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THE

NEW SEAMAN'S GUIDE AND COASTER'S COMPANION:

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CONTAINING, IN

PART I.

Complete Sailing-Directions for Ships, both outward and homeward bound, through the RIVER THAMES and all its ENTRANCES; the BRITISH and BRISTOL CHANNELS, on both Coasts, including all the Harbours; the COAST of WALES; WEST COAST of ENGLAND to LIVERPOOL; the SOUTH COAST of IRELAND; and the Islands of SCILLY, GUERNSEY, JERSEY, ALDERNEY, &c.

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PART II.

For the NORTHERN NAVIGATION: comprising the EAST COAST of GREAT BRITAIN, with the ORKNEY and SHETLAND ISLANDS; the Coasts of FLANDERS, HOLLAND, and GERMANY; the NORTH SEA, KATTEGAT, SOUND, BELT, BALTIC, GULF of FINLAND, and NORTHERN NAVIGATION to the WHITE SEA.

PART III.

161

A new and accurate TABLE of MAGNETIC BEARINGS, or COURSES, and DISTANCES, from Place to Place, for the different COASTS of EUROPE, with the VARIATIONS of the NEEDLE: Also, a new TABLE of the DISTANCES, by WATER, in Nautic Miles, from LONDON to the principal Ports of GREAT BRITAIN, IRELAND, the CONTINENTS of EUROPE and AMERICA, the WEST INDIES, &c.

TO WHICH ARE SUBJOINED

Copious Tables of Latitudes and Longitudes, from the best and latest Observations; improved and corrected Tide-tables; the Methods of finding the Moon's Age, the Day of New Moon, the Time of High Water, and the Latitude by Meridional Observation.

ALSO,

NEW TABLES OF THE SUN's DECLINATION, FROM 1806 TO 1821.

Improved from the original Work of Mr. JOHN CHANDLER, late of Orford, Pilot; Mr. MURDO DOWNIE, Master in the Royal Navy; Mr. GEORGE EUNSON, of Orkney, Pilot; Mr. MURDOCH M'KENZIE; Mr. J. DISTON, Pilot; and many other experienced Masters and Pilots.

Augmented by many important Observations from the Surveys of ADMIRAL KNIGHT; of Mr. T. FOTHERINGHAME, Mr. GEORGE MORRISON, Mr. T. STOKES, and other Masters, of the Royal Navy. Including, likewise, all recent Alterations made by Order of the different CORPORATIONS of TRINITY-HOUSE, &c., to the present Time.

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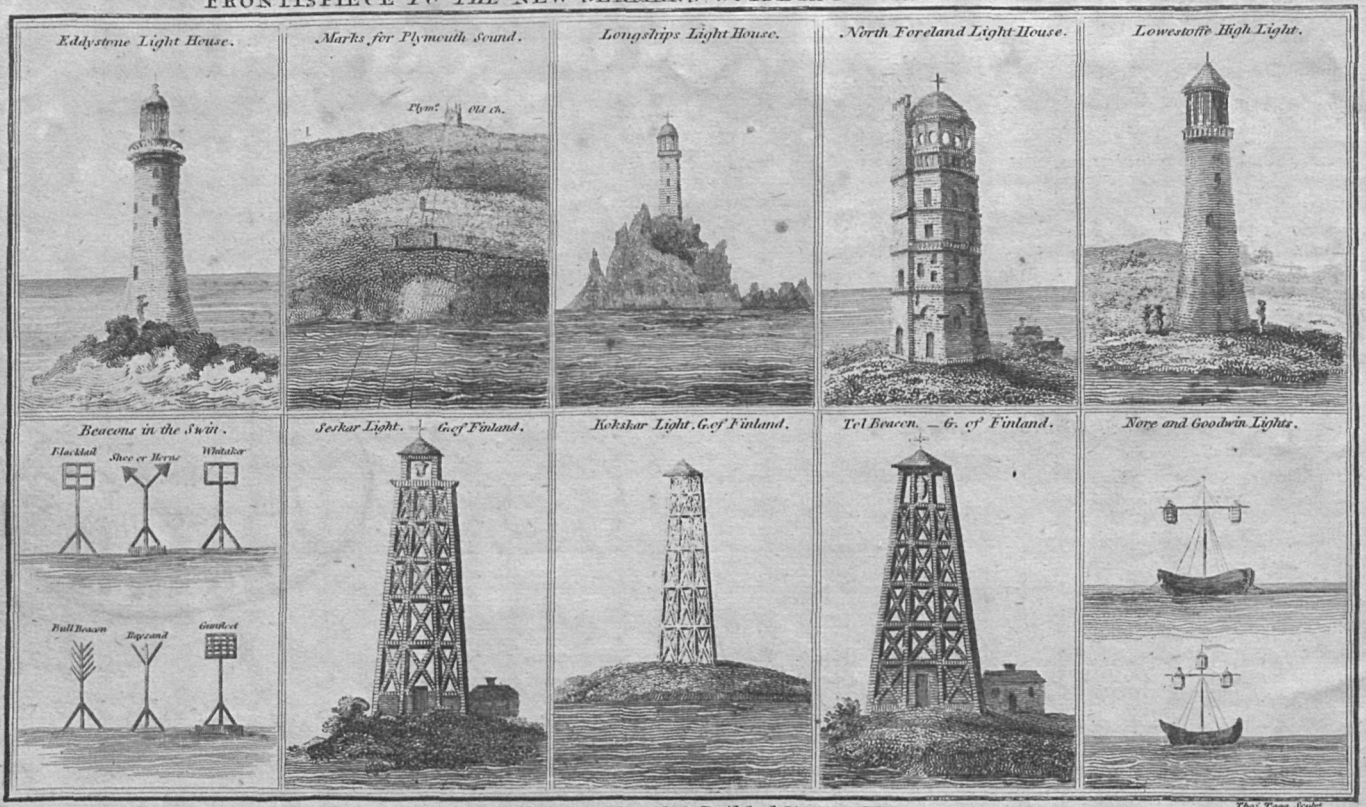

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Thos Tagg Sculpt

TO THE MASTERS OF THE BRITISH NAVY,

A CLASS OF OFFICERS WHOSE LIBERALITY HAS PARTICULARLY CONTRIBUTED TO ITS PRESENT STATE OF IMPROVEMENT, THIS NEW, ENLARGED, AND CORRECTED, EDITION OF THE 'SEAMAN'S GUIDE' IS, AS A TESTIMONY OF GRATITUDE, MOST RESPECTFULLY DEDICATED.

CONTENTS.

The reader is particularly requested to correct with his pen, or attend to, the additions and corrections which are noticed at the conclusion of the work.

PART I.—RIVER THAMES, BRITISH CHANNEL, &c.

PAGE

DIRECTIONS *for the* RIVER THAMES, *from London to the Nore* - - - - - - - - - - - - - - - - - - 1

RIVER MEDWAY, *from Chatham to the Nore* - - - - - - - - 7

From the NORE, *through the Five Fathom and South Channels, to the North Foreland* - - - - - - - - - - - - - - - 10

Directions for the EAST SWALE - - - - - - - - - - - - - 12

From the NORE, *through the Nob, Ooze, and Queen's Channels, to the North Foreland* - - - - - - - - - - - - - - - 13

From the NORTH FORELAND, *through the Gull Stream, into the* DOWNS, *and to Ramsgate* - - - - - - - - - - - - - 16

DIRECTIONS for the NORTH SIDE of the BRITISH CHANNEL.

DOWNS *to* SPITHEAD - - - - - - - - - - - - - - - - - 21

Spithead, the Isle of Wight, Needles, &c. to Poole - - - - - 26

From DUNNOSE *to St. Aldan's Head, Portland, Lyme, Exmouth, Torbay, Dartmouth, and the Start* - - - - - - - - - 34

From the START *to* PLYMOUTH, *Hamoaze, &c. and to the Eddystone* - 37

From Plymouth Sound to FALMOUTH, *Mount's Bay, and the* LAND'S END - - - - - - - - - - - - - - - - - - 42

Directions for the ISLANDS *of* SCILLY - - - - - - - - - 46

PAGE

LAND'S END to BRISTOL, Coast of WALES, and South Coast of IRELAND.

From the LAND'S END *to* BRISTOL - - - - - - - - - - - 51

The North Side of the Bristol Channel, MILFORD HAVEN, *&c. to* LIVERPOOL - - - - - - - - - - - - - - - - - - 56

The SOUTHERN COAST *of Ireland, from the Tuskar-rock to Bantry* 66

DIRECTIONS for the SOUTH SIDE of the BRITISH CHANNEL.

From CALAIS *to Cape la Hague* - - - - - - - - - - - - 76

The Islands of GUERNSEY, JERSEY, ALDERNEY, *&c.* - - - - 83

From Cape-la-Hague to Ushant and Brest Harbour - - - - - 87

Remarks on the Bay of Brest and Douvarnenez Bay - - - - 93

DIRECTIONS for SAILING from the ATLANTIC OCEAN, INTO, and UP, the BRITISH CHANNEL.

SOUNDINGS, *&c. when coming into the Channel, and Observations on a* CURRENT - - - - - - - - - - - - - - - - - 96

Directions from abreast of Scilly to the Downs - - - - - - 99

OBSERVATIONS *on* STORMS *in the British Channel* - - - - - 100

TIDE TABLE for the BRITISH CHANNEL, *on the Full and Change* - 101

LATITUDES and LONGITUDES of the principal Headlands, Harbours, &c. in the BRITISH CHANNEL - - - - - - - - 103

PART

PART II.—CHANNELS of the RIVER THAMES, and the NORTHERN NAVIGATION.

DIRECTIONS for the DIFFERENT CHANNELS of the RIVER THAMES, and between ORFORD-NESS and the NORTH-FORELAND.

PAGE

From the NORTH FORELAND, *through the South Channel to the Nore* - 104
From the North Foreland, through the Queen's and Nob Channels, to the Nore - - - - - - - - - - - - - - - - - - 106
From the North Foreland, round the Long Sand-head, to the East End of the Gunfleet - - - - - - - - - - - - - - - - 108
From the NORE, *through the* SWIN *and* KING'S CHANNEL, *to the East End of the Gunfleet* - - - - - - - - - - - - - - 109
From the East End of the GUNFLEET, *through the Stedway, to* HOSLEY BAY *and Orford-ness; thence to Harwich, and over the Naze into the Wallet* - - - - - - - - - - - - - - - - - - 112
Directions for sailing out of the King's Channel, either within or to the southward of the Shipwash - - - - - - - - - - - - 118
From Hosley Bay, and from the Gunfleet Buoy, round the Long Sand-head, to the Downs - - - - - - - - - - - - - - - - 118

The EASTERN COASTS of GREAT BRITAIN, from ORFORD-NESS *to the PENTLAND FRITH; and the ISLANDS of ORKNEY and SHETLAND.*

From ORFORD-NESS *to* FOUL-NESS, *including Yarmouth Roads and Hasborough Gat* - 120
Description of the Shoals, and Directions for sailing, between FOUL-NESS *and* FLAMBOROUGH-HEAD - - - - - - - - - - - 126
Directions from Foul-ness to Lynn Road and Boston-Deeps - - 129
Directions from Boston Deeps to the Humber - - - - - - - - 132
From the HUMBER *to the Frith of Forth, Leith, &c. including the Fern Islands and Staples* - - - - - - - - - - - - - - - - 136
From the FRITH *of* FORTH *to Buchan-ness* - - - - - - - - - 146
BUCHAN-NESS *to the Pentland-Frith, and the Islands of Orkney and Shetland* - 151

The COASTS of FRANCE, HOLLAND, GERMANY, &c. from GRAVELINES to the SKAW POINT; including the EMS, WESER, ELBE, &c.

PAGE

Description of the Banks and Navigation off the French Coast between Cape Grisnez and Ostend - - - - - - - - - - - - 165
Directions for sailing from GRAVELINES *to Ostend* - - - - - - 169
Description of the BANKS *and Navigation* OFF FLUSHING - - 172
From Ostend to the Texel - - - - - - - - - - - - - - - - - - 178
England to the Texel, and thence to the Ems, Weser, &c. - - - 184
Heiligeland to the Eyder and Skaw Point - - - - - - - - - - 193

From the RIVER THAMES, over the NORTH SEA, to NORWAY; and through the KATTEGAT, SOUND, BALTIC, and GULF of FINLAND.

NORTH SEA,—*Hosley Bay to the Naze of Norway* - - - - - - 196
SOUTH *Coast of* NORWAY, *and Entrance of the Kattegat* - - - 199
RATES *of* PILOTAGE *in* NORWAY - - - - - - - - - - - - - 200
Directions for the KATTEGAT - - - - - - - - - - - - - - - 201
Directions for the SOUND *and* GROUNDS; *including the Ordinance respecting the Ceremony of Lowering* - - - - - - - - - - 206
Directions for the BALTIC SEA, *including the Belt* - - - - - 211
Directions for the GULF *of* FINLAND - - - - - - - - - - - 220
REGULATIONS *on entering the Russian Ports or Harbours* - - - 229
Observations for Ships RETURNING *through the* BALTIC - - - 231

From the RIVER THAMES to the WHITE SEA.

General Directions for sailing from the KING'S CHANNEL *to* ARCHANGEL *and* ONEGA - - - - - - - - - - - - - - 232
Particular Directions for the WHITE SEA - - - - - - - - - - 233

DIRECTIONS

DIRECTIONS *for* SHIPS RETURNING *from the* NORTHWARD, *towards and up the* RIVER THAMES.

PAGE

OBSERVATIONS *on a* CURRENT *between Norway and the Orkneys*, 236
The NAZE of NORWAY, *to the* RIVER THAMES *and* BRITISH CHANNEL 236
The River Thames, from the Nore to London 242
TIDE TABLE *for the* NORTH SEA, *on the Days of the Moon's Full and Change* 246
LATITUDES *and* LONGITUDES *of Places in the* NORTH SEAS, BALTIC, *and* GULF *of* FINLAND 248

PART III.—The MAGNETIC BEARINGS or COURSES, and the DISTANCES in NAUTIC MILES, from Place to Place, on the different COASTS of EUROPE, with other TABLES, &c.

SECTION I.—THE BRITISH CHANNEL, BAY OF BISCAY, SPAIN, PORTUGAL, AND MEDITERRANEAN SEA.

PAGE

River Thames, Downs, and British Channel 249
Bay of Biscay 253
Cape Finisterre, &c. towards the Mediterranean Sea 253
Strait of Gibraltar, with the Spanish and French Coasts of the Mediterranean 254
French and Italian Coasts of the Mediterranean 255

SECTION II.—THE WESTERN SEAS OF GREAT BRITAIN.

The British, St. George's, and North, Channels, from the Islands of Scilly, upwards 256
The Coasts of Ireland 257
The Western Coasts and Islands of Scotland 258

SECTION III.—THE NORTH SEA, KATTEGAT, SOUND, BALTIC, GULF OF FINLAND, AND NORTHERN NAVIGATION TO THE WHITE SEA.

River Thames, Northward, along the North-East Coast of England 260
The East and North Coasts of Scotland, Orkneys and Shetland 262
Orkney Islands 264
Shetland 264
From the N. E. of Great Britain to different Places on the opposite Coasts of the North Sea 264
From the Texel and Heiligeland to different Places in the N. Sea 265
From Jutland, &c. to different Places in Norway, the Kattegat, Sound, and Grounds 265
Up the Baltic, and from Place to Place to Cronstadt 266
England to the White Sea 267

TABLE of the DISTANCES, by Water, from London to the principal Ports, &c. of Great Britain, Ireland, the Continents of Europe and America, the West Indies, &c. 268
GENERAL RULES for finding the Golden Number, Leap-Year, the Epact, and Moon's Age; also the Moon's Southing, and the Time of High Water on every Day in the Year . . 269
RULE for FINDING the LATITUDE of a Ship at Sea, or of a Place on Shore, from the observed Altitude of the Sun, when on the Meridian 271
TABLES of DIP and REFRACTION 272
TABLES of the SUN'S DECLINATION from 1806 *to* 1821 273
Variation of the Sun's Declination 277

GENERAL OBSERVATIONS.

*** Throughout this Volume, unless where otherwise expressed, the COURSES and BEARINGS are by the Compass. The Variation, according to the latest observations, is as follow:—1. In the BRITISH CHANNEL, from the Downs to Spithead, 24 degrees, West; from Spithead to Plymouth, 24 to 26 degrees; from Plymouth to the South of Ireland, 26 to 28 degrees; from Ireland to Brest, 28 to 25 degrees; and, from Brest to Calais, 25 to 23 degrees.—2. In the NORTH SEA, &c. from the Thames Mouth to Whitby, 24 to 25 degrees; from Whitby to the Orkneys, 25 to 27 degrees; to the N. E. of the Orkneys, 28 to 29 degrees: Downs to the Scheld, 22 degrees; Scheld to the Kattegat, 22 to 20 degrees; in the Kattegat, 19 to 18 degrees; Baltic, 18 to 15 degrees; and, Gulf of Finland, from 14 to 10 degrees.

The Soundings, generally, are those at low water, spring tides.

PART I.—RIVER THAMES, BRITISH CHANNEL, &c.

DIRECTIONS *for sailing down the* RIVER THAMES *from* LONDON *to the* NORE; *and down the* RIVER MEDWAY, *from* CHATHAM *to the* NORE; *and thence, including the* EAST SWALE, *through the* SOUTH *and* QUEEN'S CHANNELS *to the* DOWNS.

PORT OF LONDON.

BEFORE we proceed to give directions for navigating the River Thames, it may not be improper to premise, that the jurisdiction for the conservancy of this river, with the waters of Medway, and the fisheries therein, is one of the most antient and honourable privileges of the city of London: the property of these rivers, and of the rivulets which fall into them, their fish, and the soil beneath, *within certain boundaries**, having been, from time immemorial, vested in its corporation, and confirmed to the same by royal charters and acts of parliament.

In consequence of this right of jurisdiction, the legislature have placed the shipping of the port of London, including the new canal at the Isle of Dogs, under the regulations of harbour masters, appointed by the corporation. The dock masters of the New London and West India docks are also empowed to direct the mooring, &c. of all vessels within 200 yards of the entrance of the docks, &c. and may enforce their orders under certain penalties. It is therefore requisite, that seamen should be acquainted with these particulars, as a guidance for their conduct whilst in the port.

Complete abstracts of the acts, regulating the shipping in the new docks, with tables of the rates or dues payable therein, are contained in the new edition of Steel's "*Shipmaster's Assistant and Owner's Manual.*"

* These boundaries are shewn in Steel's new Charts of the Thames and Medway.

DIRECTIONS for the RIVER THAMES from LONDON to the NORE.

TIDE. The time of flowing and the vertical rising of the tide, on the full and change days of the moon, in the River Thames, are nearly as follow, viz. at London-bridge, three-quarters past two, at Cuckold's Point half past two; at Woolwich, a quarter past two; at Purfleet, three-quarters past one; and, at Gravesend, half past one. At Purfleet it rises 17, at Woolwich 18, and at London about 19, feet; at Old or Holy Haven it flows at three-quarters past 12, and rises 15 feet; and, at the Nore, at half past 12, and rises 14 feet. Allowance must always be made for easterly winds; because, with such winds, the tide flows sooner, and *vice versâ*.

UPPER POOL. The Upper Pool, from London-bridge to Wapping-ness, lies nearly N. W. and S. E. about 1¼ mile. A shoal lies off the Custom-house; and at Horslydown is a hard shelf of 6 feet water. A little above Fountain-stairs is a shoal, almost dry at low water, which is avoided by keeping well over towards the ships at Wapping-ness. If bound down from the Upper Pool with the wind easterly, it is best to begin at the first of the flood to warp down; but, with the wind more favourable, as at S. W. you may wait till near high water, so as to be down off Cuckold's Point at the beginning of the ebb, ready to fall down, or work through, Limehouse-reach, as may be most convenient.

LOWER POOL. The Lower Pool, from Wapping-ness to Ratcliff-cross, lies E. N. E. and W. S. W. There is a shelf off Pitcher's Point which must be avoided, by keeping over towards the ships on the north side. A little below Limekiln-dock is a shoal of 4 feet water extending down to Limehouse-Hole-stairs. The mark to sail clear of it is, the southernmost water-works at Shadwell on with St. George's church. The ebb-tide sets very strongly upon the ships in the lower part of the Pool. From Ratcliff-cross down to the horse-ferry you may moor upon the north shore.

LIMEHOUSE-REACH lies N. N. E. and S. S. W. A bank of mud stretches from Cuckold's Point, nearly half-river over, towards Limehouse-hole. The ebb-tide sets very strongly from the Pool into the Hole; just below which, at a short distance from the east shore, is a rock of 4 or 5 feet water. In this reach are 10 or 11 feet, and in Limehouse-hole 16 feet, at low water. But there is a shifting bank near the middle of the reach. From the fifth mill, downwards, a hard shelf stretches one-third over the river, which makes the channel very narrow between the east shore and the ships at the Red-house: on the upper part of it are 6 and 7 feet water; the lower-part is almost dry. To avoid it, keep Deptford new Church just open to the westward of the clock in the King's Yard. Off the King's Anchor-wharf, rather close in shore, is a shoal almost dry; without it, and near the sheer-hulk, is 16 and 17 feet water. Ships may be moored with the Kedge from a birth above Greenland-dock down to the moorings in 11 or 12 feet at low water.

GREENWICH-REACH lies in a semicircle from S. S. E. to E. by N. On the south shore, from just below Deptford-creek to the west end of Greenwich, is a shoal nearly dry. Without this shoal are 13 and 14 feet. A shoal, called Greenwich Upper Shoal, lies with Greenwich church on with the Faggot-wharf; and the northernmost end of the King's Store-house on with the end of the Isle of Dogs. The mark to go clear of it is, Woolwich church kept just open of Millington's, or lady Crowley's, Wharf. Upon the north side, off Millington's Wharf, and close in shore, is another shoal: to avoid it, in going down, keep the clock-house, at Deptford-yard, open of the Isle of Dogs till you open Blackwall-reach. You may anchor off the Isle of Dogs, from below the Ferry-house and upwards, in several berths, in from 14 to 18 feet water; but the best anchorage is, with the Royal Observatory open to Greenwich-hospital, in 15 or 16 feet.

NEW CANAL. The circuitous navigation round the Isle of Dogs, through Greenwich-reach, may be avoided, by passing through the new Canal, from Limehouse to Blackwall, or from Blackwall to Limehouse, according to tide, &c. as all ships, vessels, barges, and other craft, may now make use of it, conformably to the directions of the act.

act. Masters, pilots, &c. are, however, required to observe the following regulations, and all other directions that may be issued by the harbour-masters.

A blue flag, with a white dagger in the centre, is hoisted at each end of the canal at half-flood, to signify that vessels may enter.

No ship or vessel is, on any account, to enter the canal while under sail; and each is expected to be provided with proper and sufficient towing lines and warps.

No transit rates will be required for passing through until December 1808; but, after that time, the following will be payable:

For every ship, &c. if of 200 tons, or upwards, 2d. per ton.
——————— 100 tons and under 200, 1½d. per ton.

Vessels of 50 to 100 tons, 10s. each.

Vessels carrying sail, 20 to 50 tons, 5s. each.

Every lighter, barge, or boat, rowed through, 1s.

BLACKWALL-REACH lies N. by E. and S. by W. From the Folly-house, to the upper part of Blackwall, vessels may anchor in 12, 13, or 14, feet water, on the west shore; and, on the east side, from the upper gibbet downwards, in 18 or 19 feet at low water; and they may moor to the eastward with Millington's clock open of Saunders-ness. To anchor to the Westward, keep the clock on with the Ness. In entering this reach, give Saunders-ness a good berth, to avoid the shoal which stretches from it nearly one third over the river; but thence be cautious of a shifting middle ground, near the middle of the reach, above the Folly-house. Off the Upper Jetty is a shoal of 6 or 7 feet at low water; and there is a flat on the west side opposite the Folly-house; to avoid which, keep Millington's clock open of Saunders-ness. Just below Wells's or Perry's Yard lies Blackwall-rock, a large dangerous rock, having only 2 or 3 feet water on it at low water; when off it, Limehouse church will appear on the northernmost house in the yard. The long mark for this rock is, the west cupola of Greenwich-hospital on with Lea-ness; or, the sheer-hulk at Deptford on with a clump of trees in the Isle of Dogs. The thwart-mark is the dock-yard clock-house on with Mr. Perry's old or upper dock-gate. the tide, especially the ebb, sets strongly on this rock.

BUGSBY'S-REACH, or Nell's Hope, lies S. S. E. and N. N. W. A shelf begins at Bow-creek, and extends downwards almost to Hook-ness. It stretches nearly one-third over the river, and has but 5 or 6 feet over it at low water. To avoid it, keep Charlton-church on with a clump of trees, till Deptford new church appears on with a high tree in a field at the upper part of Blackwall-reach. Charlton-church on with the Sluice will lead clear of Charlton-shoal, a shoal of 4 or 5 feet at low water. The anchorage in Bugsby's Hole is off the south shore, in 12 or 13 feet at low water; or in 14 feet, just above the Orchard-House-causeway, upon the N. E. shore. The best marks are, the two cupolas of Greenwich-hospital open, or Greenwich-church just open of the Hospital, and Woolwich-reach just open.

WOOLWICH-REACH. This reach lies E. by S. and W. by N. and has but 8 or 9 feet at low water. There is a shelf of 4 or 5 feet to the eastward of the upper sand-wharf, which extends downwards almost to the upper moorings, and half a cable's length from shore. The thwart-mark for the upper end is, a large house standing on a hill on with the corner of the wharf. There is also a shelf of 3 feet water on the north shore, from Ham-creek to the place where Broad-street, in Woolwich, appears open. It extends half a cable's length from shore. The long mark for it is, a large house in Blackwall open of Hook-ness. With the Bell Water-gate or Broad-street open, you are below it.

Vessels may anchor, with Broad-street open, in 18 feet water; in 15 or 16 feet upwards, and downwards as low as the Point. In no part of this reach, between where the Kings's ships lie and Bugsby's Hole, are more than 9 feet water.

GALLIONS lie N. E. and S. W. The upper point is flat: give it a good berth; but, when below it, haul in towards the Devil's-House, till you get Woolwich-church a sail's breadth on with the Point; by keeping these marks on, you will avoid a shelf that lies near the lower Point and runs nearly half-river over. The best anchorage is with the Sluice open, or a berth below it, in 17 or 18 feet water. You may anchor on the east shore, above the shelf, abreast the

the upper Point, in 12 or 14 feet at low water. In passing Margaret's-Ness, be sure to give it a good berth.

BARKING or TRIPCOCK-REACH lies nearly E. and W. In the middle is a dangerous shelf, the upper end of this shelf having 5 or 6 feet on it at low water, lies off the creek's mouth; the thwart-mark for it is, Barking-church and the Tower-house in one, or the creek open. For the lower end, on which is but 2 or 3 feet at low water, the thwart-mark is, the Bell-tree which stands on the White Heath, or the Tower-house on the corner just open of the Powder-house on the south side. To sail to the northward of it, keep the barn on the Devil's-House on with Margaret's-Ness, until you are off the Sluice; then haul over toward a gibbet, on the Dagenham side, until the south edge of Purfleet appears on with Jenning-Tree point; which mark will also lead clear of a flat that lies off the point above the Half-way-house. Vessels may also go to the northward by keeping the innermost or southernmost tree in Gallions on with Margaret's-Ness. From the lower part of Gallions, downwards to Barking-creek, is a shoal, of 5 or 6 feet water, extending one-third of the river over: there is another, called Dagenham shoal, the thwart-mark for which is Dagenham-church on with the upper Sluice: to sail clear of it, keep Purfleet on with Jenning-Tree-point until Barking-church appears open of Dagenham-point. There is good anchorage off Tripcock-trees in 12 or 13 feet water.

HALF-WAY-REACH lies E. S. E. and W. N. W. There is a shelf on the north side, just below the Breach-house. To avoid it, keep to the southward or mid-channel. There is another on the south side, just below the powder-house, which may be avoided by keeping the hill at Purfleet on with Jenning-Tree-point. This reach has good anchorage all through; but the best is within Julian-Tree-ness on with Cold-Harbour-point, towards the north shore, in 18 or 19 feet, at low water; or, where Barking-church appears a sail's breadth open of Dagenham-point. Near the Ferry-house are 21 feet at low water.

ERITH-REACH lies N. N. W. and S. S. E. Going out of Half-Way-reach into this reach, be careful to avoid Julian-Tree-sand, which has a wreck upon it, and lies more than half-river over off the Ness. Keep Barking-church within a sail's breadth of the point below the Breach-house, till you bring Rainham-church within a ship's length of the Ferry-house. This mark will lead you down into Erith-hole, and clear off a shelf on the east side, from the farm-house to Cold Harbour-point, and half-river over. You may anchor in Erith-hole, Erith-church bearing W. S. W. in 5 fathoms.

Vessels bound upwards from Erith-Hole should proceed with the westernmost house in Erith on with the Faggot-wharf, until Rainham-church appears on with the Ferry-house; approach towards the north shore, with this mark, until you have passed the wreck lying on the sand near half-way over from Julian-Tree-ness; then, having brought Barking-church within a sail's breadth of the Point below Dagenham-Breach-house, you may steer for Half-Way-reach. Vessels drawing 10 or 12 feet water may, at three-quarters flood, go between the point and the wreck, giving the point a berth. Ships drawing 16 feet, at anchor in Long Reach, should not weigh anchor until the water is up to the lower chalk-wharf at Purfleet, about an hour and a half after the ebb.

THE RANDS lie E. by N. and W. by S. The Rand-sand, having 6 or 7 feet on it at low water, lies nearly in the middle of the river, near the middle of the reach, or towards the upper end. When in Erith-hole, steer into the bight till you bring the uppermost chalk-wharf on with the point, and then along the south shore into Long-Reach; or, in entering the Reach, bring a small barn, below Erith, on with a high tree, keeping them so until the upper chalk-wharf at Purfleet appears on with Crayford-ness, and you will be clear to the southward of the shoal. The mark for the upper end of it is, Jenning-Tree-point on with Coal-Harbour-point; the mark for the lower end is, Dartford-church on with the upper breaches. In the passage to the northward of the shoal is 9 or 10 feet water, and the mark through it is, the lower wharf at Purfleet on with Crayford-ness. In the passage on the south side is about 13 feet at low water.

LONG REACH lies N. W. and S. E. 3½ miles in length; at the upper end of it, just above Dartford-creek, is Dartford-sand; by keeping

keeping Dartford-church open, till you open the creek, you will avoid it. The tide out of the Rands sets strong upon the chalk-wharfs at Purfleet, and inclines towards the east shore half-reach down, when it sets over toward Greenhithe. You may anchor in any part of this reach in 6 or 7 fathoms. In leaving it, give the point at the lower end a good berth, as a shoal runs from off it.

St. CLEMENT's or FIDLER's REACH lies from N. E. by N. to East. A shelf, half a cable's length broad, is on the east side, having 6 or 7 feet water; it begins half-reach down, and extends down to Broad-ness; if you keep Gray's Thurrock open of the point you will avoid it. Another mark to go clear of it is, a small red-tiled house near the causeway, at the lower part of Gray's, just open of Broad-ness.

GRAY's-REACH, or Northfleet-hope, lies N. by W. and S. by E. There is a flat below Broad-ness; and, on the opposite side, against it, lies Black Shelf, a very dangerous shelf, being steep-to, and the tide, both ebb and flood, setting strong upon it. It begins at the creek below St. Clement's Church, and extends downward to the house above Gray's.

The leading mark along this shelf is, a small red-tiled house or cot on with West Tilbury-church. In going down, towards the lower end of this reach, you may make good allowance for the ebb-tide, which sets strongly in towards Bumboat-hall and upon the three upper chalk-wharfs at Northfleet. The ground from Northfleet to Gravesend is hard and bad.

Between Broad-ness and Black Shelf it is necessary to keep in the tide-way as much as possible, as the tide in this reach runs narrow. On the east side, during flood, there is an eddy: in turning up, therefore, vessels must not stand far over to the eastward. Toward the lower part of the reach, along the west shore, is a shoal of 3 or 4 feet water, and a cable's length broad, which extends about a quarter of a mile. A shoal also begins a little above the lower point, to which it extends, and stretches half a cable's length from shore, having 5 or 6 feet at low water.

GRAVESEND-REACH lies, from Northfleet-hope to the town, nearly W. N. W. and E. S. E. and thence to the Hope E. by S. and W. by N. In this reach is deep water and a rapid tide; therefore, if you intend to anchor here, and there are many ships, give your ship a good scope of cable at once, lest your anchor come home, and you get athwart-hawse. But especially in the night, keep well over towards the north shore. There is a shelf off the second barways, downward, upon the north side, and another off the New Tavern, which runs a mile down upon the south shore; another lies off the Coal-house, at half a cable's length distance from the shore, the Coal-house on with the east end of Tilbury-church. This shoal has about 10 or 12 feet at low water. The shoal on the south side is nearly a cable's length broad, and has but 4 or 5 feet on it at low water. Gravesend church, open to the northward of the block-house, is the mark to keep clear of it.

Buoys are fixed to large anchors, near Gravesend and Tilbury-fort, in the following situations, viz. two off the New-Tavern-causeway, one-third the breadth of the river from the Gravesend side; two off the Lower Causeway at Tilbury-fort, one third the breadth of the river from the fort; two off Gladwell's Hard, one-third the breadth of the river from the west end of Gravesend; two off the Upper Causeway near Tilbury-fort, one third the breadth of the river from the Essex shore. And, for the better assisting ships navigating in the night past the buoys, six lights are placed in the following form, viz. one off the Upper Causeway; one off the Lower Causeway; one at each of the two upper buoys; one at each of the two lower buoys. Two guard-boats are added, one to the upper buoys and one to the lower, to hail all ships approaching before they drop anchor. And it is recommended to all entering or departing to keep as near the middle of the river as possible, and not to come to anchor within half a mile of the west end of Gravesend-town, or the same distance below the New Tavern; which situations are marked by white nun-buoys, as well to avoid damage to their ships as to prevent the displacing the buoys; and, also, when informed by the guard-boats that the hawsers for the communication are stretched across the river, not to attempt passing them: and all pilots are

 required

required to govern themselves accordingly, as the expense of replacing the buoys will fall on any person who may remove them out of their places.

THE HOPE lies N. E. by N. and S. W. by S. and is about 2 miles long. There are two shelves in this reach, both on the N. W. side. The uppermost, called the Ovens, a quarter of a mile in length, lies just below the Coal-house or Upper Hope-point. Keep Gravesend open of the Point till East Tilbury-church bears W. by N. and it will lead you clear of and below it: the lower shelf is Mucking-flat, which extends about half a cable's length from the west shore in the bight, and stretches down nearly to a creek called Shell-haven. Ships in working down may stand into 5 fathoms on the Essex, and 6 fathoms on the Kentish, side. The flood tide is slack on the east side of this reach; and, close to the shore, no tide sets at all: ships, therefore, when working upwards, must not stand too far over to the eastward, because, if the head gets into less tide than the stern, it may occasion their missing stays and running on-shore.

SEA-REACH. The course down Sea-reach is E. S. E. and S. E. by E. In coming out of the Hope, the tide sets strongly upon the north shore. The upper part of this reach is flat a long way off below the Hope-point, so that the best tide and deepest water is near the Essex shore. Upon the south shore, opposite Old or Holy Haven, lies the body of the Blythe-sand. This sand is a very extensive shelf, which extends from the Lower Hope-point to Yantlet Creek. Athwart of Holy Haven, it stretches more than half-river over. In the channel, between this part and Holy Haven, are 9 and 10 fathoms water.

From the lower part of the Hope to Holy Haven, the courses are E. by N.—E. and E. by S. The north shore from Shell-haven to Holy Haven is steep; but the edge of the Blythe-sand, from the upper end to Holy Haven, is flat; so that you may, with a turning wind, stand towards it into 5 fathoms.

On the north side, opposite the lower part of the Blythe, lie the *Scars*, which stretch to a considerable distance from shore. This bank extends from Holy Haven to the Scar-houses. It is steep-to, 9 fathoms and then aground. The haven's mouth open will lead clear of it. The *Chapman* lies below the Scars, and is also steep-to. The thwart-mark for the Chapman-head is, Hadleigh castle and church in one, and on with the midddle of a large square field. In working down, ships stand to the Blythe-sand into 6 or 5 fathoms, and to the Chapman and Scars into 9 or 10 fathoms: they then put about. You will always see the edge of the tide, therefore tack before you come to it.

From Holy Haven to the Nore, the course is E. S. E. and S. E by E. 11 or 12 miles. Thwart off Leigh and the upper part of the middle, down to Southend, is called Leigh-road, which is flat from side to side, having 4 and 5 fathoms at low water. Vessels, standing over to the Middle, and turning up with a flood tide, should tack so soon as they deepen their water on the north side of it. This precaution is unnecessary with respect to the south shore, as that is very flat.

In working down from Leigh-road to the Nore, about two miles below the Chapman-head, you will find the *Middle Ground*, which extends thence about 4 miles S. E. by E. Upon it, towards the upper end, is not above 3 fathoms water; and, thwart the Nore, 4½. Some part of it is nearly dry at low water spring tides. The thwart mark for the upper end is, Prittlewell-church, N. E. on with a small house; and, for the lower end, the mark is, Queenborough-church open a little to the westward of Sheerness-point. Do not stand over the middle towards the upper end, as the channel to the northward is very narrow. In working down to the southward of it, stand to the Nore in 5 or 6 fathoms water; and to Shoebury-knock, on the north side, which is very steep, in 10 or 9 fathoms. Upon Shoebury-knock is a black buoy, from which the Nore-light bears S. by E. 2½ miles. The *Nore-sand*, on the east or seaward end of which the light vessel is anchored, extends thence about 2 miles W. N. W. and E. S. E. It is nearly half a mile broad, and dry at low water, common tides. The mark for the west end is, Queenborough-church on with the sheer-hulk, near Sheerness; and the marks for the light are, the sheer-hulk

hulk a sail's breadth on the Garrison-point, and Minster-church on with the easternmost part of a triangular field called Mizen-hedge, bearing S. S. W. ½ W.

The lower end of the Middle bears from the Nore-light about N. N. W. ½ W. 3 miles. From abreast of Shoebury-buoy to Leigh-road the course is W. N. W. 4 miles and a half.

DIRECTIONS for the RIVER MEDWAY, from Chatham to the Cant and Nore-Light.

IN the Medway the tide rises from 14 to 20 feet; the least rise being at the entrance. At Sheerness, it is high-water, on the full and change, at half past twelve; and, at Rochester, at one o'clock.

Ships drawing 20 feet water, and bound down the Medway from Chatham, must not get under-way unless the wind be at West, W. by N.—W. N. W. or N. W. by W. and at the last quarter-flood spring tides.

CHATHAM-REACH lies N. N. E. and S. S. W. Between the sheer-hulk and the dock lies a flat, extending from side to side, with only 10 feet water upon it; in the other parts of the reach, at the buoys, are 16 or 18 feet water. From Chatham-jetty to Finsborough-creek the shore is flat and dry; the north shore is pretty bold, but observe not to stand within the warping-buoys.

