the headland, at high water	49 52 12	64 32 05
	South-west Point	Lighthouse	49 23 45	63 35 46
	South Point	High-water mark	49 03 35	62 15 30
	Heath Point	Lighthouse	49 05 20	61 41 48
Prince Edward's Island.	North Point	Extreme of cliff	47 03 41	63 59 19
	West Point	High-water extreme	46 37 14	64 23 16
	Cape Egmont	Station on extreme	46 24 11	64 07 55
	Carleton Head	On extreme of cliff	46 15 04	63 42 15
	Prim Point	Lighthouse	46 03 10	63 02 06
	Cape Bear	Station on high rock	46 00 18	62 27 10
	Panmure Island	Lighthouse	46 08 47	62 27 40
	East Point	Station on extreme of cliff	46 27 15	61 57 58
	Cape Turner	Northern extreme	46 29 51	63 19 10
	Grenville Harbor	High sand-hill, near entrance	46 30 50	63 27 45
	Richmond Bay	Station on Royalty Point	46 33 55	63 42 06
Cape Breton Island.	Michaux Point	Station on extreme	45 34 11	60 41 00
	L'Ardoise	R. C. church steeple	45 36 45	60 45 59
	St. Peter's Island	South-west extreme	45 35 54	60 48 39
	St. Peter's Bay	Old Fort on west side of Haulover	45 39 21	60 52 04
	Bear Head	Station on extreme	45 33 05	61 17 07
	Chitican Point	South extreme	46 36 22	61 02 55
	Cape St. Lawrence	North extreme	47 02 54	60 35 30
	Cape North	North extreme	47 02 35	60 24 58
	Cape Egmont	East extreme	46 51 01	60 18 03
	Carey Point	West side of entrance of Great Bras d'Or	46 17 41	60 24 54
	Sidney Harbor	Lighthouse on Flat Point	46 16 12	60 07 22
	Scatari Island	Lighthouse	46 02 13	59 40 16
	Cape Breton	Station on extreme	45 57 14	59 47 03
	Louisburg	Lighthouse	45 54 34	59 57 12

TABLE OF LATITUDES AND LONGITUDES.

PLACE.	*PARTICULAR SPOT.*	*Latitude, North.*	*Longitude, West.*
		° ′ ″	° ′ ″
Sable Island	West flagstaff	43 56 24	60 02 50
"	West extreme of grassy sand-hills	43 56 44	60 08 31
"	East extreme of same	43 58 57	59 45 33
Eddy Point, Gut of Canso	Lighthouse	45 31 29	61 14 42
Cranberry Island	Lighthouse	45 19 49	60 55 26
Canso Harbor	Steeple of church	45 20 10	60 58 57
White Head Island	Lighthouse	45 11 58	61 07 59
Harbor Island	Station on north-east point	45 08 25	61 36 15
Liscomb Harbor	Spanish ship point station, near Pye's wharf	45 00 28.3	62 00 40
Beaver Island	Lighthouse	44 49 33.5	62 20 10
Sheet Harbor	Station one quarter of a mile N. W. watering cove	44 54 11	62 30 09
Pope Harbor	Harbor Island, N. E. extreme	44 47 50.5	62 38 42
Egg Island	Station near centre	43 39 55	62 51 41
Jedore Head	Station on point	44 40 21.7	63 02 46
Devil Island	Lighthouse	44 34 48	63 27 23.5
Sambro Island	Lighthouse	44 26 11	63 33 38.5
Halifax	Dockyard Observatory	44 39 38	63 35 07
Halifax Harbor	Lighthouse on Maugher Beach	44 36 06	63 31 51.5
Mars Head	Station on extremity	44 26 16	63 43 24
Malaquash or Lunenburg Bay	Cross Island, S. E. point	44 20 00	64 07 00
Cape Le Heve	Ironbound Island, south side	44 15 40	64 16 30
Metway or Medway Head	Admiralty Head, W. side entrance	44 06 00	64 34 00
Liverpool Bay	Coffin Island, south point	44 03 00	64 36 00
	Fort Point	44 03 45	64 39 00
Rugged Island Harbor	Gull Rock	43 36 00	65 06 00
Shelburne Harbor	Cape Roseway on Macnutt Island	43 37 31	65 16 30
Port Latour	Baccaro Point, east side entrance	43 26 54	65 28 42
Pubnico Harbor	On Beach Point, S. E. side of entrance, 60 fathoms from low-water mark	43 35 43	65 47 00
Seal Island	South point, half a mile inland	43 23 34	66 01 21
Yarmouth or Cape Fourchu	East cape, south point	43 47 28	66 09 49
Bryer Island	West point	44 14 57	66 23 33
Peter Island	S. entrance to Grand Passage	44 15 30	66 20 54
Digby or Annapolis	S. point of entrance	44 40 50	66 47 2[illegible]
Marshall Cove or Port Williams	.....	44 56 50	65 16 00
Margaretville	.....	45 03 00	65 04 00
Black Rock Point	South shore	45 10 48	64 48 00
Horton	On the Bluff	45 06 15	64 02 00
Basin of Mines	Burnt Coat Head	48 18 17	63 46 52
Partridge Island or Parsborough	West side of river	45 23 00	64 08 00
Apple River	Cape Capstan or Hetty P't, north entrance	45 26 00	64 50 00
Grindstone	On the W. part of the island	45 43 13	64 37 25

TABLE OF LATITUDES AND LONGITUDES.

	PLACE.	PARTICULAR SPOT.	Latitude, North.	Longitude, West.
			° ′ ″	° ′ ″
Bay of Fundy.	Enragé	On the pitch of the Cape	45 36 00	64 46 40
	Quaco	On a small rock off the Head	45 19 35	65 31 55
	St. John's Harbor	Partridge Island	45 14 02	66 03 30
		Beacon Tower	45 15 00	66 03 36
	Lepreau	On the point	45 03 50	66 27 04
	Campobello Island	North point	44 57 40	66 53 55
	Port St. Andrews	North point of entrance	45 04 10	67 04 00
	Grand Manan Island, N. E. part	Swallow's Tail	44 47 06	66 45 00
	Machias Islands	East Island	44 30 00	67 05 30
	Gannet Rock	South part	44 30 40	66 46 48
Maine.	West Quoddy Head	Light on S. side of entrance.	44 48 59	66 56 40
	Little River	Light on Island	44 39 22	67 10 35
	Libby Island	Light	44 34 04	67 21 17
	Moose-à-bec	Head Harbor Light	44 28 27	67 31 35
	Pleasant River	Nash Island Light	44 27 51	67 44 30
	Petit Menan	Light	44 22 02	67 51 35
	Mount Desert	Mount Desert Rock Light	43 58 07	68 07 22
	Isle au Haut	Saddleback Ledge Light	44 00 51	68 43 13
	Green Island	Heron Neck Light	44 01 30	68 51 53
	Mark Island	Deer Island Thoroughfare Light	44 08 03	68 41 52
	Eagle Island	Eagle Island Point Light	44 13 03	68 45 44
	Off Penobscot Bay	Matinicus Rock Light (E.)	43 47 00	68 50 58
	Entrance Penobscot Bay	Whitehead Island Light	43 58 42	69 07 06
	Off Rockland Harbor	Owl's Head Light	44 05 31	69 02 19
	Fox Islands	Brown's Head Light	44 06 41	68 54 14
	Camden Harbor	Negro Island Light	44 12 04	69 02 38
	Gilkey's Harbor	Grindel's Point Light	44 16 53	68 56 15
	Tenant's Harbor	Light on north-east side of Southern Island	43 57 39	69 10 49
	Herring Gut Harbor	Marshall's Point Light	43 55 02	69 15 32
	Manhegan Island	Light	43 45 52	69 18 37
	" "	Bell	43 45 46	69 19 16
	St. George's River	Franklin Island Light	43 53 31	69 22 10
	Bristol and St. John's Bay	Pemaquid Light	43 50 12	69 30 00
	Townsend Harbor	Burnt Island Light	43 49 29	69 38 05
	Sheepscot River	Hendrick's Head Light	43 49 20	69 41 04
	Kennebec River	Pond Island Light	43 44 23	69 45 54
	Seguin Island	Seguin Light	43 42 25	69 45 18
	Cape Elizabeth	West Light	43 33 50	70 11 40
	" "	East Light	43 33 56	70 11 40
	Portland Harbor entrance	Portland Head Light	43 37 22	70 12 00
	" " "	Portland Breakwater Light	43 39 18	70 13 48
	Off Saco Harbor	Wood Island Light	43 27 23	70 19 55
	Agamenticus	Trigonometrical Station	43 13 23	70 41 18
	Cape Porpoise Harbor	Goat Island Light	43 21 27	70 25 11
	Off York Harbor	Boon Island Light	43 07 16	70 38 18
N. Hamp.	Portsmouth Harbor	Whale's Back Light	43 03 30	70 41 [illegible]
	" "	New Castle Light	43 04 14	70 42 [illegible]
	Isles of Shoals	White Island Light	42 58 00	70 37 [illegible]

TABLE OF LATITUDES AND LONGITUDES.

	PLACE.	PARTICULAR SPOT.	Latitude, North.	Longitude, West.
			° ′ ″	° ′ ″
Massachusetts.	Newburyport Harbor	Plum Island Light, W.	42 48 25	70 48 46
	" "	Range beacon, in front	42 48.8	70 51.1
	Beverly	Spire with turrets	42 32 49	70 52 22
	Ipswich Harbor	East Light	42 41 06	70 45 39
	" "	Range beacon, in front	42 41.1	70 45.8
	Annisquam Harbor	Wigwam Point Light	42 39 41	70 40 34
	Straitsmouth Island	Light	42 39 42	70 34 58
	Cape Ann	Thatcher's Island Light, N.	42 38 19	70 34 10
	" "	" " " S.	42 38 11	70 34 10
	Gloucester Harbor	Eastern Point Light	42 34 47	70 39 33
	" "	Tenpound Island Light	42 36 05	70 39 36
	Salem Harbor Entrance	Baker's Island Light	42 32 10	70 46 50
	Salem	Tall spire	42 31 10	70 53 38
	Marblehead	Black top church	42 30 24	70 50 33
	Nahant	Hotel cupola	42 25 07	70 53 59
	Boston	State House	42 41 28	71 03 30
	Cambridge	Harvard Observatory, dome	42 22 52	71 07 23
	Charlestown	Bunker Hill Monument	42 22 33	71 03 20
	Boston Harbor Entrance	Minot's Ledge Light	42 16 09	70 45 14
	Boston Harbor	Little Brewster Island Light	42 19 39	70 53 05
	" "	Long Island Head Light	42 19 46	70 57 03
	Plymouth Harbor	Gurnet Point Light	42 00 10	70 35 43
	Cape Cod	Race Point Light	42 03 42	70 14 16
	Provincetown Harbor	Long Point Light	42 01 57	70 09 47
	Wellfleet Harbor	Mayo's Beach Light	41 55.8	70 01.7
	Barnstable	Sandy Neck Light	41 43 20	70 16 32
	Cape Cod	Highlands, Truro Light	42 02 21	70 03 18
	Eastham	Nauset Beach, beacons	41 51 37	69 56 44
	Chatham Harbor	Main, west side, Light, S.	41 40 15	69 56 37
	Monomoy Beach	Light	41 33 33	69 59 19
	Nantucket Island	Great Point Light	41 23 22	70 02 25
	" "	Sankaty Head Light	41 16 59	69 57 35
	Nantucket Harbor	Brant Point Light	41 17.4	70 05.2
	Nantucket old S. Shoal	North-east spot	41 05.6	69 50.0
	" " "	South-west spot	41 04.2	69 51.4
	Davis' new S. Shoal	Middle	40 58.0	69 51.5
	Fishing Rip	Four and a quarter fathoms.	41 00.0	69 27.5
	" "	" " "	41 07.6	69 26.4
	Martha's Vineyard Island	Gay Head Light	41 20 52	70 49 47
	Hyannis Harbor	On the main, Light	41 38 09	70 16 58
	Choppaquiddic Island	Cape Poge Light	41 25 14	70 26 44
	Edgartown Harbor	North side Light	41 23 25	70 29 51
	Holmes' Hole Harbor	West Chop Light	41 28 55	70 35 49
	" "	Beacon	41 26 57	70 35 37
	Wood's Hole Harbor	Nobska Point Light	41 30 55	70 38 59
	Naushon Island	Tarpaulin Cove Light	41 28 06	70 45 08
	Entrance Buzzard's Bay	Cuttyhunk Light	41 24 50	70 56 39
	Off Round Hill	Dumpling Rock Light	41 32 16	70 54 58
	New Bedford	Baptist Church spire	41 38 10	70 55 16
	New Bedford Harbor	Clark's Point Light	41 35 32	70 53 43
	" "	Palmer's Island Light	41 37 35	70 54 13
	Mattapoisett Harbor	Ned's Point Light	41 39 01	70 47 25
	Sippican Harbor	Bird Island Light	41 40 07	70 42 43
	Head of Buzzard's Bay	Wing's Neck Light	41 40 50	70 39 17
	No Man's Land	Trigonometrical Point	41 15 09	70 48 28
R. I.	Newport	Spire	41 29 12	71 18 29
	Newport Harbor Entrance	Beavertail Light	41 26 55	71 23 38