UPNOR-REACH lies N. E. by N. and S. W. by S. Close to the west point lies a causeway, called Midshipman's Hard; it runs to some distance from shore; the east shore is flat downwards to abreast of Upnor-castle. Off the middle moorings, the east shore is flat downwards to the point, about 20 fathoms above which is a shoal of 7 or 8 feet water. The ebb-tide sets upon the eastern shore, and the flood upon the opposite.

COCKHAM-WOOD-REACH lies S. E. by E. and N. W. by W. in length one mile. At the buoys in mid-channel are about 15 or 16 feet water. The south shore is steep-to on the marsh-side, called Finsborough-marsh, and the east point, Finsborough-ness, which is a bold point: the north side is a gradual flat. In sailing down this reach, borrow towards the East-point, (or Finsborough-ness,) to avoid flat ground that begins a little above Hoo-creek on the east shore.

SHORT or SOVEREIGN's-REACH extends S. by E. and N. by W. something less than a mile. A little below Finsborough-ness begins a flat, which dries at low water, and runs down to Finsborough; it lies about 80 yards from the marsh-side. In the upper end of this reach is a middle ground, 120 fathoms long, on which are 10 feet at low water. There are several marks for it, but of little use to pilots; as, at high water, there is sufficient water over it. Upon the east shore there is a flat ooze stretching 30 fathoms from the marsh into the river; it begins at Hoo-creek, and extends downwards to within a cable's length of the east point, called Cats-ness, which is bold-to. In mid-channel, at the moorings, are 15 feet water; and a little below Finsborough-creek, on the west shore, are 3 buoys in 22 feet water. Here the three-deck ships are moored. In this reach is but little tide, the strength of which sets through Finsborough-creek.

GILLINGHAM-REACH. This reach lies E. S. E. and W. N. W. The north shore is bold all the way down to the Folly-point. On the south shore, a quarter of a mile below Finsborough-creek, is a small creek, called St. Mary's creek. From this, all the way down the south shore, by a place called Digg's Hole, till you come down into the bight, to the eastward of Gillingham-creek, the south shore is flat, having not more than 6 or 8 feet upon it. The marks for the bank are the new barracks that stand to the southward of Upnor-castle, a sail's breadth open of the N. W. point, (or Cats-ness,) two-thirds from the south shore. In this reach, the deepest water above the Folly-point is 16 or 18 feet, until you come down near the point, then you may edge to the southward and anchor in 16 or 18 feet water. Sailing down this reach, bring Upnor-castle on with Cats-ness; this mark will lead clear to the southward of a shoal in Folly-reach, which may also be avoided by keeping close along the north shore.

FOLLY-REACH lies N. N. E. and S. S. W. ¾ of a mile in length. At the upper end is a middle ground about 200 fathoms long and 40 broad; the mark for the south end is, Upnor-castle just clear of Cats-ness. The mark for the north end is, Yantland-creek on the point of the marsh on the same side of the water. All the marshes on the east side of this reach are steep-to. Observe that the ebb-tide sets strongly into Yantland-creek, as the tide runs through it into Rainham creek. The depth of water between the east shore and the middle is from 3 to 5 fathoms, between the middle and the west shore it is 5 or 6 feet. The west shore is a long dry flat, which begins at the Folly-point, and runs down to the east point of East Hoo-creek. The mark for this flat is, a white house to the eastward of Gillingham, an oar's length open of the Folly-point. The flood runs on the west shore and the ebb on the opposite. The west channel is narrow, but it grows wider downwards, and has more water. The course through the east channel is nearly N. by E. Its breadth, from the east shore to the middle ground, is 100 fathoms. The middle ground is mud and gravel. In the lower part of the reach, vessels may stop a tide in 18 feet water.

LONG REACH is near 3 miles in length, and extends E. by S. ½ S. and W. by N. ½ N. The leading mark is, Minster-church a sail's breadth open of the beacon upon Ockham-ness. All the way from the north point of Folly-reach (called Dormitt's-Ness,) to Bishop's-Ness, which is the east point of this reach, the marshes are bold-to. A little below the ness begins Bishop's Oaze, which is steep-to, and dry at half-tide. The mark for it is, Hoo-church, a handspike's length open of Bishop's-Ness; but this mark is not to be depended upon when Kitt's Hole is open with the beacon point. From West Hoo-creek, down to the beacon, is a flat oaze, on the upper part of which is only 4 or 6 feet water; the other part is dry. Between the upper end of this oaze and the north shore is a small channel, but of no other use than as an oister-layer. The thwart-mark for the oaze is, Minster-church just open of the beacon-point. With Hoo-creek open of Dormitt's-Ness, is a good road, where you may anchor in 24 feet water.

KITT's-HOLE-REACH is one mile and a half long, and lies N. E. by N. and S. W. by S. The beacon-point is bold; and a quarter of a mile below it begins a large oaze, which lies in the north bight of the reach down to East Hoo-creek; the soundings towards it are gradual; and the mark for it is, Rainham-church on with a small house; but, so soon as you have passed the beacon, steer for the east point called Sharp-ness or Shee-ness.

At the east end of Bishop's Oaze is Rainham-creek; on the east side of this creek begins Barbutt's Oaze, which dries at half-ebb; it runs down the S. E. shore to within a quarter of a mile of Shee-ness; the mark for it is, a small white house at Rainham on with a marshy point called Barbutt-ness: Both this and Bishop's Oaze are steep-to, as is Shee-ness. Mid-channel in this reach are from 5 to 11 fathoms water. The ebb sets down on the east shore, and the flood the contrary.

SALT-PAN-REACH is 2 miles long, and lies E. S. E. and W. N. W. At Shee-ness begins a flat of 6 feet water lying 30 fathoms from shore. The mark to lead clear of it is, the S. W. marsh in Kitt's Hole, joining Shee-ness, in a line with the Ness. The shore, from this shoal to Stangate creek, is a gradual dry flat oaze; and, from Stangate-creek to within a cable's length of Queenborough-swale, is a bold shore; thence downwards lies a shoal 25 fathoms from the shore, with only 5 feet water upon it.

Abreast of Shee-ness, half-river over, begins an oister-ground, called Stoakes's Shoal; it runs down almost as low as Colemouth-creek, having from 3 to 5 fathoms upon it. A little below this shoal, and near Colemouth, is Stoakes's Hole, in which are 10 fathoms water. All the way from East-Hoo-creek, down the shore to Colemouth, is a dry oaze that extends to a good distance from the shore. The mark for it is, the mill at the Salt-pans just open of the first black piles to the northward of Colemouth. From Colemouth, nearly to the Salt-pans, the shore is bold; but just above them, 20 fathoms without low-water-mark, lies a small shoal, the leading mark for which is, West-Hoo-church on the south side of East-Hoo-creek. Depth of water from 4 to 7 fathoms. The mark to anchor at Blackstakes is, Hoo-church just open of Shee-ness, and the two little hills to the south-

ward

ward of Queenborough a ship's length upon the west point of the Swale.

SHEERNESS-REACH. This reach is 2 miles long, and lies N. E. by E. and S. W. by W.—Near the west spit of Queenborough-swale upon the east shore, in 3, 4, or 5 fathoms, is the common road for ships that ride here wind-bound. From this road downwards are several moorings; the two uppermost are cable-moorings, and the rest chain-moorings: the outer arms are 90 fathoms long and lie to the W. N. W. The inner arms stretch E. S. E. and are 80 fathoms long; they lie on the east shore in 2 or 3 fathoms; the ships lie in 6 or 8, and the hulks in 10, fathoms.

As many ships coming into Sheerness for shelter, get foul of the chains with their anchors, and often lose them by breaking their buoy-ropes and cable, the best method a stranger can pursue is, to go on-shore and make application to the foreman-rigger of Sheerness-yard; who, for a trifle, will procure the loan of a launch, with which they will be able to clear your anchor, the first low water, with little trouble.

Sheerness Pier. From the town, at the south end of the King's Dock and mast-pond, at Sheerness, is a pier or wharf, which jets out 300 feet westward into the river; there is also in that part called the Lappel, in the harbour, a tide pier, 20 feet wide, and of the elevation of two feet above the ooze, which is attached to the wharf, and runs out 900 feet therefrom, in a western direction from the town, into the river, down to low water-mark. It is therefore improper for any vessel to sail over or near the tide pier, there being no depth of water for vessels of more than 4 feet draught, when the tide is over the same. The pier or wharf, and also the parallel line and direction in which the tide pier lies, may be distinctly observed; and they may be known at night by a light on the eastern end, near the town, which is fixed at the extremity of the wharf.

The Grain-spit begins the Salt-pans, and runs down till Queenborough church is shut in with the garrison. The lower part is steep-to. The mark to clear it, till you come down to the garrison is, the Lazaretto at Stangate-creek a ship's length open of the Salt-Pan-point, which is a dry mud-bank. Upon this shore are no chains, the ships in ordinary being moored with cables in 4 or 5 fathoms water, except the upper one, which lies in 16 or 18 feet. On the ebb a strong eddy is on the west shore, and at Sheerness a strong one on the flood. The shore, from the garrison-point to the old ships, is steep-to.

Mid-channel, abreast Sheerness, the depth is 14 fathoms; and, thence to Blackstakes, about 8 fathoms.

The NORE-REACH lies E. and W. and extends above 3 miles from the Garrison-point to the Nore-light, between the Cant and the Nore.

The Cant begins on the N. E. side of the Garrison, and dries 60 fathoms off. From the east end of the garrison to the Bathing-House-creek the shore has gradual soundings, and hence down to China-Rock-watch-house lie several dry banks, called the Thread-banks. The mark for avoiding the Cant is, the Salt-Pan-houses a sail's breadth open of the Garrison-point; with this mark you may sail from Sheerness over the bar to the Nore, and not have less than 16 feet at low water. The best anchorage at the Nore is to the westward of the light vessel, between the Spit and Middle Ground or bar in 6 or 7 fathoms. To go thence into the Medway it is necessary to stand to the eastward, and bring the marks on before bearing up.

The Mark for the Grain-spit is, Queenborough shut in with the Garrison. The middle ground, or bar, extends from this spit; the mark for the east end of which is, Queenborough church on with the Swan, (a public-house to the eastward of the blue houses). Upon the middle ground is from 14 to 18 feet at low water, spring-tides; and, between the middle and the Nore-sand, 5, 6, and 7 fathoms.

Between the Grain-spit and the Nore is a swatch 3 or 4 feet deep; which, on the rising of the tide, is a channel for boats and small vessels. The mark for it is, Queenborough church and the Sheer-hulk near the point of Sheerness in one.

The best Mark for anchoring at the Little Nore is, the Lazaretto open of the Garrison-point.

At the back of the Garrison is a very strong contra-tide.

DIRECTIONS

DIRECTIONS from the NORE, through the Five-Fathom Channel and Narrows, to the NORTH FORELAND.

Description of the Buoys, &c. *which point out the Track, with their depth of Water, and the Side they are to be kept on.*

NORE-Light — —	— — —	—	4	fms, starb.
Buoy of the Cant edge	— white	—	4	fms, starb.
Oaze west buoy — —	— red	— No. 27,	4	fms, larb.
Spile-buoy — —	— black	— No. 28,	2	fms, larb.
Buoy on the Middle Ground	sqd. bl. & white,	(no No.)	15	feet, larb.
West buoy of the Spaniard	— white	— No. 29,	2	fms, starb.
Gillman buoy — —	— red	— No. 30,	7	feet, larb.
Beacon on the Red Sand	— ——	— ———,	4	feet, larb.
East buoy of the Spaniard	— black	— No. 31,	10	feet, starb.
Three buoys on the Last	— black	No. 34, 35, 36,	2	fms, starb.
Spell-buoy — —	— white	— No. 32,	10	feet, larb.
Woolpack-buoy — —	— red	— No. 33,	2	fms, larb.
Scarn-buoy — —	— black	— No. 37,	10	feet, larb.
Hook-Spit-buoy — —	cheq. bl. & white,	No. 38,	2½	fms, larb.
East buoy of Margate-sand	— black	— No. 15,	4½	fms, larb.

The Black Buoy of the Spile lies in 2 fathoms water, S. E. ¾ E. 4½ miles from the Nore-light; with Shottenden-mill bearing nearly S. S. W. two sails breadth open of the rising land on the east part of Sheppey, and the west buoy of the Spaniard S. ½ E.

In running down from the Nore, steer E. S. E. about 3½ miles. Or, to go within the buoy upon the Cant edge, bring the Nore-light a sail's breadth open of Yantland-point. This mark will lead down along the Cant, till Leisdon-church (commonly called Mouse-Hole-church) comes open with the Land's end of Sheppey, bearing nearly S. S. W.; then steer S. by E. allowing for tide, for the Five-fathom Channel, the south side of which is formed by the Spaniard-sand, and the north side by the Middle Ground and Gillman. If you are in a ship of 15 or 16 feet water, wait till it is near half flood upon the shore, before you go upon the Cant. In working down from the Nore to the Spile, stand to the Cant in 8 fathoms, and off to the Warp in 6 or 5 fathoms; in mid-channel are 9, 10, and 11 fathoms. Be careful to avoid a very steep shoal on the Cant edge, which lies with Shottenden-mill on with the pitch of the high land of Sheppey.

The Course from the Spile Buoy to the White Buoy upon the West End of the Spaniard is South; the latter buoy lies in 2 fathoms water, with Minster-church on with the red cliff bearing W. by N. ¼ N. Graveney-church S. W. by S. ½ S. open of Sheppey-island, and the east buoy of the Spaniard E. ¾ S. near 4 miles distant.

The Course through the Five-fathom Channel is E. ½ S. four miles. In the entrance is about 18 feet at low water; and, in the middle, from 12 to 15 feet. On the shoalest part of the middle ground between the Spaniard and Spile-sand is not more than 5 or 6 feet water.

The Middle Ground, having extended farther to the westward than formerly, a buoy, painted black and white in squares, is laid down on its west end, in about 10 feet at low water, with the following marks and bearings: the Spile-buoy about N. N. E. the west buoy of the Spaniard S. E. Minster-church West, and the east part of Shottenden-hill a sloop's length open to the westward of the Ham-houses, bearing S. S. W. westerly.

Upon the Gillman, to the eastward of the middle ground, lies a red buoy in 2 fathoms, with Minster-church W. ¾ N. St. Nicholas's church a sail's breadth open to the westward of the Reculvers; and the west buoy of the Spaniard W. ½ S. 2 miles and a half distant.

In working through the Five-fathom Channel, put about on the first shoal-cast on either side; the flood setting strongly over the Spaniard towards the East-swale, and the ebb the contrary. This channel, where narrowest, is more than ½ a mile over; and, below the red buoy of the Gillman, it is twice that breadth, where there is from 18 to 12 feet at low water. The leading mark through it is, Minster-church in Sheppey on with the middle of Bradgate-bay.

From the Buoy of the Spile, and extending six miles eastward, and to the northward of the Middle ground and Gillman, is a narrow shoal, the western part of which is called the *Spile-sand*, the middle part the *Red-sand*, and the eastern part the *Shivering-sand*. On the western

western extremity of the latter is a beacon (described hereafter in the directions for the Nob-channel), and on the eastern extremity a chequered black and white buoy, No. 24, is laid down in 3 fathoms. Between this shoal and the Middle ground and Gillman is a channel 2½ fathoms deep at low water, but so narrow as to be almost impracticable. The part to the southward of the east end of the Shivering is called First Deeps, where large ships often ride in 7, 8, and 9, fathoms at low water.

The East Buoy of the Spaniard, which is black, lies in 10 feet at low water, with St. Nicholas's church a sail's breadth open to the eastward of the Reculvers, bearing S. S. E. ½ E. and Hickmay-tree on the Isle of Sheppey, open to the southward of the Muscle-houses bearing W. S. W. ¼ W. and the west buoy W. by N.

The Course from the East Buoy of the Spaniard to the white buoy of the Spell is S. E. and S. E. by S. (with a flood tide), between five and six miles. Depth of water 10, 12, and 14 feet, at low water. In working over, stand to the eastward till Minster-mill, in the Isle of Thanet, be on with the east end of St. Nicholas's wood, and to the westward till St. Nicholas's church comes near the east side of the Reculvers. But, if the water be so far fallen that you cannot go over the bank, you may anchor abreast the buoy of the Spaniard in 3 or 3½ fathoms, the buoy bearing S. W. a large mile distant.

The course from the east buoy of the Spaniard to the White Buoy of the Pan-sand is E. by S. 3½ miles. Depth of water across the Flats, 12 feet. *See the Nob-Channel, page* 14.

The White Buoy of the Spell lies in 10 feet at low water. The mark to run for it is, the village of Cleave on with the boat-house in the Gore, bearing S. E. by S. The Spell-sand is a cable's length broad, and extends about a mile E. ¾ N. from the buoy. Opposite the Spell lies the *Last;* and, between, is the entrance of the Narrows.

The Last is a narrow sand lying E. by S. ½ S. near a mile and ¾. On it are 3 black buoys. The mark for that on the west end is, a single tree to the westward of Bishopton on with a gap in the cliff. The middle or elbow buoy is ½ a mile to the eastward of the west buoy, Mount-pleasant appearing on with Lower-Hale-grove, and the west corner of Reculver church-yard, S. by W. on with Waldershare-Belvidere. The east buoy is a mile S. E. from the middle buoy, with Chislet-mill, S. W. by S. just open to the eastward of Reculver-church.

The Last forms the south side of the Narrows, as the Spell, the Woolpack, and Scarn, do the north side.

In entering the Narrows be careful not to leave the white buoy of the Spell too far to the eastward, as athwart from the two buoys, at about two cables' length distance, lies a ledge of only 5 feet at low water.

From this ledge or knowl, St. Nicholas's church bears S. S. E. ½ E. 2 ships' length open to the eastward of the Reculvers. There are 9 feet at low water, between this shoal and the Last.

The course, between the Last and the Spell, is East; and after you have entered, you will have 2½ and 3 fathoms water.

The Red Buoy of the Woolpack lies N. E. ½ a mile from the elbow or middle buoy of the Last. The sand extends E. and W. about a mile. The buoy is on its western end. The leading mark in this part is, St. Peter's church on with a swamp on the east cliff of Westgate-bay, or St. Peter's church nearly on with the easternmost house in a village called Galeings, bearing S. E. easterly.

The Course and Distance from the Buoy of the Woolpack, in mid-channel, between the east buoy of the Last and the buoy of the Scarn, is S. E. 1 mile.

In the channel, between the Spell and Last, and between the Last and Woolpack, are about 2½ fathoms at low water.

The Scarn-Buoy lies S. E. from the buoy of the Woolpack, just to the westward of the Scarn-swatch. The mark for it is, Chislet-mill two sails' breadth to the eastward of the Reculvers, and St. Peter's church on the west side of Westgate-bay. It lies in 10 feet, at low water. If this buoy should be gone, do not stand too far to the northward, in working down, as a swatch, of 3 and 2½ fathoms, runs in at the back of the Scarn, near half a mile to the eastward.

The Channel hence, called the Gore, is narrow, as a small shoal lies on each side of it. That on the south side is called the Gore-patch; to avoid which, keep St. Peter's church on with the middle of Westgate-bay,

gate-bay, steering S. E. ¼ E. until Bishopton trees appear open to the southward of Reculver-church; then steer E. by S. for Margate-road or Westgate-bay.

The Gore-patch is less than half a mile long, and has on it but 7 feet at low water. The mark for the west end of it is, west part of Upper-Hale-grove S. ½ E. on with Monkton-mark. That for the East end is Monkton-mark on with the middle of three trees at the east end of Upper-Hale-grove, bearing South.

The Course from the Narrows to the hook of Margate-sand is S. E. Upon the hook are not above 6 feet water. Here, at about E. S. E. nearly a mile from the Gore-patch, lies a chequered buoy, the marks for which are, St. Peter's church on with the east side of Westgate-bay, and Monkton-beacon on with the west end of Lower-Hale-grove. But, to run from the Narrows to Cliff-end, keep St. Peter's church in the middle of Westgate-bay.

Other Marks for the Hook-buoy are, Mount-pleasant, nearly S. open to the westward of Birchington-church, and George's Farm-house, W. by S. open to the westward of Reculver-church.

In working Down, stand each way until St. Peter's church comes upon either side of Westgate-bay.

The best Mark for anchoring in the Gore is, St. Peter's church midway between the house and barn in Westgate-bay, and Monkton-beacon in a line with Upper-Hale-grove, in 5 or 5½ fathoms. In the Gore, the tide runs till 12 o'clock, but flows upon the shore at 11½, full and change.

Cliff-End-bank is a shoal in mid-channel of the Hook-spit, 1 mile long, and a cable's length broad, lying athwart of Cliff or Gore End. Upon its shoalest part am not above 9 or 10 feet. The leading mark, to go to the southward of this bank, is, to keep a small grove, which has the appearance of a barn, open to the southward of the Reculvers, between the bank and the main. At the upper end of the channel are 3½ or 4 fathoms; towards the lower end 7 or 8. When you have Birchington-church S. by W. you are below the bank. To sail between the bank and Margate sand, keep the small grove open to the northward of Reculver-steeple.

The Anchorages most commonly used, especially by large ships, are, the Hook, Westgate-bay; and Margate-road. For the Hook, the marks are, Monkton-mark, any where between the west side of Lower-Hale-grove and the middle of Upper-Hale-grove; and St. Peter's church, about S. E. on with the house on Westgate-bay. In this part are about 5 fathoms at low water.

The Marks for Anchoring in Westgate-bay are, Margate-church on with Nailand-point; and Minster-mill, upon the barn in Westgate-bay, in 5 or 6 fathoms water, good ground.

The Course from Cliff-end to Fore-ness is E. ½ S. 5½ miles. In working down, stand to Margate-sand in 6 or 5 fathoms, and, in shore, to 5. The marks for anchoring in Margate-road are Nailand-mill and Minster-mill in one, in 6 or 6½ fathoms. Fore-ness S. by E. ¾ E. and the North-Foreland-light, S. S. E. in 6 or 7 fathoms water, nearly 2 miles from shore.

The Mark to go clear of Longnose is, to keep the seed-mill that stands to the northward of Birchington, just open of Ledge-point. Run out with this mark on till the North-Foreland-Lighthouse bears S. S. W. and you will be to the eastward of Longnose; approach no nearer than 6 or 7 fathoms. Longnose runs off N. E. half a mile from Fore-ness.

DIRECTIONS for the EAST SWALE.

THE *East Swale*, at the eastern end of Sheppey-island, is an excellent harbour, and a secure retreat for ships which have lost their anchors, &c. It is about 5 miles long from E. to W. and, (more or less,) nearly three quarters of a mile broad. As the shore is, in general, soft mud or ooze, ships may safely run a-ground on any part within Shell-ness; but the best place is Feversham-creek. If a ship require to be laid a-shore, there is a place sufficiently hard at Harty-ferry.

From Shell-ness, to about a mile above Harty-ferry, the ground is good for anchoring; and there are 3½, 4 and 5 fathoms, at low water, spring tides: at those tides the water rises from 17 to 21 feet, and at neap-tides from 12 to 14 feet. It flows, on full and change, at about half past twelve o'clock, if the wind be not easterly; but, with an east wind, at 10 o'clock.

From the East or Black Buoy of the Spaniard, to sail into the Swale, steer S. W. or S. W. by S. until a remarkable clump of trees, which appears like a saddle-hummoc, about ten miles up the country, is on with Harty-church. From the Pan-sand, steer W. by S. until the same mark appears in a line, which will carry you in the deepest water.

The Columbine, a hard sand, half a mile broad, and about two miles and a half long, extends W. S. W. and E. N. E. on the starboard side as you enter. The mark for the east end of it is, Whitstable-church on with the easternmost copperas-house, which is white. On the larboard hand is Whitstable-street, a ridge of pebbles, having the appearance of a street, which runs out a considerable distance from the point against Whitstable, and is generally dry at low water. The mark for this ridge is, the easternmost copperas-house open a sail's breadth to the westward of Whitstable-church.

To anchor without Shell-ness in the Swale, bring two houses on Shell-ness, called Paul's houses, on with East Church, or Leisdon, and Ore-mill on with Judd's Folly-house. Then drop anchor in five fathoms at low water; thence you may anchor with Ore-mill on with Judd's Folly-house in 3½ and 4 fathoms, all the way up to a sand called the Horse, which is about one mile and a quarter in length, and lies one-third over the channel from the Isle of Sheppey.

The Horse is sometimes dry on neap-tides at high water. The channel for large ships is on the south side of it: on its north side are but six feet at low water. The mark to sail between the Horse and the main is, a remarkable barn in the upper part of a field brought in one with two trees in the lower part of the same field; which will bring you in the deepest water near the entrance of Feversham-creek; where, bearing by your lead over to the Horse, you may anchor at low water in 4, and at high water in 7, fathoms.

From Margate-road, or Westgate-bay, to sail into the Swale with a ship drawing more than 14 feet water. If you mean to go through the South Channel, with the wind southerly, or so that it can lead all the way, get under way at half or last quarter of flood, and steer towards the west buoy of the Last, then a little to the northward to avoid the cross-banks. Thence run W. by N.—West, or N. N. W. from the buoy of the Spell: a W. by N. course will then carry you safe between Whitstable-street and the Columbine to Paul's houses.

To sail out of the Swale you must have a leading wind: and ships drawing more than 14 feet water must wait till the water reaches the foot of a beacon at the entrance of Feversham-creek, or about the first third of flood, as there are, at that time, 3 fathoms in the shoalest part of the channel, which is at the EAST END, between Whitstable-street and the eastern extremity of the Columbine.

In thick weather, when the marks are invisible, if you can see the Point of Shell-ness, steer in for it, and bring it to bear W. by S. which will carry you in safely. Or, if Paul's houses can be seen, steer for them until they bear W. by N. and Shell-ness W. by S. Then proceed as before.

Be always careful to keep the marks in one, as the flood-tide sets from the west buoy of the Spaniard, through the Ham-Gat, over the Pollard, and the ebb the contrary.

DIRECTIONS from the NORE, through the OAZE *and* NOB CHANNELS, *over the Flats, and through the* QUEEN'S CHANNEL, *to the NORTH FORELAND.*

Description of the BUOYS, *&c. which point out the Track, with the Depth of Water and Side they are to be kept on.*

SHOEBURY-Buoy	—	— black	— No. 1, 4 fms, larb.
Nore-light	—	— ——	— ——, 4 fms, starb.
Buoy of the Cant edge	—	— white	— ——, 4 fms, starb.
West buoy of the Oaze	—	— red	— No. 27, 4 fms, starb.
Blacktail-beacon	—	— ——	— ——, larb.
Buoy of the Mouse	—	— black	— No. 2, 4 fms, larb.
East buoy of the Oaze	—	— white	— No. 26, 3 fms, starb.
Buoy of the Nob	—	— red	— No. 25, 4 fms, larb.
Buoy of the Shivering	—	cheq. black & white,	No. 24, 3 fms, starb.
Buoy of the Girdler	—	— black	— No. 23, 3 fms, larb.

Buoy

Buoy on the North Knowl	— red and white,		2½fms, larb.
Buoy on the Pan-sand —	— white	— No. 22,	2 fms, larb.
Buoy on the South Knowl	— black	— No. 21,	9 feet, starb.
Pan-Sand-beacon —	— ——	— ——,	——, larb.
Buoy on the Pan patch —	— white	— No. 20,	2½fms, larb.
Buoy on the Wedge —	— red	— No. 19,	4 fms, starb.
West buoy of the Tongue	— white	— No. 18,	3 fms, larb.
North spit-buoy on Margate-sand,	black	— No. 17,	4 fms, starb.
East buoy of the Tongue	— white	— No. 16,	4 fms, larb.
East buoy of Margate-sand	— black	— No. 15,	4 fms, starb.

If you are at the Nore, and bound down the Nob-channel, between the Oaze-edge and the Mouse, with the wind westerly, and in a large ship, weigh at half-ebb, and steer E. by S. 9 miles, for the entrance of the channel, passing the buoys, &c. as above.

The Marks for the Red Buoy on the West End of the Oaze, are, the Nore-light, W. by N. ½ N.; the Blacktail-beacon, N. E. ½ N. and the buoy of the Spile S. ½ W.

The Blacktail-beacon stands with Leisdon or Mouse-hole church, a ship's length open of the land's end of Sheppey, or Shottenden-mill, on with Harty-ferry, and the buoy of the Mouse, E. by S. ½ S.

The Black Buoy on the West End of the Mouse is at the entrance of the Nob-channel. This buoy lies with the Blacktail-beacon W. by N. ½ N. and Kenington-church on with a small house on Foulness island, bearing about N. W. ½ N. It bears from the Nore-light East, distance eight miles and a half; and, from the white buoy at the east end of the Oaze-edge, N. W. by N. near 2 miles. In this part the channel is about 1½ mile wide, and in it are 8, 9, and 10 fathoms water.

When abreast of the Mouse-Buoy, steer S. E. towards the buoy of the Oaze; and, in working, stand towards the Mouse into 6 fathoms; the Nob into 8 or 9, and the Oaze into 5 or 6, fathoms.

The Bearings from the Eastern or White Buoy of the Oaze are, Mouse-buoy, N. W. by N. near 2 miles; Shoe-beacon, N. N. E. 4 miles: buoy of the Nob, S. E. 1 mile and ½; and the Shivering-Sand-buoy, S. S. E. ¼ E. near 2 miles.

When abreast of the East Oaze-buoy steer past the red buoy on the Nob, S. E. by S. or S. S. E. according to wind and tide, for the Shivering-Sand-buoy; between these buoys are 6 and 7 fathoms. From the Shivering-Sand-buoy, to that on the Girdler, steer S. S. W. with an ebb, and S. by E. with a flood, tide. In this channel are from 4 to 11 fathoms. But observe that, from the Shivering-Sand-buoy through the Nob-channel and over the Flats, you have a beam-tide for which you must make allowance, according to the wind and velocity of the stream. There is a good anchorage between the buoy of the Nob and the Shivering, in 7 or 8 fathoms.

Oaze Channel.—It is now to be observed that, in the year 1795, the corporation of Trinity House, for the convenience of navigating through the OAZE DEEPS OR CHANNEL, caused a white buoy to be laid down on the Cant edge; which buoy lies in 4 fathoms, at low water, with the following marks and bearings:

Shottenden windmill just open of the east end of the high land of Sheppey, bearing S. by W. ½ W.—Nore-light W. N. W. ¾ N.—West buoy of the Oaze, E. by N.

A beacon is also placed on the north side of the west end of the Shivering-Sand, in four feet at low water, with Hearn windmill bearing south, Reculver church S. by E. ½ E. Shivering-Sand buoy, E. ¼ S. and west buoy of the Oaze W. N. W. ¾ N.

This beacon is distinguished by two spars, branching from the mast, which, with the mast, have a triangle at the head.

It is recommended not to stand, with *large ships*, nearer than 8 fathoms on either side of the channel.

The course down, from about a quarter of a mile to the southward of the west buoy of the Oaze, is E. by S.

The Red Buoy of the Nob lies with the Shoe-beacon nearly N. by E. the buoy of the Girdler, S. S. W. ¾ W. and the buoy of the Pan-sand S. ½ E. *The marks for the Shivering-buoy* are, Ash-church, open to the eastward of the Reculvers, bearing nearly S. ½ E. the buoy of the Girdler, S. W. by S. and the buoy of the Pan-sand S. by E. ½ E.

The Buoy, chequered red and white, on the North Knowl, is laid in 20 feet water; the marks for it are, the Reculvers, S. ¾ W. the buoy of the Girdler, N. by W.; the Pan-Sand-beacon, S. E.; the Pan-Sand-buoy,

buoy, S. by W. ¾ W.: and the east buoy of the Spaniard W. ¼ S. 3¾ miles. On this shoal are but 9 feet at low water.

From abreast the Buoy of the Girdler to the buoy of the Pan-sand the course is S. by E. ½ E. 2 miles and three quarters. When the wind is to the southward of W. keep to windward of this course, as the ebb-tide sets strongly towards E. N. E. In this track are 4, 3½, 3, and 2½ fathoms water.

In June 1805, *the buoy of the Pan-sand* was removed from its former situation to about two cables' length, in an E. S. E. direction, nearer to that part of the sand which dries at low water; and it now lies on the S. W. part of the edge of the sand (which runs about half a cable's length in a N. N. W. direction from it) in 2¼ fathoms at low water spring-tides, with the following marks and bearings.

Pan-sand beacon, E. S. E.:—Reculvers church, South:—Buoy of the South Knowl, S. E. ¾ S.:—North Knowl buoy, N. by E. ¾ E.:—Nob buoy, N. ⅕ W.:—Shivering-Sand buoy, N. by W. ½ W.—Girdler buoy, N. N. W.

The Pan-sand extends 2 miles E. S. E. and W. N. W. and is ¾ of a mile broad at the beacon, which is near the broadest part, where it is dry at spring tides. On the west end of it are from 3 to 6 feet water, on the middle 1 foot, and, on the east end, from 6 to 9 feet.

After you are to the southward of the buoy, the water in the fair way gradually deepens from 2½ to 4 fathoms, where it is called Pan-Sand-hole. In the best anchorage there, in 4 fathoms, the beacon bears E. by N. about ¾ of a mile, and a black buoy on the South Knowl, S. S. E. about 1 mile. The South Knowl, on which this buoy is laid, is a very small sand of about 10 feet water, but near it are 2¼ fathoms. It lies S. S. W. ¾ of a mile from the Pan-Sand-beacon, near which is also 2½ fathoms; but, in mid-channel, between it and the South Knowl, are 4 and 4½ fathoms. From the Knowl-buoy Minster-mill appears on with the Gore or Cliff-end, bearing nearly S. by E. ½ E.

The marks for the standing beacon on the Pan-sand are, the Pan-sand buoy W. N. W. Birchington-church, S. S. E. ¼ S. the Reculvers S. by W. ½ W. and St. Peter's church, S. E. by S. ¼ S.

The Course from the White Buoy of the Pan-sand, between that sand and the buoy of the Knowl, is E. S. E. and S. E. by E. 2½ miles. Near a mile S. E. by E. ¼ E. from the Pan-sand-beacon, and 1¼ mile E. by N. from the South-Knowl-buoy, lies a small shoal called the *Pan-patch*, having on it but 9 feet at low water, on which is a white buoy, lying with Monkton-beacon bearing south, on with Upper-Hale-grove.

N. ½ E. 1 mile from the buoy on the Pan-patch, lies another small shoal, called the *Pan-speck*, from which the white buoy, on the west end of the Tongue, bears E. S. E. This shoal has not much more than 1 foot upon it at low water. The marks for it are, St. Peter's church, S. S. E. ¼ E. a sail's breadth open to the westward of Margate-church, and Monkton-beacon, S. ¼ W. on with the west part of Upper-Hale-grove. Between the Pan-patch and the Pan-speck are 2½ and 3 fathoms at low water, and between the Pan-speck and Pan-sand about 2½ fathoms. Off the Pan-patch is 3½ and 4 fathoms, and close to the buoy 2½ fathoms.

The Course from the Pan-patch, between the Wedge and Tongue, is E. by S. better than 4 miles. The Tongue lies on the north, and the Wedge on the south, side of the Channel. The red buoy of the Wedge lies S. E. ½ E. from the Pan-Patch buoy, with Monkton-beacon on with Lower-Hale-grove, bearing S. by W. ½ W. This sand is ¼ of a mile broad, and extends 1 mile E. S. E. and W. N. W. It has on it but 1 foot water in spring-ebbs.

One mile and a half E. ¼ S. from the Pan-Patch-buoy, and nearly at the same distance N. E. by N. ½ N. from the Wedge-buoy, lies the white buoy on the west end of the *Tongue*. The marks for it are, St. Peter's church on with Fort-point at Margate, bearing S. by E. ¼ E. and Mount-pleasant on with Birchington-Church-steeple, S. by W.

The Tongue-sand is about one-third of a mile broad, and 2½ miles long, extending E. by S. ¼ E. and W. by N. ¼ N. On the west end the depth is about 9 feet, on the middle 2½ fathoms, and, near the end, are about 3½ fathoms, at low water. A white buoy is laid on each end. The marks for that on the east end are, the black buoy on the north spit of Margate-sand, S. W. ⅜ S. 1 mile and ⅜, the east buoy of Margate-sand, S. E. by S. 3¾ miles, the pitch of the Foreland S. by E. and the Pan-Sand-beacon W. by N. ¼ N.

The

The Course, from the Buoy of the Pan-patch to the North-Spit-buoy of Margate-sand, is E. S. E. ¼ E. near 4 miles. With a turning wind, stand to the northward into 7 fathoms, and towards the Wedge into 9 or 10 fathoms water. After passing the Wedge-buoy, stand towards the Tongue into 7 or 8 fathoms, and towards the Wedge and north spit into 9 fathoms. Between the Tongue and Wedge, in Mid-channel, are 11 fathoms, and between the Tongue and North-Spit 14 fathoms, at low water.

The Black Buoy of the North-Spit lies 2 miles E. ½ S. from the buoy of the Wedge, and 2 miles S. E. by S. from the west buoy of the Tongue; the marks for it are, Minster-mill on with the barn in Westgate-bay, and Redding-mill on with North Down.

The Course from the North-Spit-buoy to the East Buoy of Margate-sand, is E. S. E. and S. E. by E. 4 miles. From the east buoy of Margate-sand that of the Tongue bears N. W. by N. distance 3¾ miles. The marks are, Nailand-mill and Minster-mill in one, bearing S. W. ½ W. St. Peter's church on with North Down, S. S. W. and the North-Foreland-lighthouse, S. by W. 5 miles.

Margate-sand, from the east buoy to the Scarn-buoy, lies W. ¼ N. 8 miles; about 4 miles of which are dry at low water. Its greatest breadth is about two miles.

From the East-buoy to a fair way off the Foreland the course is S. S. E. and S. by E. 5 miles.

In turning down the Queen's Channel from the Pan-sand you will have 2½, 3, and 4 fathoms, to 4½, as low as the Pan-patch white buoy. *You may go on either side of the black buoy of the south* Knowl; but the most water is to the northward of it. Below the Pan-patch you deepen your water to 5, 6, 7, 8, and 9 fathoms. The upper part of the Tongue is steep, 10 and 9 fathoms near the sand. The upper part of the Wedge is also steep, having 9 fathoms at a small distance from the sand; but, towards the lower end of each sand, you may stand to 6 fathoms; as you come down towards the north spit of Margate-sand, you must not stand to the southward into less than 10 or 9 fathoms, and to the northward in 8 or 7; here, in mid-channel, you will have 11, 12, and 14, fathoms water.

After you are below the black buoy of the north spit, about a mile, you may stand to Margate-sand, in 5 or 4½ fathoms, and to the northward, into 10 or 9 fathoms.

Tides. The first of the flood, near the east buoy, sets south, the middle S. W. the last of the flood N. N W. and N. The first ebb N. N. E. the middle E. S. E. and the latter S. S. E. The tide rises about 15 feet.

DIRECTIONS from the NORTH FORELAND, through the Gull-Stream, into the Downs, and to Ramsgate.

OFF the North Foreland, the first half flood upon the shore sets S. S. W. then S. W. and soon after it is slack water; after which it sets West, W. N. W and N. W. round the Foreland, and N. N. W. till half-ebb. So that the ebb-tide, out of Margate-road, runs three hours to the eastward before the tide of ebb runs to the southward through the Downs; for which reason, if your ship be in Margate-roads, with the wind at S. W. you must not make sail to beat and go round the Foreland till half-ebb, when the tide will be going to windward through the Gull-stream. At the North-Foreland the tide flows on full and change days, at a quarter past eleven. Spring-tides run about a mile and a half in an hour, and neap-tides about half a mile. The tide often sets in all points of the compass when low water slack begins off the Foreland in gales of wind.