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	PLACE.	PARTICULAR SPOT.	Latitude, North.	Longitude, West.
			° ′ ″	° ′ ″
Rhode Island.	Newport Harbor	Goat Island Light	41 29 34	71 19 18
	Dutch Island	Light	41 29.8	71 23.9
	Wickford	Poplar Point Light	41 34 14	71 26 02
	Warwick	Warwick Neck Light	41 39 59	71 22 22
	Providence River	Nayat Point Light	41 43 28	71 20 01
	Providence	Baptist Church	41 49 37	71 24 11
	Point Judith	Light	41 21 38	71 28 34
	Block Island	"	41 13 46	71 34 17
Connecticut.	Near Stonington	Watch Hill Light	41 18 11	71 51 12
	Stonington Harbor	Light	41 19 39	71 54 00
	Mystic	Morgan's Point Light	41 18 57	71 59 03
	Thames River	New London Light	41 18 58	72 05 04
	Connecticut River	Seabrook Light	41 16.2	72 20.3
	Off Guilford Harbor	Faulkner's Island Light	41 12 41	72 38 54
	New Haven	Light	41 14 54	72 53 55
	Stratford River	"	41 09 05	73 05 53
	Bridgeport	"	41 09 24	73 10 28
	Black Rock Harbor	"	41 08 30	73 12 44
	Norwalk Island	"	41 02 53	73 24 50
New York.	Long Island, east end	Montauk Light	41 04 13	71 51 06
	Entrance Long Island Sound	Little Gull Island Light	41 12 21	72 06 05
	Gardiner's Island	North point, light	41 08 18	72 08 13
	Plum Island	West end, light	41 10 23	72 12 22
	Sag Harbor Entrance	Cedar Island Light	41 02 26	72 15 19
	Horton's Point	Light	41 04 54	72 26 34
	Old Field Point	"	40 58 34	73 06 48
	Huntington Bay	Eaton's Neck Light	40 57 12	73 23 25
	Lloyd's Harbor	Lloyd's Neck, light	40 54 55	73 25 44
	Great Captain's Island	Light	40 58 55	73 37 06
	Execution Rocks	"	40 52 38	73 43 57
	Sands' Point	"	40 51 55	73 43 28
	Throg's Neck	"	40 48 17	73 47 09
	New York	City Hall	40 42 43	74 00 03
	"	Trinity Church spire	40 42 26	74 00 24
	Brooklyn	City Hall	40 41 31	73 59 07
	Shinnecock Bay	Light	40 50 57	72 29 55
	Fire Island	"	40 37 53	73 12 51
	New York Bay and Harbor	Elm Tree beacon, Staten Isl'd	40 33 45	74 05 26
	" "	New Dorp beacon, Staten Isl'd	40 34 48	74 06 54
	" "	Princess Bay, light	40 30 25	74 12 30
	" "	Fort Tompkins Light	40 36 01	74 02 56
	" "	Robbins' Reef Light	40 39 24	74 03 37
	Hudson River	Stony Point Light	41 14 26	73 58 00
	"	West Point Light	41 23 43	73 56 45
	"	Esopus Meadows Light	41 52 05	73 56 12
	"	Rondout Light	41 55 12	73 57 42
	"	Saugerties Light	42 04 18	73 55 28
	"	Four Mile Point Light	42 18 20	73 46 42
	"	Coxsackie Light	42 22 45	73 47 23
	"	Stuyvesant Light	42 24 40	73 46 23

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	PLACE.	PARTICULAR SPOT.	Latitude, North.	Longitude, West.
			° ′ ″	° ′ ″
New Jersey.	Highlands Navesink	New North Light	40 23 45	73 58 51
	" "	New South Light	40 23 43	73 58 49
	Sandy Hook	Light	40 27 39	73 59 49
	"	East beacon, north	40 28 15	74 00 06
	"	West beacon, south	40 27 49	74 00 09
	New York Bay	Conover beacon, main channel	40 25 14	74 03 01
	" "	Chapel Hill beacon, main channel	40 23 51	74 03 13
	" "	Pt. Comfort beacon, Gedney channel	40 26 51	74 06 58
	" "	Waackaack, Wilson's beacon	40 26 36	74 07 51
	Bergen Point	On reef, light	40 38 32	74 08 36
	Elizabethport	Corner Stake Light	40 38 44	74 09 47
	Newark Bay	Passaic Light	40 41 44	74 07 19
	"	Elbow beacon	40 42 06	74 07 08
	Barnegat Inlet	Light	39 45.8	74 06.0
	Delaware Bay Entrance	Cape May Light	38 55 50	74 57 16
	Delaware Bay	Egg Island Light	39 10 31	75 08 02
	"	Cohansey Light	39 20 18	75 21 17
Delaware.	Delaware Bay Entrance	Cape Henlopen Light	38 46 38	75 04 43
	" "	Cape Henlopen beacon	38 47 25	75 04 50
	" "	Delaware Breakwater Light	38 47 54	75 06 09
	Delaware Bay	Brandywine Shoal Light	38 59 07	75 06 28
	"	Mahon's River Light	39 10 16	75 23 43
	Delaware River	Bombay Hook Light	39 21 46	75 30 19
	"	Reedy Island Light	39 30 00	75 33 49
	Christiana River	Light	39 43 15	75 30 56
Penn.	Philadelphia	State House	39 56 53	75 08 42
Maryland.	Chesapeake Bay	Fog Point Light	38 02 04	76 02 15
	Tangier Sound	Clay Island Light	38 13 53	75 58 08
	Potomac River Entrance	Point Lookout Light	38 02 16	76 19 01
	Patuxent River Entrance	Cove Point Light	38 23 07	76 22 36
	Choptank River	Sharp's Island Light	38 37 44	76 21 55
	South River	Thomas Point Light	38 54 25	76 26 53
	Annapolis Harbor	Greenbury Point Light	38 58.5	76 27.0
	Annapolis	State House	38 58 40	76 29 09
	Chesapeake Bay	Sandy Point Light	39 01.0	76 23.5
	"	Bodkin Tower	39 08 02	76 25 10
	Patapsco River	Sevenfootknoll Light	39 09.3	76 23.9
	"	North Point, lower light	39 11 36	76 26 12
	"	" upper light	39 11 46	76 26 36
	"	Fort Carroll Light	39 12 50	76 30 55
	"	Lazaretto Point Light	39 15 42	76 33 59
	Baltimore	Washington Monument	39 17 48	76 36 39
	Off mouth of Gunpowder River	Pool's Island Light	39 17 23	76 15 41

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	PLACE.	PARTICULAR SPOT.	Latitude, North.	Longitude, West.
			° ′ ″	° ′ ″
Maryland.	Head of Chesapeake Bay	Turkey Point Light	39 26 56	76 00 12
	Mouth of Susquehanna River	Fishing Battery Light	39 29.6	76 04.7
	" "	Havre de Grace Light	39 32 23	76 04 47
	Potomac River	Piney Point Light	38 08 03	76 31 29
	"	Blakiston's Island Light	38 12 23	76 44 24
	"	Fort Washington Light	38 43.4	77 01.2
Virginia.	Washington City	U. S. Nav. Observatory, dome	38 53 39	77 02 48
	"	Dome of Capitol	38 53 20	77 00 15
	Potomac River	Jones' Point Light	38 47.4	77 02.1
	Assateague Island	Light	37 54 37	75 21 04
	Great Matchepongo Inlet	Hog Island Light	37 23 16	75 41 35
	Entrance Chesapeake Bay	Cape Charles	37 07 48	75 52 12
	" "	Cape Henry	36 55 29	76 00 12
	Hampton Roads	Old Point Comfort	37 00 02	76 18 06
	"	Old Point Comfort beacon	37 00.0	76 18.5
	Elizabeth River	Craney Island Light	36 53.3	76 20.6
	Norfolk	Naval Hospital Light	36 50.8	76 17.8
	James River	White Shoal Light	37 01.4	76 31.5
	"	Point of Shoals Light	37 03.8	76 39.2
	"	Deep Water Shoals Light	37 08.2	76 38.0
	"	Jordan's Point Light	37 18 43	77 13 06
	Chesapeake Bay	Cherrystone Light	37 15.6	76 01.8
	"	Black River Light	37 05 10	76 15 54
	"	New Point Comfort Light	37 18 00	76 16 22
	"	Stingray Point Light	37 33.6	76 16.1
	Tangier Sound	Watt's Island Light	37 46 53	75 53 18
North Carolina.	Kill Devil Hill	Trigonometrical Point	36 01 03	75 39 49
	Body's Island	Light	35 47 16	75 31 43
	New Inlet	S. pt. Trigonometrical pt.	35 41 00	75 28 31
	Cape Hatteras	Light	35 15 08	75 30 57
	Ocracoke Inlet	"	35 06 28	75 58 51
	Cape Lookout	"	34 37 16	76 31 04
	Cape Fear River Entrance	Federal Point Light	33 58 04	77 54 53
	" "	Cape Fear Light	33 52 19	77 59 49
	Cape Fear River	Oak Island high Light	33 53 24	78 01 36
	"	Price's Creek Light	33 56 04	77 59 13
	"	Orton's Point Light	34 03 23	77 56 11
	"	Campbell's Island Light	34 06 57	77 56 03
S. Carolina.	Georgetown Harbor	Light	33 13 21	79 10 53
	Cape Romain	On Raccoon Key, Light	33 01 08	79 22 12
	Bull's Bay	Light	32 55 20	79 33 44
	Charleston Harbor Entrance	Morris Island Light	32 41 56	79 52 29
	Charleston Harbor	Castle Pinckney Light	32 46 26	79 54 27
	St. Helena Sd. Entrance	Hunting Island Light	32 24 16	80 24 45

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	PLACE.	PARTICULAR SPOT.	Latitude, North.	Longitude, West.
			° ′ ″	° ′ ″
Georgia.	Savannah River Entrance	Tybee Light	32 01 20	80 50 31
	" "	Tybee beacon	32 01 17	80 50 06
	Savannah River	Fig Island beacon	32 04 57	81 03 33
	Savannah	Exchange Tower	32 04 52	81 05 15
	Doboy Sound Entrance	Sapelo Light	31 23 28	81 10 55
	" "	Sapelo beacon	31 23 24	81 16 50
	Wolf Island	Inner beacon	31 21 03	81 16 37
	"	Outer beacon	31 21 03	81 16 28
	St. Simon's Sound	Light	31 08 02	81 23 24
	St. Andrew's Sound	Little Cumberland Isl. Light	30 58 34	81 24 34
				2 m 58 11.2
				12
				6 41 48 8
Florida.	St. Mary's River	Amelia Island Light	30 40 23	81 26 20
	St. Augustine	Anastasia Island Light	29 53 13	81 16 57
	Cape Florida	Key Biscayne Light	25 39 56	80 09 24
	Carysfoot Reef	Light	25 13 15	80 12 44
	Dry Bank	"	24 37 36	81 06 43
	Sand Key	"	24 27 10	81 52 43
	Key West	Harbor Light	24 32 58	81 48 07
	"	North-west Passage Light	24 37 04	81 54 01
	Dry Tortugas	Garden Key Light	24 37 47	82 52 53
	Tampa Bay	Egmont Key Light	27 36 00	82 45 15
	Cedar Keys	Seahorse Key Light	29 05 49	83 04 46
	St. Marks	Light	30 04 26	84 10 38
	St. George's Sound Entrance	Dog Island Light	29 46 51	84 38 37
	Apalachicola	Flagstaff	29 43 30	84 59 00
	Cape St. George	Light	29 35 15	85 02 40
	Cape St. Blas	"	29 39.8	85 21.6
	Pensacola	Barancas Light	30 20 49	87 17 19
Alabama.	Sand Island	Light	30 11 18	88 01 58
	Mobile Bay	Mobile Point Light	30 13 46	88 00 28
	"	Grant's Pass Light	30 17 37	88 07 29
	"	Choctaw Point Light	30 40 11	88 01 08
	Mobile	Barton's Academy	30 41 24	88 01 53
Mississippi.	Off Pascagoula	Round Island	30 17 30	88 34 10
	E. Pascagoula River	Light	30 21 03	88 33 08
	Ship Island	West end, Light	30 12 54	88 56 58
	Biloxi Bay	Biloxi Light	30 23 45	88 53 06
	Cat Island	Western Point Light	30 13 57	89 08 43
	Pass Christian	Light	30 18 54	89 14 02
	Merrill's Shell Bank	"	30 14 18	89 14 28
	St. Joseph Island	"	30 11 09	89 24 34

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	PLACE.	PARTICULAR SPOT.	Latitude, North.	Longitude, West.
			° ′ ″	° ′ ″
Louisiana.	Lake Borgne	Proctorville beacon	29 52 26	89 39 29
	Lake Pontchartrain Entrance	Rigolets	30 09 21	89 38 06
	Bon Fouca	Light	30 15 06	89 51 01
	New Canal	"	30 01 43	90 05 50
	Chandeleur Island	"	30 03 08	88 51 38
	Mississippi delta	Pass à l'outre Light	29 11 32	89 01 30
	"	South Pass Light	29 01 00	89 09 03
	"	Head of Passes Light	29 08 37	89 14 08
Texas.	Galveston Bay Entrance	Bolivar Point Light	29 22 02	94 45 34
	Galveston Bay	Half-moon shoal Light	29 24 02	94 50 33
	" "	Red Fish bar Light	29 30 49	94 51 42
	Galveston	Cathedral	29 18 17	94 46 59
	"	Market-house	29 18 27	94 46 59
	Matagorda Bay Entrance	Pass Cavallo Light	28 20 49	96 23 30
	Matagorda Bay	Bayou Saluria Light	28 24 07	96 23 51
	Aransas Pass	Light	27 51 51	97 02 58
	Corpus Christi Bay	"	27 47 54	97 23 23
	Rio Grande Entrance	Observatory, north side	25 57 21	97 07 57
Cape North of the Amazons to Trinidad.	Cape North	Extreme	1 42 00	49 48 00
	Mount Mayé	Summit	2 49 30	50 52 21
	Cape Cachipour	Extreme	3 46 00	51 02 00
	Mount d'Argent	Summit	4 22 15	51 37 51
	Grand Connétable	Centre	4 49 50	51 53 06
	Cayenne	Fort	4 56 10	52 18 40
	Salut Islets	North extreme	5 16 50	52 32 51
	Mont Diable	Summit	5 10 30	52 51 55
	River Maroni	Française Point	5 42 10	53 56 30
	"	West point of entrance	5 44 00	53 57 00
	Post Orange	Village	5 53 40	54 33 30
	Surinam	Beacon on Bram Point	5 56 00	55 04 00
	Paramaribo	Church	5 44 20	55 13 15
	Saramacca River	East point of entrance	5 53 00	55 57 00
	Corentyn River	Nickerie Battery	5 57 30	56 52 54
	Berbice River	Light vessel	6 19 18	57 22 30
	Demerara	Lighthouse	6 49 20	58 11 30
	Mocomoco Point	Extreme	8 39 25	60 10 15
	Barima Point	"	8 37 00	60 23 00
	Ciudad Bolivar	Market-place Point	8 08 52	63 32 58
	Tobago, north point	Pierced Rock	11 25 00	60 32 00
	" Rockly Bay	Lighthouse	11 10 00	60 44 00
	Trinidad, Galera Point	Extreme	10 50 00	60 52 51
	" Port Spain	Water battery near the lighthouse	10 38 40	61 30 36
	" Mount Maraccas	Summit	10 44 00	61 24 41
	Chute d'Eau Island	Centre	10 46 00	61 30 45
	Chacachacare Island	Rocks off south-west point	10 40 03	61 45 54
	Pato Island	East point	10 38 15	61 51 18