In the Downs, the tide flows on full and change days S. S. E. and N. N. W. *or half past 10; and, at the South-Foreland, 6 minutes after* 11. The tide runs about three hours and three quarters off in the stream after it is high water by the shore. The flood runs about six hours and three quarters, and the ebb five and a quarter. Common tides in the road rise about 16 feet. A strong north-east wind sometimes keeps back the tide more than an hour, and southerly wind the contrary. The first of the flood sets strongly over the South Sand-head towards the Fork, or Bunthead, and outwards over the North Sand-head; the middle of the flood sets more over the sand for the Gull-stream; and the latter part towards the South-Foreland. The first

first of the ebb sets much as the last of flood; in the middle, more for the Gull-stream; and afterwards it sets over the North Sand-head for the Fork or Bunthead, then outwards again over the South Sand-head.

A FLOATING LIGHT lies E. ½ S. by compass, about ⅛ of a mile from the nearest part of the North Sand head, in about 9 fathoms. It was first laid S. S. E. ½ E. about 7½ miles from the North-Foreland-light, and N. E. by E. ½ E. about 13¾ miles from the easternmost or lowest South-Foreland-light; but it is now a quarter of a mile more westward. To distinguish it from the two Foreland-light-houses, three distinct lights are exhibited in such a manner, that the middle one appears considerably higher than the two extreme lights, forming an erect triangle. In foggy or hazy weather, a large bell is kept constantly ringing, to warn ships that they are near the North-Sand-head. —The situation of this light renders it impossible for any vessel to get upon the North-Sand-head, or any part of the Goodwin, if proper attention be paid to the following directions:

1st. The grand intention of this light being to keep vessels to the eastward of the Goodwin, those coming from the North Sea towards the Straits of Dover must not bring it to bear more southerly than S. S. W. but should always keep the light rather to the westward than to the southward or eastward of that bearing, while they are to the northward of it: they will then pass far enough to the eastward of it and every part of the Goodwin, by steering a S. by W. course after they have passed the light.

2dly. Vessels, coming from the Straits of Dover towards the North Sea, must not shape a northerly course until the light bears N. by E. but they should keep the light rather to the northward of that bearing than to the eastward of it, while they are to the southward of it; and they will then pass far enough to the eastward of it, and every part of the Goodwin. And,

3dly. Should any vessel, coming from the North Sea towards Dover-Straits, be prevented, by necessity, on account of wind or tide, from proceeding to the southward at the back of the Goodwin, or to the eastward thereof; it may, by a single bearing of the Goodwin light, anchor under the North-Sand-head in 6 or 7 fathoms water, clean ground, and ride there as safely as the light vessel; in order to which, keep to the northward of the light; and, when it bears about south, near half a mile distant, it may anchor.—Or, should getting into the westward of the Goodwin be preferred, so as to have the Gull-stream open, vessels may run into the northward of the Goodwin, upon a N. W. course, about 2½ or three miles within, or to the N. W. of the light, and anchor in 7 or 8 fathoms, the light bearing S. E. from the vessel.

Buoys are also laid down in the Downs in the following situations, viz. 1. a white buoy on the Elbow, a small shoal bearing S. E by E. about 2½ miles from the North-Foreland-lighthouse, with the following marks: Broadstairs mill on with a chimney in the centre of a dark-coloured house, which stands midway between Crow-hill and the north end of Broadstairs town: and Harley's Tower its own breadth open of the west end of the Moro Castle. It is to be left at two or three cables' length distance on the starboard side.

2. A white buoy on the eastern part of the Gull-sand, at the northern entrance of the Gull-stream, bearing S. S. E. about 3 miles from Broadstairs, with the marks following: Southwould House on the eastern end of Albion-place, and the flag-staff of Dover Castle on with the flag-staff of Deal Castle. This buoy is also to be left on the starboard side at the distance of two cables' length.

Ships that draw less than sixteen feet water, may sail between the two last mentioned buoys and the North Brake buoy; but the passage is unsafe for line of battle ships at, or near, low water.

3. A chequered black and white buoy lies in 4 fathoms, near the end of the Fork, a spit of sand extending from the western side of the Goodwin. The buoy lies with Waldershare monument on with the flagstaff of Deal castle, and Ramsgate pier lighthouse just open to the westward of St. Lawrence's mill. This is to be left on the larboard side. The S. W. entrance of the Gull-stream is between this buoy and the S. W. buoy on the Brake.

In going round the North-Foreland for the Downs, be careful to keep clear of a knowl of 2½ fathoms, and a quarter of a mile long, called Broadstairs Knowl, which lies between the North-Foreland and the

the north end of the Brake-sand, with the North-Foreland bearing N. N. W. ¼ W. one mile and a quarter. The marks for it are, Broadstairs mill, N. W. by W. ¼ W. on with the chimney of the middlemost house on Crow-hill; a small hut N. by W. ¼ W. near Kingsgate public-house, just open of Icehouse-point; and the west corner of a remarkable square field rather to the northward of Stonehouse, a little to the westward of St. Peter's church. In sailing along the east side of this shoal, keep Foreness-point a sail's breadth open of the Point on the north side of Kingsgate-bay, until Redding-mill, bearing W. N. W. ¼ N. comes on with two houses upon the cliff. You may then steer S. by W. for the North-brake-buoy, which is red, No. 14. On the north side of Kingsgate-bay, upon the Point, stands a remarkable building.

To go through the Gull-stream, from a-breast of Broadstairs-knowl, steer S. by E. or S. S. E. according to wind and tide, keeping in 6, 7, and 8, fathoms, until the South-Foreland-lighthouse appears on with the middle of Old-Stairs-bay. With a large ship, be careful to avoid a knowl of 17 or 18 feet water, which bears from the North-Brake-buoy E. by N. three quarters of a mile. The marks for it are, Ramsgate south mill on with Jacob's Ladder, and the South-Foreland-lighthouse on with the north end of the first cliff to the northward of Old-Stairs-bay. From the North-Foreland to the Gull-stream are very irregular soundings: and, as the before-mentioned knowls lie right in the fair way from the Foreland to the Gull-stream, be careful to avoid them. The new white buoy of the Gull-sand on the starboard, and the floating light on the larboard, side, will be a guide for the entrance of the Gull-stream; be careful not to approach too near the Goodwin.

In thick weather, keep your lead constantly going when sailing through the Gull-stream, and go no nearer the Brake than 5 or 6, nor to the North-Sand-head than 6 or 7, fathoms; when advanced near the Bunt-head, which is steep-to, go not any nearer the Goodwin than 10 or 11 fathoms. Towards the Brake the soundings are regular.

There is a Buoy on each end of the Brake; that on the north end is red, and that on the south end black. The north buoy was laid with the following marks: St. Lawrence's church on with the north cliff of Ramsgate, or a little to the northward of Ramsgate-Pier-head; the North-Foreland-lighthouse open to the northward of Stone-stairs; and the pitch of the same Foreland N. by E. ¼ E.: but it has since been removed about a cable's length farther out, with the same thwart-mark as before, viz. St. Lawrence's church on the north cliff of Ramsgate. The marks for the south buoy are, the North-Foreland lighthouse, on the north cliff of Broadstairs, and Waldershare-monument, about 3 times its breadth, on the left of the small windmill, nearest the north of Deal.

Should the floating light be gone, the marks for the North-Sand-head are, St. Lawrence's church on with the hollow in the cliff to the eastward of Ramsgate; the North-Foreland-lighthouse, N. N. W. ½ W.; and St. Peter's church on with the mill. St. Lawrence's mill on with the north cliff of Ramsgate is the mark for the Bunt-head.

Knowl. Nearly two miles and a half, N. by E. easterly, from the North-Sand-head, is a knowl, having on its shoalest part not more than 3 fathoms, at low water, spring-tides. The marks for it are, St. Peter's church, W. N. W. ¼ N.; and the North Foreland, N. W. by W. ¼ W.

The high lighthouse on the South Foreland, from the N. to the S. cliff of Old-Stairs-bay, is the *turning-mark through the Gull-stream;* but, as this mark will carry you near the Bunt-head, stand towards the Brake into 6 or 7 fathoms water, and towards the Goodwin into 10 fathoms. A-breast of the Bunt-head, the channel is about a mile and three quarters wide.

In the night, when running through the Gull-stream, bring the highest South-Foreland light S. W. ¼ W. taking the soundings from the Brake in 6 fathoms.

A Middle Ground, lying in the Gull-stream, parallel to the Brake, on which are 4 and 4½ fathoms, is often mistaken for the Brake, in turning to windward, from which it is about three quarters of a mile distant; between, are 5, 6, and 7, fathoms water.

For

For anchoring in the Downs, with a large ship, the marks are, the South-Foreland-lighthouse, S. W. by W. on with the inner cliff; and Upper-Deal-mill on with Deal-castle, in 7, 8, or 9, fathoms, as there the ground is good. To moor, lay your best bower so as to have an open hawse when the wind is southerly. *In the night*, if the wind blows hard from S. S. E. or S. so that you part from your anchors, bring, if possible, the South Foreland to bear S. W. ¼ W. and steer N. E. ¼ E. which will carry you through the Gull-stream, between the Brake and Goodwin; in going through which, keep your lead going, and approach no nearer the Goodwin than 10 or 11 fathoms, nor to the Brake than 7 fathoms, water. When the North-Foreland-light bears N. W. by N. steering out E. S. E. or E. will carry you clear of the North-Sand-head. On the flat, off the Foreland, are but 6 or 7 fathoms; but, when you find it deepen to 18 or 20 fathoms, you are clear of all the sands.

Should the floating light be gone, when bound from the Downs from the North Foreland, in the night, with the wind S. or S. S. W. if the tides fall out too late in the evening, or too early in the morning, endeavour to get to the North Sand-head against the time when the tide begins to run southerly; then you may steer out E. S. E. or S. E. by E. keeping the North Foreland-lighthouse N. W. by N. which bearing will carry you clear of the North Sand-head; but keep your lead going, and approach no nearer to that sand than 7 fathoms. When you have deepened your water to 18 or 20 fathoms, and are without the North-Sand-head, you may haul up to the southward along the back of the Goodwin; the east side of which, from the North-sand-head to the Swash, lies nearly S. S. W. ½ W. and, to the southward of the Swash, about S. W. ½ W. In going along the east side of it, go not any nearer than 14 fathoms water. The leading mark for the east side of the Goodwin is, Folkstone high-land, open of Dover, or of the South Foreland. That land, however, cannot be seen farther to the northward than the Swash-way.

Upper-Deal-mill, a ship's length open to the southward of Walmer-castle, is the common *Mark to clear the South-Sand-head*; but the best mark is, Upper-Deal-church on with Walmer-castle, which will carry you to the southward of the sand in 6 or 7 fathoms. Keep the South Foreland-lights in one in the night, bearing W. ¼ N. Between the South Sand-head and the South Foreland are from 10 to 19 fathoms; near the Foreland the water is deepest.

Off Deal-town lies *Deal-sand*, which vessels must very carefully avoid; it is about half a mile from shore, and on it are but 9 feet at low water, spring tides. Go no nearer to it than 7 fathoms. For the south end of it the mark is, Deal-church on with the King's buildings at the south end of the town; for the north end the mark is, Lower-Deal-mill on with a boat-house to the northward of Deal.

Ships bound from the Downs to the westward, with the wind southerly, should weigh at high-water slack, and cast their head towards the shore, by which they would get the tide sooner in their favour. Be careful, in turning out of the Downs, to avoid those sands which lie in the way; and stand no nearer to the shore, between Walmer-castle and the cliff, than 8 or 9 fathoms; or to the pitch of the Foreland, or Goodwin-sand, which is steep, than 10 or 11 fathoms.

Small Downs. About 2 miles N. by W. from the Downs, extending about 2 miles from Sandown towards Ramsgate, and between the south end of the Brake and the shore, is called the *Small Downs*, in which is good anchorage in 6 fathoms, about three quarters of a mile from the south buoy of the Brake. The mark is, Deal-mill and Sandown castle in one; but, southward of this, about half a mile from shore, Sandown castle bearing W. or W. by N. is the *best anchorage for small ships.*

Inner Channel. Between the Brake and Ramsgate, to the northward of the Small Downs, is the *Inner Channel*, in which is the depth of but 9 feet at low water. In this channel are several shoals, viz. the Cross-ledge, near the Brake, on which are but 8 feet at low water; the Querns, on which are 6 feet; the Fore-foot; and the Colbournes; on which, at low water, are but 4 feet. The north part of this channel, near the shore, is dangerous, and only navigable by small vessels: the course through it is about N. E. by N. or N. E. according to wind and tide; and the leading mark is, St. Margaret's church on with the north end of Deal, or the North Foreland-lighthouse two

sails' breadth open without Broad-Stairs Pier-head. Either of these marks kept on, until Winsborough-steeple appears between the two churches of Sandwich, will carry you clear to the northward of the Cross-ledge.

The Mark for sailing between the Querns and Cross-ledge is, Winsborough-steeple, W. by S. between the two Sandwich churches. This mark will also carry you between the Brake and the Querns. To the north-eastward of the Querns, the North Foreland-lighthouse appears right on with the north cliff of Broadstairs. The mark for the south end of the Querns is, St. Lawrence's mill on with the north cliff of Ramsgate; and, for the north end, St. Lawrence's mill on with the hole in the north cliff.

To sail clear of the Colbournes from the Querns, steer E. by N. until you are in 6 or 7 fathoms water, or until the top of St. Peter's church appears a handspike's length open above the land. The thwart-mark for the Colbournes is, St. Peter's church on with Broadstairs'-mill.

Downs to Ramsgate. The following explanatory directions for sailing from the Downs to Ramsgate, are published by authority of the Harbour Trust:

"It being of importance that ships should not run for Ramsgate harbour, when it is dry, the following particulars must be observed: A red flag will be hoisted upon the cliff, near Jacob's Ladder, in the day-time, when there are 10 feet water between the pier-heads; and, in the night, a light in the lighthouse, (composed of three large Argand lamps, with reflectors) will be lighted, when there is the same water; and they will respectively be continued until the water falls to 10 feet.

"It is high water, full and change, in the harbour, at 20 minutes after eleven; and, 20 minutes after nine in the morning, the tide begins to set to the N. E. and continues 5 hours and 25 minutes. About an hour after the 10 feet signal is made, there will be 16 feet water, at spring tides; two hours after, about 20 feet; and, three hours after, 21 feet. On neap-tides, one hour after the 10 feet signal is made, there will be 14 feet; two hours after, 17 feet; and, three hours after, 18 feet, or high water.

"From Sandown castle, steer about half-way between the shore and the Brake, keeping the houses on Pegwell white cliff, N. ¾ E. for about 4 miles, until you bring Woodnesboro' or Winsbury-church, (in the country) on St. Clement's and St. Peter's, at Sandwich: you will then be the length of the Rattler and Cross Ledge, and will have the lighthouse and cupola of the committee-room in one, for a day-mark, bearing then N. E. by N. (being in the direct focus of the western reflector,) and will be a guide in the night in cases of great necessity.

"It will therefore appear necessary, that all commanders in the Downs, in bad weather, should know their exact situation, before dark, by the intersected bearings of Sandown-castle and the Half-way-house; and they should also keep a good look out for, and note the time when, the 10 feet signal is made. It is hoped that no vessel will cut or run for Ramsgate harbour in the night time, unless in a case of real distress; lest, by so doing, she runs into greater danger, with a view to avoid, perhaps, only a temporary gale, which perseverance and good ground tackle might have enabled her to ride out, at least till day-light. But the safest way, in the night, is to run out through the gull-stream.

"In approaching the harbour, if the tide sets to the eastward, keep a good sail on your ship, and steer close to the west pier-head, and run directly for the mud-bank; as it will be better than letting go an anchor, which may injure the ship: you will then be under the direction of the harbour-master, who will order you into a proper berth.

"The best time to enter Ramsgate harbour is two hours before high-water; or, when the tide first begins to set to the N. E.

"It is to be observed, that at this time the water has risen, on a spring-tide, 12 feet; and, on a neap-tide, 10 feet, perpendicular; and there is, at the pier-head, 6 feet water, at low water, on full and change; and 8 feet at neap-tides."

APPEARANCE OF RAMSGATE.

A. The Lighthouse. B. The Committee-Room & Cupola. C. C. The Pier.

Sailing for Ramsgate, from the north end of the Brake, steer W. by S. ½ S. till Ramsgate-mill comes nearly on with the Pier-head; run in, with this mark on, until within a quarter of a mile of the Pier. To the northward of the Querns, about half a mile from the Pier, is the White-dyke, or Four-foot; to sail clear of which, bring the mill on with the Pier-head.

DIRECTIONS for the North Side of the BRITISH CHANNEL, from the DOWNS to SCILLY.

IF you are in the Downs, and bound down Channel, with the wind westerly, weigh at high-water slack, and work down round the Foreland, standing to the main in 8 or 7 fathoms water, and off to the Goodwin in 12. When you have the lights in one, then bearing W. ¾ N. you are below the Goodwin-sand. After you are below Dover, do not stand too far over towards the French coast; for, nearly in the midway, in the Straits, lie two sands, called the Ridge and Varne, over which the spring-tides set at the rate of two miles and a half an hour.

The Varne lies S. W. by W. ½ W. It is 5 miles and three-quarters long, and half a mile broad; the east end has 4 fathoms upon it, at low water; bears S. S. W. ½ W. rather more than 6 miles and three quarters from the South-Foreland-lighthouse, 6¼ miles S. by W. from Dover-castle, and 7¼ miles S. E. ½ S. from Folkstone-church. The west end has 7 fathoms on it, lies S. W. ¾ S. 10½ miles from Dover-castle, south 7¾ miles from Folkstone-church, and E. by S. 11 miles and a half from Dunge-ness-lighthouse. On the other parts of the sand are from two fathoms and three quarters to three fathoms and a half, and near it, on each side, are 12 and 13 fathoms.

The Ridge lies S. W. ¾ W. and N. E. ¾ E. It is near 9 miles in length and half a mile in breadth. The eastern end, upon which a red buoy is placed, has 3 fathoms and a half upon it, at low water. This end lies 11½ miles S. by W. from Dover castle, and W. N. W. from Calais Cliff. The west end has 6 fathoms on it, lies S. E. 12¼ miles from Dungeness lighthouse; S. S. W. ¾ W. 17½ miles from Dover castle; and W. ½ N. from Blancnez. On this end a black buoy is placed, close to 4 fathoms of water. Within the extremities there is, generally, a greater depth. The shoalest part is, however, shewn by a floating beacon, situated in 3 fathoms, at low water, at about a cable and a half distant from the north side of the bank, whereon there are only 12 feet water: this small depth is on the very brink of the shoal; thence, to the northward, the depth suddenly increases to 5, 10, and 17 fathoms.

The depth from 14 to 16 feet on the north edge of the bank, extends about a mile and a half to the N. E. of the beacon, and nearly the same distance to the S. W. Thence, to the termination of each end of the shoal, is from 3½ to 7 fathoms, very irregular.

From the beacon, the following bearings have been taken by compass:

	Deg.	Min.	
Telegraph Hill, over Boulogne,	S. 36	30 E.	or, nearly S. E. ¾ S.
The Signal-house on Cape Grisnez	S. 72	00 E.	———E. S. E. ½ E.
Blancnez — — —	S. 83	00 E.	———E. ½ S.
South Foreland Lighthouse	N. 31	00 E.	———N. N. E. ¾ E.
Dover Castle — —	N. 25	00 E.	———N. N. E. ¼ E.
Folkstone Church —	N. 3	30 E.	———N. ¼ E.
Dunge-ness Lighthouse —	N. 52	30 W.	———N. W. ¼ W.
The West Buoy, distant two miles	S. 48	00 W.	———S. W. ¼ W.

The channel between the Ridge and Varne, is 3 miles broad, and about 20 fathoms deep. Between the Varne and shore, there is nearly the same depth.

In working down, between Dover and Dungeness, while you are to the eastward of Folkstone, between the shore and the Varne, you may stand in to 11 or 12, and off to 16, fathoms. Beyond 16 fathoms, to the southward, the strength of the tide is lost. To the westward of Folkstone, a ledge of rocks stretches off to a full mile from shore, having 12 fathoms close-to. Stand therefore no nearer to the shore than 13 or 14 fathoms; nor farther off than 18 fathoms.

You may anchor in Romney Bay, with a westerly wind, in 8, 10, or 12 fathoms, with Dungeness bearing S. W. by W. or W. S. W. observing to keep the Hopeland to the eastward of Dover open.

DOVER ROAD. Dover lies nearly West, 3 miles from the South Foreland; and Dungeness from the latter is W. S. W. ¾ W. 20 miles. In Dover Road you may anchor in from 8 to 16 fathoms, with St. James's church in the valley, which has a flat steeple, bearing N. W. ½ N. Or, with the lower end of the white way, to the N. W. of the castle, right over the hill, or between the hill and St. James's church. Here you may stop a tide, but a great swell generally causes loaded ships to roll. It is supposed to be occasioned by a counter-current setting strongly westward, and athwart the entrance of the harbour, from the last-quarter flood to the end of the first-quarter ebb. This current is apt to sheer vessels, especially in a gale, against the south-pier-head; it is however but narrow, and is about a cable's length from the head of the pier. On spring-tides, the water rises about 10 feet, which depth is on the bar at half-flood.

On the west pier-head of Dover are two flag-staffs; on the longest a red flag is hoisted by day, and a lantern-light on each by night, when there are more than 9 feet water in the harbour.

The entrance of Dover-pier is narrow, and lies S. S. E. and N. N. W. The head of the west pier is farther out than that of the east pier. Southward of the pier, on a rocky bottom, is an erection nearly similar to it. With a wind, and after the counter-tide is made, come close to this erection, and steer towards the castle until the gates of the bason are in sight, then haul in.

The harbour is a good tide harbour; and has, at spring-tides, nearly 20 feet at high water.

DUNGE-NESS is a low, steep, beachy point, with an excellent lighthouse upon it, lighted with Argand lamps and reflectors, which may be seen from a very considerable distance. You may go round the pitch of the Ness in from 9 to 12 fathoms, steep-to. The water here rises in spring-tides, about 4 fathoms, and the strongest tide runs in about 15 fathoms.

Swallow Bank. N. E. ½ E. about 3½ miles from the pitch of Dungeness, lies the middle of a bank, called the Swallow Bank, having on it, in that part, about three fathoms water, but deepening gradually off to each end; which are marked by white buoys. A small ridge extends towards the shore from the inner part of the bank, having also upon it but 3 fathoms. It was surveyed in 1805, by Mr. Fotheringhame, assisted by another master of the royal navy, who laid a ship's buoy upon each end.

To the northward of the Swallow Bank, and extending E. N. E. ½ E. towards Folkstone, is a long narrow bank, called the Roar or Rear. It is about 4 miles in length, and has from 2 to 3 and 4 fathoms, deepening off to the northward. Between it and the shore, are 3, 4, and 5 fathoms. The southern part, which is nearly in a line with the north end of the Swallow Bank, but within it, is pointed out by a black buoy.

Westward

Westward of Dunge-ness, about 2 miles from shore, is a shoal, having on it but 3 fathoms, at low water, spring-tides. Between it and the shore, are from 8 to 3 fathoms. In 5 fathoms, is fine soft ground and good anchoring. This shoal is about ½ a mile broad, it extends W. by N. ½ N. and E. by S. ½ S. about 2 miles, and has a black buoy upon each end. For the middle of it the thwart-mark is, the square tower of Lyd-church, N. E. by N. on with the ruins of an old monastery, about 11 miles up the country. The marks for the east end of it are, Lyd-church N. N. E. ½ E. and the lighthouse, E. N. E. ¾ E. 1 league distant. For the west end, the marks are, the lighthouse, E. ¾ N. 4½ miles, and Lyd-church, N. E. northerly, just open to the eastward of Lyd-mill.

With the church and mill in one, you are to the westward of the shoal, without and near to which are 12 fathoms water.

Anchorage. Merchant-ships, to anchor westward of Dunge-ness, should bring the lighthouse E. by S. and Lyd-church N. E. in 5 fathoms, good holding ground, out of the way of the tide.

TIDES. Between Rye-bay and Dunge-ness, the North Sea and Channel tides meet; and the North-sea tide, prevailing over that of the Channel, forces its way to the westward, runs 1 hour longer, and rises several feet higher. When the flood to the eastward has run 3 hours, it sets to the westward for about 5½ hours; and again turns and sets for 6½ hours to the eastward. Four hours before the *flood* has done running at Dunge-ness, the *ebb*-tide to the westward begins to run down channel; so that the *flood* at Dunge-ness, joins the channel *ebb* in the last 4 hours, during which they both run westward. When the *ebb* at Dunge-ness has run eastward 2 hours, it is joined by the Channel *flood*, and they run through Dover-strait together for 4½ hours longer. About Dunge-ness, the water rises 7 feet higher than either to the eastward or westward.

RYE-HARBOUR. This harbour lies about 8 miles westward of Dunge-ness. There are two white beacons on the stony beach on the east side, which, in running for the harbour, keep in one, till you bring two others on the west side in one, which are the leading marks into the harbour. There is 15 feet water at low water, spring-tides, in the anchorage. A flag is hoisted in the day-time, at the mouth of the harbour, so soon as there are 10 feet flow of water there; and 2 lights are shewn by night when there is the same depth of water.

The point and high-land of *Fairleigh* is 5 miles westward of Rye.

About 5 miles N. E. of Beachy-head, is *East Bourn*, to the southward of which, vessels may anchor in 6 or 7 fathoms, and be sheltered from westerly winds; but go not so far to the northward as the town, and you will avoid foul ground lying to the eastward of it.

From Eastbourn to Beachy-head, the shore is foul and rocky a mile off shore; but, at a greater distance from shore, is fine, clear, sandy ground.

Eastward, 7 miles from Beachy-head, is also a rocky shoal, called *Pevensey-shoal*. It lies 2 miles from the shore off Pevensey, and has 12 or 14 feet on it at low water. The soundings round it are irregular, but near the south side are from 7 to 9 fathoms; and, on the north side, 6 and 7 fathoms. The marks are, Pevensey-church N. N. W. and Beachy-head W. Go no nearer this part of the coast than 15 fathoms.

Royal-Sovereign-shoal. About 6½ miles E. S. E. ½ E. from Beachy-head, is the Royal-Sovereign-shoal, of 14 feet at low water, spring-tides. The marks are, Pevensey-church, N. by W. ½ W. 5 or 6 miles, and Fairleigh-point, E. by N. 11 or 12 miles. The westernmost of the *seven cliffs*, kept a sail's breadth open of Beachy-head, will carry you on it. This shoal is rocky, stretches N. by E. and S. by W.; it is 60 fathoms long, and 10 broad, and is shoalest near the south end.

In the year 1801, the Lascelles, West Indiaman, struck upon hard ground of sand and stones, and lay thus for a considerable time, with the following bearings, viz. Beachy-head W. N. W. and a chalk-pit N. W. by N. about 7 miles distant; Eastbourn, N. W. ¾ W. nearly at the same distance. The soundings upon the bank only 15 feet, but close along shore 6 fathoms.

Another dangerous shoal lies 6 miles S. S. E. easterly, from Beachy-head, and 9 leagues from Dunge-ness. It is called the *Horse of Wilingdon*, with 16 feet on it at low water; there are 15 fathoms at low water near the south side.

Appearance of BEACHY-HEAD, *and the* SEVEN CLIFFS, *when the Head bears E. N. E. 8 leagues distant.*

BEACHY-HEAD is a high chalk cliff, and lies 29 miles W. ¼ N. from Dunge-ness. You may anchor before the town, in Eastbourn-bay, in 6, 7, or 8, fathoms water. Going round Beachy-head, you may with safety stand to the shore in 12 or 10 fathoms; with a southerly wind, stand not too far in, as both ebb and flood, between Beachy-head and Seaford-head, have a great inset. From the Head out to sea 2 or 3 leagues is a flat, with 18 fathoms water.

SEAFORD-ROAD. After you are below the Seven Cliffs and Seaford-head, you may stand to what water you please, towards the shore, as low as Shoreham or Little Hampton; and anchor any where upon the coast in 9 or 10 fathoms. In Seaford-road, anchor a-breast the town, in 7 fathoms, then you will have 5 of the 7 cliffs open; but, in 10 fathoms the middle of the westernmost cliff is open; and the Head will then bear S. E. by E. This is an exceeding good berth in an easterly or N. E. wind.

From Beachy-head to the south-east point of the *Owers*, the course is W. N. W. ½ W. distance 12 leagues; to *Dunnose*, on the same course, 18½ leagues; to the *Start*, W. N. W. ¾ W. 50½ leagues; and, to the *Lizard*, 75 leagues.

Four miles westward of Beachy-head lies *Cuckmore-haven*; in which are but 6 feet at low water, spring-tides, and 13 or 14 feet at high water. This place is sometimes much stopped up by the washing in of the Beach in stormy weather; but it is opened again by great land floods. Between Cuckmore and Beachy-head the shore is steep-to, and the soundings along it are regular.

Newhaven lies about 5 miles farther to the westward, and is much like Cuckmore-haven.

NEW SHOREHAM lies nearly 7 leagues N. W. by W. ½ W. from Beachy-head; this place is much better than Cuckmore or Newhaven; there are 18 feet in it at high water, spring-tides; and 3 feet at low water. The town is almost a mile within the haven, and vessels drawing 8 or 9 feet water, may lie a-float a little below the town. Coming from the eastward you will open the haven before you are opposite to it; but, coming from the westward, you will not open it until you are nearly a-breast of it, because the west point, at the entrance, lies farther out to the southward than the east point. From the latter point runs a small spit, over which small vessels may go at high water. On the east point are two beacons, which bring in one, and then steer right for them until you come near the north shore, along which you may run into the harbour.

Brighthelmstone is about 4 miles to the eastward of New Shoreham. Many small vessels belong to this place, which they heave up by crabs on the beach.

Arundel lies about 10½ miles W. N. W. westerly, from the entrance of New Shoreham, and 30 miles N. W. by W. westerly, from Beachy-head. This harbour has a good pier: in the entrance are 2 fathoms at half-flood; and at high water, there are upwards of 3 fathoms. The harbour is 4 and 5 fathoms deep at low water.

Bognor-rocks. Half-way between Arundel and Pagham, is a ledge of rocks, which run off a mile and a half from the shore; as they are dangerous, ships turning into the Park must be careful to avoid them. They run off S. E. by S. from Bognor, and are called Bognor-rocks. The mark to clear them is, Culver-cliff open of Selsey-bill; go no nearer to them than 4 fathoms.

The East Barrow-head on the Owers, bears from Arundel-haven S. S. W. 8 miles. In running from the latter to the former, you will have 6, 7, 8, 9, and 10, fathoms. In 10 fathoms you will be half a mile from the Barrow-head.

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The marks for running in toward the shore, clear of the East End of the Owers, are, the grove of trees at Pagham, and a white way on a hill above Chichester, in one. When you are a-breast of the East Barrow-head, Selsey-bill will bear N. W. ½ N. 5 ½ miles. The East Barrow-head is 4 miles from shore. Between the Barrow-head and the inner-shoal rocks, is a narrow channel, of 5 or 6 fathoms at low water.

After you are past the East Barrow-head, the leading mark into the Park is, a tuft of trees, at Pagham, and Chicester church in one, bearing nearly north*. This mark will carry you safe into the Park, where you may anchor between the Barrow-head and Selsey-bill, in 4½ or 5 fathoms water, good ground, 2 miles from shore. This is by far a better place for anchoring with southerly winds than the Downs, for the east end of the East Barrow is nearly dry at low water, spring-tides.

To sail out of the Park through the Loo-stream, keep the westernmost point of the beach, off Selsey-harbour, in one with Pagham-church, until the Cardinal's Cap, on the Isle of Wight, (otherwise called Semi and Seminot,) appears just open to the southward of Culver-cliff. This mark will carry you through the Loo-stream, in 5, 6, and 7, fathoms; and, when you deepen your water to 10 fathoms, you may safely steer for St. Helen's.

If going down without the Owers, keep Dunnose W. N. W. northerly, which will carry you clear without them. The Owers are hard black rocks, lying to the southward and the westward of the East Barrow-head, and have only 7 or 8 feet on them at low water. The middle part of them extends about 6 miles N. W. by W. and S. E. by E. They are not more than a cable's length broad.

When bound up or down Channel, be careful not to come too near the Owers, especially in light winds or thick weather; because the tide, during the last quarter-flood, and the whole of the ebb, sets right over them, with great velocity, for St. Helen's Road. As within a mile and a half of the east end of this dangerous bank are 18 fathoms, it is not safe, especially in foggy weather, or when there is little wind, to approach any nearer to it than 20 fathoms water. When Selsey-point bears N. you are a-breast of the narrowest part of them, and will, in clear weather, see the white way on the hill to the westward of Chicester-church, bearing N. ½ E. The west end of the Owers bears from Culver-cliff S. E. by E. ½ E. about 10½ miles distant. The mark for going in towards the shore, clear of the west end, is, Medmery house, Chichester-church, and St. Rooke's hill, on with each other, bearing then N. E. ¾ N. This end of the Owers is called the Puller. When you are to the westward of it, steer N. W. for St. Helen's, or N. W. by N. for Spithead.

A floating light is placed near the east part of the Owers, S. S. E. ¾ E. 6 miles from Selsey-bill, N. E. ¾ E. nearly 1 mile from the southernmost end or elbow of the Owers, E. S. E. rather more than one-third of a mile from the Shoal of the Lead, and S. ¼ E. rather more than a mile and three quarters from the East Barrow-head; so that all ships going down channel should be careful to keep one mile and a half to the southward of it; which, that they may more easily do, they must observe, in approaching it from the eastward, they should not bring the light more westerly than N. W. by W. by compass; and, after passing it to the above distance, they should be particularly careful not to shape a course to the westward until the light bears N. E. by E. by compass of them; and then, and not till then, should they steer to the westward; and, when to the westward of the light, and bound into Spithead, they must be careful not to steer more northerly than W. N. W. by compass, for fear of getting upon the west end of the Owers, called the Boulder-bank.

In coming up Channel, vessels will find no difficulty in observing the above directions in a contrary order.

If it be necessary to run into Selsey-park for shelter, with contrary winds, pass to the eastward of the light-vessel, and afterwards be sure not to bring it to the southward of S. S. W.: keep your lead going; and when 2½ miles N. N. E. of it, you may steer for the anchorage in the park.

* This, and all the other principal marks, are most clearly exhibited in the Lake chart of the Isle of Wight, &c. lately published by P. Steel.

(Cancel.)

To go over the bar into Chichester harbour, you must, whilst more than 3 miles from the shore by the harbour's mouth, bring Bosham church a little to the westward of the middle, between the two points of the harbour. This mark will carry you into the West Deeps, where you may anchor in 5, 6, or 7 fathoms. In proceeding up to Chicester, be careful to avoid the *Gardeners*, which lie in the way, and are dry at low water, spring-tides. To go round their head, steer directly for the middle of Thorney-isle, until the chimney of a house at Snowhill comes on with West Wittering church. To go through the Steed-way at tide-time, bring Bosham church on with the mill upon Rook's Hill, and 2 fathoms at half-flood. The bar of this harbour is often shifting.

DIRECTIONS for SPITHEAD, &c.

The channels to Spithead are bounded on either side, by shoals, regularly buoyed. The shoal part on the east or starboard side, is the Dean Sand, an extensive flat of sand, of more than 2 miles and a half, shoaling gradually from its outer edge to the shore. The soundings near it are also regular. On the west or larboard side, are the Princessa, Bembridge Ledge, &c. hereafter described.

The direct course and distance from abreast of the Puller Bank to the east buoy of the Dean, is N. N. W. ¼ W. 9 miles, but variable between N. W. and N. N. W. according to the tide, with gradual soundings from 10 to 6 fathoms; when, after passing the outer buoy, the water again deepens to 12 and 15 fathoms.

The outer or S. E. buoy of the Dean, bears from the Puller Bank to N. N. W. ¼ W. distance near 9 miles. Between, is a fine sandy bottom with depth of from 7 to 10 fathoms. The buoy lies in 27 feet water, sandy bottom, with the tower on Ashey Down midway between the Priory-house and St. Helen's mark. The marks are,—1. The high land of Dunnose on the point of Culver cliff, bearing W. S. W.—2. The N. W. and largest chalk-pit of Brading Down on with St. Helen's mark, West, Southerly.—3. The windmill on Portsdown Hill on the N. W. angle of Cumberland Fort, N. ¼ E.

The Second or Middle Buoy, which is called the *Dean Buoy*, lies in 27 feet water, over sandy ground, with the following marks.—1. Ashey-down tower between the two clumps of trees to the southward of the Priory-house, bearing west, a little northerly.—2. The six clumps of trees on the eastern part of Portsdown Hill just open of the S. E. angle of Cumberland Fort, and bearing N. by E. ¾ E.—3. The bank of Portsmouth on with South-Sea castle, and bearing N. by W. ¾ W.

The Third Buoy, called the *First Buoy of the Dean*, lies in 26 feet water, gravelly bottom, with Clerk Jervoise's Folly, or summer-house, on with the S. E. angle of Cumberland Fort, bearing nearly N. E. by N. The summer-house appears as a high white tower on the east end of Portsdown Hill.—*Second mark*, the windmill on Portsdown on the western part of Eastney fort, bearing N. by E. ¼ E.

The Fourth, or *Elbow Buoy*, lies in 24 feet, gravelly bottom, with South-Sea castle on the eastern part of the trees on Portsmouth lines, N. ¼ E. and the six clumps of trees upon Portsdown hill on Eastney fort, N. E. by N.

The Fifth or *Horse Buoy*, lies in 24 feet water, sandy bottom, with the chapel just open to the eastward of the trees on Portsmouth lines, and the following marks.—1. Kickergill tower on the point of the N. E. angle of Fort Monkton, N. N. W. ½ W.—2. St. John's chapel in Portsea, on the western brickhouse upon South-sea beach, N. N. E. ¼ E.

From the First, or *S. E. Buoy*, the second buoy bears W. N. W; the third from the second N. W. ¾ W.; the fourth from the third N. W. ¾ W.; and the fifth from the fourth N. by W. ½ W.

N. ¼ E. nearly half a mile from the Horse buoy, lies a white buoy, in 30 feet water on the west side of the remains of his Majesty's ship *Boyne*, and in the fair way to Portsmouth harbour. The marks for it are, the eastern beacon upon South-sea beach on the eastern part of the trees upon Portsmouth lines; and the gap, or London road, on Portsdown hill, on the S. E. angle of South-sea castle, bearing N. E. ¼ N.

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The Buoy of the Spit, which is black, bears from the buoy of the Horse N. ½ W. distance one large mile. It lies in 26 feet, fine sandy bottom, with the large chalk-pit upon Portsdown-hill on the eastern part of the trees upon Portsmouth lines N. by E. ¼ E. and Kingston church on the S. E. angle of South-sea castle N. E. a little easterly.

The Shoals, &c. which are buoyed on the island or western side of the Channel to Spithead, are:—1. The *Princessa Shoal*, having a buoy upon each end; the inner one white, the outer black.—2. *Bembridge Ledge*, having a black buoy.—3. The *Knab*, with a red buoy.—4. The *Warner*, with a white buoy.—5. *Noman's Land*, with a white buoy.—6. The *Sturbridge*, with a white buoy on each end.—8. Wrecks of the Royal George, and of the Edgar, near each of which is a buoy.

The Princessa is a rocky shoal lying in the way of ships bound from the westward, round Dunnose, for Spithead. As the Princessa and several other ships of the line have struck upon it, care must be taken for large ships to avoid it. The least water on it is a quarter less four fathoms. It is more than three quarters of a mile in length, extending nearly N. W. and S. E. and about one quarter in breadth.

The Black Buoy on the S. E. extremity, lies in 28 feet, sandy bottom, and bears from Dunnose E. ½ N. about 8 miles distant. It lies with the high square tower on South-sea castle, N. ¼ E. in one with the westernmost and smallest chalk-pit on Portsdown-hill (this chalk-pit is above half a mile to the westward of the great chalk-pit); and the red clay-cliff, which is a little way to the westward of the white chalky part of Culver-cliff, W. N. W. just open to the southward of the S. W. extremity of Culver-cliff.

The white buoy on the N. W. extremity of the Princessa, lies in 31 feet, oazy bottom, with the following marks:—1. The N. E. corner of the north-easternmost bastion of Sandown castle, W. by N. just open of the high-water mark off the S. W. extremity of Culver-cliff.—2. Nettlestone point on Bembridge point, N. by W. ¼ W.

To avoid the Princessa Shoal, by going to the southward of it, supposing the buoy to be removed, steer from Dunnose E. by N. or E. according to the wind and tide; and the red clay-cliff will appear between the S. W. extremity of the white chalky part of Culver-cliff and Sandown castle. Be sure to keep the red cliff about a quarter of a cable's length open to the southward of the S. W. extremity of the white part of Culver-cliff, until the westernmost and smallest chalk-pit on Portsdown-hill appears to the eastward of South-sea castle: you will then certainly be to the south-eastward of the shoal, and may steer N. N. E. for the red buoy on the *Knab rock*.

There is a channel between the N. W. end of the Princessa and the buoy on Bembridge or Betty's Ledge, which may be used with northerly and N. W. winds, in proceeding for Spithead; because ships, by going through this channel, will be a mile and a half to windward of the other track. In sailing through, steer for the N. W. buoy of the Princessa, and bring Sandown castle on with Culver-cliff; continue this mark on, until Clerk Jervoise's Folly appears on the S. E. angle of Cumberland fort. Now steer with the latter mark, until the New Inn (the easternmost brick house) at St. Helen's appears open to the northward of the red clay cliff within Bembridge point; you will then be within the buoy of Bembridge ledge, and may then steer for the Warner, N ½ W.

The Marks for the Black Buoy on Bembridge Ledge, are—1. The New inn at St. Helen's N. W. ¾ N. on with Red-cliff point.—2. The small chalk-pit on the high land of Dunnose, W. by S. just open to the southward of Culver-cliff. This buoy lies in 24 feet, gravelly bottom, and bears from the N. W. buoy of the Princessa, N. by E. distance three quarters of a mile.

The Knab Buoy, which is red, lies in 23 feet water, upon a rock E. by N. ¾ N. about three quarters of a mile from the Buoy of Bembridge ledge, and N. N. E. one mile and a half from the S. E. buoy of the Princessa. Its marks are—1. Ashey-down tower, W. N. W. on the N. W. and largest chalk-pit on Brading-down.—2. The eastern

end

end of the large chalk-pit on Portsdown-hill, N. by E. on the western side of Lump fort.

Long Rock. About two-thirds of a mile N. by E. from the buoy of Bembridge ledge, and nearly in the direction of the Warner buoy, is a rocky shoal, called *Long Rock*, on which, in very low spring ebbs, there are only 23 feet water. To avoid it, keep Dunnose open of Bembridge point until Portchester castle is open to the eastward of the square tower on South-sea castle.

The next danger is the Warner Sand, which extends rather more than a quarter of a mile from N. W. to S. E. and has but 14 feet on it with 12 fathoms very near it. On the eastern side is a white buoy, in 30 feet water, sandy bottom. The marks for it are, St. John's chapel in Portsea, on the eastern side of the trees upon Portsmouth lines, bearing N. ¾ E. and Portsdown windmill, N. N. E. ¼ E. just open to the westward of Lump fort; also, St. Helen's mark just open of St. Helen's point.

The next Shoal is Noman's Land, the N. E. part of the shoal-ground stretching from Nettlestone point. On the N. E. point is a white buoy, in 39 feet water, gravel bottom, and bearing from the buoy of the Warner, N. N. W. ¼ W. distance one mile. The marks for it are,—1. A red farm-house by the water side, to the westward of Nettlestone point, S. W. by W. ¼ W. on with the N. W. and largest chalk-pit on Brading-down.—2. The barn on Portsdown, (to the eastward of the mill) N. E. by N. its breadth open to the westward of Kingston church.

The Sturbridge lies between Noman's land and the eastern end of the Mother-bank, with two white buoys upon it. It is very narrow, but three quarters of a mile in length. The buoy on the S. E. end of this bank lies in 22 feet, and bears N. W. ¾ W. from the buoy on Noman's land, distance one mile and a half. That on the N. W. end lies in 26 feet, and bears from the former nearly N. W. by W. half a mile. The marks for the east buoy are, the west end of the fir-garden, (on the western part of Portsdown hill,) N. N. E. ½ E. on the governor's house of Haslar hospital; and the eastern beacon on South-sea beach, N. E. by E. ½ E. on with Kingston church. Those for the west buoy are, Clerk Jervoise's Folly upon Portsdown, E. N. E. on the bathing-house upon South-sea beach; and the west end of the fir-garden upon Portsdown, N. E. by N. on the N. W. angle of Fort Monkton.

Royal George, Edgar, &c. We have now to observe, that there are buoys lying upon, or near, the wrecks of his majesty's ships the Royal George and the Edgar. That of the Royal George is red, and lies in 14 fathoms, about one-fourth of a cable's length to the eastward of the wreck, upon which there are 4½ fathoms. The marks for the buoy are, Portsdown windmill N. E. ½ N. on with the eastern side of the trees on Portsdown lines; and the wharf in Stoke's bay, N. N. W. ¾ W. on Monkton point.

The Buoy of the Edgar is also red, and lies in 12 fathoms, with the six clumps of trees on the eastern part of Portsdown-hill, N. E ½ E. on the S. E. angle of South-sea castle; and the fir-garden on Portsdown, N. by E. ¾ E. on with the platform flag-staff. The buoy of the Horse bears hence S. E. distance one mile.

When sailing into Spithead, should any of the buoys on the Dean sand be gone, the tower of Asney-down should not be brought open to the northward of St. Helen's mark until the six clumps of trees upon the eastern part of Portsdown-hill be brought on with Cumberland fort, or Portsmouth church just open to the westward of South-sea castle. With these marks you will be within the second buoy of the Dean, and with the leading mark on.

The Leading Mark into Spithead is, Kickergill tower N. N. W. northerly, on the middle of the barracks of fort Monkton, keeping it on until you open the dock-yard clock to the westward of Portsmouth church, which will be about a quarter of a mile within the buoy of the Horse. Should the shipping at Spithead be so thick that you cannot see the marks, which is frequently the case, bring the two westermost brick-kilns in Stoke's bay N. N. W. ¾ W. on with a remarkable clump of trees to the N. W. of them, and situated to the westward of Berry-house.

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Should the wind be easterly, and an ebb-tide, go no nearer to the Warner than to have Ashey-down tower in sight above the trees to the N. W. of St. Helen's, called Priory trees. This mark will keep you to the eastward of the Warner, but not to the eastward of Noman's land; for, you may be aground on Noman's land, and still have Ashey-down tower above the trees.

If obliged to turn into Spithead, you may turn Kickergill tower on each side of the barracks of fort Monkton; but approach no nearer to the Warner than 12 fathoms; to the Dean, than 9 or 10 fathoms; nor to the Horse-buoy, than 11 fathoms. In standing towards Noman's land, you will have 16, 17, and 18, fathoms, close to the sand, therefore you must tack the moment that the water shoalens.

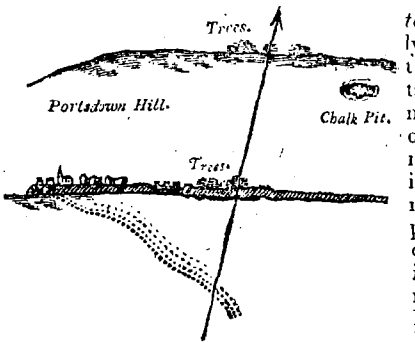
To go into Portsmouth Harbour, (from the fifth, or Horse buoy,) bring the beacon erected in Gosport, on with Blockhouse point. This mark will lead you in, leaving the two buoys on the outer spit on the larboard side.

The Marks for anchoring at Spithead are, South-sea castle, N. E. by E. and the Kicker or Monkton point, N. W. in 14 fathoms.

Ships from Dunnose, or the westward, in proceeding for Spithead, may proceed by the foregoing directions; but it is also to be observed, that, in *Sandown bay*, ships frequently stop a tide in 8 or 9 fathoms; but the bottom is rocky, and is therefore not a safe anchorage for large ships.

From Dunnose to the Buoy on Bembridge Ledge, the course is E. N. E. and the distance 7 miles. To go clear of Bembridge ledge, keep Sandown castle open, conformably with the preceding directions; or, until the sea-mark at St. Helen's appears a large ship's length open of the red cliff within Bembridge point; and may then steer N. ½ W. towards the Warner, or anchor in St. Helen's road.

The Marks for anchoring in St. Helen's Road are, Bembridge point S. S. W. or S. W. by S. and the mark on Ashey-down on with the sea-mark at St. Helen's, nearly W. ½ N. in 8 or 10 fathoms.



In going from St. Helen's to Spithead, ships generally keep to the *eastward* of the buoy on the Warner, taking care to approach no nearer to the sand than 11 or 12 fathoms; but they may go to the westward of it, by bringing the easternmost trees on Portsmouth platform on with the trees on Portsdown, as exhibited in this figure. Another mark is, to stand into St. Helen's road, until the large chalk-pit on Portsdown appears on with South-sea castle, bearing N. by E. ¾ E. which will also lead to the westward of the buoy of the Horse.

The course from the point of Dunnose to the S. E. buoy of the Princessa is E. ½ N. distance 8 miles. In standing towards the latter, should the buoys be gone, keep the red clay cliff, which is the cliff next Sandown castle, open of the white part of Culver cliff, until the six clumps of trees upon the eastern part of Portsdown, bearing N. N. E. appear on Cumberland fort. This will be half a mile to the eastward of the buoy. Keep this mark on, until Ashey-down tower be on with the red cliff within Bembridge point, which will be within the buoy of the Knab, whence you proceed according to the foregoing directions.

Observe that, in all cases, allowance must be made for the tide. The flood setting strongly to the eastward, over the Horse, and the ebb to the westward, over the Warner and Noman's land.

Supposing a ship was bound to Spithead from the northward of Bembridge point, and the buoys all gone, keeping Dunnose just open of Bembridge point will carry it on the edge of the Dean, in regular soundings, and it may stand into any depth at pleasure; the mark or tower on Ashey-down, always in sight above the trees, will carry it clear

clear of the Warner, the courses and dangers above which have already been described.

The Mother-bank, where merchants' ships generally anchor, is to the westward of the Sturbridge. On the east end are only 2 fathoms; but off the outer edge are 7 fathoms. Vessels generally anchor in 5 or 6 fathoms, mostly out of the stream of the tide. The ground is clear, very good for holding, and ships are here quite sheltered from southerly winds.

When turning out from Spithead *with large Ships*, be careful not to shoalen your water, when standing towards Nomnan's land, or the Warner, as they are both very steep. In the Channel between the buoys is 17, 16, and 15 fathoms, to without the buoy of the Warner. *In turning out*, when you are the length of the buoy on the Warner, the valley of St. Helen's appears open: when Culver cliff bears west, you are without Bembridge ledge; and, when the water deepens to 20 fathoms, you may steer a channel course, either to the eastward or the westward.

Leaving Spithead with a fair Wind, the course between the buoys is about S. E. by S.; but, as the flood tide sets E. S. E. over the Horse and the Dean, and the tide of ebb N. W. by W. over Nomnan's land and the Warner, it is necessary, when going out with a flood tide and little wind, to steer S. by E.—South, or S. by W. and to make, with an ebb tide, a contrary allowance.

TIDE at SPITHEAD, &c. The last quarter of the Channel flood sets from the Owers into Spithead, which makes the tide run to the westward at Spithead, one hour and a half sooner than it does round Dunnose.

In St. Helen's Road, the flood, on the full and change, runs to the eastward until a quarter past nine A. M. but it is not high water by the shore until half past eleven. It runs through the road to Spithead near 8 hours, which includes the two last hours of Channel flood, and the whole of the ebb.

At Spithead it runs to the eastward, until half past nine, but it is not high water by the shore until 35 minutes past eleven, when the young ebb is making out of the harbour. Here the tide runs westward 7 hours, and eastward little more than five.

In the Harbour it flows at 40 minutes past eleven; and, when high-water there, it is half-ebb at Spithead, Of course, the first 3 hours ebb from the harbour sets to the westward through Spithead, and the last 3 hours ebb through St. Helen's.

The SOLENT, or PASSAGE WITHIN the ISLE of WIGHT. To the westward of the Kicker or Monkton-point is *Stoke's Bay*, the place generally used by merchants' ships, especially in time of war.

To the N. W. of Stoke's Bay lies the Middle Sand; and, to the N. W. of the Middle, lies the *Bramble*. There are two black buoys on the Middle, bearing nearly N. W. by W. and S. E. by E. about two miles from each other. The buoy on the north end lies in 15 feet at low water. The marks for it are, the high tower of South-sea castle, on with the north extremity of the northernmost bastion of Monkton fort, and the south gable of the large double house near the water side, between West Cowes and the wooden storehouse, where the road to Newport turns up the hill, on with the high-water-mark of the low beachy point by the rope-walk, a little to the westward of Old Castle point, bearing W. by S.

On the east end of the Bramble is a white buoy in 3½ fathoms. The marks for which are, the west side of Hamble church-tower N. ½ W. on with Hook's summer-house, and the south side of the Hospital water-engine, E. S. E. ½ S. just open to the northward of the north side of Kickergill tower. About a mile and half W. by N. from the east buoy of the Bramble, lies its west buoy, which is red, in 4 fathoms at low water. The marks for this buoy are, Fawley church-steeple on with the red house near Calshot castle, the Inn's Farm (or Saltern), about half a cable's length open of the bluff part of Stone point, and the Chapel trees open to the westward of Cowes castle.

The Bramble is nearly dry at low water: along its south edge from buoy to buoy, are 3 fathoms; about a ship's length off, 6 fathoms; at half a cable's length, 7 fathoms; at a cable's length, 9 fathoms; at two cables

cables' length, 12 fathoms: and, in the mid-channel, are 11 fathoms and a quarter at low water.

SOUTHAMPTON WATER.—*Between the east buoy of the Bramble and the N. W. buoy of the Middle* is the channel for sailing into SOUTHAMPTON WATER. When the wind is between south and west, it is fair for going up this place. There should be no northing in the wind for going up to, nor any southing in it for coming down from, Southampton. If bound for Southampton, with the wind northerly, stand into Stoke's Bay to 3 fathoms water, and off to the westward as you please, until you get abreast of Titchfield trees. Stand no farther to the eastward than to bring St. Michael's church-steeple (in Southampton) on with the point abreast of Calshot castle, called Bald-Head point; nor stand any farther to the westward, after Heath point just touches Calshot castle. *The leading mark up the river* is, the Round Tower midway between the two churches of Southampton. With a turning wind, you may stand to the westward till the tower touches St. Michael's, and to the eastward until it touches Holyrood chapel.

To go clear of the Bramble, when sailing from Southampton towards Cowes, keep Netley abbey open of Calshot castle, which will carry you clear of the east end of it. Between Calshot castle and the Bramble are from 2½ to 5 fathoms water; and, between the east buoy of the Bramble and the west buoy of the middle, from 2½ to 9 fathoms at low water. The middle of the Bramble bears from Calshot castle, S. ½ W. about two miles.

SPITHEAD TO COWES.—From Spithead to Cowes point the course is N. W. by W. 7 or 8 miles. The mark to carry you clear of the Middle is, South-sea castle a ship's length open to the southward of the Kicker point; with these marks proceed until you open West-Cowes castle off East-Cowes point: then steer for West-Cowes point, giving it a good berth. In the fair-way are 10, 9, 10, 11, and 12, fathoms water.

When bound to Cowes from the Mother-bank, you may run along the edge of the bank in 6 or 7 fathoms, as the soundings are regular all the way. About two miles N. E. by N. from East-Cowes point lies the east buoy of the Bramble. Approach no nearer this sand than 8 fathoms.

WESTERN PASSAGE OF THE ISLE OF WIGHT.—From Calshot castle to Hurst castle is a flat; which, increasing in breadth to the westward, extends for some distance, nearly one-third of the channel over, from the main towards the island.

At the entrance of Lymington-creek, on the edge of the flat, stands a pole painted white, with a basket on its top. This is called *Jack in the basket*: a mile to the eastward or westward of which, is the best anchorage. Between Calshot and Jack in the basket, the flat dries at half-tide.

In Cowes road is an anchorage of from 10 to 12 fathoms.

From West-Cowes point to Yarmouth, the course is west northerly, about nine miles; the shore on the island side is quite clear, excepting West-Cowes, Gurnet, and Hampstead, points; off which are ledges of rocks, extending near a quarter of a mile from the shore. In turning to windward, you may stand for the island into 8 fathoms; and, towards the main, to 6 or 7 fathoms. Vessels may stop a tide any where between West-Cowes and Yarmouth. The strength of the tide is least near the island.

The Places most used for anchoring are Cowes and Yarmouth. In Yarmouth road is good holding ground, but the best anchorage is near the shore, on the east side, in 6 or 7 fathoms, out of the strength of the tide. As the tide runs strong and irregular in both Yarmouth and Cowes roads, care should be taken to prevent ships riding at single anchor from breaking their sheer, and dragging their anchors.

If bound out from Yarmouth roads, through the Needles, first steer for Sconce point, which is bold; you may approach it to about half a cable's length. From Sconce point steer towards Hurst castle. In mid-channel is from 15 to 25 fathoms, the deepest water nearest the main. When abreast of the castle, steer for the Needles' point, in from 16 to 5 fathoms. To run through this channel, bring Hurst castle N. E. by E. ½ E. it will then be in one with a cupola-house to the eastward of Lymington-creek, called Pilewell-bath. This mark will

will carry you over the bridge, clear out to sea. In standing off from Hurst castle for the Needles' Point, be careful to keep the vanes of the windmill, which stands on the Isle of Wight, in sight above the land; or, keeping the Needles' lighthouse open of Hetherwood Point, is a better mark, to avoid the Warden-ledge.

Vanes of the mill.

The thwart-mark for Warden-ledge is, the cupola on Hurst castle in one with the flag-staff; but, the best mark is, a salthouse, that stands on the beach just within Hurst castle, in one with Milton tower. This ledge of rocks runs off about a quarter of a mile from Warden point; on its extremity is a buoy, lying with the windmill about S. S. E. About W. N. W. from the Needles' Point is the bar-shoal, called the Bridge, on which there is no more than 3½ fathoms at low water, spring-tides. This shoal lies with the Needles all on with *each other; and it is so very narrow, that a ship's going at the rate of* four miles per hour, will prevent the leadsman from getting a second cast upon it.

THE NEEDLE-ROCKS in one, when on the Bridge.

The course out from Hurst castle is about S. W. by W. ½ W.

To avoid the Shingles, in working through the Needles with the wind from the south-westward, take care to keep Cowes point shut in with Sconce point. Should the wind baffle, which is often the case in this narrow passage, take particular care not to open West-Cowes point with Sconce point. Should the weather be hazy, do not fear bordering on the island side; but stand no farther into Totland bay than 7½ or 8 fathoms. When clear, and both sides can be distinctly seen, your eye is the best pilot for the island side.

Ships, in order to be ready to pass through the passage at the Needles, may anchor under Hurst beach in from 8 to 10 fathoms water. The best mark for anchoring there is, Chisel's door (which is very remarkable from its standing a little to the west and southward of a black house) and the lighthouse in one.

The mark for the north-east point of the Shingles is, the wind-mill, which stands upon the island, on with the wood to the westward of the hill, off which Warden ledge lies; there are two woods, but the easternmost one is that which is now referred to. In the fair-way, Sconce point will be on with the trees on Portsdown-hill. Always be careful to keep the vanes of the windmill, which stands on the island, in sight, which will keep you clear of Warden ledge. Do not approach nearer the Shingles than 4 fathoms, but you may stand towards the island to about a cable's length, as it has a bold shore. After passing the Warden ledge, back and fill, with your ship's head towards the island, observing to keep within a cable's length of it, and the tide will set you through the Needles.

PASSAGE AT THE NEEDLES. Two lighthouses are erected for the benefit of ships *going in* at the Needles in the night; one on the point to the eastward of the Needles, and the other on the beach to the southward of Hurst castle. As the north-west part of Hurst lighthouse is darkened, so as to prevent the light from being seen by ships that are farther to the westward from it than S. W. by W. ½ W. Ships, when coming *from the westward* for this passage in the night, should bring the light open of the north-west darkener in time; it bears, when just open, about N. E. by E. ½ E.; and, as this line of direction runs close along the east side of the Shingles, it will be necessary, in ebb-tides, (which set strongly over them,) to bring the light N. E. by N. and, with a flood tide, to keep it barely open, until they draw near Hurst point, provided the wind be free; if otherwise, you must be directed by judgement. The tides run here with great velocity, especially springs; therefore this channel is but seldom attempted, unless with a fresh gale and a leading wind. The ebb-tide sets strongly over the Shingles, and the flood towards the Needles' point.

Between Hurst Castle and the Shingles, is a small narrow channel of 4½ and 3½ fathoms at low water. It it but seldom used by any, except

cept small coasters. The leading mark through it is, Sconce-point just touching Hurst castle; which will carry you to the northward of the Shingles, into Christ-church bay, in 5½ and 6 fathoms water.

CHRIST-CHURCH HARBOUR lies about 8 miles N. W. by W. from Hurst castle. There is very good anchoring in the bay, to the eastward of the harbour's mouth, about a mile and a half or two miles from the shore, in 5½ or 6 fathoms. This is a bar-harbour, and accessible to small vessels only at high water.

POOLE-BAR lies about 13 miles N. W. by W. ½ W. from the Needles' point, and about 2 miles to the northward of Handfast point: on it are only 15 feet at high water. This place should not be attempted by a stranger without a pilot. Vessels bound into it, generally take a pilot at Studland bay, which lies between the bar and Handfast point. Ships, in any of the branches of its harbour, may ride safely. The harbour enjoys an uncommon advantage, namely, that of the ebbing and flowing of the tide twice in 12 hours. It first flows regularly 6 hours, and ebbs for an hour and a half; it then flows again for an hour and a half, and ebbs during the remaining 3 hours. The second flood seems to be owing to the situation of the mouth of the river. By its being in a bay towards the east, the tide of ebb, from between the Isle of Wight and the main, falls into that bay, and forces its way into the river, so as to raise the water for an hour and a half; at which period, the water without the bar, by its falling below the level of that within, produces a second ebb for the space of 3 hours, or until it is low water.

TIDES, &c. about the ISLE of WIGHT, and some Directions for the Southern Side of the Island, and the Coast between the West Point and St. Aldan's Head.

THE *flood-tide near the shore*, sets from Durlestone head to Christ-church head; and thence over the Shingles to Sconce point. From one or two leagues without Durlestone head, the flood sets into Freshwater bay; and thence through Brixton and Chale bays, over the foul ground off St. Catherine's point. In the offing, farther than 2 leagues from the head, it sets right up the channel. From the Needles to St. Catherine's point, the ground is foul, and there is no safe anchoring within 2 or 3 miles of the shore; without that distance you may anchor in 8 or 9 fathoms water, clear sandy ground.

About 3 leagues S. S. E. ¼ E. from Dunnose, there is a small *sand-bank*, with 10 fathoms water on some parts of it, on which ships, bound up or down channel, may stop a tide in light winds: the ground is clear from rocks. The ebb-tide sets strait from this bank to St. Catherine's point, and thence round to Freshwater bay.

The Tides of Flood in the harbours of *Selsey, Chichester, Langstone,* and *Portsmouth*; and in the rivers of *Southampton, Beauley,* and *Lymington*, run in slowly, until the western tide is made without, or in the offing. It then flows very fast into them, particularly into Chichester, Langstone, and Portsmouth.

It flows in all these harbours about 7 hours, and ebbs about 5. The spring-tides rise about 18 feet, and the neap-tides 12; except about Cowes and Beauley, where it rises 15 at spring-tides, and at neap-tides, 10. At Lymington, Yarmouth, and the places adjacent, the spring-tides flow 12 feet, and the neap-tides 8 feet; but, at the Needles, the spring-tides flow only 9, and the neap-tides 6 feet.

About two miles to the southward of Poole-bar, is Handfast point; *before which is Studland bay, where is good anchorage in 5 or 6 fathoms*, Handfast point bearing S. by E. or S. S. E. In 4 and 4½ fathoms at low water, ships lie sheltered from all winds but those from S. and S. E.

About two miles and a half to the southward of Handfast point, is Peverel point. Between which is Sandwich or Swanage bay, where the ground is rather foul, or ships might ride very well in westerly winds. The mark for the best anchorage in this bay, is, the south side of a round hummor, a little to the northward of Swanage, on with a windmill farther up from the shore; run in with this mark, and anchor in 4 or 3 fathoms at low water. From Peverel point runs a ledge of rocks about 1 mile S. E. by E. From the extremity of this ledge, Durlestone head lies about a mile and a half W. by S.

St. Aldan's Head lies about 4 miles W. ¼ N. from Durlestone-head; the

the ground between is foul, with great overfalls, but there is no danger even from the shoalest of them, unless by anchoring.

From DUNNOSE to St. Aldan's Head; PORTLAND ROAD, Lyme Regis, Exmouth Bar, Torbay, Dartmouth Harbour, and the START.

FROM Dunnose to St. Catherine's point is about 6 miles W. ½ N.; from St. Catherine's point to the Needles, is N. W. by N. 12 miles; from St. Catherine's to Poole bar, N. W. ½ W. 24 miles; to St. Aldan's head, N. W. by W. ½ W. 28½ miles; to the bill of Portland, W. N. W. 44 miles; to Berry head, W. N. W. ¼ W. 84 miles; and, from St. Catherine's point to the Start, is W. N. W. ¾ W. 92 miles.

From St. Catherine's Point, foul ground extends W. by N. about 3 miles. The ground between St. Catherine's point and the Needles, is rocky and foul; and extends, in some places, more than 2 miles off from shore. About three quarters of a mile, W. S. W. from Atherfield point, and a mile and a half west from Bull-place point, the rocks are almost dry at low water, spring-tides: the outermost part of those off Atherfield point lies about 3 miles N. W. by N. from St. Catherine's point; and those off Bull-place point, are S. E. above 4 miles from the Needles.

The ground off St. Aldan's Head is foul: to the southward, or abreast of the head, it extends about three quarters of a mile: about west from the head, a narrow part of the foul ground runs off above 2 miles.

WEYMOUTH. The entrance of Weymouth harbour lies 5 leagues N. W. by W. from St. Aldan's head. On the bar are no more than 6 feet at low water; within it is a small place, in which are 9 feet at low water; the spring-tides rise only 6 or 7 feet. The channel into the harbour is narrow, and the deepest water is nearest the north shore. E. S. E. from the flag-staff, about a quarter of a mile from the shore, is a small rocky shoal, called the Mixon. There is very good riding in Weymouth road, half a mile from the Jetty head, in 7 or 8 fathoms. About two miles and three quarters, S. S. W. westerly, from Weymouth jetty, stands Portland castle; about 1 mile N. E. from the castle, is Portland road, and from 7 to 9 fathoms water.

PORTLAND. In Portland road is excellent anchoring with westerly and southerly winds. In going in, pass either to the eastward or the westward of the Shambles, according as is most convenient; to go to the eastward of them, the mark is, the north-east point of Portland on with Wyke-Regis church, or the north-east point, bearing N. by W. ¾ W. The lower lighthouse, from the east end of the Shambles, bears nearly N. W. by W. ¼ W. and the west end N. N. W. ½ W. Wyke church is about a mile a mile to the westward of Weymouth, and may easily be known. You may edge towards the north-east point of Portland, into 5 fathoms; when within this point, you may haul closer to the south shore. The anchoring marks for this road are, Portland castle S. W. the north-east point of Portland S. by W. and Weymouth castle N. W. by N.; here are 6 or 7 fathoms water.

The Shambles. From St. Aldan's head, the east end of the Shambles lies about 11½ miles, W. by N. and 4½ miles, E. S. E. from the Bill of Portland; thence they extend W. by N. 2¾ miles. This is a dangerous shoal of coarse sand and shingles, and steep all round, which always shews itself by a break or ripple. On the east end are from 3 to 5 fathoms; and, on the west end, from 6 to 7 fathoms; but, on the shoalest part, nearly the middle of it, are only 12 feet at low water, spring-tides. *The mark for the east end of this shoal* is, Weymouth castle on with the north-east point of Portland; which will carry you on it in 4 fathoms. *The mark for the west end* is, Portland old church on with the Hope, or south pier; which will carry you on it in 9 fathoms. *The mark for the shoalest part* is, the Folly barn, a little to the southward of Weymouth, on with the north-east point of Portland. This mark will carry you over the shoal in 2 fathoms. Nearly half way, between the Shambles and the shore, are from 15 to 17 fathoms; and close in shore 6, 7, 8, and 9 fathoms.

The Race of Portland is a great rippling, about S. S. W. from the Bill, or the southernmost point of Portland; it is about 1¾ mile in length

length from east to west, extending about 1 mile to the eastward of the point, and three quarters of a mile to the westward of it. The Race is caused by the unevenness of the ground over which they pass. In the Race the water shoalens from 18 to 7, and quickly deepens again to 10 and 15 fathoms; and it continues to do so until you are through it. At spring-tides, and when the sea is high, it breaks exceedingly, which makes it very dangerous for small, laden, merchant ships. The distance of the Race from the Bill, varies, as the winds are northerly or southerly; with northerly winds it is 1¾ mile from the Bill; and, with southerly, not more than three quarters of a mile. The mark for the east end of the Race is, the two lights on the Bill in one. The leading mark, to carry you between the Race and the Shambles, is, Portland new church and the Poor-house in one. Small ships may sail safely between the Race and the Bill, in 10, 11, and 12 fathoms. Within a cable's length of the Bill, are 3 fathoms at low water; excepting that, on the south-east side, there is a flat ground of about two cables' length, which may be known by the ripple.

Between the Bill and the Shambles, is a fair working channel from 6 to 10 fathoms in depth.

The leading Marks for sailing between the Race and the Shambles are, the lighthouses in one, or N. N. W. ½ W. by compass, or the east part of Portland N. N. E. ½ E. which will lead ships clear between them. This passage should not be attempted at flood-tide with little wind, as the tide sets right on the Shambles, at new and full moon, at the rate of 6½ knots an hour. The time of high water, at the lighthouse point, is 9¼ hours, at full and change.

In sailing for Portland Road, from the westward, so soon as the lights on the Bill appear, keep well out to the southward, and on with each other, bearing N. N. W. ½ W.; you will then be passing the east end of the Race; and, although near it, you may, by steering S. E. by E. avoid the Shambles. If, when to the westward of the Race, you apprehend that you cannot go to the southward of it, you may, with a brisk southerly or westerly wind, go between the Race and the Bill; especially if you have slack water, or an ebb-tide. When the high light appears open to the eastward of the low light, you are to the eastward of the Race, and may proceed for Portland road, agreeably to the former directions.

WEST-BAY. Of this bay, lying to the north-west of the Bill of Portland, the advantages, until very recently, have been little known; and the following observations, by that very accurate and ingenious observer, Admiral KNIGHT, are the first which have appeared upon the subject:

"West bay has hitherto been an unfrequented place of anchorage, on the supposition, from its south-westernmost exposure, to be unsafe: The ground is, however, clear, and the land affords an admirable shelter from northerly and easterly to south winds; and is the only shelter on the English coast, in the Channel, from the effects of those winds. These advantages, it is presumed, mark this bay as a valuable roadstead for a *Fleet* of any magnitude.

"As the tide, nine hours in twelve, sweeps strong along the cliffs to the eastward and southward, this circumstance will, on the event of a sudden shift of wind, enable ships to clear the Bill; which, being steep-to, may be approached with safety.

"At the anchorage, on sandy ground, in from 16 to 20 fathoms, the Bill bears S. to S. by E. by compass, and the village of Chesil, E. N. E. to S. E. Here the eastern tide runs, on the days of full and change, till 10 o'clock."

Some, to whom the advantages of West bay were unknown, formerly recommended to such vessels as were embayed here, with the wind and sea high, and especially at the beginning of an ebb-tide, to run aground upon the Chesil-bank; but, as that bank is very hard, being composed of stones, loose shingle, &c. this expedient is attended with imminent danger, and has, in many cases, been fatal. In case of such extreme emergency (which will very rarely happen, so as to prevent a ship from clearing the Bill), it will be best for small vessels to run for the pier of Bridport, which is near 15 miles N. N. W. ¼ W. from the anchorage in West bay; as, on either side of that pier, the ground is good, particularly on the eastern side of it, and there a ship may run aground with some degree of safety.

Chesil Bank, or Beach, extends from Chesil, in Portland, to Burton-cliff; the stones which cover it lessen gradually in size from Portland to the westward. At Chesil they are about the size of an egg; but opposite Fleet and Langstone much smaller; at Becksington they are little larger than peas; and between Swyre and Burton-cliff, at the beach end, it is fine sand. Beneath the stones, &c. is shingle and a firm black clay; and strong S. E. winds blow the stones off the beach from one end of it to the other, so that nothing but clay remains, until the sea, agitated by strong S. W. winds, throws them up, and covers the beach again.

In Burton-bay, and along Chesil-beach, the flood-tide runs 9, and the ebb runs 3, hours; very near the shore are 10 fathoms water.

Lyme-Regis is about 22 miles N. N. W. ¼ W. from the Bill of Portland: it is a small bar-harbour, quite dry at low water. An artificial island, called the Cobbe, defends this place from all winds, excepting those which are easterly.

Exmouth-bar lies about 12½ leagues N. W. by W. from the Bill of Portland. As this bar is dangerous, it must not be attempted by those unacquainted with it; it is narrow and intricate at the entrance, having rocks on the east, and sand on the west, side. Six or 7 feet are on the bar at low, and 16 or 17 feet at high, water. Vessels, within the bar, generally anchor off Starcross, in 10 or 12 feet at low water. Those who go up to Topsham, lie along-side the quay, where they ground at low water. From Topsham the goods are carried up in lighters, through sluices, to Exeter. Without Exmouth-bar, about a mile from the west shore, is good anchoring in 6 or 7 fathoms, Strait-point bearing E. by N. or E. N. E. and Langstone-rock W. N. W.

Four and a ½ miles, S. W. by W. from Exmouth bar, and 13 leagues N. W. by W. ½ W. from the Bill of Portland, is *Teignmouth*, a bar-harbour, frequented only by coasters, and a few Newfoundland vessels.

TORBAY. About 6 miles to the southward of Teignmouth bar is Bob's Nose, the easternmost point of Torbay; near which are four small islands, or rocks; the easternmost is called the Mew-stone or Great-rock; the next the Load-stone, or Flat-rock, which lies close to the point. Between this rock and the Mew-stone is a passage of 5 fathoms water: the next is the Thatcher-rock; and the westernmost the Shag or White-rock. Close to those rocks are from 5 to 10 fathoms water: the ground between them and the shore is rocky, and bad for anchoring. The entrance into this bay, formed by Bob's Nose and Berry-head, is about 4 miles wide, and the ground all over it is clear and good for holding: in sailing in, you may, if necessary, keep close either to Berry-head or the Mew-stone. To go between the Mew-stone and Flat-rock, keep about mid-channel, and do not approach too near the west side of the Mew-stone, as the water is shoal half a cable's length from the rock on that side. About S. W. by S. a little more than a cable's length from the Mew-stone, lies a sunken rock with no more than 6 or 8 feet on it at low water. You may anchor in Torbay in 6, 7, 8, and 9, fathoms, as the ground is strong clay, and remarkably good for holding. The usual marks for anchoring here are, Berry-head S.—S. by E. or S. S. E. and Brixham-church on with the pier-head; but the best anchorage is about a mile and a half from Brixham pier-head, in 7 fathoms. Ships may ride on the north shore well sheltered. A great swell is forced into this bay by easterly winds; but, about a mile and a half from Brixham pier-head is an underset to windward, by which you will ride easier than in other parts of the bay. At Brixham on the south side, and Tor-quay on the north side, of Torbay, small vessels lie aground*.

In general, the deeper in the bay that you anchor, the better is the riding, being more out of the stream. Ships of war commonly ride too far out.

It is high water, on the full and change, at about six o'clock. The perpendicular rise of the tide is about 18 feet on the spring, and 10 feet

* These Directions will be found to correspond with the new Chart of Torbay, engraved from the Survey of Mr. J. Dessiou, and published at Steel's Navigation-Warehouse, Little Tower-Hill.

eet on the neap, tides. The eastern stream ends in the bay at about 8 o'clock, but in the offing at nine.

On the south side of the bay there is an eddy with all the eastern stream, and on the north side with all the western stream.

Both streams round the bay, but the western stream, not far without the Mew-stone, sets for the Berry-head.

DARTMOUTH HARBOUR is about 1½ league S. W. of Berry-head, and 2½ leagues N. E. from the Start. The entrance is between two high lands, and the harbour is capacious enough to contain 300 sail, in from 7 to 15 fathoms, quite secure from all winds. Ships, coming from sea, and obliged to wait for an opportunity to enter, frequently anchor without the harbour, in what is called the Range, in from 7 to 10 fathoms. It is a safe place to anchor when the wind does not blow in; and when it is unsafe, there is always a leading wind into the harbour.

The wind from S. W. to E. blows true in, and from N. W. to N. E. true out; all other winds blow in flaws. There are always pilots ready, whose boats attend to tow whenever wanted.

On the east side of the Range are several sunken rocks, extending 150 fathoms from the shore. The mark for the outermost is, a house with a balcony near the north end of the Custom-house Quay, on with the easternmost end of Dartmouth castle bearing N. N. W. This mark will carry you clear of all the others. On the west side is the Home-stone, a small rock with only 4 feet at low water; it lies 200 fathoms without the Black-stone, the saddle of which on with Kingswear castle bearing N. E. by N. is the mark for it.

In coming from the eastward with a leading wind, steer, from the Mesh-stone, for Combe's point, until you bring Kingswear point on with Dartmouth castle; then steer in with this mark, which will carry you clear of the east ledge.—When you are nearly abreast of Black-stone, keep the castle open on your larboard bow, until the southernmost house in Kingswear comes open of Dartmouth castle point. This mark will carry you clear of the Cheek-stone: you may then run in and anchor.