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	PLACE.	PARTICULAR SPOT.	Latitude, North.	Longitude, West.
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Coast of Venezuela and outlying Islands.	Peña Point	Extreme	10 43 48	61 50 50
	Testigos Island	North-west extreme	11 23 45	63 09 00
	Cape Tres Puntas	Extreme	10 45 00	62 41 55
	Puerto Santo Islet	Centre	10 43 00	63 10 55
	Esmeralda Islet	"	10 40 00	63 31 55
	Morro de Chacopata	Extreme	10 42 00	63 50 25
	Escarseo Point	"	10 40 00	64 17 55
	Margarita Island	Ballena Point	10 59 00	64 47 55
	Margarita Arenas Point	West extreme	10 58 30	64 25 00
	Sola Island	Centre	11 19 00	63 36 00
	Cumano	Fort Boca	10 28 00	64 12 55
	Barcelona Morro	Hill	10 13 30	64 44 00
	Cape Codera	Morro	10 35 00	66 06 15
	Tortuga Island	Oriental Point	10 55 00	65 12 35
	Centinella Islet	Centre	10 49 30	66 09 25
	La Guayra	La Trinchera bastion	10 37 00	66 56 55
	La Silla de Caracas	Summit (8,500 feet)	10 32 30	66 50 55
	Puerto Cabello	St. Philip's Castle	10 29 30	68 00 25
	Tucacas Island	Ore House	10 47 00	68 19 55
	St. Juan Bay	Cay	11 10 00	68 27 55
	Cape San Roman	Extreme	12 11 00	70 04 55
	Maracaybo Bar	Zapara Castle	11 01 00	71 40 00
	Espada Point	Extreme	12 04 00	71 07 55
	Los Monges	North Islet	12 29 15	70 57 00
	Orchila Island, west point	Rock	11 49 00	66 11 55
	Port el Roque	Pirate Cay	11 57 00	66 38 55
	Aves Islands, west group	West extreme	12 00 00	67 42 25
	Buen Ayre Island	Lighthouse	12 02 12	68 17 25
	Little Curaçoa	"	11 58 00	68 38 40
	Curaçoa Island	North point	12 21 00	69 11 10
	Curaçoa Rif Fort	Lighthouse	12 06 10	68 55 10
	Oruba Island	North point	12 36 00	70 07 55
Coast of New Granada.	Gallinas Point	Extreme	12 25 00	71 44 25
	Bahia Honda	East point	12 20 00	71 45 55
	Cape Vela	Islet	12 10 15	72 12 55
	La Hacha	Church	11 33 00	72 54 35
	Santa Marta	Cathedral	11 15 00	74 12 05
	Cartagena	Fort Pastelillo	10 24 57	75 33 18
	Cartagena Barú Island	Fort San José	10 18 58	75 35 19
	Port Cispata	Zapote Point	9 24 00	75 48 00
	Fuerte Island	North extreme	9 24 00	76 10 45
	Caribana Point	Extreme	8 37 30	76 52 55
	Cape Tiburon	"	8 41 30	77 21 30
	Port Carreto	Peak	8 47 00	77 38 00
	Caledonia Harbor	Scorpion Cay	8 54 52	77 42 25
	Manzanillo Point	Extreme	9 39 00	79 31 30
	Porto Bello	Fort St. Jeronymo	9 32 30	79 38 30
	Toro Point	Extreme	9 23 00	79 56 00
	Chagre	Flagstaff	9 19 39	79 59 33
	Escudo de Veragua	West point of island	9 06 30	81 34 30
	Valiente Peak	Summit (722 feet)	9 10 30	81 55 35
	Cobbler Rock	Centre	9 14 30	82 08 24
	Shepherd Harbor	Hut on summit	9 14 22	82 21 07
	Columbus Island	Lime Point	9 24 47	82 21 04
	Tirby Point	Extreme	9 25 45	82 22 20