When coming from the westward, with a leading wind, give the Combes-rocks a good berth, and steer to the eastward, until you bring Kingswear castle open to the eastward of the Black-stone; steering in with this mark on, will carry you clear of the Home-stone: and when you have shut in Stoke church, you are past the Home-stone, and may steer for the Black-stone, which is steep-to. Having passed the Black-stone, keep Dartmouth castle on the larboard bow, as before directed.

To ascertain when you are athwart the sunken Rocks on the east Side, observe the following mark: to the eastward of Dartmouth is a red point, the lower part of which, near the water, is black; when a white stone, in the red part above, comes directly over the black part below, you are abreast of the rocks on the east side. The town-key, if you can see it, kept on with the middle of the entrance of the harbour, will lead you in clear of these rocks. Ships bound to Dartmouth should hoist a signal for a pilot when they come near the Range, as pilots are always ready.

From BERRY-HEAD *to the* START is S. W. by W. 12 miles. The shore is rocky between the head and entrance into Dartmouth harbour; but the rocks are not more than three quarters of a mile off. Between Dartmouth and the Start-point, is Start-bay. About 3 miles east from the Start-point, are the Skerry-rocks, on which are only 9 feet at low water. Upon this shoal, the Lennox ship of war grounded in the year 1712. When she was upon it, there was a quarter-less 4 under the head-rails, 5 fathoms under the gun-room port, and but 18 feet abreast of the chest-tree. These rocks are three quarters of a mile in length, and a cable's length in breadth. The Bolt-head kept open with Praul-point, until the Berry-head opens of the Down-end, is the mark to avoid them on the south side. With southerly and westerly winds, small vessels frequently anchor in Start-bay, off Widecomb, in 7 or 8 fathoms.

PRAUL-POINT is W. by N. 4 miles from the Start-point; and 3 miles to the westward of Praul is the Bolt-head, a very high land. Between Praul-point and the Bolt-head is *Salcombe*, a small harbour. Its entrance is not more than a cable's length in breadth; the land on each side is very high. On the bar are only 9 feet water; but, in that part

part of the harbour called the Bag, are 3 and 4 fathoms at low water. Coming from the westward, the harbour appears open, the land on the west side of it is rugged, and that on the east side gradually slopes. On the west side of the entrance is a small island called the Mew-stone: and without it, about half a cable's length, is a ledge of rocks, over which the sea breaks. To these rocks give a good berth, leaving them on the larboard side.

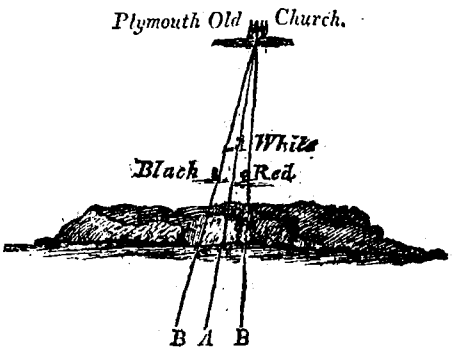
The Bolt-tail lies about 3¾ miles N. W. ¾ N. from the Bolt-head; all the shore, between the Start-point and the Bolt-tail, is very steep and rocky, and must be carefully avoided. Indeed, the coast, all the way from the Start to Stoke-point, is foul; but none of the rocks lie farther from the shore than half a mile, and a ship may sail within a large half mile of the shore, excepting in Bigbury-bay. From the Bolt-head to Rame-head, the course is N. W. 17 miles. *The Eddy-stone* is about 18 miles, W. N. W. ¼ W. from the Bolt-head.

The East Rutts, a ledge of sunken rocks, lie with the Mew-stone nearly N. ¼ W. the Bolt-head E. by S. ¾ S. and the Bolt-tail, E. ½ N. distance from the Bolt-head nearly 7¼ miles; and, from the Bolt-tail, 4½ miles. There is only a depth of about 27 or 28 feet on them at low water in moderate spring-tides; thence it deepens suddenly to 7 and 10 fathoms, from which the soundings are more regular, and increase at a little distanceto 20 fathoms. These rocks are nearly in the fair-way of ships coming round the Bolt-head, and bound for Plymouth-sound. That part where the shoalest water is, appears to be flat; and there is generally a heavy ground-swell upon it. The marks are, a a sudden-rise in the land within Praul-point touching the Bolt-head, and the easternmost part of Moorend-hills on with the highest part of Salcombe grey cliffs.

PLYMOUTH-SOUND. Vessels from the eastward, turning up to the northward into Plymouth-sound, will make, on the starboard side, two remarkable large rocks, which lie without reefs stretching from shore. The first, called the *Great Mew-stone*, lies off the eastern point of the Sound, and has just without it a small one, called the *Little Mew-stone;* off which a shoal stretches itself S. W. 130 fathoms nearly. The second is a black rock called the *Shag-stone*, which lies N. by W. ½ W. ¾ of a mile from the Mew-stones, and nearly one quarter of a mile from the coast.

In the Sound are several dangers; the first and chief of which, in the lower part of it, are named the Tinker, the Shovel, the Knap, and the Panther; the Tinker and Shovel being on the eastern, and the Knap and Panther on the western, side of mid-channel. On each is a buoy.

On the rising land, called the *Hoa*, at the head of the Sound, and to the westward of Plymouth citadel, stand three stone beacons painted red, white, and black, which are the principal mark-objects for sailing into, and out of, the Sound. Their situation and colour, with the leading and turning marks, are shewn by the annexed figure.



A. The leading mark. B. B. Turning marks, between the Panther and Shovel.

The Tinker is the outermost danger in the Sound; this is a rocky shoal, stretching one-third of a mile, E. and W. and lying N. W. by N. about 1¼ mile from the Mew-stones. It has on it from 14 feet to 4 fathoms

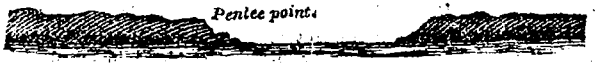
thoms water. The shoalest part of its western end, on which, in 14 feet, is a red buoy, lies with the following marks: Penlee-point (the western point of the entrance into the Sound), on with a square dark spot in the valley to the northward of Rame-head, bearing W. N. W.; and the Shag-stone, bearing S. E. by E.

The Shovel. The buoy on the Shovel is white, and lies N. by E. ½ E. 1 mile from the Tinker buoy, and 17 feet water. The long mark is, Plymouth old church, just touching the eastern part of the Red Obelisk on the Hoa, bearing N. E. ½ N.; the thwart-mark is, the west end of the Shag-stone on with the east end of the Little Mew-stone, bearing S. by E. ¾ E. The Shovel is a ledge of rocks, extending about a cable's length to the south-eastward of the beacon.

The Panther is a small rocky shoal, having, on its north-eastern side, a black buoy, which lies in 4 fathoms, N. W. by W. about half a mile from that on the Shovel, with the following marks: Plymouth old church, just touching the western part of the Black Obelisk on the Hoa, bearing N. E. ½ E.: the spire of the new steeple in Dock, just open of the trees over Redding-point.

Knap. About S. W. ½ W. nearly half a mile from the Panther buoy, is a similar black buoy, on the south-west side of the shoal called the Knap. This shoal extends about a cable's length towards the Panther, and has 21 feet over it at low water. The buoy lies with the flag-staff on Drake's Island in a line with a white house, in a grove of trees, on the high ridge of back land in the country, bearing N. E. ½ N.—the small house near the water side at the south part of Edgecumbe-park, in a line with the house next west of Maker church, bearing N. W. by N.—and the Shag-stone just touching the southernmost point of the Yealme-land.

APPEARANCE of the ENTRANCE of PLYMOUTH SOUND from the Southward.



The Rame-head and *Mew-stone* form the entrance, bearing E. S. E. ¾ S. and W. N. W. ¾ N. 4½ miles distant. The bearing and distance, between Penlee-point and the Shag-stone, is nearly E. S. E. and W. N. W. 2¾ miles.

The Marks by which the Entrance may be known in the day on a nearer approach are, Rame church open to the northward of Rame-head; and a square tower standing upon the highest part of the land over Penlee-point.

Ships coming from the westward for the Sound, with westerly winds, generally go to the westward of the beacons on the Knap and the Panther, which is by far the best channel. If they are obliged to turn in, or have the wind scant to the north-westward, they may safely round Penlee-point in 6 or 7 fathoms water, taking care not to approach it nearer than one-third of a mile, until they have opened Tor-House off Redding-point, which mark will carry them clear of a rocky shoal with only 12 or 13 feet water, which runs off S. S. E. about 130 fathoms from the Point. The leading mark is, the whole of the citadel open to the eastward of Drake's Island. Here it is *necessary to observe, that, as the ground near to Penlee-point is rocky,* anchoring there ought, if possible, to be avoided. There is good anchoring in Cawsand Bay, in 6 or 7 fathoms, Penlee-point bearing about S. W. and the battery at Cawsand N. N. W. about 1 mile from the shore*.

When bound into the Sound from the westward, give therefore Penlee-point a berth of near half a mile, and bring the red stone beacon on the Hoa in a line with Plymouth new church, which has a spire-steeple: keep in that direction till you open Cawsand; then sail easterly till that steeple appears between the red beacon and west part of the citadel, and till the Shag-stone is shut in with the eastern part of the Mew-stone; you will then be to the northward of the Panther, and may steer E. N. E. for the anchorage.

Vessels from the eastward may run up the channel to the eastward of the Tinker and the Shovel. The passage, between the Tinker and

* By order of the Admiralty, the larger ships of war only are in future to anchor in Cawsand-bay; frigates and smaller vessels proceed to the Sound.

the Shag-stone, is less than half a mile wide, and is therefore seldom used, excepting by small vessels. The leading mark is, Plymouth old church on with the west end of the citadel, or Mount Batton a sail's breadth open of Stadon-point, until you draw near to this point: then give the shore a proper berth, and you may anchor as hereafter directed.

The common passage into the Sound is between the Tinker and Shovel, on the starboard side, and the Knap and Panther on the larboard side. If from the eastward, steer for Rame-head until the middle, or white, beacon on Plymouth-Hoa, is brought in a line with Plymouth old church: this is the leading mark between the above-mentioned shoals, and is to be kept on until Mount Edgecumbe-house (on the western side of the head of the Sound) appears in sight; or till the Shag-stone be on with the western part of the Mew-stone: then steer E. N. E. for the anchorage.

As the long mark for the Shovel is the eastern or red beacon, on the Hoa, in a line with Plymouth old church, and as the Panther lies with the western or black beacon in a line with the same, ships with a turning wind, either in coming into, or going out of, the Sound, may stand to the eastward till the red or eastern beacon on the Hoa appears nearly *to touch* the old church, and to the westward till the black or western beacon appears nearly to touch the same. These marks being for the narrow part of the channel, between the Panther and Shovel; and will serve as a sure guide should the buoys on the shoals happen to be removed.

To the southward of the last-mentioned shoals, while the Bolt-head appears between the Shag-stone and Mew-stone, you may stand to the westward till the black stone beacon appears on with the middle of the Old Church; and to the eastward till the white stone beacon and Tor-house* are in one. When the Bolt-head is open to the southward of the Mew-stone, or hid behind it, you will be to the southward of the Knap and Tinker, and may stand farther either to the eastward or westward.

When arrived within all the Beacons, you should haul to the eastward, until you bring the Withy-hedge right end on, and then anchor in 6 fathoms water.

The best ground for anchoring in the Sound is with the following marks: namely, Mount-Edgecumbe house just open to the southward of St. Nicholas' Island, called also Drake's Island; or this island N. W. by N. and the Withy-hedge right end on, in 6 or 7 fathoms water: the Withy-hedge will then bear about S. E. by E. When at anchor, be sure to keep Mount-Edgecumbe house in sight.

In steering for the anchorage, care must be taken to avoid a shoal of 10 feet water, which lies E. ¼ N. ¾ of a mile from the Shovel, with Stadon-point bearing S. S. E. ½ a mile distant; and about one-third of a mile from the nearest shore: near it are 5 or 6 fathoms. It will be avoided by observing the foregoing directions.

If sailing into Plymouth Sound in the Night, bring the Eddystone S. W. and steer N. E. by N. or N. E. by E. according to the wind and tide. Keep in this direction until the water shoalens to 10 or 11 fathoms; which is about three quarters of a mile from Penlee-point, which shore is by far the safest to run in by the night, or in thick weather. Be careful to keep your lead going, and to go no nearer the Point than 8 or 9 fathoms; for, in this depth, you will be but little more than half a mile from shore.

Upper Part of the Sound. From the north side of Cawsand Bay, and thence to a considerable distance round Drake's Island, is a rocky shoal. The greatest depth between the island and Redding-point, on the part called the Bridge, is less than two fathoms. The entrance of this passage lies with the south part of Drake's Island on with the high south part of the citadel; Plymouth Dock mill just touching the extremity of the Devil's Point; and the house next east of Mount Wise on with the platform on Devil's Point, bearing about north.

To sail over the Bridge, keep to the westernmost of the two chimneys of the above-mentioned house on with the westernmost side of the Devil's House, which stands under Devil's or Blockhouse Point. The channel is narrow; and sometimes, on low spring-tides, has but 9 feet water.

* The Tor-house is a remarkable building, surrounded by trees, and bears N. E. by N. of the white stone beacon.

On

On the extremity of the shoal, stretching from Drake's Island, is a black buoy, called the Buoy of the Spile, which lies with the flag-staff on the island about N. N. W. ½ W. one third of a mile distant. There is also a red buoy on a rock called the *Winter-rock*, which extends about a cable's length N. W. by W. and S. E. by E. having only 11 feet on it at low water. To the eastward of it are 12 and 14 fathoms; but betwixt it and Drake's Island only 4 fathoms. The marks for the buoy are, the obelisk to the northward of Mount Edgecumbe house on with Blockhouse-point; and the nearest point to the south-westward of Drake's Island, a little open to the southward of that island. There is also a floating white beacon on a rock, called the *Africa-rock*, which lies a little more than a cable's length from the Winter-rock, in the direction of Mill-bay. The marks for it are, the stairs from the dead wall to the sea-shore, at the back of the marine barracks (or long buildings at the bottom of Mill-bay), on with high-water-mark, at the west side of Mill-bay, and the obelisk on with the embrasures of the battery on Blockhouse-point. The *German-rock* is a rock lying about half a cable's length from shore, on the south side of the Devil's or Blockhouse Point, with the stone wall on the Hoa and the Point on the east side of Mill-bay in one. It is mostly dry at low spring-ebbs; without it is another, having a white buoy on it, called the Vanguard.

HAMOAZE. To sail into Hamoaze with a large ship, go to the eastward of the Winter-rock, and to the northward of the Africa-rock. Run in towards the stone wall upon the Hoa, until you have a fair view of the three holes in the rock under the wall, keeping the wall and the middle hole in a line with each other, until you bring a tuft of trees above Edgecumbe house on with the north side of Drake's Island. Run with these marks on, but keeping the S. W. corner of Plymouth citadel open without the east point of Mill Bay; and Mount Wise open of Blockhouse-point. Ships, going into Hamoaze, generally run into that direction until they open Stonehouse. When past the Vanguard, edge over into Mount Edgecumbe Bay, or Bareing Pool, till you have opened Passage-point, and then steer over to the eastward for Stone-house Pool.

To go to the westward of the Winter-rock, bring Stoke-house, which appears to the westward of the hospital in Stone-house, to touch the point on the east side of Mill Bay, which will lead you through between it and Drake's Island. When in the fair-way, between the Winter-rock and Drake's Island, and abreast of the floating beacon on the Africa, you will have one-half of a large low building, without chimneys, which stands within the point on the east side of Mill Bay, open of that point. Run in, with Stokehouse on with the east side of Mill Bay, as aforesaid, until the obelisk comes on with Blockhouse-point; then run, with the latter mark on, till the easternmost summer-house on Mount Edgecumbe side comes open of the point within which it stands: keep this mark on, until the east side of Mount Wise comes open of Blockhouse-point; then steer in the middle of the channel for Stonehouse-pool, till Drake's Island is shut within Blockhouse-point, taking care not to open the island again, until Southdown comes open of the obelisk-point. *You may then steer up into the harbour*, observing, that the south side of Drake's Island kept just touching Passage-point, will lead you to the southward of the *harbour-shoal* on the eastern side: on the outer part of this shoal is a rock of 16 feet water; but, on every other part of it, are not less than 3½ fathoms.

Off Passage-point, in the Crimble-passage, is a rock with a buoy on it, which will be avoided by observing the foregoing directions.

With little wind, let go your anchor in time, if the ship will not steer in Bareing-pool; as the tide, which is rapid, sets right upon Mount Edgecumbe. In this place are 17 and 18 fathoms water.

Merchant vessels generally anchor abreast of or below Millbrook-creek.

CATWATER. Upon the outer extremity of a ledge of rocks which runs off about two cables' length to the westward from Mount Batton, is a buoy called the buoy of the *Cobler*. Between it and the shore are 7 fathoms water.

In proceeding for Catwater, run between the Winter-rock and the Cobler; steering in for the west corner of the citadel, until you have shut in Plymouth old church with the citadel, will carry you to the northward of the Cobler. Having past this shoal, leave the greater part

part of the channel on the starboard side, in order to avoid the shoal water off Mount Batton. In the fair-way is another rock, the *Mullard*, of 12 feet water, lying off the citadel, with the old church steeple, just in sight above the land, touching the west side of it. By keeping the old church shut in with the garrison, you will avoid it.

Having entered Catwater, continue to give Mount Batton a good berth, in order to avoid a middle ground of loose sand, on which is not more than 16 feet water; to the eastward are 4½ fathoms. Avoid coming to anchor on the loose sand; for, should your anchor come home, with a southerly or south-west wind, it will not take hold again; and, having so little room, the ship must inevitably go on shore in Deadman's Bay. For this reason, run up to the lower Limekiln on Cat-down, or abreast the high land upon it, where you may anchor and moor in security with all winds, having 5 or 6 fathoms with little tide. After Cat-down is well open, in mid-channel are 4 and 4½ fathoms water down to the lower Limekiln.

EDDYSTONE, &c. Going out of Plymouth-Sound the course is S. W. by S. The Eddystone bears from Rame-head S. W. ¾ S. distance 8¾ miles. The south-east side of this rock is foul for about half a mile, off several of the rocks shew themselves at low water. On the west side it is clear; and a ship may sail within a cable's length of it in 12 and 13 fathoms. About ¼ of a mile N. E. by E. from the lighthouse, is a rock which appears at low water, spring-tides. Between Rame-head and the Eddystone there are 35 and 36 fathoms water; and close to Rame-head are 20 fathoms. In the stream of the Eddystone are 40 fathoms, as far to the westward as the Lizard.

Hand-deeps. About 3¼ miles, N. W. by N. from the Eddystone, and 8 miles S. W. by W. from Rame-head, is the Hand-deeps, a bed of sunken rocks, lying to the N. and W. of the Eddystone, and immediately in the fair-way of ships from the westward, bound into Plymouth-Sound. In the shoalest part is a pointed rock, (as far as can be judged by the lead), on which are about 24 feet at low water, moderate spring-tides. This shoal has commonly a ground-swell on it; and, with a south-west gale and ebb-tide, the sea runs very high, so that a large ship may depress (or *send*) 5 or 6 feet. The marks for these rocks are, the easternmost part of Moor-End-hill in a line with the Mew-stone; and a white house, which stands on the declivity, under the highest part of the Moor-End-hills, just in sight to the eastward of the declining land over Penlee-point; it appears one-third up the hill, from Penlee-point to Maker church, and is very remarkable by an arch in the centre of it.

The following are the bearings from the shoalest part of the Hand-deeps:

The Eddystone, S. E. by S.—Rame-head, N. E. by E. ½ E.—and the Mew-stone, E. ½ N.

Least depth of water about 24 feet.

With these marks on you will be right upon the rock.

From RAME-HEAD to the Dodman, Falmouth-Harbour, Mount's Bay, and LAND's-END.

FROM Rame-head to the Dodman, the course is W. by N. 26 miles; to Falmouth-harbour, W. ¼ N. 33 miles; and, to the Lizard, W. ½ S. 44 miles.

Nearly 3 leagues N. W. ½ W. from Rame-head is Loo-harbour, which is small, dry at low water, and frequented only by a few small vessels. Athwart of West Loo, near Tall-point, is a small island, called *Loo-Island;* to the eastward of which is an anchorage of 5 or 6 fathoms.

The Udder. Three miles, W. ½ S. from the north-west part of Loo-island; and 2½ miles from the centre of Lantach-bay, is a sunken rock called the Udder, about 80 feet long and 20 broad; it has only 9 feet on it at low water, spring-tides; 8 fathoms water are within it; and, near it, without, are 9 fathoms. For this rock, the marks are, a farm-house by the shore, in a line with a stone wall, which runs up nearly N. N. E. ½ E. and the high land, above Pollparre, on with the north-west part of Loo-island. The mark to clear it is, the above-mentioned high land open of the north-west part of Loo-island.

FOWEY. About 8 miles westward of Loo and about 3½ leagues E. N. E. ¼ E. from Deadman's Point, is Fowey. This harbour may be known by its narrow entrance, and the high land on each side; the entrance

entrance is little more than a cable's length in breadth: on the west side of it stands the castle, and on the east side the ruins of an old church; and there at not less than 3 fathoms at low water. You may anchor opposite to the town in 3 fathoms at low water, spring tides; but near to Polruan, on the east shore, are only 12 and 15 feet. As this harbour lies about N. E. by E. and S. W. by W. it has a better outlet to the westward than either Plymouth or Falmouth. The tide flows here, on the change and full days of the moon, at half past five o'clock; and the water rises, on the spring-tides, 16 or 17 feet. There is good anchoring-ground without the harbour in from 5 to 10 fathoms. With the tower of Fowey church over St. Saviour's Point, and the Three Points to the eastward open, is good anchorage in 7 or 8 fathoms. In deeper water than 10 fathoms is foul ground. The danger to be avoided, when going to Fowey, is a ledge of rocks called the Conies, which lie about a quarter of a mile, S. by W. ½ W. from Predmouth-point, and may be seen at half-ebb. Between these rocks and the point are only 10 feet water, and the ground is foul. The mark to clear the Conies is the Dodman Point open without the Wind-head-rock.

The Dodman Point is high and bluff: the land appears double, with a round hill, which slopes to the westward. The Wind-head or Guinea-rock, lies about 2 miles and a ¼, E. by N. from Dodman Point, and ¼ of a mile from the shore. It is a black stone always above water. Small vessels, if well acquainted, go between it and the shore.

Between Fowey and the Dodman are two large bays called Polkerris and Mevagizey. Polkerris-bay is just round Predmouth-point to the north-west; it is large, deep, and sandy, with regular soundings from 12 to 6 fathoms; the latter depth is near the shore. The best anchorage is on the western side, in Ropeborn-road. This place is well sheltered from westerly and southerly winds. To anchor off Ropeborn-pier, in 11 or 12 fathoms water, bring the Blackhead, which is to the northward of Mevagizey, S. by W. ½ W. The ground is sand and clay, and good for holding.

To the southward of Blackhead the ground is foul and bad. Off Mevagizey, a little to the E. by S. from Goran-haven, lie two rocks; one is called the Guineas-rock, and is always above water. A little to the eastward of it lies the Jaw-rock, which appears at low water, spring-tides. To the northward of the Guineas-rock is Chapel-point; for about a quarter of a mile to the eastward of which the ground is foul. Between the point, and the Guineas-rock, are 10 fathoms water. Neither Polkerris-bay nor Mivagizey-bay are much frequented, unless by small vessels.

On the east side of the entrance of Falmouth harbour, about 9½ miles, W. ½ S. from the Dodman, is *St. Anne's Point*. The coast between these places is steep; but the bottom, near the shore, is rocky and unfit for anchoring.

FALMOUTH HARBOUR. Falmouth has an excellent harbour, situated on a very convenient part of the coast, with respect to the western ocean, and so capacious that a hundred sail may commodiously ride in it. The entrance may be readily ascertained from Pendennis castle, which stands on the point on its western side.

Nearly in the middle of the entrance, almost opposite to Pendennis castle, is a rock, called Falmouth-rock, or Black-rock. It appears at half-tide, and has a perch on it, to shew where it lies when overflowed by the tide. You may go on either side of it; but the east side is the best, in 3 fathoms water, within a cable's length of the shore. The channel to the westward of the rock, is both narrower and shoaler than that to the eastward of it.

To sail into Carreg-road the east channel is the best; minding to give the Shag-rock, off St. Anne's point, a good berth; because there are some rocks lying off about a cable's length from it. You may keep towards St. Maw's castle in 5 or 6 fathoms; but it is best to steer in mid-channel, in 16 or 17 fathoms. Run in until the Manacles appear just on with Pendennis castle point; and keep this mark on, until the church to the westward of Pendennis be on with the east side of the valley, called the Smithic: then stand over for St. Maw's, and anchor with the castle S. E. by S. To moor in this road, let go your westernmost anchor in 6 or 7 fathoms, and be brisk in veering away cable, for otherwise the ship will drag her anchor off the bank. If you let go your westernmost anchor in 6 or 7 fathoms,

your

your easternmost one, as you must moor athwart the tide, will be in 16 or 17 fathoms. To the northward of St. Maw's castle, there runs off a bank or flat from the shore, called St. Maw's bank, which extends almost half way towards the western side. This bank is steep, having 14 or 15 fathoms very near it, and it must be carefully avoided. The Manacles, just open of Pendennis castle point, will carry you clear to the westward of St. Maw's bank; this is the best mark for anchoring with large ships. Small vessels may go up and anchor before Falmouth; but they must wait for a proper time of the tide, because a bar runs right athwart from Trefussis-point towards the land of Pendennis castle. Before the town are only 12 feet at low water. The packets always lie before the town.

Between St. Ann's point and St. Maw's castle is Mandil's creek, where small vessels ride before St. Maw's fort, in 2 or 3 fathoms at low water. The Castle point is rocky.

To the northward of Carreg-road is St. Just's Pool, which is the best place in the harbour for anchoring; but ships cannot sail from it so conveniently as from Carreg-road. To go up to this pool, keep near to the west shore, or Trefussis-land, until you are near to the north-east point of this land; then steer over between the north end of St. Maw's bank, and the south end of the middle bank, into the Pool. You may run all the way by your lead, taking care not to approach nearer to either side than 6 fathoms water.

From St. Just's Pool to Turner-Ware-point, keep close along by the east side, in 2 fathoms at low water. When you get up to the point, give it a good berth, to avoid a shoal or flat which runs off it. When above Turner-Ware-point, you may anchor any where from thence to Mopas. To go to Truro, proceed with a flood-tide. At Truro it is dry at low water.

The tide flows here, on the new and full days of the moon, at three quarters past five o'clock. The spring-tide rises 18 and 20 feet, and the neap-tides 12 and 14 feet.

Bound out of Falmouth to the westward, the course to clear the Manacles with an ebb-tide and a scant-wind, is S. by E. and, with a large wind, south, for about 4 leagues: from the entrance of Falmouth, they bear about S. W. by S. four or five miles. When going out of Falmouth with an ebb-tide and little wind, you may anchor in 12 or 13 fathoms water. S. S. E. from St. Anne's point, and, about a mile and a half from the shore, is a fine sandy bank. The ebb-tide sets out of Falmouth directly S. S. E. until it gets to the southward of this bank; it then sets towards the Manacles on the western shore.

HELFORD is about 4 miles westward of Falmouth. When going into, or out of, this harbour, keep in mid-channel, or rather nearest the south shore; because the ground, to a little distance from the north shore, is foul. On the south side is a steep point, and, on the north side, a low flat one. Within Mawnan-point, you may anchor by bringing Mawnan church N. N. W. or N. W. in 3 or 3½ fathoms at low water. The town of Helford lies about 3 miles, W. N. W. from the entrance of the harbour. A little to the eastward of the town is a bar of only 9 feet at low water. The deepest water over it is nearest the south shore. There is the same depth of water at Helford town, as on the bar. None but small vessels use this place, which generally lie off the town. The entrance of Helford is known by Mawnan church, on a hill, on the north side, and by a castle, called Little Denis castle, on the south side.

Manycles. Four and a half miles S. W. by S. from the entrance of Falmouth, 3 miles S. by E. from the entrance of Helford, and 3 miles E. N. E. from Black-head lie the Manacles; some of which lie nearly 2 miles from the shore. They always appear high above the water. To sail clear of them, keep the windows in the steeple of St. Kivern's church in sight above the land, which will carry you to the eastward of them. Small vessels may go within them; but none should attempt it unless they know the place, and are well acquainted with the setting of the tides.

THE LIZARD POINT may be seen 7 or 8 leagues off: it lies 39 miles, W. ½ N. from the Eddystone. From the Lizard to Pealen-point, the course is N. N. W. ¾ W. 14 miles; from the Lizard, the Rundel

stone

stone lies 18 miles N. W. ½ W. and the Wolf-rock, N. W. by W. ¼ W. northerly, distance 28 miles. *The tide flows here, on the new and full days of the moon, at 4 hours 55 minutes.*

The Lizard is a bold land; several rocks lie near it, called the Stags; some of them, about a quarter of a mile without the Point, appear at half-tide. The mark to clear them is, Black-head-point kept just open of the Lizard-point, until the two lighthouses on the Lizard appear in one, or until Godolphin hill appears above the land to the westward of the Lizard.

MOUNT's BAY *lies to the westward of the Lizard-point; on the* east side of it, about 4 miles from the Lizard, lies the Gull-rock, at a small distance from shore. Ships bound up channel, and meeting with strong easterly winds, may run in on the north side of this rock, and anchor near the shore in 8 fathoms, *sheltered from easterly and* south-east winds.—Several places are fit for anchoring on the east side of this bay; viz. To the northward of Gunwalloe's Cove, in 7 fathoms; and about a mile to the southward of Loo-bar. Northward of which the ground is also good and clear. Off Port Levan is good anchoring in 11 fathoms, hard sand.—The marks are, Helstone church N. E. or N. E. by E. and St. Michael's Mount N. W. In all these places you may anchor with easterly winds. From Port Levan battery to St. Michael's Mount, *the coast is so rocky, that large ships must not go into* less than 14 fathoms. On the north side of this bay is St. Michael's Mount; on the north-west side of the Mount, is a pier for small vessels; off which you may anchor in 4 fathoms. Near the Mount is the best ground; towards the shore it is rocky. On the east side of this bay the tides run in different directions.

Ships bound to the westward, with strong gales of wind from that quarter, generally go into Guavas-lake, off Newlyn, where they ride safely with westerly and southerly winds. The dangers here are, sunken rocks, called the Low-lea, and the Carn-base; the former bears E. S. E. and the latter bears E. from St. Paul's church. They lie nearly N. and S. about a quarter of a mile from each other. The Low-lea has but 5 feet water on it, and the Carn-base 6 feet: between are 10 fathoms. Low-lee-rock is about one-third of a mile from Pealea-point. For anchoring in Guavas-lake the mark is, St. Clement's *Island, just shut in with Pealea-point, in 6 fathoms.* Large *ships* generally anchor without the Low-lea and Carn-base rocks, between St. Michael's Mount and St. Clement's Island, in 12 or 13 fathoms.

Coming from the eastward for Guavas Lake, with a westerly wind, haul in for the westernmost land, until you come near the island off Mouse-hole, called St. Clement's Island. Be careful to keep St. Paul's church tower in sight above the land, till you are northward of Pen-lea-point; then steer for Penzance, keeping the windows of the tower *of St. Paul's church in sight, until you bring that tower to the north*ward of the long hedge that is about half way between Newlyn and Pealea-point, which hedge will then appear to come straight from the church to the cliff. Then haul in for Newlyn pier-head; or keep a *white house, in the corner of a field just above Newlyn, on with the* middle of Newlyn pier-head, until St. Paul's church tower disappears, and open St. Hilary's spire northward of St. Michael's Mount; then anchor with St. Clement's Island just shut in with Pealea-point, in 6 fathoms at low water, the best ground in the lake. Observe to lay your small bower to the N. E. and your best bower to the S. W. that you may ride with an open hawse with S. E. and southerly winds, which bring a heavy sea into the road. The steeple of St. Hilary's church is a tall *white spire, on the high land to the eastward of Mazarion.*

Near one-third of a mile, S. by W. from Penzance pier, is a rock, called the *Geer*, which just appears at low water, spring-tides. Several sunken rocks are round it, on some of which are no more than 3 feet at low water. When turning in here, take care not to shut in Little Godolphin hill with the south-east side of St. Michael's Mount, for otherwise you will run on those rocks. South-east and southerly winds cause a heavy swell to come into this bay; but there is an underset to windward, which makes the ships ride pretty easy, and, the harder the wind blows, the stronger is the underset to windward.

This motion of the under water to windward, is owing to those inequalities which the wind has made in the surface; and it may be accounted for upon one of the well-known laws of fluids: agreeably to which, the upper water, forced into the bay by the violence of the winds

winds and waves, and meeting with the solid shore, returns underneath, where there is least resistance. The harder the wind blows, the more will the upper water be forced upon the shore, and the stronger will be its return below, in order to restore the equilibrium; hence ships, whose bottoms reach to a considerable depth, must feel its influence; and those which draw most water will receive most benefit. But unless the wind blows right into the bay, or nearly so, ships riding in it will not be so much benefitted; because the underset to windward will, at other times, go out on the lee side of the bay, or from that side to which the upper water is driven.

There is very little tide in Mount's Bay, and ships may always lie with their heads to the wind; if their ground-tackle be good, they will ride safely, unless the wind should come round to the N. W. or N. and blow hard; in that case, the anchors may come home, because the ground has a little descent to the leeward.

In Penzance pier are 13 feet water on spring-tides, and 9 feet on neap-tides.—At the Pier of St. Michael's Mount there is rather more water than at Penzance. The tide flows in Mount's Bay, on the change and full days of the moon, at 55 minutes after four o'clock.

Rundelstone. Near the shore, between Mount's Bay and the Land's End, are several dangerous rocks. The first is the Rundelstone, a small rock, about four yards long and two broad: its base is dry at low water, and is covered before half flood. Upon this rock a beacon is erected, formed of four cylinders of cast iron, about twelve feet high, bolted together and to the top of the rock, with a pole in the head and a small wooden basket, making it in all about 19 feet high. This rock bears from the lighthouse on the Longships S. 21° ½ E. distant near 4 miles; from the flag-staff on Point Tol-Pedan-Penwith, S. 7° ½ W. near 1 mile; and from that point ¾ of a mile. The ground without the Rundelstone is clear, but there are rocks and foul ground to the eastward and northward of it; therefore a passage within it cannot be recommended to strangers.

Leaw-mean. About a cable's length N. E. by N. from the Rundelstone, is a rock, called the Leaw-mean, which appears at half-ebb. There is a passage between these rocks and the main, in which there are 12 fathoms water; but it is seldom used. To go clear without them, keep the windows of St. Levan's church open above the land; and the mark to go within them is, the same church shut in with the land; by this mark you may sail through the inside channel, without fearing any danger.

About half a mile N. N. W. from the Rundelstone lies the extremity of a bed of sunken rocks, which extend thence toward the Rundelstone and Leaw-mean, having only 4 feet on them at low water. This bed of rocks is not more than a cable's length over each way.

The Wolf-rock bears from the Land's-End, or the westernmost point of land, S. W. ¾ W. distance 8 miles; W. by S. distance 8 miles. Between the Rundelstone and this rock there are from 20 to 36 fathoms water. It is on all sides steep, and has, within a cable's length of it, from 30 to 40 fathoms all round.

The sea generally makes such a roaring on it, that the noise may, in moderate weather, be heard a great way off.

The Wolf-rock is 56 yards long, and 38 yards broad, at low water, bold all round, and is barely covered at high water in neap-tides; it therefore always shews itself, except at high water, spring-tides, and a very smooth sea. A pole, 24 feet long, with a small wooden basket upon its head, is erected upon this rock, and secured to it by iron work. From this rock the lighthouse appears a little within the Brissons (about one-third of the distance to Cape Cornwall), bearing N. 44° E. distant 7½ miles; and the Wolf bears from Tol-Pedan-Penwith S. 68° W. or W. S. W. distant nearly 7¼ miles.

LONGSHIPS. About 3 miles N. N. W. ½ W. from the S. W. point of the Land's End, and one mile W. N. W. from the westernmost point, lie the high rocks called the Longships. They extend about half a mile north and south.

A lighthouse stands upon the largest of the Longships, the lantern of which is so lighted with Argand lamps and reflectors as to be clearly seen from Point Tol-Pedan-Penwith to Cape Cornwall. The light bears from Point Tol-Pedan-Penwith N. N. W. ½ W. distant 3¼ miles; from Cape Cornwall, S. W. ¼ W. 4 miles; from the Brissons, S. W. ¼ S. 3¼ miles; from the Rundelstone, N. N. W. northerly, near 4 miles;

miles; from the Wolf rock, N. E. northerly, 7½ miles; and from the lighthouse of St. Agnes, E. southerly, 25 miles.

Appearance of the Longships, from the South-westward.

Ships sailing down the British Channel, and bound round the Land's End, cannot make the light till it bears N. N. W. ½ W. or open of Point Tol-Pedair-Renwith, on account of the high land which covers it from this point to Cape Cornwall; but, having seen it, and brought it to bear N. 21° ½ W. will have the Rundelstone in the direction of the light; and, by bringing the light to bear N. by W. or N. may steer safely for the light, clear of the Rundelstone, and all danger, and may give the light any convenient berth, as the westernmost rock of the Longships lies only about ½ a cable's length from the lighthouse.

Ships bound from the South-westward of the Light to the northward, must keep this light clear of a N. E. direction, on account of the Wolf rock; but, by keeping the light a point or two to the eastward or northward of this direction, till they have passed the Wolf, may with certainty avoid it. The same observations will hold good, if bound to the southward, for both these rocks.

Ships bound either to the northward or southward, when to the northward of the Light, ought to keep it a point or two to the southward of S. W. ¼ S. in order to go to the westward of the Brissons, which are two high and bold rocks, or small islands; but there is no safe passage between them and Cape Cornwall.

There is a Passage between the Longships and the Shore, for ships of any draught of water: it is, however, very narrow and intricate, and therefore seldom used, excepting by coasters and smugglers. From the northernmost part of the Longships, to about half way towards the westernmost point of the Land's-End, lies a shoal, called the *Kettle-bottom*, on the north part of which there are no more than 6 feet at low water. A little to the southward of the westernmost point of the Land's-End, is a small island near the shore; near to this island, on the west side, lie some rocks, which make the passage betwixt the island and Kettle-bottom dangerous, so that it is seldom used by any but small vessels.

Sharks's Fins, &c. About half a mile E. N. E. from the northernmost rock of the Longships, are some rocks called the Sharks's Fins. Off Peddenancue point the ground is foul and rocky, you must therefore not come within half a mile of this point.

The Bresan Rocks lie about 8½ miles N. E. ½ N. from the Longships; they are two high, small, round rocks, the largest of which is called Bresan Island, and lies about three quarters of a mile from Cape Cornwall. As the coast, within this island, is foul and rocky, none should attempt to go betwixt them, unless they are well acquainted.

THE LAND's-END, when first seen at a distance, appears in two round hummocs, on the highest of which is a spire-steeple: upon nearer approach, on the outermost point, which is low, another spire will appear. By these marks the Land's-End is easily known. It may be seen in clear weather, 8 or 9 leagues off.

About a mile to the northward of the Land's-End, in Whitesand-bay, you may ride in from 19 to 25 fathoms. This bay is well sheltered from north-east, easterly, and south-east winds; but the danger arising from westerly winds, makes it but little frequented. *Cape Cornwall* lies N. N. E. ¼ E. about 3½ miles from the Land's-End.

THE TIDES. The tide of flood on the west coasts of England, may be considered as beginning at the Land's-End, near the Longships, where the stream divides, one part setting to the northward, and the other to the southward; and it flows, on the change and full days of the moon, nearly E. N. E. and W. S. W. or 4 hours 25 minutes. It sets nine hours to the northward, and only three to the southward. At the Rundelstone and the Wolf rocks, it flows four hours and three quarters. Without the Wolf rock, in the offing, the

the tide runs to the eastward, until it is half-ebb by the shore; and when it is half-ebb in Mount's bay, the stream at the Land's-End begins to run to the northward. At first it runs N. W. and continues to alter, until it comes to the N. E.; it is then high water by the shore. During the flood, the stream, at the Land's-End, sets from the southward nearly 9 hours; and in most places it continues to run about 8 hours. Betwixt the Land's-End and Scilly, the ebb-tide runs only between 3 and 4 hours; this, if not attended to, may prove dangerous. Southward of the Wolk rock, the flood, during the first three hours, sets south-east. When it is half-ebb by the shore, in Mount's bay, the ebb-tide at the Wolf rock begins to set to the W. S. W. and continues to run for 6 hours, or until it is half-flood by the shore. South-west winds and stormy weather generally raise the tides to the height of 30 feet; common spring-tides only about 20 feet; and neap-tides rise only 10 or 13 feet. Northerly winds sometimes keep the tide back an hour or more; and south-west winds make it flow an hour longer: it is therefore highly necessary that proper allowance be made for such winds, especially at their beginning, and when they blow strong.

DIRECTIONS for sailing into the SCILLY-ISLANDS, with an Account of the Tides, &c.

IN coming from the southward, you will descry Scilly, in clear weather, 6 or 7 leagues off, and have 60 fathoms, grey sand with broken shells; it may be seen also on the south side in 55 fathoms water, stony ground, with some red shells. But, coming from the north, at 7 leagues distance, you will have sand and ooze mixed together.

The Island of St. Mary is nearly W. ½ N. 24 miles from the Land's-End, and W. N. W. 6 leagues from the Wolf rock.

The Seven Stones, dangerous rocks, over which the sea breaks, lie 5½ leagues N. W. by W. from the Land's-End. They extend near 2 miles N. W. and S. E. and are about a mile broad. The breakers, in clear weather, may be seen 3 or 4 leagues off. On the east and west side of these rocks are 52 fathoms; on the north from 30 to 40 fathoms; and on the south side 50 fathoms.

Tide. Between the Land's-End and the Seven Stones, and between the Seven Stones and Scilly, the tide runs 9 hours to the northward, and but 3 hours to the southward.

There are four principal Channels or Sounds to go into Scilly, viz. St. Mary's sound, Crow sound, Smith's sound, and Broad sound, which are divided into N. W. and S. W. channels. There are, besides Old and New Grimsby, St. Helen's gap, Tean sound, &c. These islands are surrounded by a vast number of dangers, to avoid which, the utmost care is required.

A Lighthouse is erected on St. Agnes' Island, in which are exhibited a number of Argand lamps, fixed in a ring, moving in a circular revolution; and a bright and conspicuous light, in every direction, once in a minute.

ST. MARY'S SOUND AND ROAD.—St. Mary's sound, which lies in W. N. W. between St. Mary's and St. Agnes' Islands, is the safest channel, and St. Mary's road is the best road in these islands. To go into this road, coming from the eastward, you must run into the southward of St. Mary's island, steering for Penninis point, (the south point,) until you are within half a mile of it or less, but approach no nearer than five fathoms, and keep the lead going: then steer for the Woolpack, keeping nearer to St. Mary's shore, in 5 or 6 fathoms, to avoid the Spanish ledge, which lies about mid-channel, and has no more than 6 feet on it at low water. The Woolpack shews itself before low water, and lies off that battery, over which stands a large white rock. When a-breast of the Woolpack, to which you must give a berth of two cables' length, stand right for the Steval rock, which is bold-to, and has 7 fathoms close to it, keeping the starboard shore pretty close on-board, to avoid Bartholomew ledge; this is nearly dry at low water, and lies S. S. W. about half a mile from the Steval. Observe that Spanish and Bartholomew ledges must be always left on the larboard side. When a-breast of the Steval, steer away N. by W. At near half a mile, you will meet Broad sound, and open the Little-Crow rock with Bantscarron point; then

then stand over N. N. E. or N. E. by N. for the road, till you bring the Nut rock N. W. or N. W. by W. of you, about 2 or 3 cables' length distance; or, bring the castle S. S. E. and anchor; you will have clean holding ground in 5 or 6 fathoms at low water, and ride well sheltered from all winds but those from the S. W. which bring in a great sea.

Some ships coming in from St. Mary's sound, without a pilot, used to observe, to deep one-third of the vanes of the mill in the garrison above land; as a mark to go clear of the Spanish and Bartholomew ledges, as well as the Woolpack: but the vanes of this mill have been blown down long ago: notwithstanding, the two houses or mills, much resembling dove-houses, are yet remaining. *It is farther to be observed*, that there is a wind-mill built on Penninis point, which is no mark for the sound.

CROW SOUND *lies at the north end of St. Mary's*; and, close by it, is a bar-channel, having no more than 4 feet on the bar at low water. Be careful of attempting an entrance too far to the northward; as a long rocky flat extends from the island of St. Martin's. The tide here sets out S. E. at three quarters flood, and continues till three quarters ebb, it then runs back N. W. from the entrance of the sound to the bar, where you will meet with the tide, which sets into St. Mary's road W. S. W. To enter into St. Mary's by Crow sound, steer in about N. W. ½ W. keeping nearly mid-way between Little Ganinick and St. Mary's island, until you bring the Nut rock, which is round, on with the south part of Sampson, bearing about W. by N. which mark will carry you close by the Crow rock, leaving it on your starboard side. This rock is above water at half-tide, and between it and the shore, are no more than 6 or 7 feet at low water. When you are a little past the Crow rock, steer over to the southward, to avoid running upon the Pots. Let Nut rock bear N. W. about two cables' length from you, and then you may anchor in clean good holding ground, where you will have 5 or 6 fathoms at low water, spring-tides.

On the east side of Crow bar, vessels may anchor with northerly, N. E. and southerly winds, in 4 or 5 fathoms: but this place is dangerous with easterly and S. E. winds. The ground is clear and good. The mark is, Nut rock nearly W. by N. a little open to the southward of Great Crow island.

N. B. This channel is dangerous, as well as

SMITH's SOUND, which lies on the west part of St. Agnes; it is very narrow, and does not shew itself, but it is good, and has deep water. Coming from the southward, leave St. Agnes on the starboard side, and all the western scragged rocks and islands on the larboard, keeping the Castle Bryer (a high round rock to the westward of Bryer) on with the Great Smith, another rock to the north-west of St. Agnes; run in on that mark till near the Great Smith, then steer over towards Annet island, and give it a berth on the larboard side; afterwards steer away for St. Mary's road. The tide sets out S. E. at 4 hours flood, and continues till 2 hours ebb, running pretty nigh the same all through the western necks and rocks, as far as the Bishop; but, to the northward of that, you will meet with the harbour-tide in.

BROAD SOUND. This sound is dangerous to those who are unacquainted with the setting of the tides. There are two passages leading into it, viz. the S. W. and N. W. channels. *To go through the S. W. channel*, which is the best of the two, sail in between the Bishop and the Crim, the two westernmost rocks of Scilly, which are mostly above water, about one mile and a half asunder, and about N. and S. from each other; then steer in about E. ¼ N. leaving the Gunner on the larboard hand, and keeping the Little Granhilly (the nearest big rock to the S. E. of St. Martin's) on with Bantscarran, or the north part of St. Mary's, which mark will run you on till you are nearly a-breast of Annet head; then steer more northerly, and open Little Granhilly a sail's breadth clear of Bantscarran point, (by which you will avoid the Wreck, a ledge of rocks which lie about N. N. W. a little more than half a mile from Annet island, with only twelve feet on them at low water;) and this mark will carry you into St. Mary's road.

But, should you fall in with the *Bishop and Clerks* at low you will find that for about half an hour, and no more, the

N. W.; and, if you stand to the northward, that the tide trims round till you leave all the islands on your starboard side; then you will have, about a mile from shore, a true tide, setting E. N. E. as on the other side of the islands away to the eastward. At the Bishop, at this half-hour's flood, you will have an east stream all the way to St. Mary's road, and also as far as St. Martin's head; but then mind not to go too far to the southward near the rocks; for, as the tide flows, it parts, turning away to the southward; and, if you run too far to the northward, it does the same.

To sail into the N. W. Channel of Broad Sound, keep the lighthouse on St. Agnes a sail's breadth open to the westward of the Great Smith; run in on that mark till you are within a mile of the rock, and then steer for St. Mary's road.

The Nun Deeps are a ledge of rocks which shew themselves just at low water, and lie from the Crim N. E. by N. about 1 mile and a ½. Should you fall into the northward of the Crim, they are exceedingly dangerous, unless you are well acquainted with the N. W. channel; but this channel ought never to be attempted without having a good pilot on board.

NEW GRIMSBY. New Grinzey, or New Grimsby, is an excellent harbour, but small and narrow. The entrance from the northward, is between the islands of Tresco and Bryer. There are two rocks, called the Kettle and Kettle-bottom, just off the point of Tresco, which shew themselves always above water: sail in by them, keeping the starboard head-land close on board. You may anchor opposite the round peeked island, called Hangman's island, within the harbour, close over to the Bryer, in 5 fathoms. It is very narrow here, and you ought to moor; or, farther in, you may lie aground at low water.

In this harbour the tide runs as follow:—From the northward, at low water, it sets in an hour and a half, then sets out N. W. three hours, turns and sets in four hours and a half, till it is half-ebb; and then turns and runs out the other three hours, till low water. But, [illegible] Sampson and Bryer islands, the tide sets in 6 hours from the westward, from low water till 2 hours ebb, and then runs over to the westward till low water.

OLD GRIMSBY, &c. Old Grimsby, St. Helen's gap, and Tean-sound, are tolerably good anchorages, pretty safe, but narrow and intricate, and not to be used by a stranger without a pilot. Old Grimsby and St. Helen's pool are both good places for small coasting vessels, or such as will lie aground; there are 12 or 18 feet in Old Grimsby, at low water, spring-tides. The entrance from the northward is deep; and, when your ships are in, you are all land-locked, and may go to sea with all winds. In these sounds, the tide runs alike; at low water it sets in from the northward, running away S. E. 9 hours, until it is half-ebb by the shore; then it turns back for the other three hours, till low water.

ST. MARTIN'S HEAD. St. Martin's head is the westernmost point of the islands, on which there is a land-mark, in the form of a steeple, 40 feet high. Between this island and those to the eastward of it, there is a sound, through which small vessels may come in; but few enter that way, being unacquainted with the marks and setting of the tides, which are as follow:

The Tide that comes in from Broad Sound, sets east through St. Mary's road, for the east end of St. Martin's island, where it meets the tide at 4 hours flood, coming round St. Martin's head, which makes the Race of Hingeg or Minjack; this prevailing, sets away southward as far as Menawethen island; where, meeting Crow sound tide, which sets out S. E. it makes a great race at spring-tides, and both go off to the southward together.

It is high water at all the Islands of Scilly, on the full and change, at 40 minutes past four, that is E. N. E. and W. S. W.; and it rises at ordinary tides 18 or 20 feet. With moderate weather, in and about the islands, it flows E. N. E.; and, at neap-tides, with a northerly wind, N. E. But when it blows hard, or has done so, and the wind is out to the southward, it flows about an hour longer, while a northerly wind puts it as much back.

The POOL BANK, &c. lies 5 miles south-westward from Gorreggan,

gan, (one of the small southernmost islands,) and has 15 fathoms water over it. Its mark is, St. Agnes' lighthouse on with the N. W. point of Millegan, through the middle of the Gorreggan.

In the stream of Scilly, 10 leagues to the windward, there is a small bank, on which are 30, 35, and 40 fathoms.

Another bank lies 20 or 22 leagues W. by N. and W. N. W. from Scilly. On this there are 50, 51, and 53 fathoms; and, between it and Scilly, 60 fathoms.

Farther Observations on the flowing and setting of the TIDES, in general, among the Islands of Scilly.

The tides, about two leagues to the southward of Scilly, set straight, and run for equal spaces of time; the flood sets E. for 6 hours, and the ebb sets W. during the other 6 hours; but nearer to and among the islands and rocks, they are subject to a variety of inflections and inequalities. The flood, in Broad Sound, sets east through St. Mary's harbour, and thence S. E. by E. through Crow sound. Another branch of the tide goes east from St. Mary's harbour, between the rock Hinjack and St. Martin's island. This branch, after running about 4 hours, is joined by the tide from the northward, which junction makes what is called the Race of Hinjack. The tide from the north, as before observed, prevailing over the other, carries it away S. W. by S. as far as Menawethen island; where, meeting with Crow-sound tide, they set S. S. E. a little way, and then more easterly, until they join the east tide, which runs at the distance of two leagues to the southward of the islands.

Between the islands Bryer and Sampson, the tide sets 8 hours to the eastward; that is, during the whole of the flood, and the first two hours of the ebb; it then turns and runs to the westward until low water.

DIRECTIONS for the COAST, &c. from the LAND'S-END to BRISTOL, Part of the Coast of WALES, and the Southern Coast of IRELAND.

THE promontory, called the Land's-End of England, is the west part of the hundred of Penwith, in the county of Cornwall; it is in breadth about 7 miles, and upon it are three points: the southernmost is called, in the Cornish language, *Tol-Pedan-Penwith*, or the great hole in the head of Penwith: for there is a great cavern in the cliff, in which the sea falling, makes a great roaring. N. N. W. a league from this, is another point, called the *Land's-End*; west from which, about a league, lie the rocks called the *Longships*. These rocks lie N. W. by N. and S. E. by S. about 2 miles in length, always above water on a spring-tide. You may go very well between them. *See a description of them in page 47.*

To the north of the Land's-End is a sandy bay, called *Whitesand bay*, where you may anchor in 12, 10, 8, 7, and 6 fathoms, in good ground. You may come in or go out to sea, to the northward of the Longships, without danger.

The third point is called *Cape Cornwall;* it bears from the Land's-End, nearly N. by E. about 5 miles. Three quarters of a mile from this Cape, and $2\frac{3}{4}$ miles N. E. by N. from the Longships, lie the Brazans, or Brezam Rocks, heretofore described, which are two small rocks, the northernmost part higher than the other. Between these and Cape Cornwall lies another rock that is always above water.

From Cape Cornwall to St. Ives, the coast lies N. E. $\frac{1}{2}$ E. and E. four

four leagues. St. Ives lies upon the west point of a great bay, which is about 3 miles broad. At the east point of the bay is a little island, called Godrevy, and from it extends a great ledge of rocks 2 miles to the north-west, many of which, at half-ebb, are above water; therefore, in sailing from Cape Cornwall to St. Ives, keep along the shore, and sail in due W. In going up this channel, you must keep a good offing, these rocks being very dangerous; for, betwixt Godrevy island, at the east point of the bay, and the rocks, the ground is in many places rocky and foul; but, in St. Ives bay, there is, on both sides, good sandy ground, where you may anchor, and approach as near the shore as you please.

St. IVES. At the west entrance of its bay, is the town of St. Ives, at the north point is the head with a pier, where small ships and barks lie aground, secured from all winds; but great ships anchor without in 6 or 7 fathoms. At the bottom of the bay you will see an opening between two sandy points; on the west point stands a church, called Levart church; you may run betwixt them at high water, where there is 10 or 12 feet; the westernmost side is the deepest. As soon as you are in, you will see a deep bay or creek; steer due E. into that creek; you may secure your ship upon a smooth flat sand from a northerly wind, which makes a grown sea in the bay.

From St. Ives to Hartland Point the course is N. E. by E. $\frac{3}{4}$ E. 20 leagues.

From St. Ives to Trenargon Point is N. E. by E. $\frac{3}{4}$ E. 25 miles; the point is 3 or 4 miles to the westward of Padstow, and may be well known by four high rocks, which are called the *Cow and Calf*; or, by some, the South rocks. These four rocks lie about a mile and a half directly W. from this point, in a quadrangular form; there is another rock lies nearer the shore to the S. E. from these. All the shore, from St. Ives to this place, is full of bays and high cliffs, and in many places there are sand-hills as in the shore on the east of St. Ives' bay, for some miles to the eastward of the great highland, called, in the Cornish dialect, Keon-barianack, or St. Agnes' Ball; off which lie two rocks, called the Master and Man. Two leagues N. N. E. from these rocks, is a point with another rocky island, which point is called Ketsey-point, and the island Gull-rock. Here you will see four points; the westernmost called as before mentioned; the second, *Pentire-point*; the third, *Pentire-vean*, or *Little Pentire-point*; and the easternmost, *Towan-point*. Betwixt the two Pentire-points is a bay, or haven, called the *Gunnel*, fit only for small ships, which go in at high water, and lie safe aground upon the sand. To the east of Towan-point is a bay, which takes its name from this point, in which a ship may ride safely in 10, 12, or 8 fathoms, free from a S. or E. wind. About three leagues N. by E. northerly from Towan-point, is the rock called the Cow and Calf, mentioned before, lying off to the westward of Trevose-head, to the eastward of which is a bay, where ships may ride in 7 or 8 fathoms water.

All along the coast from Godrevy island, which is upon the east point of St. Ives' bay, the coast is bold, and there is no danger but what shews itself.

From Trevose-head, 4 miles eastward, is the harbour of Padstow: in the way lies a high rock, called the Gull rock, and beyond it, off the harbour's mouth, another, called the Newland, or Black-rock.

From the west part of Trevose-head, the *Gull rock* bears E. by N. $\frac{1}{2}$ N. $2\frac{1}{2}$ miles distant; and, from Stepper-point, the west point of Padstow harbour, N. W. by W. nearly the same distance. Within it, and nearly mid-way between it and the shore, is a sunken rock, called the Gulley, having but 6 feet on it at low ebbs.

The *Newland* bears N. E. by N. $\frac{1}{2}$ N. 2 miles and a quarter from Stepper-point, and N. W. by N. one mile from Pentire-point, on the east side of the bay. It has within it, to the E. S. E. a sunken rock of only 2 feet, at one-third of the distance between it and the land.

PADSTOW. In gales at N. W. and N. N. W. Padstow harbour affords a good shelter. The entrance is a mile wide, but a bar, called the *Dunbar*, which dries with the last quarter of the ebb, stretches from the eastern side more than three-fourths over, leaving a passage of only 70 fathoms in breadth, close to the western side, which is bold and steep-to. Pilots are generally waiting under the Point.

The

The harbour may be used at all times of the tide, with the wind free, from N. by W. to E. S. E.—Large ships had better, however, wait until near half-flood.

When going in, keep towards Stepper-point, the western point, where you will find 3 and 4 fathoms at low water. At a mile within, on that side, there is a cove, called Harbour-cove, where you may lie safe from all winds, on soft mud, or afloat, at low water, as most convenient. The haven is a mile higher on the same side. It is dry at low water, but good soft oazy ground. Spring-tides rise from 22 to 24 feet; ebbs from 12 to 14 feet. In coming in from the westward, Trevose-head will appear like an island. You may go close to the Gull rock in proceeding for the harbour.

The best time to enter, with rough weather, is from half-flood to high water. With a scant wind, between N. N. W. and W. N. W. keep good after-sail; as, at such times, there are flows from the high land on the west, which may take you aback. In this case, drop an anchor; and, if requisite, send a rope on shore, to be fastened to the mooring-rings.

In going out of Padstow Harbour, you may, without danger, sail betwixt the Newland and the east point, called Pentire, to the east of which lies another island and rock, called the Mold. You may sail between it and the shore, if there be occasion, and come to an anchor in the bay. At the easternmost point of this bay is a fishing-cove, called *Port Queen*, where you may have a pilot to carry you into Padstow.

Port Isaac. Five miles to the eastward of Pentire-point, and 2 miles from Port Queen, is the haven of Port Isaac. Here a vessel of 200 tons may go in at high water, and run on shore upon the sand out of the rage of the sea. It is a fishing town, to which belong several vessels that trade to Bristol, Wales, and Ireland.

Hartland Point lies 9½ leagues N. E. ¼ E. from Port Isaac, and E. N. E. 24 leagues from Cape Cornwall.

BRISTOL CHANNEL. About 14 miles N. ¼ W. from Hartland-point, N. E. by E. 25 leagues from Cape Cornwall, N. W. by W. ½ W. 20 miles from Mort-point, and in the entrance of Bristol Channel, lies *Lundy Island*. This island is high, and extends N. N. E. and S. S. W. about 2 miles. On the east side is but indifferent anchoring in 6 or 7 fathoms; and it is the more unsafe, as the tide, during the last quarter flood, runs upon all points of the compass. Ships should not therefore lie here at single anchor. Should they happen to fall to the southward of this island, they must also be very careful to avoid getting into Barnstaple bay, especially with northerly winds.

Barnstaple. Eleven miles E. by S. from Hartland-point, and 6½ leagues S. E. from the south end of the isle of Lundy, lies Bideford-sound, or the bay of Barnstaple, which is a bar-harbour, but with water enough for a ship of 300 tons at half-tide. To this harbour belongs a great number of ships, trading to most parts of Europe and America. There is good anchoring without the bar; and, when within, a very good road off the the town of Appledore, which is situated a little within on the starboard side. Here the harbour divides itself into two branches; the easternmost goes up to Barnstaple, the other to Bideford. A ship of 300 tons, or more, may lie at the quay. The tide rises 23 feet upon the springs.

The west side of this bay is free from rocks, and the ground is good. On the east side is a rocky shoal, called the Crumbles, almost dry at low water. The marks for the bar, when sailing for the harbour, are, a summer-house and Westrecot trees beginning to shut in with the land. The summer-house is near the water-side, to the westward of Northam church; and the latter near the shore, a little to the southward of a rock called *Smith's Rock*. Then look out for a field in form of a shoulder of mutton, and bring it just on with, or a little open of, Hairy-point, on the north side. This field is just above a small wood, and exactly under the lowest dent, or saddle, of the inner land. Run in, with this mark on, until a house, now Mr. Cleveland's, comes on with the easternmost house in Appledore; steer with this mark on, until you bring a summer-house, southward of Appledore, in one with another between the former and the same place. Keep these marks on until Instow church comes on with the middle of a large field just above that church; and steer with the last mark on, until Instow-quay and the mill appear on with each other. Then anchor in the Pool,

well over towards *Shill's Hook-sand*, with the best bower, and lay the small bower to the southward.

From Barnstaple to the Bar, or Bag-point, is N. easterly, 4 miles, and thence to Mort-point, (the south-westernmost point of Bristol channel,) is N. E. by E. 4 miles; from Mort-point to *Ilford-comb*, the course is E. northerly, about 4 miles. In the haven of Ilfordcomb there are, at low water, 3 or 4 fathoms. Before the haven, is also a good road, with 8 or 9 fathoms at half-flood, and on its western side is a lighthouse.

To sail into Bristol Channel in foggy Weather, or in the Night, keep along the English coast, from Lundy to Hurstone-point, in 12 or 14 fathoms. Between Hurstone-point and Flat-holm are from 15 to 11 fathoms.

When running up in the night, you will perceive a light on the larboard side. This light emanates from a lighthouse on Mumble-point, which is furnished with Argand lamps and reflectors, and intended as a guide for avoiding the shoal-grounds on the north side of the channel.

Tide. Be particularly careful to allow for the operation of the tide, as the flood sets with great velocity from the Ness-point to the eastward of Minehead, into Bridgewater-bay, directly over a large flat which lies between that bay and Steep-holm, called the Culver-sand.

Minehead. About 7 leagues E. S. E. ¼ E. and S. E. by E. ¼ E. from Ilfordcomb, is the pier of Minehead, where small vessels lie aground: it is a small fishing town, where you may have a pilot to carry you to Bristol.

The Holms. About 12 leagues E. ½ S. from Ilfordcomb lie two little islands, about 3 miles N. N. E. and S. S. W. one from the other, called the Holms; the northernmost is called the Flat-holm, which is low, with a lighthouse upon it; the southernmost, the Steep-holm, which is a high round island.

In the Fair-way, between Ilfordcomb on the English, and Worm's-head on the Welsh coast, you will have 6 fathoms; thence up the channel to the Holms, there are 21, 18, 15, and 12 fathoms water; the nearer the Holms, the more shoal is the water. When you advance upwards from the westward, within Lundy island, you may see the land on both sides of the Channel.

The Coast from Hartland Point to the Holms, is altogether clean: but the coast of Wales is almost as foul and shoaly from the island Caldy to Bristol, having many banks, sands, and reefs, lying off it.

The Flat-Holm and Lundy Island bear from each other, E. by S. and W. by N. about 19½ leagues. Upon the Holm a light is kept in the night.

GENERAL DIRECTIONS FROM LUNDY ISLAND TO BRISTOL. The island of Lundy has a free and large passage on either side of it; that betwixt the island and the English shore being bold, and without any danger; but the other, towards the Welsh shore, is more difficult; as this coast is full of sands, so keep not above three leagues, at most, to the north of Lundy island, and pass between the two islands called the Holms, according to the following directions:—

To sail through between the Holms. To sail through between the Holms, you must keep nearest to the Flat-holm, where it is deepest; with a large wind you may sail so near it, without danger, as to throw a stone on shore. Within, or to the eastward of the Holms, from the east land, lies a great shoal, with a long tail shooting towards the W. called the *English Grounds*, which, when coming from the westward, you must be careful to avoid. Therefore, keep the Flat-holm, when you are past it, W. S. W. or W. by S. from you, and continue that course till you have sailed about a league, and then bear away E. and E. by S. towards Portshut point, in 14 or 15 fathoms water, and look out for a little island, which lies near the east shore, that will then be almost athwart of you. The English Grounds are flat, so that you may sail along by them, with your lead in 3 or 4 fathoms, as near as you will.

When you are passed Flat-Holm Island, steer to the northward until it bears W. by S. or bring the high land of Minehead on with the middle part of Flat-holm, which will carry you to the northward of the English Grounds, on which are but 9 feet at low water, but merchant ships may go over them at half-flood.

The

The Tide rises here 7 or 8 fathoms at full and change, so that you may then run boldly towards the English shore, and as close along by it as you please towards Portshead or Portshut-point.

From the Flat-holm to Portshut-point, in the fair-way, you will have 15, 12, 10, and 8, fathoms. You must be careful not to go too near the Welsh shore, because it is very uneven, and full of banks that are steep, and in many places dry at low water. You must not, therefore, approach nearer that coast than in 12 fathoms; for, in sailing towards it, you shall have at one cast 10 fathoms; and, before you can recover the next, be aground. It is so all along from the Flat-holm until you come to Bristol.

In King-Road, which is between Portshut-point and the river of Bristol, is good anchorage in clay ground, and from 8 or 9 to 3 fathoms, particularly in 6 or 7 fathoms, and as near the river as is convenient, when brought in by pilots.

You may thence also sail along by the coast up the *River Severn*, which is also, like the Avon, or Bristol, river, a fair river to sail into. Those who go farther, either to Bristol or up the Severn, must take a pilot at King-road. It is, however, more usual to take a pilot at Flat-holm.

IN SAILING FOR BRISTOL CHANNEL FROM THE NORTHWARD, leave the Small's Lighthouse on the larboard side, and steer S. E. by S. or S. E until Caldy-island in Carmarthen-bay be open of St. Gowan's-point, in order to avoid the *Crow-rocks*. Care must also be taken to avoid the the *Helwick*, the *Scarweather*, and *Nash, sands*; and the sunken rocks, called the *Wolves*, near Flat-holm. These dangers are described in the succeeding directions for the coast of Wales.

DIRECTIONS TO SAIL FROM KING-ROAD TO LUNDY. To sail from King-road to Lundy, you must steer away from Port-shut-point W. N. W. and W. by N. until the Flat-holm bears W. S. W.; then steer directly for the Flat-holm, and keep very close along to the southward of it; when you are past, steer W. by N. and W. to the island of Lundy.

About 3 miles W. by N. from Flat-holm Island, is a sand bank of one fathom at low water. The mark to keep clear of it is, Portshead, or Portshut-point, open to the southward of Flat-holm, to which you may nearly approach.

Cardiff. About 3 leagues to the northward of the Flat-holm lies the town of Cardiff, in Wales, which has a tide-haven; and before it is a good road, where you may lie land-locked from almost all winds. To the eastward and northward of it lie many banks and sands which are dry at low water, so that they secure you from the N. E. to the S. E. To sail into this road, coming from the west, you must run in between the Flat-holm and the point of Cardiff, which lies to the southward of the haven; and, being come about the point, then steer to the northward, up along by the shore, into the road. About a mile N. W. from the Flat-holm, lie some sunken rocks, called the *Wolves*, of which you must be careful.

A little off the Point of Cardiff, to the westward of it, lie two little islands; the easternmost, or that next the point, is called *Scilly*; the westernmost *Barry*: betwixt Scilly and the Flat-holm lie the aforesaid rocks, called the Wolves, S. E. and S. E. by S. from the point. If you pass through Cardiff-road at high water, you may sail over all those sands which are covered at half-flood.

About 4½ leagues W. N. W. from Cardiff-point lies *Nash-point*; to the westward of which the land falls away, first about N. by W. ¼ W. to *Neath*, afterwards W. and S. W. and S. S. E. and makes a great bay between Nash and Oxwich-points, where there are very good roads for West, N. N. E. and E. winds. From the Nash-point, within the Nash-sand, is a good channel, of five or six fathoms water. The shore stretches N. by W. ½ W. Be careful, however, to avoid the rocks of Tuskar, which lie midway in the channel, S. S. W. of Newtown. Here you may ride in smooth water, when the wind is between the N. and E.

The Nash-sand is a great bank, which stretches from within three quarters of a mile S. W. by S. from Nash-point, 5 or 6 miles N. W. About two miles and a half N. N. W. from the W. end of this sand, and S. W. by W. one league from Scar-point, lies the E. end of the *Scarweather-sand*, the W. end of which is about 3 leagues S. E. by E. from Oxwich-point. The Scarweather is 6 miles long, and partly dry at

at low water. Between it and the shore are from 5 to 8 fathoms. Between the Nash and Scarweather is a channel of 6 fathoms. With Scar-point N. N. E. this channel is fairly open. Barry island kept open will carry you to the southward of these sands.

From the Nash-point to Neath is 6 leagues, and thence to *Swansea*, (which, as well as Neath, is a haven for small vessels), the course is W. by N. 3 or 4 miles. From Swansea (which is a pier-harbour) to Mumble-point is a league and a half S. W. by W.—Between is a deep bay, where you may ride safe from a west and northerly wind in 3, 4, or 5, fathoms.

About the year 1797 the western pier of Swansea, extending 228 yards into the sea, was completed; which had the effect of confining the current of the River Tave, and deepening the mouth of the harbour 2 feet. This pier has since been extended 57 yards farther out; and, in 1804, a jetty thereto was completed. In 1805 a new pier was begun on the eastern side of the harbour, which is to be continued and brought round westwardly, within 70 yards of the other pier, for effectually securing and scouring the mouth of the harbour. Dry and wet docks are also intended; and, by embanking the river, a most spacious quay is to be formed. The harbour formerly was entirely dry at low water.

On the *Mumble-point* is a lighthouse, with Argand lamps and reflectors, on the best principle, which has been found of the greatest utility to shipping. From the point a small ridge of rocks runs out, which must be cautiously avoided. Five miles S. S. E. from Mumble-point is the west end of the Scarweather: between is deep water.

Four miles W. S. W. from Wormshead, and 7 leagues S. E. ½ S. from *St. Gowen's Head*, lies the west end of the very steep sand called the *Helwick*: it extends thence about 2 leagues E. ½ S. The east end is about a mile from Porthaynon-point. On the middle of it are less than 6 feet, but on each end 2 fathoms; between it and the shore the depth is from 7 to 10 fathoms. To go clear of it, keep Bury-holm's island open a ship's length westward of Wormshead, until Oxwich-point is open to the eastward.

In coming from the Eastward, if you would ride in the bay between Nash-point and Wormshead, you may run along shore between Nash-point and the Nash-sand. *When you come from the westward*, and are bound in there, fall in close along between the points of Wormshead and the Helwick, the channel between being nearly a mile broad. Those that come from seaward may sail between the aforesaid banks, or sands, for it is there wide and deep: but it is to be observed, that off Porthaynon-point the ground is foul.

Wormshead is a point lying far out, in two islets, appearing at a great distance almost like Old-head, near Kinsale; it goes sloping towards the North, and has in many places chalky-spots, whereby it is very easily known.

Burry Harbour. The harbour of Burry, to the northward of Wormshead, is a good harbour, having about 6 feet on the bar at low water, and from 3 to 5 fathoms within it; but it is very open to N. W. winds, and the banks are frequently shifting, especially the Hooper-sand, which extends without from the north side, and renders the passage within very narrow. It flows here on the full and change at half past six, and rises about 24 feet. In Rosesilly bay, to the southward, between the harbour and Wormshead, there are great eddies and counter-tides, which make the place very dangerous in rough water.

Carmarthen Bay. About 5 leagues to the northward and westward of Wormshead lies the little island Caldy, whereon stands a white tower (appearing from sea like a white sail), which was built there to distinguish the land by. Betwixt Caldy island and the point of Wormshead, the land falls away with a great bay to the northward. Over all this bay is good anchoring-ground: on either side of Caldy island you may also anchor, and have shelter from all winds.

About two miles to the northward of Caldy lies a range of sunken rocks, called the *Wallor*, or *Woolhouse*; more than a mile E. S. E. of which is a sunken rock, called Yowan's-rock.

Another rock called the *Spaniel*, lies about a mile S. E. ½ E. from the S. E. point of Caldy, on which two fathoms is the least water. In blowing weather it has a breaking sea upon it. To clear it, keep within three quarters of a mile of the south end of Caldy, or else above a mile and a half from it.

The

The Drift Rock is another rocky shoal, which lies about 2½ miles S. S. E. ¼ E. from the south end of Caldy; the least water on it is 4 fathoms; but, with fresh winds from the West or S. W. there is a great breaking sea upon it.

Tenby. To sail to the eastward of Caldy island up to Tenby, run close to the east side of the island, leaving the rocks on the starboard side; or else run along to the eastward, and to the northward of the Woolhouse, leaving them on the larboard side: thence steer for Tenby, and anchor there before the town, in 5 or 6 fathoms.

To avoid the Woolhouse-rocks, in sailing for Tenby round the E. end of Caldy island, *run in, until you bring a round building* on the westernmost point of Caldy haven open of the easternmost point of the haven. This mark will lead you westward of the rocks, and between them and the *Catharines* into Tenby road. To sail to the eastward of the Woolhouse, keep the spire over the easternmost land of Caldy in sight until you open the *White-sand*, which lies between the castle and the Catharines; then haul in for Tenby road, and anchor in 3 fathoms at low water. To the eastward and northward of the Wallox rocks is good anchorage, in 6, 7, or 8, fathoms; it is there all clean ground, and farther off shoal-water. You may also sail in to the westward of Caldy island, between the island and the point of the main, to Tenby, where it is narrow, yet clean and deep water.

The Harbour of Carmarthen lies from the island of Caldy E. northerly 8½ leagues, and the channel leading in lies in E. by N. on the east side. On the south side of the entrance is a great bank, which extends to a great distance from shore, the outer side going off flat. To sail in there, you may sound it in along by the east and north shores, until you are over the shoalest part of the bar, where there is, at half flood, about 14 feet water; over the bar there is 4 fathoms; you may run in by your lead along the south shore, until you come within the river.

Three leagues to the westward of the island of Caldy lies *St. Gowen's-point*, the south point of Wales, by some called the White-point.

About a league and a half westward of St. Gowen's-point lies Lenny or Crow-point, by some called St. Patrick; a mile from which is a rock called the Crow. This rock lies exactly in the trade-way, and is covered at about four hours flood. It is encompassed by several sunken rocks. Although but a mile from shore, yet, being upon a head-land, it is very dangerous in thick weather.

Hence N. by W. westerly, about 4 miles, is the entrance of the famous harbour of Milford. In this part it is high water on the full and change, at about six o'clock, and spring-tides rise from 20 to 24 feet.

To fall in with Milford-Haven, keep Lundy island S. ½ E. or, the top of the highest and most remarkable hill to be seen in Pembrokeshire N. E. ¼ E. until you make Lenny-point. When the latter bears N. E. you may stand for the haven.

MILFORD-HAVEN is the most capacious and best harbour in Britain. You have here no occasion for a pilot, either by day or night (taking the tide), even with contrary winds. The height of the land here is about the height of that near Plymouth. On the west point, at the entrance, called St. Anne's Point, stand two lighthouses, hereafter described. This point is N. E. ½ N. 33 leagues from Cape Cornwall; N. ½ W. 16½ leagues from Hartland point; and N. ½ W. 12 leagues from Lundy island. The entrance is deep, and near 1½ mile wide. Two little islands are near the shore on the east side: the first, or Sheep island, lies about two miles E. S. E. southerly from St. Anne's-point; and the second, or Rat island, is a little to the northward of Sheep island.

The only Dangers in the Entrance are, a sunken rock about three quarters of a mile W. N. W. from Rat island, which has 17 feet on it at low water, spring-tides; and a sunken rock, round which are 5 and 7 fathoms, about ½ a mile W. by S. from Nangle-point, the inner eastern point of the entrance.

The course in to abreast of Nangle-point, is about N. E. by E. Near this point is a little island, called Thorn island, which lies about a mile N. E. of Rat island; and about a mile E. by N. from Thorn island is another large rock called the Stack, which is always above water, and steep on all sides. The channel to the southward of the Stack is mostly used. The Stack and Thorn in one is the mark for the inner sunken rock above-mentioned.

After you are in, on the larboard, to the N. of Dale castle, is the road

road called *Dale-road*, a ready outlet, where you may lie land-locked from all but easterly winds in 3 fathoms at low water, good ground. In sailing in, be cautious to avoid a bay on the larboard side, sometimes mistaken for the Road, as it is dangerous.

The Channel to the southward of the Stack is mostly used; between which and the south shore is an excellent anchorage of 9 to 13 fathoms. About 1¼ mile S. S. E. from Stack island is *Nangle bay*, where the ground is good and clear, and where ships may safely run aground on soft oaze. Observe that, the deepest water is in mid-channel, and it shoalens towards the shores.

The usual and most convenient Anchorage here is Hubberstone-road, or Nangle-road. To sail for it, keep in mid-channel, until Hubberstone town, on the north side, bears N. by E.; then anchor in 10 or 11 fathoms.

Nangle-oaze, or Slutch, on the south side, is all covered over at about half flood. About the middle of it there are some irregular stones called the Oyster-rocks, about 4 feet high, which, as they do not appear at low water neap-tides, make the place very dangerous to vessels running in there when the wind blows hard in the road.