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Coast of Costa Rica and Mosquito.	Carreta Point	Extreme	9 38 30	82 39 40
	Blanco Peak	Summit (11,740 feet)	9 16 30	83 04 00
	Blanca Point	Grape Cay	10 00 00	83 02 30
	Mount Cartago	Peak (11,100 feet)	10 01 30	83 48 00
	San Juan de Nicaragua	Arenas Point	10 56 45	83 43 14
	Blewfield	Schooner Point	11 59 00	83 42 30
	Cookra Hill	Summit	12 15 30	83 46 30
	Pearl Cay Lagoon	Mosquito Point	12 20 39	83 37 46
	Pearl Cays	Columbilla Cay	12 22 35	83 23 44
	Great Corn Island	Wells north of Quin Bluff	12 09 17	83 04 09
	Little Corn Island	Gun Point	12 17 30	82 59 09
	Brangman's Bluff	Extreme	14 03 00	83 22 00
	Mosquito Cays	South end	14 21 12	82 46 30
	Cape Gracias á Dios	Extreme	14 59 00	83 11 00
	Half-moon Cay	Centre	15 08 50	82 42 42
	Gorda Bank	Gorda Cay	15 52 00	82 24 00
	Farrall Rock	Centre	15 51 00	82 18 40
	Caxones or Hobbies	Great Hobby	16 03 30	83 08 54
	"	West end	16 06 00	83 19 00
	Carataska Lagoon	East side of entrance	15 23 40	83 43 09
	Bajo Nuevo, N. E. part lee reef	Sand bank	15 53 00	78 38 33
	Roncador Cay	South point	13 34 30	80 05 54
	Albuquerque Bank	South Cay	12 10 00	81 50 42
	Courtown Cays	Middle Cay	12 24 00	81 29 09
	St. Andrew's Isl'd, S. W. cove	Entrance Island	12 31 40	81 44 14
	Old Providence	Isabel House	13 22 54	81 22 39
	Quita Sueño Bank	Spit at north-west end	14 30 00	81 07 54
	" "	South extreme of reef	14 08 00	81 08 54
	Serrana bank, S. channel	Little Cay	14 21 30	80 15 30
	Serranilla Bank	Beacon Cay	15 47 45	79 51 27
	Rosalind Bank	North-west extreme	16 54 00	80 52 00
	Swan Islands, west one	North-west point	17 24 30	83 57 01
Honduras and outlying Islands.	River Patook	East side of entrance	15 48 50	84 17 44
	Brewer's Lagoon	" "	15 51 50	84 39 06
	Great Rock Head	Bluff extreme	15 53 00	85 27 43
	Truxillo	Fort	15 55 45	85 59 51
	Bonacca Island, south side	Cay next eastward of Half-moon Cay	16 26 45	85 52 45
	Rattan, Port Royal	N. W. point of George Cay	16 23 45	86 19 14
	Rattan, Coxen Cay	Centre	16 18 00	86 35 00
	Hog Isles, west	Highest hill	15 58 00	86 32 43
	Utilla Island	South Cay	16 03 40	86 59 49
	Cape Triunfo	Bluff Point	15 48 45	87 28 20
	Congrehoy Peak	Summit (8,040 feet)	15 38 00	86 55 33
	Cape Three-points	North-west extreme	15 57 45	88 39 24
	Omoa	Sandy spit at entrance of harbor	15 47 11	88 05 04
	Hospital Bight	Hut at N. point of entrance	15 52 20	88 33 56
	River Dulce	Entrance west side	15 49 45	88 46 56
	Gulf of Dulce	Isabel	15 24 20	89 10 17
	"	Fort St. Philip	15 38 00	89 02 09
	Sarstoon River	Entrance	15 54 00	88 56 53
	Icacos Point	South extreme	16 14 15	88 36 24
	Seal Cays	South Cay	16 08 00	88 20 48
	South-water Cay	Centre	16 48 50	88 06 09

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	PLACE.	PARTICULAR SPOT.	Latitude, North.	Longitude, West.
			° ′ ″	° ′ ″
Honduras, and outlying Islands.	Sand-fly Cays	Garbut's Hut, south end	16 57 50	88 06 38
	Glover's Reef	South-west Cay	16 42 20	87 51 24
	"	North-east extreme	16 55 00	87 44 13
	Half-moon Cay	Lighthouse	17 12 12	87 32 48
	Cay Bokel	Centre	17 08 50	87 56 24
	Mauger Cay	North-west end	17 36 15	87 47 03
	English Cay	Flagstaff	17 19 30	88 03 54
	Belize	Fort George	17 29 20	88 11 53
	North Standing Creek	Entrance	16 57 40	88 14 21
	Cockscomb Mountain	Summit (4000 feet)	16 48 10	88 38 13
	Sittee Point	Cay	16 47 45	88 15 48
	Placentia Point	Huts on Point	16 30 54	88 22 46
	St. George's Cay	Centre	17 33 15	88 05 18
Coast of Yucatan and Gulf of Mexico.	Chinchorro Bank	North Cay, north end	18 45 00	87 19 34
	"	Dry sand bore	18 23 20	87 23 24
	Ascension Bay	Allen Point	19 45 15	87 28 34
	Cozumel Island	South point	20 16 00	87 00 00
	"	North point	20 35 30	86 44 48
	Cancun Island	Nisuc point	21 02 00	86 49 33
	Mugeres Island	Lookout tower	21 12 00	86 43 39
	Contoy Island	North extreme	21 31 45	86 48 45
	Cape Catoche	North-east extreme	21 36 00	87 04 30
	Lagartos	Village	21 36 00	88 11 00
	Silan	"	21 23 00	88 55 00
	Sisal	Fort	21 10 06	90 03 11
	Madagascar Reef	Centre	21 26 30	90 19 00
	Alacran Reef	Perez Cay	22 23 36	89 42 19
	Cay Arenas	North-west Cay	22 07 10	91 24 54
	Bajo Nuevo Reef	Centre	21 50 00	92 05 00
	Triangles, west reef	Cay at south-west end	20 58 00	92 19 30
	" east reef	Beacon	20 54 54	92 13 21
	Obispo Shoals	Northern shoal, spot of 16 ft.	20 29 00	92 14 00
	Arcas Cays	Western Cay	20 12 35	91 59 38
	Placer Nuevo or New Bank	Centre	20 32 00	91 53 00
	Campeché	Fort San José	19 51 36	90 31 24
	Lerma	Church	19 48 24	90 36 45
	Morro de Paypoton	Summit	19 38 00	90 44 00
	Carmen Island	North-east point	18 47 08	91 32 30
	"	South-west point, Vigia	18 38 44	91 51 46
	Tabasco River	Bar	18 33 00	92 37 00
	Goazacoalcos River	"	18 10 00	94 17 00
	Roca Partida	Extreme	18 44 00	95 03 00
	Alvarado	Bar	18 45 00	95 43 00
	Tuxtla	Volcano	18 30 00	95 00 00
	Cofre de Perote	Peak (13,995 feet)	19 29 00	97 07 00
	Orizaba Mountain	Peak (17,911 feet)	19 02 18	97 13 00
	Vera Cruz, San Juan de Ulua	Light tower	19 11 54	96 08 00
	Sempoala Point	Extreme	19 27 26	96 19 27
	Bernal Chico	Islet	19 38 35	96 23 24
	Tuspam Shoals	Islets	20 55 00	97 00 00
	Lobos Cay	Centre	21 26 00	97 08 00
	Tampico	Bar	22 15 30	97 46 00
	Cerro del Mecate	Summit	22 35 00	98 00 00
	Santander	Bar	23 48 00	98 00 00
	River San Fernando	"	25 20 00	97 30 00