You will avoid *shoal-water*, and a sand-bank on the north side, with a turning wind, by not bringing St. Anne's lighthouses open to the northward of Thorn island. *To avoid the sand bank* on the south side between Nangle bay and Pennermouth, go no nearer than a cable and a half's length of the shore on that side, or no nearer than till the Stack appears on with a remarkable gap in the hills above Dale, to the westward of Dale road, called Dale valley.

In sailing higher up the Haven, you will avoid the above-mentioned bank on the south side, by keeping the Stack on with, or a little southward of the middle of, Dale valley. The Stack on with, or a little northward of, Dale valley, will carry you clear of a ledge which extends a cable's length southward from Ware-point, lying 2 miles above Hubberstone.

About a quarter of a mile north from the Turret or Watch-house, on the fort on the south side, below Nailand, lie the *Car-rocks*, which begin to dry at 4 hours ebb. These rocks form part of a ridge of rocky ground, stretching almost across the haven, from Pater church towards Llanstadwel, which makes the channel narrow and difficult. To avoid them and a shoal which lies to the northward of them, of only 9 feet at low water, keep Ware-point just on with, or a little open to the eastward of, the Bluff-head at Bullwell on the south side. You are abreast of them when the west end of the fort is in a line with the east end of Pater church near the fort.

East, about a quarter of a mile from the Car-rocks, is a *sand-bank*, about a cable and a half long, of 9 feet at low water. As there are no marks to lead along the north side of it, nor of that of the Car-rocks, be sure to have water enough over it.

The best Anchorage near Nailand for large Ships, about 8 miles from St. Anne's-point, is with Ware-point about a sail's breadth open of Nailand-point, Nailand-quay bearing W. N. W. ¼ W. and Barnlake, to the eastward of Nailand, N. ¼ W. muddy ground and 8 fathoms water. Between this anchorage and the shore is some foul ground, which lies about half a cable's length from Barnlake, Nailand-quay bearing W. ¾ S. and a lime-kiln at Barnlake, N. ¾ W.

In the Bay opposite Nailand, about a cable's length from shore, is a *good anchorage*; the Ferry-point bearing E. S. E. ¼ E. and Barnlake N. by W. ¼ W. in about 3 fathoms at low water, and more out of the way of the tide than in any other place.

There is sufficient water for the largest ships to go near 15 miles from St. Anne's-point, good anchorage most part of the way, and to the northward of Lowrenny, which lies about 4½ miles above Nailand. With spring-tides, small vessels go up to Haverfordwest.

The Porgus-bank. The N. E. end of the Porgus-bank, a long narrow bank, lies two leagues S. W. of St. Anne's head, and has over it from 2 to 3 fathoms. It thence extends, gradually deepening, for nearly 3 leagues to the west.

To the N. N. W. of St. Anne's-head lie the islands of Skokam and Skomar, with numerous rocks, &c. which render the navigation thence to St. David's-head very dangerous. Skokam lies from St. Anne's-head N. W. about 4 miles. Skomar lies from Skokam north about 2½ miles: between these islands, and between them and the main, there is plenty

plenty of water; but, as there are several sunken rocks, no one should attempt these channels but such as are well acquainted with the dangers.

St. Anne's Head-lights. The present lighthouses on St. Anne's-head were first lighted in June, 1800. The lights are on the improved principle, with Argand lamps and reflectors.

The low lighthouse, which is situated upon the extremity of the head, is 15 feet high, has its lantern elevated 160 feet above the level of the sea, and exhibits a strong continued light from the island of Skomar to the northward, round to seaward, and up the harbour as far as Hubberstone.

The high lighthouse is 45 feet high; it is elevated 195 feet above the level of the sea, and bears from the low light N. 45° W. by the true meridian, or about N. by W. ¾ W. by compass, and is distant from the low light 203 yards: no light is exhibited *up the harbour* from the lighthouse, but it appears equally as strong as the low light from the island of Skomar to Lenny-point.

When the lights are in one, or the lower light directly under the upper one, this line of direction will lead about one-third of a mile without the Crow-rock, and thereby ships may round Lenny-point in safety, provided the low light be not brought to the westward of the high light; which, in working off that point, must be attended to.

Gresholm. About 6 miles W. N. W. off the island of Skomar lies the little island Gresholm, which is a high steep round rock, and the first land seen in coming towards the haven from the westward. About two leagues W. N. W. from it lie the rocks called the *Smalls*, on which a lighthouse is erected.

The main rock, upon which the lighthouse stands, is about 50 yards long, stretches S. E. and N. W. To the S. E. are four smaller rocks, that appear in a line before low water, extending about 100 yards, and a sunken rock still further, and almost at once from 30 to 40 fathoms.

Between Gresholm and the Smalls lie two ledges of rocks called the *Hats* and *Barrels*, that appear at low water for about a mile. Part of the Barrel is seen at half tide. They bear from the Smalls lighthouse S. E. by E. between 3 and 4 miles. You must, however, be very careful how to sail between in a calm, or in the night, for the tide runs very strong, and there is a great overfall with dreadful whirls to the southward.

Between the Hats and Barrels and Gresholm, near a league from the latter, are some other rocks, called the *Skirtle*, or Kettle Bottom, which dry with some low ebbs, and are very dangerous. In a line between Gresholm and Ramsey, at the distance of a league from the former, is a sunken rock, called the *Pope;* and, to the northward of Gresholm, at the distance of about 3 leagues, lies the southern part of the *Auger Bank*, with a patch of foul ground, called the *Mascus*, which is nearly dry at low ebbs.

The Flood-tide, or southerly stream here, is opposed by the islands and rocks; and, owing to the great pressure of water from the southward, runs from two to three and four hours later than when it is high water on shore, according to the distance from shore and the stream in the channel, which must be particularly observed and allowed for.

The Smalls bear from Cape Cornwall N. N. E. ½ E. distance 33½ leagues.

ST. BRIDE'S BAY. About two leagues north from Skomar, lies the island Ramsey. Between these islands is a great bay, called St. Bride's bay, and, by some, the Broad Bay. Ramsey lies at the north point, and Skomar at the south point, of the bay. There is safe riding from any winds from the N. E. about to the south in 7, 8, and 9, fathoms. Upon the north point of this bay stands the town of St. David.

The Bishop and Clerks are four remarkable rocks to the westward of Ramsey, always above water. In sailing between these rocks and Ramsey island, keep within half a mile of Ramsey, to clear three other rocks that lie about half-way, and dry before low water; and, to sail between Ramsey and the main, keep within a mile and a half of St. David's Head, to clear two other rocks that lie about three quarters of a mile eastward of the Bishop and Clerks, that dry about half

half ebb. In standing towards the Strumble Head, keep three of the Bishop and Clerks in sight without St. David's Head, to avoid several rocks that lie off the shore of Aberpool.

There is a Channel for small Vessels between the island of Ramsey and St. David's Head, of 10 fathoms, but very narrow to the northward, through which runs a great tide.

In Goldtop road, or Little-haven, vessels, drawing 14 or 15 feet water, may ride safely with the wind from W. S. W. to E. anchor E. ½ N. a quarter of a mile from Goldtop-head, in 3 or 4 fathoms, sandy ground. A current on the south side of the bay sets with the ebb to the westward for nine hours, and turns two hours before high water.

Vessels, drawing 10 or 12 feet, may lie safe aground near the quay, in *Solvach-creek*, on the north side of St. Bride's Bay. In the mouth of this creek, vessels may ride in 3 fathoms; but, when it blows between the S. and W. a heavy sea sets in: keep on the east side of Skerlas when going in, to clear a shoal of 6 feet at low water, that lies half a mile to the westward from it.

The Entry of Solvach is two cables' length wide; the highest part of Skerdi and Skerlas rocks in one, will lead you to it: on each side, near the shore, is a small rock always above water; between the rock on the east side, and the shore, it dries at low water. To go in, leave the westernmost rock on the starboard hand, and keep a little nearer the shore than the rock: in the channel are 3 fathoms water: the channel, between the two rocks, is a little nearer to the westernmost, with 2 fathoms water in it.

In Ramsey-sound, a vessel may stop a tide; but, in many places, the ground is foul, and the stream irregular: the best anchorage is a cable's length from the shore, and one-third of a mile N. off the Bitches and Whelps, in 7 fathoms, sandy bottom. In Ramsey-sound the stream runs to the northward, from half-flood to half-ebb; but, near the shore, on each side, the stream sets directly contrary.

The Great and Little Horse-rocks lie N. by E. ½ E. half a mile from Penmanmillan-point: to clear them, keep the west point of Scomar island out by Penmanmillan-point, or keep near mid-channel. The Great-horse dries with spring-tides, but the Little-horse has 2½ fathoms on it, at low water.

The Bass-bank lies N. 3 miles from St. David's Head; on it is an overfall, and a breaking sea in blowing weather; it is about 4 miles in length from W. S. W. to E. N. E. and a quarter of a mile broad; on the south end is 3½ fathoms, and to the northward 5 or 6 fathoms. To sail between the Bass and the Bishop and Clerks, keep St. David's Head S. E.

The Island of Ramsey, on the S. W. point of Wales, and Carnsore-point the S. E. point of Ireland, bear from each other S. E. ½ S. and N. W. ½ N. distant 13 or 14 leagues.

Carrigonan-bay, at the extremity of Strumble-head, is a convenient place to stop a tide in when the wind is to the eastward of N.; anchor a cable's length southward of the island, when the sound is open, in 7 fathoms, as in most other parts the bottom is foul.

CARDIGAN-BAY. In *Fisgard-road*, vessels may ride safe from any winds, except from the N. to the E.; anchor with Cow-rock (which is always above water) N. W. ½ N. distant a quater of a mile, and a white house to the eastward of Fisgard S. S. E. ¼ E. in 3 fathoms water. Vessels of 11 feet water may go up to Fisgard with spring-tides, but, at neap-tides, vessels of 6 or 7 feet only.

In Aberdinas-road, vessels may stop, with westerly winds, on the east side of Dinas-head, in 3 or 4 fathoms, sandy ground.

Newport-harbour lies half a cable's length from the shore, just below the village; there are 13 feet water on the bar with spring-tides, and, at neap-tides, 7 feet. When a vessel is over the bar, she may take the ground on clean sand, and lie sheltered in all weathers. There are no marks for this channel, but it may be distinguished, in general, by the appearance of the water.

Cardigan-harbour. In moderate weather, a ship may stop almost any where in Cardigan-road, in 6 fathoms water. The harbour is only fit for vessels of 9 or 10 feet, and can take the ground easily. The channel is nearest the east side of the bay, and is liable to shift; in it are 14 feet water with spring-tides, and 9 feet at high water, neap-tides.

A leading

A leading mark over the bar is, Penregid-point S. by E. ½ E. and a small hedge, 3 miles off, just open with the point, till you are over the bar and in smooth water; then bring the point a little on the east end of the hedge. When you are a little westward of that point, you may bring to for a pilot.

CARDIGAN-BAY. Along the south coast of Cardigan-bay are several ledges, or rocky flats, which dry every ebb-tide, but none without the Headlands, except the Patches, the east end of which bears from Newkey-head N. E. by E. and from the smelting-house S. W. by W. ½ W.; they extend about 7 miles westward: on the N. W. end is dry at low ebbs, and thence to near the east end keep from 6 to 12 feet water. To clear the west or outer end of the Patches, keep Newkey-head S. W. by S.; or keep Sarnbuh-point on with the north top of Snowdon-hill, bearing N. E. by E.—Snowdon-hill is the most remarkable mountain at the east end of Caernarvonshire.

At the N. E. end of the Patches, is a Swatchway, ¼ of a mile broad, to *Sarvilgan-shoal*, which shoal extends to the main, and has from 4 to 12 feet water on it, till within a mile of the shore, where it dries. To sail through the Swatch, in which are 3 fathoms at low water, keep the custom-house at the west end of Aberistwith, just open with Penguin-Ingan-point, which is at the north side of the castle. The stream of flood sets north and the ebb south on the Patches, and both commence near 2 hours later than the stream along shore.

The little Port of Aberaeron lies 3¾ miles S. E. by E. ¼ E. from New Key-head. Within this line of bearing are several patches of foul ground; and, to the eastward of the port, is a shoal, of from 2 to 6 feet, that stretches a mile from the coast to the W. N. W.—There is also a rocky spot, nearly dry at low water, half a mile to the W. N. W. Two lights in one are the mark for the entrance. It is high water here as well as at Aberistwith and Aberdovey at half past seven, and spring-tides about 18 feet.

Aberistwith-harbour is fit for vessels of 9 or 10 feet water only, and such must wait spring-tides to go over the bar, which lies near the shore, across the entry. A cable's length within the bar is placed a perch; and beyond it, on the land, is a white moveable board; these marks in one will lead over the bar. In the night, when any vessel is seen, care is taken to place two lights, one on the perch and the other on the white board, for a direction over the bay. Aberistwith may be distinguished at some distance by Dinas-hill, which rises remarkably steep at the south end; also by the ruinous castle at the N. W. end of the town.

Aberdovey-harbour is a safe harbour for vessels of 8 or 9 feet water, when you are once in it; such may anchor off the town, half a cable's length from the shore; but, as the bar and channel are liable to shift, it is not advisable to attempt passing over the bar without a pilot. Aberdovy may be distinguished at a distance, by being the first remarkable opening in the land to the southward of Caderidrish-hill.

Sarnbuh-shoal extends about 3 miles westward of Sarnbuh-point; it dries with spring-tides near a mile from the shore; the rest never dries, but has from 2 to 8 feet water over it; to avoid the west end, sailing northward or southward, keep Aberdovy-point S. E.

Barmouth-harbour is only fit for vessels of 9 or 10 feet water, and such must not attempt to go over the bar till high water, spring-tides, nor even then if the sea is very rough. There are two bars to this harbour, but the south bar is by far the best, as the north one is very subject to shift, so that it should not be attempted but by a pilot. For the south bar, wait the last quarter flood, and keep the perch, which is half a mile within the bar, on the beach-point; when over the bar, leave the perch one-third of a cable's length on the larboard hand, and stand between Penrhin-point and the small island near it; sail round the east end of that island for Barmouth, and anchor close under the houses, out of the stream of the tide. Spring-tides flow here at three quarters past seven, and rise 14 feet.

Sarnbadrig-shoal, or *Patrick's Causeway*, a long serpentine shoal, stretches 5 leagues out to sea W. ¾ S. from the point which lies near 6 miles N. by E. of Barmouth. It is rocky; and, towards the outer extremity are sixteen large stones, dry at low water. The eastern part is also dry with spring-tides; but, elsewhere, there is on it from 1 to 3 feet water.—Aberdaron church about N. ½ E. open on the eastern point of Aberdaron-road, will lead clear of its west end in 3 fathoms.

Sarnbadrig

Sarnbadrig is very magnetical; and, at the distance of a cable's length, affects the compass; but, at the distance of two cables' length, it is not sensible.

Trathmaur and Trathback harbours lie within one entry, and are only fit for vessels of 6 or 7 feet water; it is dangerous for strangers to attempt these harbours, as the channels are subject to shift; and, within the bar, lies a shoal of only 2 feet; vessels of 7 feet water should wait till the last quarter of the flood, before they attempt to go in.

Pwllheli-harbour is only fit for vessels of 9 or 10 feet water; the entry to it may be distinguished from St. Tudwal's-road, by the Gimblet, a rocky peninsula, that forms the south side of the entry; take three quarters flood to sail into this harbour, and keep the Gimblet half a cable's length on your larboard hand, and anchor in the hight, making fast to a ring on the rock; there are never less than 2 feet water on the bar, at the point of the Gimblet; vessels finding it hard riding in St. Tudwal's-road, may, after half flood, run for Pwllheli. It is high water here at 8 o'clock on the full and change, and spring-tides rise 20 feet.

St. Tudwal's-road is easy of access, and fit for any vessel; in sailing in, there is a rock to be avoided, which lies about a quarter of a mile E. S. E. from St. Tudwal's islands; when there is any wind, it is easily perceived by the breakers. In going between St. Tudwal's islands and the main, keep half a cable's length from the main side; the best anchorage in this road is, when the westernmost island bears S. by W. and the black point of Penrhyn-du W. S. W. in 4 or 5 fathoms; small vessels may ride nearer the shore in 3 or 3½ fathoms.

In *Aberdaron-bay* a vessel may stop a tide; but the ground does not hold well with strong winds; the best anchorage is ½ a mile from the head of the bay, when Aberdaron church bears N. in 4 fathoms near the middle of the bay.

About S. 2 miles from Bardsey island are some overfalls, which extend 2 or 3 miles S. on which are never less than 4 or 5 fathoms; to clear the rough sea, which is frequently on them, keep within 2 miles of Bardsey, or 4 or 5 from it.

Porthdinlleyn-harbour is fit for vessels of 9 or 10 feet water, which may lie aground under the shelter of Porthdinlleyn-pier; at spring-tides there are 2 feet more water in the pier at high water than at neap-tides. There is a small rock, which lies a quarter of a mile eastward of the point, which dries at three quarters ebb.

Nevyn-harbour is fit for vessels of 6 feet water only; it dries at half-ebb; when Nevyn-point is on with Porthdinlleyn houses, you may anchor in 3 or 4 fathoms, ½ a mile from shore; but the ground does not hold well in hard gales of wind. It is high water here at three quarters past 8, and spring-tides rise 20 feet.

CAERNARVON-BAY. *In Caernarvon-harbour*, vessels of 13 feet water may, at high water neap-tides, go in, and anchor on good ground, in 4 or 5 fathoms, about one-third of a mile above Abermeny-point; there are not above 2 feet water on the bar, at low water. About a cable's length and a half S. S. W. from the extremity of Chlawthuin-point, lies a small rock; on which are 2 feet at low water: there is likewise a small rocky shoal, half way between Chlawthuin-point and the west extremity of the south bank, or Middle-patch, on which are 4 feet at low water; as it lies in the channel, do not sail in till half flood. The north bank extends northward nearly as far as Abermeny-point, forms the north side of the channel, and dries with spring-tides only: the south bank is never dry, excepting a small part at the N. E. end, which dries with spring-tides, and commonly has a breaking sea on it; the inner side is steep-to. In sailing in or out, with little wind, observe that the stream of flood sets northward, and the ebb southward, over it.

To sail over the Bar, wait till half flood, and keep 2 cables' length from Chlawthuin-point till past it, to clear the rocks; then steer S. S. E. till the east end of Holyhead-hill is on with Chlawthuin-point: keep that mark on till you bring the lime-house two-thirds from Bellon-point; then steer N. N. E. bringing the limehouse nearer by degrees to Bellon-point, till it is hid by it; then stand on to Bellon-point. To clear the *Mussel-bank*, keep Abermeny-point open of the east house of Caernarvon: you are abreast of this bank, when Dinas-dinchlea and the sand-hillocks of Dinchlamas are in one; anchor when the lime-house bears S. E. in 4 fathoms water, 2 cables' length from the

the point, or below the ferryhouse of Abermeny, on the east side of the point, with one anchor on shore.

In Aberffraw, or *Aberfru-bay*, vessels may anchor, in moderate weather, on the north side of the bay, in 4 or 5 fathoms, about 2 cables' length from shore.

Vessels may stop, almost any where, a mile from shore, in Caernarvon-bay, with the wind off the land; but, with W. or N. W. winds, it is dangerous anchoring in any of the bays on the coast of Caernarvon.

HOLYHEAD is a dry well-sheltered harbour, with soft ground to lie on; N. W. winds, however, render it dangerous to large shipping. Vessels drawing 15 or 16 feet water may go in at high water, spring-tides; those drawing 11 feet may go in with neap-tides. In sailing for this harbour, keep the N. Stack-head open of the low point of Ineswelt, to clear the Platters, which lie N. ¼ E. a quarter of a mile from Inishgybi, and on which are only 4 feet at low water. There is another rock, half a cable's length northward from the middle of Inishgybi, that dries with spring-tides: vessels, when waiting for water to go in, may anchor in 5 fathoms, 2 cables' length from the shore, when the mouth of the harbour is a little open.—A packet sails regularly from this place to Dublin.

It is high water here at 10 o'clock, on the full and change, and spring-tides rise 24 feet.

Skerries. The island and rocks called the Skerries lie about 3 leagues to the northward of Holyhead harbour, and about half a league from the main. The light may be seen 7 or 8 leagues off, and is of great use to the navigation off the coast, which is here, in general, rocky.

The Harbour of Cæmlyn, in which vessels may ride in 3 fathoms at low water, lies two leagues to the eastward of the Skerries. On the eastern side of its bay is a dangerous ledge of foul ground, called Harry's Furlong, stretching one-third of a mile from the point. Here, and upon a rock called Y Garreg Allen, or the Coal Rock, many vessels have been lost. The latter lies directly in the trade way, at the distance of 2 miles N. ⅜ E. from the East-point, it has an overfall with a dreadful whirl, and is said to appear on equinoctial spring-tides.

It is high water here at half past ten, on the full and change, when spring-tides rise 24 feet.

In the vicinity of the coast hence to the eastward are three remarkable little islands, called the Western, the Middle, and the Eastern, Mouse. The two first lie about half a mile, and the latter one quarter of a mile, from shore. The western one bears nearly W. S. W. from the Coal Rock, and has within it 11 fathoms. The latter are also steep-to.

GENERAL REMARKS. It is to be observed, generally, that vessels navigating off the western coast of Wales, ought to make particular allowance for lee-way in forming their course. For, it has been remarked, that ten vessels have been lost upon the coast of Wales, for one that has been lost upon the opposite coast of Ireland.—The reason is, that the wind blows for about nine months of the year from the S. W. and West, while the tides of ebb and flood, combined with various in-draughts, run strongly S. W. by S. and N. E. by N. and make a heavy swell that always falls upon the Welsh coast, between Holyhead and St. David's Head, the ill effect of which is felt with easterly winds: for the coasters have frequently experienced, that, in sailing with a fair gale hence to the westward, they could not make so much way as in sailing from the west. Hence it is, that some have found themselves upon a lee-shore when they supposed themselves considerably to the westward.—The coast is generally steep, unlike the adjoining land, with very uneven ground, and great variety of soundings, which are not in the least to be depended upon.

AMLWCH PORT, formed by a small creek between two steep rocks, lies two miles to the west of Lynos or Elian-point, upon which is a lighthouse, and near half a mile to the eastward of the Eastern Mouse. It is difficult for a stranger to find the entrance; but there are two small white houses, one on each side of the dock, which have lights in them at night, that make it the more conspicuous. The Eastern Mouse is a good direction until you approach the shore.

Near Amlwch is *Port Elian*, where the Liverpool pilot-boats lie afloat in 8 fathoms, ready to meet any vessel in the offing.

To the southward of Lynos-point lies the harbour of Dulas, into which

which an in-draught of the tide sets with great rapidity. The entrance is narrow, and full of large stones. It is, however, considerably frequented. Vessels anchor without the bar in 3 fathoms. Spring-tides rise 24 feet.

In *Redwharf-bay*, a vessel may stop a tide, a mile from shore, when the wind is off the land; but, when the wind is westward, the best part to anchor in is off the south side of Malvro island, in 3 or 3½ fathoms, 2 cables' length from the island.

The Harbour of Beaumaris is large and safe; in moderate weather, vessels may enter at any time of the tide by the western passage; the ground is in general clean. There is a small sandy shoal which lies half a mile to the northward of Priestholm, with 10 feet on it at low water; the west end of Priestholm, just within the lowest part of the east side of Penmanmaur mountain, clears it on the west side; and the east end of Penmanmaur, shut in to the top with the east end of Priestholm, clears it on the east side. Off the west end of Priestholm, lies a ledge of rocks, called the Causeway, extending 2 cables' length S. S. W. which dries every tide; from thence, as far as S. E. by S. it dries with spring-tides only. On the extremity of the first part, is a perch on a rock, which dries at low water; keep this perch a cable's length on your larboard hand going in, and at the perch stand S. W. to clear that part of the Causeway that dries with spring-tides; give Triundi-point near a cable's length berth at low water. To sail into Friars-road from the perch, keep Beaumaris steeple in one with the shoulder of Lodge-hill (where it begins to slope downwards), till past Penmon-bay; then keep the steeple about the middle of the shoulder; keep the lead likewise going, to avoid the shoal water on each side; anchor off the Friar, when Friars-house bears N. by W. or N. N. W. in 5 or 6 fathoms or more out of the tides way, nearer the Friars, in 2 fathoms, at low water, the Friars bearing N. by W. and a lane at the summer-house open; vessels may anchor off the town in 4 or 5 fathoms. The stream of flood runs up 2 hours after high water, and the ebb runs out 2 hours after low water. It flows here on the full and change, at a quarter past 10, when the tide rises 34 feet.

Conway-harbour is only fit for small vessels, which must lie aground below the houses; the channel is difficult, and dries with spring-tides at the entry; it should not be attempted before three-quarters flood, when there is sufficient depth for small vessels.

CHESTER and LIVERPOOL. Having heretofore given in the former editions of this work, sailing directions for the harbours of Chester and Liverpool, we now repeat them here; but think it proper to premise that they are not entirely to be depended on; because alterations in the Hoyle and other sands which form the boundary of the channels, very frequently occur; and the best channels will sometimes be blown up in the course of a week. No vessel should therefore attempt to enter without a pilot, and those who will be found here are famous for their skill and attention.

There are, however, numerous lights and sea-marks for the different passages; particularly the Bidestone and Mockbeggar lights, commonly called the Sea Lights, for the southern channel to Liverpool; the Lake lights for Hoyle Lake; Bootle marks, or beacons, for the Bar; with the Formby and N. E. marks for the Northern or Formby Channel. There is also a good lighthouse upon the point of Air, which is intended for the use of ships passing over Chester bar; and care must be taken that it be not mistaken for the Bidestone or Mockbeggar lights.

The time of tide and ship's draught are the particulars to be considered, chiefly when going into Hoyle Lake or Chester; as, on the bars, there is but one fathom at low ebbs, and not above 18 feet at half tide.

It is high water upon the banks, on the full and change, at about half past ten; spring-tides rise nearly 26 feet, and neaps about 14 feet.

Observe, generally, that all the can-end buoys are to be left on the starboard, and all the cask-end buoys on the larboard hand.

CHESTER BAR. To sail over the bar from the westward, in vessels of 10 or 12 feet water, the directions hitherto given have been, to wait till half flood; then bring Crag-disart hill to form an equilateral triangle with Middle and Combe hills; and, keeping the Ormes-

heads

heads shut below, and a little open above, you will then clear all dangers on the south side; to clear the banks on the north side, open Ormes-heads below, near a ship's length. To go between Middle-patch and Earwick, keep Ormes-heads a little open below; and, when Cragdisart-hill and Middle-hill are in a line, then steer N. E. till you deepen your water to 4 fathoms at low water; then sail along Hoyle, for the point of Air, on which is a good lighthouse, giving that point a berth of 2 cables' length. To clear that point of Hoyle opposite to Air, keep Bidston windmill out to the south of Helbry summer-house; anchor a mile eastward of Air-point, in Wild-road, in 5 fathoms: when the tide meets the wind, there is a very rough sea from half ebb to half flood, the banks without are dry; the best anchoring off Dalpool, at such time, is in 3½ fathoms.

Off Parkgate the stream is strong, and the anchoring ground bad, vessels to be safe must therefore lie aground; take the ground 2 hours before high water, below the houses of Parkgate.

To sail from Dalpool into Hoyle-lake, keep Heswell church on the south end of Cliff, till you perceive an opening between the south end of Great Helbry and a rock near it; then steer N. ¼ E. till the summer-house on Helbry bears E. N. E.; give the north end of that island a good berth, and steer E. for the lake.

Between the Ormes-heads, ships may stop a tide, a mile from the shore in 4 or 5 fathoms.

In Vorid creek small vessels may lie aground; in going in, wait till after three quarters flood; keep the two perches on the west side of the channel just open on the starboard side, and give each a berth of a ship's length; anchor on the west side of the river, just within the first point.

LIVERPOOL. To sail into Hoyle-lake road from the westward, keep Great Ormes-head West till you are abreast the N. W. buoy of Hoyle-sand, when the sea-lights will be in one, bearing S. E. ¼ E. and a windmill above Parkgate, bearing S. S. E. a handspike's length open to the W. of Dalpool-point; keep the lights on till you come to the N. E. buoy, and bring the two Lake-lights in one; steer with the Lake-lights on into the Lake, and anchor in 3 fathoms; or you may ride safer farther up the lake, with the great light S. S. E. in 4 or 5 fathoms. It is hard riding in this anchorage with spring-tides and N. W. winds, when Hoyle-sand is quite covered.

At all times, when the wind and tide will not permit an entrance into Hoyle-lake, vessels may stop a tide without the N. E. buoy of the sand.

When at anchor at the N. E. buoy, observe that, when the tide flows to the Turbury or Black Ground near Dove-point, there is about 12 feet water on the bar, in the Rock-channel; and, when the Turbury-ground are almost covered, there are 18.—When near the rock-perch observe that, when the tide flows up to the perch you have 8 feet water, when it covers the lower boards 12, when it just covers the upper boards 17, and, when it is up to the shores, there are 24, feet on the bar.

To sail from Hoyle-lake to the anchorage off Liverpool, take half-flood, and keep the N. E. buoy of Hoyle, Beggar's-Patch-buoy (a cask), and Braziel-buoy (a cask), on the larboard hand; then, to sail through the Rock-channel, keep the land-marks in one, and the Rock-perch half a cable's length on the starboard hand; anchor ¾ of a mile above Rock-point, 2 cables' length from high water-mark, in 7 to 13 fathoms, at low water; or sail up to Sloyn, where the ground is good, and little stream; anchor 2 cables' length from the shore, in 8 or 9 fathoms. Off the town of Liverpool the ground, in mid-channel, is rocky, and the stream very rapid.

To sail through Formby-channel to Liverpool, first bring Formby land-marks in one; keep them so until you see the cask-buoy on Mad-wharf, which leave on your larboard hand until you bring the North-end land-marks in a line, which will lead to another cask-buoy off the Middle-patch. Liverpool will then be open of the land of the Rock-point. Now steer E. by S. and South for another buoy on the same side, off Crosby-point, distance about 2 miles; and next for the buoys of the New Deep, on the starboard side. The course and distance hence to the Rock-perch will be S. by E. 2 miles and a half, giving it a berth of at least 2 ships' length, and anchor as before directed.

In sailing through Formby-channel with little wind, be careful of

of the tide, as the stream of flood sets strongly eastward through Burbo-swashes, towards the land, and the ebb on the Burbo-banks. From Formby to Wier-water, the coast is shallow, having not more than 3 fathoms at 2 miles from shore.

For the Tides in Bristol-channel, Coast of Wales, &c. see the general Tide-Table for the British-channel subjoined to the Directions.

DIRECTIONS for the Southern Coast of IRELAND.

THE *Tuskar*, a remarkable high rock, which should be always seen before ships sail to the northward, lies from the Land's-End, N. by E. ¾ E. 43½ leagues; from the Smalls lighthouse, N. ¾ W. 11 leagues; and, from Carnsore-point, E. by S. ¼ S. 6 or 7 miles. About half a mile S. W. of Tuskar, are some sunken rocks of five feet water; to avoid which, keep near a mile from the south-west side of Tuskar. Nearly midway between the Tuskar and the main, is a long, narrow, sand, called the *Baillies*, of 6 feet water; the south end of which bears W. from that rock, and E. by S. from Carnsore-point: it thence extends N. 3 miles.

To avoid the Baillies, on the east side, keep nearer to the Tuskar than to the main: near the sand in this channel are 16 fathoms. In the bay opposite to it, about three quarters of a mile from the shore, you may anchor in 6 or 7 fathoms.

Black Rock. Three leagues, W. ½ N. from Tuskar, and 4 miles W. ¾ S. from Carnsore-point, lies Black Rock, always above water. Between Black Rock and the shore, to the westward of Carnsore-point, is an anchorage in 6 and 7 fathoms. Nearly 1 mile E. S. E. from the Black Rock, are two small rocks called the *Barrels*, which appear at half ebb: to go to the southward of them, when sailing to the westward, keep Greenore-point open of Carnsore-point, until Black Rock bears N. N. W. or until it is on with Ballahele castle; you may then steer W. S. W. past rocks that lie to the southward of Great Saltee island. Going to the eastward, keep above a mile to the southward of the Black Rock.

Great Saltee Island lies about 2½ leagues W. ¼ N. from the Black Rock. Off the north-west point of this island, you may anchor in 5 or 6 fathoms. *Little Saltee island* lies about 2 miles S. by W. from Ballitaig castle-point; between are 4 and 5 fathoms. *Kunnymore-rock*, a rock always above water, lies a mile and a half S. S. W. ¼ W. from the S. W. point of Great Saltee island. *Kunnybeg-rock*, a rock which appears at half ebb, lies above a mile S. W. by W. from Kunnymore; and, from the south-west point of Great Saltee, S. W. by S. 2½ miles. When Kunnymore-rock is on with the middle of the sound or opening between the Saltee islands, you are to the eastward of Kunnybeg-rock: when the sound is quite shut in, you are a little to the westward of it. *Brandy-rocks*, two rocks which appear at half ebb, lie 2 miles E. by S. from Kunnymore; and, from the south-west point of Great Saltee, S. E. ¼ S. 1¾ mile. To go clear of them, on the east side, keep the castle of Ballitaig open of the north end of Little Saltee: to go clear of them, on the south side, keep Kunnymore-rock W. N. W. ½ N.; and, on the west side, keep Ballitaig castle just open of the south end of Little Saltee; or keep the north end of Great Saltee N. N. E.

A narrow ridge of large stones, called *St. Patrick's Bridge*, extends northward in a curve from Little Saltee to the main, with only from 7 to 10 feet on it at low water.

Half a mile to the northward of the south-west point of Little Saltee, lies a small rock of only 3 feet. A cable's length S. W. from the same point is another small rock, which appears at half ebb.

Two rocky shoals, of 6 feet water, extending northwards, lie about a quarter of a mile from the north-east of Great Saltee island. Between these shoals you may anchor, with moderate southerly and south-east winds, by bringing a small house, which is seen there, to bear S. or S. by W. about a cable and a half's length from the shore: the ground is clean. To go clear of these shoals, and between the Saltee islands, keep nearer to Little Saltee than to the great one. With moderate westerly winds, you may anchor along the east side of Little Saltee, 2 cables' length from the shore, in 6 fathoms, clean but not good ground.

Half a mile eastward from the entrance of Feathard-creek, is a rocky shoal, of only 4 feet. From *Ingard-point*, a ledge extends nearly

nearly halfway to this shoal: and a shoal of 5 feet, called the *Bridge of Bracéen*, extends about ¾ of a mile S. S. E. from the point next to the northward of Slade-harbour. To avoid this shoal, keep any part of the mountain of Fort, above Wexford, open of, or without, Baganbon-head.

Feathard, on the north side of Ingard-point, and about 10 miles N. W. of Saltee island, is a small dry harbour. Betwixt the pier-heads are 8 or 9 feet at high water, spring-tides; and 6 or 7 feet with neap-tides. From the point, a rocky ledge extends eastward about two cables' length: to avoid it on the north side, when going in or out, keep an old castle at the south end of Feathard trees, on with the Quay-head. About half a mile to the eastward of Ingard-point, there is a long rocky shoal; the least water on it is 5 feet: a leading mark to it is, a summer-house below Feathard trees, on with the fore-mentioned castle.

In Slade Bay, to the north-east of Hook lighthouse, vessels may anchor and be sheltered from westerly and northerly winds. The ground is foul in the N. E. part of this bay. The mark for the best anchorage is, the pier-head and the castle in one, opposite to a stone wall which runs out a little way from the shore, in 5 fathoms, clear and sandy ground. *Slade harbour, about a mile to the eastward of* Hook lighthouse, is dry at low water, and only fit for small vessels. Between the Quay-heads are 11 feet at high water, spring-tides; and 8 or 9 feet neap-tides.

WATERFORD-HARBOUR. From Great Saltee island to Hook-point, on which Waterford lighthouse is erected, is W. N. W. 12 or 13 miles; and, from the Land's-End to Waterford lighthouse, is N. ½ E. 43 leagues. When coming from the southward or the eastward for Waterford, keep Sleanaman mount, a remarkable mountain inland, N. E. ½ N.; or keep Saltee island E. S. E. until you see the lighthouse on the east side of the entrance of Waterford harbour. Go not any nearer Hook-point than about a cable's length, to avoid falling into irregular streams of tide that run near it.

Having passed the Hook, proceed for the anchorage at Passage, with a flood tide, or a leading wind, and steer for Credan-head, giving it a berth of at least half a cable's length. From Creden-head, steer N. E. by N. for Duncannon-fort, carefully avoiding sand-banks which extend from both shores; that on the starboard side begins at Bluff-head, extends more than half a mile from shore, and terminates at Duncannon-fort. Between Bluff-head and Duncannon-fort is Ballistraw-bay. The sand on the other side, called Drumroe-bank, extends more than a mile from shore, and narrows the passage off Duncannon-fort to about a cable's length. The thwart-mark in the narrowest part of the channel is, Father Hogan's house on with Newton trees; and the leading mark through it is, two lights in Duncannon-fort in a line with each other. About three quarters of a mile northward of Creden-house, is a bar composed of loose shingle which stretches across and is little more than a ship's length over. In northerly winds, there are only 13 feet water on it; but, with southerly winds, 26 feet. The deepest water is towards the starboard shore. Between the bar and Duncannon-fort, are from 2 are a half to 9 fathoms: deepest nearly abreast of the lights. When above the lights, keep near the eastern side, steering about N. for the church of Ballibake, until you see a perch which is fixed on the upper end of Drumroe-bank, to which you must give a good berth. Abreast of *this perch, are 6 or 7 fathoms in the middle of the channel.* The usual anchorage is about a mile above Passage-town in 5 or 6 fathoms.

Two or three Miles above Passage is very good anchorage, and there the stream is much weaker than at Passage. In proceeding for this place, avoid a spit of sand, which stretches off about W. S. W. from Buttermilk castle, extending about half way over; the least water on it is 9 feet. Avoid also a small bank of 9 feet at low water and 14 feet at half tide, which lies about two cables' length from shore, on the south side of Cheek-point. In proceeding about low water, keep in the middle between the two points, or rather nearest to Buttermilk point; if the flood tide be running, keep in the rough part of the stream, and you will go clear of the shoal. Vessels, drawing 10 or 11 feet water, may go up to Waterford, where there are two fathoms at low water, a ship's length from the Quay. *The safest chan-*

nel to Waterford is on the north side of Little island: the channel on the other side is deeper, but it is narrow, winding, and subject to eddy tides, which make it dangerous.

Swiny-head is opposite to Hook-point, on the west side of the entrance of Waterford. To the southward of this head, there are three small islands, called the Filis Kirt, which are steep-to.

TRAMORE BAY, about 4 miles westward of Swiny-head, and two leagues to the westward of Hook lighthouse, is notorious for shipwrecks, and must be carefully avoided. In hazy weather, when Hook tower cannot be seen, this bay has frequently been mistaken for the entrance of Waterford; and many ships have thereby been lost. Hard southerly winds drive a heavy sea into it, and the flood tide sets with great velocity towards Rineshark harbour; which, operating jointly, render it almost impossible for a ship, so caught in the bay, to get out of it by plying to windward. The ground is so foul and rocky that cables are frequently cut, and ships lost. The north-west part of the bay is the only place where there is any possibility of escape; the east side being so shoal and full of rocks, that ships, unfortunately forced on that side, become involved in terrible breakers at a considerable distance from shore.