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	PLACE.	PARTICULAR SPOT.	Latitude, North.	Longitude, West.
			° ′ ″	° ′ ″
Windward or Caribbean Islands.	Barbados	East extreme	13 07 00	59 25 10
	" Carlisle Bay	Fort Beckwith	13 03 00	59 36 45.6
	Grenada, St. George's harbor	Fort George, flagstaff	12 03 00	61 44 55
	Carriacou	Pilot Point	12 26 05	61 25 18
	Bequi Island	Admiralty Bay, north point	13 05 00	61 14 00
	St. Vincent, Kingston	Ordnance Yard	13 09 04	61 13 15
	St. Lucia	South point	13 34 00	60 57 00
	"	North point	14 05 00	60 57 00
	" Port Castries	Tapion Battery	14 00 00	61 01 00
	Martinique	Fort St. Louis	14 37 07	61 04 15
	"	South point	14 24 00	60 52 00
	"	Caravelle Rock	14 48 30	60 53 00
	Aves Island	Centre	15 42 00	63 37 46
	Dominica	South point	15 13 00	61 22 00
	"	North point	15 38 00	61 26 00
	" Roseau	Town flagstaff	15 18 24	61 24 42
	Guadeloupe	North point	16 31 00	61 35 00
	"	Petite Terre	16 10 29	61 05 07
	"	Vieux Fort Point	15 59 30	61 44 13
	Deseada	North point	16 20 00	61 12 00
	Antigua	Man-of-war Point	17 03 22	61 39 44
	" English harbor	Dockyard flagstaff	17 00 00	61 45 18
	" St. John's harbor	Fort James	17 06 40	61 51 21
	Barbuda	Mortella Tower flagstaff	17 35 50	61 49 36
	Montserrat	Plymouth	16 44 00	62 10 00
	"	North point	16 50 00	62 12 00
	Redondo	Centre	16 55 18	62 18 53
	Nevis	Summit	17 18 54	62 34 05
	" Charles Town	Fort Charles	17 07 52	62 37 10
	Booby Island	Centre	17 13 38	62 35 25
	St. Christopher	Basseterre Church	17 18 12	62 42 55
	St. Eustatius	Fort, flagstaff	17 29 10	62 58 50
	Saba	Diamond Rock	17 39 10	63 14 57
	St. Bartholomew	Fort Oscar	17 53 58	62 51 06
	St. Martin	Fort Marigot	18 04 07	63 05 21
	"	Oyster Hill	18 03 20	63 01 04
	"	Stadth House	18 01 22	63 03 11
	Anguila	Custom-house	18 13 06	63 04 15
	Dog Island	Centre	18 16 42	63 15 36
	Sombrero	"	18 35 45	63 27 46
Virgin Islands and Puerto Rico.	Santa Cruz	Lang's Observatory	17 44 32	64 41 00
	Anegada	West point	18 49 09	64 24 45
	"	East extreme of reefs	18 36 30	64 10 34
	Virgin Gorda	Vixen Point	18 30 39	64 21 36
	Ginger Island	South extreme	18 23 18	64 28 00
	Tortola	Fort Burt	18 25 04	64 36 35
	Norman Island	Ruin in the bight	18 19 17	64 36 27
	St. Johns	Ram Head	18 18 08	64 41 51
	St. Thomas	Christian's Fort	18 20 27	64 55 40
	Culebra or Passage Island	Soldier Point	18 16 46	65 17 07
	Bieques or Crab Island	East point	18 08 15	65 16 06
	Cape Mala Pasqua		17 59 00	65 49 00
	San Juan Head		18 23 00	65 36 00
	City of Port San Juan		18 29 00	66 07 15
	Gallardo Shoals		18 00 00	67 18 00
	Guanica Point		17 56 00	66 57 00
	Mona Island	East point	18 05 00	67 50 00

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	PLACE.	PARTICULAR SPOT.	Latitude, North.	Longitude, West.
			° ′ ″	° ′ ″
Haiti or St. Domingo.	Cape Engano	Extreme	18 35 00	68 20 00
	Saona Island	East point	18 12 00	68 31 00
	St. Domingo, city	Consulate	18 28 12	69 52 00
	Caldera or Salinas Point	Extreme	18 12 00	70 36 00
	Avarena Point	"	18 07 00	71 00 00
	Frayle Rock	Centre	17 37 00	71 41 00
	Alta Vela	Summit (500 feet)	17 28 50	71 39 44
	Beata Island	North-west point	17 36 45	71 32 54
	Jacmel	Wharf	18 13 30	72 32 39
	Isle Vache	Sandy beach near N.W. point	18 06 00	73 43 40
	Irois Bay	Huts on beach	18 23 48	74 29 34
	Cape Dame Marie	West extreme	18 36 30	74 27 13
	Jeremie	Fort	18 38 15	74 05 54
	Grand Caïmites	South-west point	18 36 00	73 48 59
	Rochelois	Dry rocks	18 38 30	73 12 24
	Merigoane	Fort	18 27 00	73 04 38
	Grand Goave	Island in the bay	18 26 15	72 44 13
	Gonave Island	West point	18 55 26	73 18 34
	Port au Prince	Fort Alexander	18 33 10	72 19 56
	"	Dr. Williamson's house, near Fort Bizothen	18 32 10	72 22 44
	North Arcadin	Centre	18 48 00	72 38 04
	Gonaïves	Verrier Point	19 25 42	72 42 52
	Nicolas Mole	Fort George	19 49 30	73 22 34
	Port au Paix	Wharf	19 57 40	72 48 54
	Cape Haïtien	Town fountain	19 46 40	72 10 42
	Grange	West point	19 54 45	71 39 03
	Isabella Bay	Hut in bight	19 53 50	71 04 07
	Puerto de Plata	Fort	19 48 34	70 42 06
	Vieux Cap Français	Extreme	19 40 00	69 54 00
	Cape Cabron	"	19 22 00	69 16 00
	Town of Samaná	Fort	19 12 30	69 19 50
Jamaica, with Cays and Banks adjacent.	Navaza Island	North side	18 25 10	75 02 03
	Morant Cays		17 26 30	75 57 00
	Formigas Bank	Shoal spot	18 33 00	75 44 24
	Morant Point	Extreme	17 56 00	76 11 44
	Yallahs Point	West extreme	17 51 30	76 33 34
	Port Royal	Fort Charles	17 56 06	76 51 10
	Pedro Bluff	Cove, a quarter of a mile to the northward	17 51 30	77 45 24
	Savannah la Mar	Fort	18 12 20	78 08 54
	Negril Bay	Wharf in south part	18 16 50	78 22 24
	St. Lucia	Fort	18 27 45	78 11 24
	Montego Bay	"	18 29 25	77 56 48
	Falmouth	"	18 30 34	77 40 24
	St. Anne's Bay	Long wharf	18 26 24	77 13 24
	Port Maria	North-west wharf	18 23 00	76 54 54
	Port Antonio	Fort flagstaff	18 11 15	76 27 24
	Pedro Bank	East end, Portland Rock	17 08 00	77 27 00
	"	South-west breakers	16 48 00	78 52 00
	"	North-west edge	17 36 00	78 52 00
	Grand Cayman	Fort George, west end	19 17 45	81 23 54
	Little Cayman	West point	19 39 10	80 07 54
	Cayman Brac	South-west point	19 40 35	79 54 59
	Pickle Bank	Centre	20 26 00	80 26 15

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	PLACE.	PARTICULAR SPOT.	Latitude, North.	Longitude, West.
			° ′ ″	° ′ ″
Cuba.	Cape Maysi	Extreme	20 14 00	74 07 24
	Puerto de Guantanamo	East head	19 53 00	75 15 00
	Santiago de Cuba	Morro Castle	19 55 29	75 53 57
	Cape Cruz	Huts on the beach	19 50 24	77 45 03
	Caballones Channel	Pilot Point	20 50 00	78 55 00
	Boca Grande Cay	West point	20 57 24	79 13 42
	Blanco Cay	West end	21 38 15	79 50 00
	River Guaurabo	Ciriales Point	21 46 00	80 05 00
	Xagua or Jagua	Lighthouse	22 01 00	80 30 00
	"	Bank	20 37 00	80 35 00
	Piedras Cay	Centre	21 58 00	81 03 00
	Jardines Bank	Eastern extremity	21 39 00	81 02 00
	Rosario Channel	Entrance	21 37 00	81 55 00
	Isle of Pines	Frances Point	21 37 15	83 12 34
	"	Extreme south point	21 22 30	82 59 45
	San Felipe Cays	South-west part	21 55 00	83 37 00
	Laguna de Cortes	Small Cay at entrance	22 00 00	83 57 00
	Cape Antonio	Extreme	21 51 30	84 58 04
	Colorados Reef	West end	22 09 00	84 48 00
	Jutias Cay	Lighthouse	22 43 20	84 06 30
	Gobernadora	"	23 00 00	83 13 10
	Havana	Moro Lighthouse	23 09 20	82 22 04
	" under No. 4 fort	Engineer's post	23 08 53	82 20 43
	Managua Paps	Western	22 57 00	82 20 00
	Pan de Matanzas	Summit	23 01 54	81 45 00
	Cayo Piedras	North-west point	23 14 42	81 08 17
	Bahia de Cadiz Cay	"	23 13 00	80 30 00
	Paredon Grande	"	22 29 03	78 10 06
	Cayo Confites	South point	22 11 14	77 40 29
	Cayo Verde	North-west end	22 08 45	77 39 30
	Maternillos Point	Lighthouse	21 40 15	77 08 45
	Puerto de Nuevitas	East side of entrance	21 36 35	77 03 30
	Puerto de Naranjo	"	21 06 15	75 51 00
	Pan de Sama	Summit (885 feet)	21 04 30	75 49 30
	Port Nipe	Roma Point	20 47 14	75 33 28
	Puerto de Sama	East side of Entrance	21 06 00	75 45 00
	Lucrecia Point (estimated)	Extreme	21 10 00	75 34 30
	Manglito Point	Lighthouse	21 09 20	75 31 30
	Cayo Moa	East end	20 41 00	74 54 00
	Puerto de Baracoa	Captain of Port's house	20 21 00	74 30 18
Bahama Islands and Banks.	Navidad Bank	Centre of east side	20 02 00	68 47 24
	Silver Bank	East extreme	20 35 00	69 21 24
	Mouchoir Bank	North-east breaker	21 06 30	70 29 54
	Grand Turk	Hawks' Nest	21 26 15	71 07 30
	South Caicos	Parsons' Point	21 29 33	71 31 30
	French Cay	West point	21 30 00	72 12 51
	West Caicos	Hill, south-east end	21 37 30	72 28 33
	Fort George	Old Magazine	21 54 00	72 07 14
	Inagua Island	South side, Lantern Head	20 56 40	73 19 24
	" Alfred Sound	North-west point	21 07 10	73 40 21
	" Matthew Road	Henrietta Fort	20 57 00	73 41 00
	Little Inagua	North-west point	21 30 40	73 42 33
	Hogsty Reef	North-west Cay	21 40 30	73 51 03
	Mariguana	South-east point	22 16 30	72 47 03
	"	North-west point	22 27 40	73 07 33

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	PLACE.	PARTICULAR SPOT.	Latitude, North.	Longitude, West.
			° ′ ″	° ′ ″
Bahama Islands and Banks.	Plana or Flat Cay	South-west point	22 34 38	73 38 03
	Samaná or Atwood Cay	West point	23 05 30	73 49 33
	Crooked Island	Moss flagstaff	22 47 30	74 20 24
	Castle Island	South-west point	22 06 40	74 20 54
	Fortune Island	South end	22 32 40	74 22 54
	Watlings Island	Hinchinbroke Rock	23 56 40	74 28 34
	Rum Cay	Harbor Point	23 37 45	74 50 08
	Concepcion Island	West bay	23 50 50	75 07 27
	Cay St. Domingo	Centre	21 42 00	75 45 09
	Cayo Verde	Hill, south end	22 01 15	75 10 34
	Ragged Island	Gun Point	22 14 02	75 45 17
	Nairn Cay	East point	22 20 44	75 28 20
	Nurse Channel	Channel Cay beacon	22 31 15	75 51 41
	Long Island	South point	22 51 00	74 51 54
	"	North point	23 41 00	75 19 24
	" Clarence Harbor	Lochaber flagstaff	24 05 45	74 59 00
	Great Exuma Island	Beacon on Stocking Island	23 32 15	75 46 24
	Wide Opening	Danger Cay	24 25 30	76 40 22
	Wax Cay Cut	Rock, south-west Bush Hill	24 34 25	76 47 24
	Highbourne Cut	Flagstaff	24 43 45	76 48 49
	Ship Channel	North point Bluff Cay	24 51 52	76 48 05
	Fleming Channel	Shannon beacon	25 16 40	76 55 03
	San Salvador	Hawks' Nest Point	24 09 15	75 33 04
	"	North-west point	24 41 10	75 46 24
	Eleuthera	Cow and Bull	25 26 15	76 37 08
	"	Pigeon Cay	25 11 15	76 15 17
	Royal Island	Eastern Pap	25 31 20	76 51 48
	Douglas Passage	Douglas Rocks	25 08 40	77 05 45
	Nassau	Lighthouse	25 05 37	77 22 22
	"	Ordnance Wharf	25 05 12	77 21 20
	Green Cay, tongue of ocean	West point	24 02 12	77 10 34
	Andros Island	High Cay	24 39 30	77 42 30
	" Morgan's Bluff	North extreme	25 10 40	78 01 36
	Berry Islands, Great Stirrup Cay	Lighthouse	25 49 40	77 54 00
	Berry Islands, Little Stirrup Cay	West end	25 49 12	77 57 06
	Great Isaac	Lighthouse	26 02 00	79 06 30
	Gun Cay	"	25 34 30	79 18 48
	Cay Sal Bank	"	23 56 30	80 27 48
	" Anguila Isles	South-east extreme	23 29 20	79 31 10
	Cay Lobos	Lighthouse	22 22 50	77 35 09
	Mucaras Reef, Diamond Pt.	South extreme	22 10 00	77 19 24
	Ginger Cay	Centre	22 44 50	78 06 30
	Abaco	Lighthouse	25 51 30	77 11 09
	Bahama Island	West point	26 41 18	79 00 38
	Memory Rock	Centre	26 56 53	79 06 54
	North-west Matanilla Shoal	Western edge	27 21 30	79 03 54
	Walker's Cay	Highest part	27 15 42	78 23 48
	Elbow Cays Light	Light	26 35 30	76 58 30
Bermuda Islands.	Bermuda	West extreme of reefs	32 16 00	65 03 00
	"	South extreme of reefs	32 12 00	64 52 00
	" Dockyard	Superintendent's house	32 20 00	64 51 48
	" "	Bastion	32 19 30	64 51 24
	" Gibbs' Hill	Lighthouse	32 15 04	64 51 36
	" St. George's harbor	Hen Island	32 22 27	64 41 47
	" West end	Wreck Hill	32 16 42	64 54 38

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