Rineshark-harbour may be entered by small vessels that have a pilot: in the shallowest part of the channel is 9 or 10 feet water at half tide: but it is narrow, without either perches or buoys: and the danger of getting aground on the point of a sand which lies at the entrance is great; no stranger should therefore attempt to go in unless absolute necessity require. In that case, endeavour to have four hours flood, and to keep within a cable's length of the starboard shore, notwithstanding the appearance of breakers on that side, until you are nearly a mile up, where the water is smoother. But, if embayed here when the wind renders it impossible to be extricated, run on shore any where near the west side of the bay, rather than attempt the harbour, which will afford the best means of safety.

Dungarvon-Harbour. Vessels, drawing not more than 10 feet water, may here have good shelter, and lie on clean sand when left by the tide: but vessels that draw more should not go in until near high water, spring-tides. In the shoalest part of the channel, are 3 feet at low water. At Dungarvon-quay, are 9 feet at high water, spring-tides; and 7 feet at neap-tides: at a short distance from the quay the water is 2 or 3 feet deeper.

To fall in with Dungarvon Bay, keep Crauch-hill the westernmost and most tapering of the Dungarvon-mountains, N. $\frac{1}{4}$ E. In the mouth of this bay are two rocks always above water; the largest, called *Carrickapene,* lies nearly in the middle: you may pass on either side of it, giving it a berth of half a cable's length. From the other rock runs a ledge, which extends to the shore of Balinacourty. The rock, called the *Gainers,* lies about half a mile to the northward of Helwick-head, extends about a quarter of a mile from east to west, and has on it, with ordinary spring-tides, about 2 feet at low water. To avoid this rock on the north side, keep the castle, at the Abbey of Dungarvon, N. by W. or keep the abbey on with the highest part of a hill situated about 2 miles N. by W. from Dungarvon; or, by keeping within a cable's length of Carrickapene, or giving Helwick-head a berth of about two-thirds of the distance between it and Carrickapene.

A dangerous Ridge of Sand extends southward along Ballinacourty-point, dries in low spring-ebbs, and makes the channel there very narrow. To go between this ridge and the shore, keep about half a cable's length from high-water-mark; or keep Ryland's turret N. by W. in a line with the sharpest top of Knockmeldown mountain.

To wait for the Tide to go up to Dungarvon, anchor off the house of Ballinacourty, about half a cable's length from the shore; because there the ground is best. About half-flood, attempt not to proceed sooner, steer for Ballinacourty-point; and, when you are near the house, keep about half a cable's length from that shore; or keep Ryland's turret on with the sharpest point of Knockmeldown, until you pass the point; then steer N. W. by W. till Ryland's turret appears in a line with the summit of Croach-hill; then steer N. by W. for Conegar-point; or proceed with the old castle, at Dungarvon-quay, on with the highest top of Knockmeldown-mountain, and come to anchor off the town.

YOUGHALL

YOUGHALL-HARBOUR lies about 15 miles westward from Helwick-head. Ships drawing not more than 12 feet may go in, and ride afloat off the middle of the town. Across the mouth of the harbour is a bar which extends above a mile southward from the entrance, and has 4 feet on it at low water. On this bar the sea is rough when the wind blows on the shore, or against tide: 13 feet are on it at high water, *neap-tides*. When Cable island bears W. S. W. you are on the outer edge of the bar. When sailing for Youghall-bay from the southward, keep Knockmeldown-mountain N. by W. To anchor when waiting to go over the bar, the best places are on the south side of the bar, the harbour's mouth bearing N. N. E. in 3 or 4 fathoms; off Whiting-bay, in 5 or 6 fathoms; or on the north side of Cable island, in 4 or 5 fathoms, about 2 cables' length from the shore.

Ballicotton Islands lie 5 miles W. ½ S. from Cable island. In the middle, between the two Ballicotton islands, is a small rock, dry at very low spring-ebbs. About a mile W. N. W. from Ballicotton islands, lies another small rock, called the Smiths, which is dry at low spring-ebbs. To avoid this rock on the south side, keep about half a mile from shore; or keep Cable island open without Ballicotton islands. *Poor-head* is about 6 miles W. by N. from Ballicotton islands; and, about 4 miles N. W. by W. from Poor-head, is the entrance of Cork-harbour.

CORK-HARBOUR. From the Land's-End to the entrance of Cork-harbour, is N. by W. ½ W. 46 leagues. Coming from the southward and bound to this harbour, keep Knockmeldown-hill about N. N. E. until you see the Old Head of Kinsale, a bluff point of land with a lighthouse on it. From this Head the entrance of Cork harbour lies E. by N. about 4 leagues. When off the harbour, Roche's tower is remarkable, on the east point of the entrance. A little without the point, on the east side of the entrance, lie the *Stag rocks*; when in mid-channel, between them and Kenly Cove, the course in is nearly N. N. E.

A LARGE *and most accurate* SURVEY of this harbour has been lately made by *Rear-Admiral Knight*, in which the different marks for avoiding the dangers, and the various appearances of the land, are represented in the most picturesque and striking manner. From the Admiral's chart*, and the observations engraven upon it, many of the following remarks have been extracted:

"*The entrance of the harbour is in latitude 51° 46′ N. and in longitude 8° 12′ W. from Greenwich.* It is (excepting Bantry-bay,) the only port on the south coast of Ireland, fit to receive ships of the line, which, with a leading wind, may, at all times in the day, enter, by attending to the marks that lead clear of the *Harbour-rock* and *Turbot-bank*.

"There is clean ground on a moderate depth without the harbour's mouth, where ships may, with a northerly wind, wait the flood or daylight.

"Roche's tower-point at the entrance, on the eastern side, is bold; as is Dog's Nose, a high point on the same shore farther in, on which is a remarkable white wall on the face of the cliff, to the southward of the fort, that may be seen some leagues off.

"The western shore is pretty bold, until you draw up with the Ram-point, (opposite Dog's Nose,) from which a flat of sand extends 150 fathoms south. Having passed the Narrows, which is about 450 fathoms over, the channel continues not more than that width on a N. by E. and N. E. direction, between the flats to the anchorage E. of Spike island, on sandy ground; thence it leads upwards, narrowing round the beacons on the ground extending S. E. from Hawlbowling island close to Cove town, on the north shore.

"Here the tide runs two or three knots: it is high water on the full and change at half-past four, and the tide rises from 8 to 18 feet."

Large ships, going in at near low water, must be careful to avoid the rock called the *Harbour rock*, which lies a little within the Stag rocks on the east side; it bears N. by W. ¾ W. from Roche's tower, nearly half a mile, and has 15 feet on it at low water, spring-tides. The thwart-mark for the outer end of this rock is, the lowest of 3 remarkable stone gates on with the chimney of the first house within Roche's tower. The gates in one will carry you right on it. The thwart-mark

* This Chart is published at Steel's Navigation Warehouse, London, price 5s.

for the inner end is, a remarkable white road between Roche's tower and Dog's Nose fairly open.

The long mark is, a conspicuous house on Great island, Dr. Rogers's, (to the eastward of the fort on that island,) touching the point of Dog's Nose, and bearing N. 24° E. About one-third of a mile N. ¾ E. from the Harbour rock, lies the south end of the *Turbot-bank*, extending thence N. W. and which has, on its shoalest part, the north end, in common tides, but 10 feet water. This bank lies with the red cliff to the westward of Spike island, in a line with the extremity of Ram point, the point opposite Dog's Nose. There are channels for the largest ships on both sides, but the eastern one is generally preferred.

To avoid these Shoals on the East Side, keep within 2 cables' length of the eastern shore; or rather bring the lower part of the white wall, which stands to the southward of the fort upon Dog's Nose, on, or under, the west bastion of that fort.

To go to the westward of the Harbour-Rock and Turbot-Bank, keep the fort on Dog's Nose open to the westward of the lower part of the white wall above-mentioned; or, when without the harbour, bring and keep a village, which appears on a hill, upon Great island, over some pine trees, touching the point of Dog's Nose, and bearing N. 38° E. which will lead clear of all danger on that side.

To go between the Shoals, keep the flag-staff, in the fort on Dog's Nose, on, or over, the lower part of the white wall.

To avoid Harbour-rock, on the south side, keep the Cow-rock on with Poor-head. The Turbot-bank may be avoided merely by keeping nearer to the east than to the west side of the entrance. Between the Harbour-rock and the east point, are 5 or 6 fathoms; between the Harbour-rock and Turbot-bank, are 6 and 7 fathoms; and, between the bank and the western shore, are 5 and 6 fathoms at low water.

About a Mile E. S. E. ¼ E. from Hawlbowling Island, extends the Spike-sand, which begins to dry on the north side at half-ebb, and shelters the anchorage at *Cove*. On this bank are two perches, one on the east end, and the other on the edge of the north side opposite Cove. In going from Dog's Nose for the Cove, keep Dog's Nose point S. by W. ¾ W.; or steer right for the easternmost part of the fort, on the north shore, to avoid a flat which extends in some parts, a mile from the east shore; and also a rock that lies to the westward of Cork-beg, which appears at half-ebb. The best place for large ships to anchor in, is off the Garrison, in from 8 to 5 fathoms. Merchant ships may ride off Cove, in smoother water, and less tide: they may go also farther up the harbour off Passage, and ride any where between the first house and Roman's-point.

In proceeding from Cove to Passage, do not approach nearer than half a cable's length to the south side of Black-point; and give the west side of it a berth of above a cable's length, to avoid a sand which extends from that shore, and dries at low water. You may go westward from Hawlbowling island, until you see Roman's-point in the channel of Passage; then steer northward, along the west side of the channel, for the anchorage. Vessels drawing only 10 or 11 feet water may, with spring-tides, go up to Black-rock, or to the town of Cork. Between Passage and Horse-head, is a spit of sand, of 6 feet water, extending above a cable's length eastward from Clay-cliff: you will avoid the extremity of this spit by keeping Dunkettle house on with a grove of trees which stand on the top of a hill above the house. The point of this spit lies with Belvely castle and Roman's-point in one, and vessels which anchor near it should have the castle fairly without Roman's-point, or wholly shut in with it.

In a small Creek called CROSS-HAVEN, within the entrance of Cork harbour, and on the west side, opposite to Dog's Nose, vessels may ride in 10 or 12 feet, and have good shelter. The channel round the Point, going in, is very crooked: the best way is to keep in the ripple of the tide, which is mostly visible; or go in a little before high water, when vessels drawing 10 or 12 feet water will go over all the dangers.

OISTER-HAVEN, about 2 miles to the eastward of the entrance of Kinsale, is a creek in which small vessels may find shelter in 9 feet at low water. To enter this haven, pass on either side of the Sovereign's isles.

isles. As a shoal runs from the west side of Keneda-point, nearly half a cable's length without high-water mark, give it a moderate berth. The best place for anchoring is on the west side, in the mouth of that branch which runs to the westward.

Dant's Rock, about 4½ miles S. W. from the entrance of Cork harbour, a mile and a half S. S. W. from Cork-head, and three quarters of a mile from shore, is about half a cable's length long, and has 11 feet on it at low water, spring-tides. At this rock, Roberts's Head bears N. by W. and Roberts's Cove N. by E. To avoid it on the south side, keep Flat-head a ship's length without Ranis-head. To go clear of it on the east side, keep Cork-head N. by E. ¾ E. To avoid it on the north side, keep Roberts's Head N. N. W. and, to sail between it and the land, keep within half a mile of the shore. From Dant's-rock, the Old-head of Kinsale bears W. ½ S. 9 or 10 miles.

KINSALE-HARBOUR. Kinsale is a very safe harbour for all ships: in sailing towards it from the southward, keep Knockmeldown-hill N. E. until you see the Old-head of Kinsale; after making the Old-head, which is about 4 miles S. S. W. ½ W. from the entrance of the harbour, run in until the lighthouse on it bears W. N. W. about 3 miles: then run in N. W. by N. until the lighthouse bears S. W. by S.; and then steer N. E. by N. until you are a-breast of the lower cove, where you may anchor in 6 fathoms.

The only Danger near the Harbour of Kinsale, is Bulman-rock, which lies a little more than a cable's length S. W. from Hangman's-point, on the east side of the entrance, and has 4 feet on it at low water: you may pass this rock on either side, but the channel on its west side is the broadest, and most safe for ships coming in or going out. To go between the rock and Hangman's-point, keep Sovereign's isles a boat's length open of Froward-point. To avoid it on the south side, keep Oister-haven-rock open on the same point; and, to keep clear of it, when going in on the west side, keep Charles's Fort in sight, or open of Hangman's-point; or keep the Block-house, at Old Fort, shut in about its own length with Money-point.

There is a Bar nearly a-breast of Charles's Fort, of only 12 feet at low water, spring-tides; and ships that arrive at low water, spring-tides, and draw more than 11 feet, must stop there until the water rises a little, before they proceed. You are over the bar, when going up, with Charles's Fort bearing E.

The most common Anchorage is off Cove, a little more than a cable's length from shore, in 4 or 5 fathoms; but there is water enough for the largest ships to anchor above Cove, any where in the channel of the river, which lies close along the western shore, and is not above a cable's length wide, until you get near Kinsale, where the channel is broader.

To go into Kinsale-Harbour in the Night, keep the light on the Old-head S. W. by S. and the light in Charles's Fort N. N. E.; or, when the Old-head light is right a-stern, keep the light in Charles's Fort on your larboard bow.

In Courtmacsherry-harbour, small vessels may lie very safe near the quay, in 2 fathoms. As the water is shoal off the point next the quay, vessels drawing 8 or 9 feet must have half-flood to go in. About a quarter of a mile east of this place, in a small bight formed by a perpendicular clay-cliff, a vessel may stop in 1½ or 2 fathoms water: but, as the channel is narrow, and the tide rapid, one anchor must lie on the shore. The channel, from the extremity of Courtmacsherry-point to these anchorages, is not above one-third of a cable's length from shore.

Two rocks, called the *Barrels*, lie near the middle of Courtmacsherry-bay; the southernmost is small, and dries about low water; the other is larger, lies about half a mile to the northward of the former, and is very seldom seen above water. At the southernmost Barrel-rock, the extremity of the Old-head of Kinsale bears S. E. by E. and the Horse-rock, (a rock always above the water,) W. by N. To avoid the Barrel-rocks on the west side, keep within a mile and a half of the shore, on the west side of the bay. The water, within a ship's length of the Horse-rock, is deep all around. Vessels may anchor, with westerly winds, on the west side of Courtmacsherry-bay, either off the officers' houses, S. W. from the Horse-rock, in 10 or 12 fathoms; or, on the north side of the rock, in 4 or 5 fathoms.

Clonekilty-Harbour is fit for small vessels only; and, going in or out, when the wind is southerly, is very dangerous. There are but 2 feet on the bar, at low spring-tides, and none ought to run for the harbour in blowing weather, unless under great necessity, and with three-quarters flood. The entrance is on the east side of the island, and the channel lies near the main. On the north side of the point of King, is a rock, which extends to the edge of the channel. You should anchor near the main, opposite the east end of the island, in the bight next above the narrow, or on the north side of the island. The other channel, along Mucker, is only fit for boats. In the middle of Clonekilty-bay, about a mile southward of King-point, a vessel may stop, with the wind off shore, in 10 or 12 fathoms.

About half a mile to the westward of Dundedy-head, otherwise Galley-head, lies *Daly-rock*, which dries at about half-ebb. There is no other danger on this part of the coast, that does not always appear above water.

Ross-Harbour, &c. About 4 miles to the northward of Dundedy-head, is Ross-harbour, a small creek, which sometimes affords shelter to small vessels, but only in very moderate weather. The entrance is dry at low water, and is rough and dangerous at high water, when the wind is on the shore. There are 10 feet on the bar at high water, spring-tides, and 8 feet with neap-tides. With off-shore winds, and moderate weather, vessels may anchor on the west side of Dundedy-head, between it and Ross-harbour, and also several miles to the westward of Ross, on clear ground, about half a mile or a mile from shore.

Glandore-Harbour. About 4 miles to the westward of Ross-harbour, is Glandore-harbour; and about a mile to the northward of the harbour's mouth, and nearly in the middle of the channel, are 4 small rocks, called the Dangers; the southernmost of them is dry at half-ebb, and the northernmost appears at four hours ebb. On each side of these rocks is a channel sufficiently deep for large ships; that on the west side is reckoned the best, because there is a mark to lead through it.

To go into Glandore on the west side of the Dangers, keep the east extremity of the little island, which is next to them, on with the west extremity of Adam's isle; these points kept a very little open of each other, will lead you on the northernmost of the Dangers. In proceeding along the east side of these rocks, keep about half a cable's length from the shore.

Near the head of this harbour, vessels may lie very safely off Ballincalla, although there are but 4 or 5 feet there at low water, spring-tides; soft oaze prevents their receiving damage. About high water, neap-tides, ships of 12 feet water may run up a cable's length or two above the house of Ballincalla, and lie there safely on soft mud.

Castlehaven-Harbour is a harbour for vessels drawing not more than 10 feet water; which must lie about a quarter of a mile above Reen-head, with the Stags of Castlehaven in sight between Horse island and the main; or with the tower upon Horse island on with Reen-head. When the wind does not blow hard from the S. or S. E. vessels may ride in the bay, off the town of Castlehaven, in 4 or 5 fathoms. Between Adam's isle and Shillenragga-head, is a sunken rock, on which are 12 feet at low water, spring-tides: this rock lies rather nearer the island than the head. To avoid it, keep one-third of the distance, between the head and island, from the head; or one-fourth of that distance from the island. Carrikananim-rock lies between Ragged island and Squince island, but nearer to the latter: it is covered, excepting at very low spring-ebbs. To avoid this rock on the south side, keep the westernmost of the Black rocks, which lie about half a mile W. N. W. from Ragged island, on with Toe-head. About a cable's length W. S. W. from the westernmost Black rock lies a small rock, which is dry at about half-ebb.

The Stag Rocks lie W. $\frac{1}{2}$ N. $11\frac{1}{2}$ miles from Dundedy-head; 5 miles W. by S. $\frac{1}{2}$ S. from Ragged island; 4 miles S. W. $\frac{1}{2}$ W. from the entrance of Castlehaven harbour; 6 miles E. S. E. $\frac{1}{2}$ E. from Kedge island; and 14 miles E. $\frac{1}{2}$ S. from the S. W. part of Cape Clear island. Ships may anchor in the bay on the east side of Toe-head, or in the bay on the west side of Toe-head, or in Barlog-bay, about half a mile from the shore.

BALTI-

BALTIMORE-HARBOUR lies about 6½ miles E. by N. from the south-west part of Cape Clear island*; and is convenient for ships bound either eastward or westward. Small vessels may ride 2 or 3 cables' length to the north-west of Baltimore town, in 10 or 11 feet at low water, quite sheltered from all winds. Large ships must lie off the old castle on Sherkin island, in 3 or 4 fathoms, where the harbour's mouth is open.

The rocks in this harbour are, the Loo and the Perch; the Loo lies about half a cable's length N. W. from the high cliff with the turret on the east side: it is dry at 4 hours ebb, and may be avoided by keeping in mid-channel. The Perch appears at half-ebb, lies nearly N. N. E. from the turret on the cliff, and is known by a perch which is kept on it; this rock has shoal-water on every side, half a cable's length from the Perch.

In the entrance of Baltimore-harbour, are from 12 to 19 fathoms; between it and Cape Clear, are from 18 to 34 fathoms, clear sandy ground; and about 2 leagues from the land are 50 fathoms.

Long-Island-Harbour is well sheltered, of easy access, and capable of receiving large ships, which may enter at either end of the island, and anchor any where in good ground. But be careful to avoid a spit of sand which runs off about half a mile within the east end of the island, and extends northward more than half way over the channel. The least water on it is 3 feet. In entering this harbour, at the west end of Long island, only give the north-west point, opposite Goat island, a berth of about half a cable's length.

Scull-Harbour is pretty well sheltered, the ground good, and the water in the anchorage from 2 to 3 fathoms and a half. There is only one rock to be avoided, which lies in the middle of the entry, and is dry at 2 hours ebb.

There are several other places among the islands near Cape Clear, into which vessels may run and find safe anchorage, in times of distress.

* Rear-Admiral Knight has ascertained the situation of *Cape Clear*, in his usually accurate and scientific manner. Its latitude is 51 degrees 24 minutes N. and its longitude 9 degrees 30 minutes west from Greenwich.

CAPE CLEAR, DUNMANUS BAY, BANTRY BAY, &c. On the north side of Cape-clear island, above a mile from shore, vessels may anchor in moderate weather. About 4 miles and a quarter W. by S. from Cape Clear lies the Fastnet-rock, which is small and steep-to. Between this rock and Cape Clear island, are from 12 to 35 fathoms: close to the former there are 12, to the latter 24 fathoms. From Fastnet-rock, Mizen-head lies N. W. 9 miles; and the entrance of Crook-haven N. by W. nearly 7 miles.

Crook Haven entrance lies 7 miles N. W. from Cape Clear. The harbour is narrow, but well sheltered, and convenient for vessels bound eastward; the ground is good, and the water sufficiently deep for large ships. Off the point, on the south side of the entrance, lie some rocks: to avoid them, keep the summit of Baldivan-hill between two points of land on the north side of the entrance, or rather on with the easternmost of the two, until you open the haven, which lies nearly east and west. The best anchorage is opposite the houses on the south side, and about a mile and a half from the entrance. Ships, drawing above sixteen feet, may anchor about half a mile up from the mouth of the harbour. There cannot be any sea in this haven, but with easterly winds; it will be therefore proper for ships that do not go above the peninsula, to moor north and south, that they may, when the wind is easterly, ride by both anchors. The north anchor should lie on the shore, or very near it. The ground, all over the harbour, is soft mud, and vessels that lie above the houses of Crook-haven, may take the ground, about half-ebb, without risque of damage. Southward of Crook-haven, ships may anchor in from 20 to 30 fathoms.

Mizen Head lies 12 miles N. W. ¾ W. from Cape Clear; and the castle-head two miles and three quarters N. ½ E. from Mizen-head; this head is remarkable by a castle on it with three towers. Sheep's-head lies N. N. E. ½ E. 4 miles from Castle-head. The 2 heads last mentioned form the entrance of Dunmanus-bay.

DUNMANUS BAY has deep water and clean ground nearly as far up as Manin island at the head of it; but it is quite exposed to westerly winds, and little frequented, except by small vessels that can ride

ride in Dunmanus-creek, or above Manin island. In Dunmanus-creek, anchor nearest the west side, in 3 or 4 fathoms. At Manin island, anchor about a cable's length E. by S. from the island, in 9 feet at low water, spring-tides, and soft mud. In summer, large ships may ride on good ground, any where above Carberry island, especially on the south side near Casilian-hill.

About a quarter of a mile W. N. W. from the north-west point of Carberry island is a rocky shoal of 8 feet water, very narrow from north to south, and generally discernible by the swell of the sea, which, in strong westerly winds, breaks violently. The top of Casilean-hill on with the north-west point of Carberry island will carry you to the northward of it. Another shoal extends from the small island to the eastward of Carberry, above half way to Carberry island; on this shoal are only 5 or 6 feet at low water. On the north side of Four-mile water-creek, is Carrignaronky-rock, dry at low water. Between Furze island and Horse island, is a rocky ledge, extending almost over, and is covered only about an hour before high water. Sugach is a rock about a cable's length from the shore, below Dunkelly houses, on which are but 6 feet at low water, spring-tides.

BANTRY BAY, to the northward of Dunmanus-bay, is large, safe, and commodious, for ships of any size. The stream of tide is scarcely sensible in any part of it; the water is deep almost close to both the shores; and there are no rocks or shoals in the way but such as may be easily avoided, even in the night. Ships may stop any where in the middle of the bay, on good ground; or in most parts near the sides.

In the bottom of the bay are two anchorages; one on the south, and the other on the north side. That on the south shore is within Whiddy island, to the northward of Bantry town, commonly called *Bantry Harbour*; the westernmost entrance is not more than a cable's length wide, and the shore is steep-to on both sides. In the narrowest part are from 3 to 4 fathoms, and farther in from 5 to 6 fathoms. Along the east side of Whiddy island are 5 small islands; the best anchorage is to the northward of the 4 southernmost ones, in 5 or 6 fathoms, quite land-locked, and secure from all winds.

Glengarif Harbour is on the north side of Bantry-bay, opposite to Whiddy island; it is small, and the entrance narrow. Without the harbour is an island, on the east side of which is the passage in; abreast of the island, the passage is a quarter of a mile wide, and has 6 fathoms. To go in here keep near the east shore, in order to avoid some rocks which lie off the island. When past this island, anchor off the town, in from 3 to 5 fathoms. This place is very small, and the ground indifferent; it is seldom used by any but coasters and fishermen. In summer, the largest ships may ride without the island, in the mouth of the harbour, in 7 or 8 fathoms, good holding ground.

Bear Haven is a good harbour, large, and well sheltered, and good ground; the water is sufficiently deep for the largest ships in the navy. It has two entrances; one at the east end of Bear island, and the other at its west end. The western entrance is the most convenient for ships from the westward, but the other is safest for strangers. You may anchor every where on the north side of the island, in from 5 to 11 fathoms; off Balinakilly is the best place. Ships that wait for a wind, will find the west end of the harbour most convenient. In the west entrance are 2 rocks; one on the south side, always under water; the other on the north side, off Dunbui-bay, dry at low water. The former lies within half a cable's length of the shore, a little past the narrowest part of the entrance, and has 6 feet on it at low water. The other, called the Colt-rock, which lies about one-third of the channel from Dunbui, and two-thirds from Bear island; bears from Dunbui-house, E. S. E. It is also to be observed that, nearly in the middle of the channel, to the southward of the former, there is a ledge of rocks, of only 11 feet at low water, stretching from the western side, which you must be careful to leave on the larboard hand. To go clear to the southward, keep the Turret-house on with Brandy-hall, or steer in mid-channel, and you will go clear of the rocks on both sides.

Going in at the east end of the island, the Caranamadry rocks are the greatest danger; the easternmost of which lies about half a mile S. E. from the east point of the island, and is never quite covered but

but at high water, spring-tides. These rocks are avoided by keeping in the middle, or rather nearer to the little island Roanharrik than to the point of Bear island. Ducalla-rock lies nearly ¾ of a mile E. by S. from Roanharrik island, and is dry about low water. To avoid this rock on the south side, keep the point of Rimore on with the sharpest topped distant hill eastward of the head of the bay. About half a mile to the northward of Roanharrik island, is a rock always above water, from the south side of which, a ledge extends southward about one-third over towards the island: part of this ledge is dry at low water. The northern shore is steep-to, and the best way for strangers is to go to the eastward of all the rocks; then proceed in between the little island Roanharrik and the main, close to the latter. There is a passage of 18 fathoms between the third and fourth rocks from the island, which are steep. To the westward of these rocks, the channel is clear on both sides, and you may anchor on good ground in from 5 to 9 fathoms.

General Observations on BEAR HAVEN *and* BANTRY HARBOUR, *by Rear-Admiral Knight.*

"*Bear Haven*, by its proximity to the sea, and situation on the western coast of Ireland, at 5 leagues from Bantry, must be esteemed an excellent rendezvous for a *Fleet*; it having two entrances, great space, and a moderate depth of water on good holding ground. It is easy of access, and well sheltered from all winds, and in a country abounding with many necessary refreshments.

"Its western entrance, being narrow between the steep cliffs, ought only to be attempted with a leading wind; but ships may at all times work into or out of the eastern channel.

"*Bantry Harbour* has a fair entrance to the westward of Whiddy isle, and is capable of containing many ships of any rate. Throughout the Bay the bottom is muddy."

These observations are from the Admiral's Chart of BANTRY, *published, as a companion to his Survey of Cork Harbour, at Steel's Navigation Warehouse, London.*

TIDES on the Southern Coasts of IRELAND.

THE rising and flowing of the tides on the coasts may be known by referring to the Tide-table for the British Channel, subjoined to these directions. About 3 or 4 leagues without the Hook-point of Waterford, the tide sets E. and W. When it is half-flood by the shore, the tide begins to set E. and so continues for 6 hours; it then turns, and, for the other 6 hours, sets West.

On the east and north sides of Tuskar, the strongest spring-tides run 4 miles an hour, and neap-tides about 1½ mile. Near the Saltees, the strongest stream runs about two miles an hour; between the Saltees and Waterford, it runs about one mile an hour; and, at the Hook-point, 3 miles an hour. At this point, a meeting of different streams makes a ripple or breaking of the water. Along the east side of Hook-point, the stream, from half-flood on the shore to half-ebb, runs to the northward; and, from half-ebb to half-flood, it runs to the southward. On the west side of Hook-point, and within a cable's length of the shore, the stream runs south from half-flood to half-ebb; and north from half-ebb to half-flood.

Between Waterford and Youghall, the principal stream of flood sets in from the westward; and, 5 or 6 miles from shore, it does not run, when strongest, above 1 mile an hour, unless it be near head-lands, and in narrow channels.

Between Youghall and Dundedy-head, the flood sets in from the westward, and the ebb from the eastward. Within 3 miles from the shore, the strongest spring-tides do not run above one mile in an hour, except near to the head-lands, westward of Kinsale, where they run, when strongest, about 3 miles an hour.

Between Dundedy-head and Cape Clear, 1 mile from shore, the strongest spring-tides do not run more than 1 mile an hour, but, near the head-lands, they run 2 miles in the same time.

The stream of flood continues to run along Mizen-head for two hours later than to the eastward. The flood-tide sets from the N. W. along the coast, west of Cape Clear, and the ebb from the S. E. In the offing, about one league from shore, the strongest spring-tides do

not run above a mile and a half in an hour. Within a mile of Mizen-head, the tide of ebb, or westward stream, runs 3½ miles an hour, and commonly makes a rough sea there. The tide of flood, or eastward stream, does not appear to be any rougher there than in other parts, unless the wind blows hard. In the bays, the stream of tide is scarcely sensible.

From Waterford to Cape Clear, the tide in the offing runs about three hours longer than on shore.

DIRECTIONS for the South Side of the BRITISH CHANNEL, from Calais to Ushant; including the Islands of Guernsey, Jersey, Alderney, &c.

CALAIS bears S. E. ¼ S. 23 miles from Dover, and appears from sea, like an island, with three spire steeples and several windmills on it; one of the steeples is larger than the others. Going into Calais harbour, which is rather dangerous with northerly winds, keep the mill, at the east end of the town, on with the eastern Jetty-head, and run in close by this Jetty. When within the Jetties, keep to the eastward for Paradise-bason, which is dry at low water. The tides run strong here, and as several ships' anchors lie in the way, it is hazardous to enter until near high water. The water at the Jetty-heads, rises about 21 feet; and, within the entrance, from 15 to 18 feet, according to the winds. So soon as there are 8 or 9 feet water in the harbour, notice is given thereof by a flag in the day, and by a light in the night, on the Jetty-head. This signal is gradually hoisted according to the progressive rising of the water, and is kept up until the water has fallen to the same depth.

It may be observed, generally, that the run from Dover to Calais will always be found shorter than from Calais to Dover, because the tide is always more favourable.

The Road of Calais lies considerably to the N. W. of the harbour, and is sheltered by a sand bank. Ships may anchor near this bank, in from 10 to 18 fathoms. The best marks are, the great steeple on with the westernmost fort, and Blancnez two sail's breadth open of Calais land, in 16 or 17 fathoms. The ground, composed of gravel mixed with mud, is excellent.

Cape Blancnez, or *Calais Cliff*, lies two leagues west of Calais; and Cape Grisnez W. ¼ S. 4 leagues. Blancnez, so called from its whiteness, may be distinguished 6 or 7 leagues off. Within pistol-shot of it are some rocks, which must be carefully avoided. Between Blancnez and Grisnez the land is hilly.

Nearly north, a large mile from Blancnez, lies the inner end of a bank, called the Quenois Bank, extending thence for some distance, N. W. by N. and, lengthwise, to the W. N. W. It has, on its shoalest part, near the end, but 2 fathoms.

Within Cape Grisnez, to the W. N. W. is a flat, 2 miles in length, called the Anclim Bank, or Banc la Ligne, having from one to five fathoms on it at low water. In proceeding towards the cape, vessels may stop a tide near the bank in from 10 to 17 fathoms good ground.

From Cape Grisnez the east end of the Ridge bears N. N. W. ¼ W. 3½ miles

8½ miles, and the west end nearly W. by N. 12 miles. Between the Ridge and the shore are 25 fathoms; the deepest water nearest the Ridge: you may stand towards the shore into 7 fathoms, without danger. Here, as at Dungeness, the North Sea and Channel tides meet. See page 23.

From Cape Grisnez to the Entrance of Boulogne is S. S. W. nearly 3 leagues. About a mile and a half to the southward of the cape, in St. John's Road, is an anchorage of 9 to 15 fathoms, where ships lie secure from N. E. East, and S. E. winds; but with the wind strong from S. W. West, or N. W. it is dangerous; and, as the ground, for about a quarter of a mile from the shore, is foul and rocky, be careful not to come within that distance, nor into less than 9 or 10 fathoms. Between this road and a point to the westward of Boulogne are several sunken rocks, some of which lie nearly half a mile from shore.

Boulogne Harbour was formerly dry at low water, and obstructed by a shoal which nearly barred the harbour; but, since the new bason has been formed*, for the admission of shipping, its depth has been greater, and the obstruction to its entrance reduced. Vessels may anchor off the harbour at half or three quarters of a mile from shore, in 6 to 9 fathoms.

About a league without the harbour lies the long bank, called the Bassure de Baas, which stretches, lengthwise, in a curve from Ambleteuse to the S. S. W. and S. W. It is half a mile broad, and has upon it, generally, from 4½ to 7 fathoms. Its shoalest part has but 17 feet or 3 fathoms upon it, and lies with the entrance of Boulogne nearly S. S. E. distance 3 miles. Hence to the southward the depth gradually increases. Close to the sides of the bank are from 11 to 13 fathoms.

About 3 leagues W. S. W. ¼ W. from the entrance of Boulogne lies a sand bank, called *Le Vegoyer*, on the shoalest part of which there are but 17 feet, or 3 fathoms, at low water. From this part in the year 1805, Cape Grisnez bore N. 55° E. and Dungeness N. 11° W. From the west end Dungeness bore N. 9° E. and the west end of the Ridge N. N. E.—On the south side of it there are from 12 to 13 fathoms: near the north side 20 fathoms; and, between it and the Bassure de Baas, from 26 to 30 fathoms. Spring-tides flow at Boulogne at 40 minutes past 10, and rise about 19 feet.

From Boulogne to the River Canche, or Harbour of Etaples, the distance is 4 leagues. The land between is high, and has a white appearance from a distance. The harbour is dry at low water, and has several shifting banks at its entrance.

From Etaples to the River Somme, upon which the town of *St. Valery* is situated, the distance is 6 leagues. The harbour is capable of receiving merchant vessels; but its entrance is difficult, being barred by a large sand-bank extending 2 miles to seaward, and on which the tide rises but 8 or 9 feet, although the vertical rises of the tide without is from 25 to 30 feet. The best passage in is along the southern shore, the depth of which is about 2 fathoms at low water. It is generally buoyed.

On the south side of the entrance is a lighthouse, west from which vessels bound into the harbour generally anchor in 5 or 6 fathoms, good ground. The flood-tide runs in the offing until eleven o'clock, and the stream sets about E. N. E.

Off the coast, at unequal distances from the land, between Etaples and St. Valery, lie three long banks, namely the *Batteur*, *Quemer*, and *Bassurelle*, in a N. E. and S. W. direction, nearly parallel with each other; neither of them is dangerous. The depth over them, from 6 to 8 fathoms, being nearly equal. Between are from 10 to 20 fathoms, gradual soundings. The *Batteur* is the outer one; it lies nearly 4 leagues from the land. The middle one is the *Quemer*, and the inner one the *Bassurelle*. The latter is 8 miles in length, extending directly athwart the entrance of St. Valery, at the distance of five miles. The soundings upon it are grey sand and broken shells.

In this part the tide on the full and change flows at 10 o'clock; the first two hours of the flood sets upon the land, afterwards N. N. E. and N. E. The ebb directly contrary.

From the southern entrance of the Somme to Treport the bearing and distance are S. W. ¼ W. 8 miles. The shore all the way is sandy downs,

* A plan of the new bason and piers may be seen by referring to the draught of Harbours and Islands in the British Channel, which accompanies the improved chart of Rear-Admiral Knight, published in 1806.

downs, and the land of a moderate height. The river at Treport is only capable of receiving small coasters, &c. Its entrance is narrow and very difficult.

From Treport to Dieppe the coast stands W. by S. 4 leagues and a half. The land is almost entirely white cliff.—Soundings from 6 to 10 fathoms, sand and marl, within 5 or 6 miles of the coast.—It is, however, to be observed, that at about four miles W. by N. from Treport, lies a ledge of rocks, of 7 or 8 feet, which extends to nearly 2 miles from the shore. Nearly 5 leagues to the westward of Treport, is a road where ships, waiting for the tide to run into Dieppe, anchor in 6 or 7 fathoms good ground, and well sheltered from easterly and southerly winds, but exposed to those from W. N. W. to N. E. This road is westward of Dieppe, and opposite to a small church on the cliff, with a remarkable steeple, and the only one in that part.

When coming in from the Sea towards Dieppe, which is situated in the bottom of a valley between two cliffs, two high steeples and a large castle will appear to the westward of the town. On the N. E. side of the town is the suburb du Paulet, and two stone jetties, one on each side of the entrance to the harbour. This harbour is rendered difficult of access by the rapidity of the current, both inwards and outwards. As soon as you have anchored in the road, if not before, you are visited by pilots, and a signal is made on shore when you may venture to enter the harbour. But do not stay until the ebb makes out, as the rapidity of the current outward would render an attempt to enter extremely hazardous, if not impossible: a signal is made by the pilots on shore for that purpose. *In the harbour*, which is dry at low water, you will lie at the quay well sheltered from all winds. The tides flow here, at half past ten o'clock, and rise about 19 feet.

Off Cape Lailly, about 4 miles westward of Dieppe, the ground is foul to the distance of two miles from shore. Within half a mile of the rocks are 13 fathoms; in 14 fathoms you will go clear of all danger. A lighthouse is erected upon this cape at the distance of 5 miles from Dieppe. It stands at 80 fathoms from the edge of the cliff, facing a rock called *Galere*, the principal of those called the Rocks of Lailly. The tower may be seen from a boat situated at the entrance of Dieppe; the whole height of the lighthouse, measuring from the ground, being 56 feet, and that of the lantern 15 feet.

St. Valery-en-Caux lies about 10 miles W. by N. from Cape Lailly; as the coast between these places is foul, go not any nearer to it than 14 fathoms. The coast between the same, is a high white cliff, in which there are but two openings; St. Valery stands in a third opening, and its harbour will contain about 30 small vessels, 5 or 6 of which may always lie afloat. The spring-tide rises here, as at Dieppe, about 19 feet.

Fecamp lies about 4 leagues and a half W. ¼ N. from St. Valery-en-Caux; the high white cliff continues between these places, with several woods upon it. There appear, inland, a number of steeples, and 3 vallies, which extend nearly to the shore. Fecamp is situated in a wide valley, and may be known by a church upon the edge of the shore, N. E. of the town. The entrance of the harbour lies nearly S. E. and N. W. and vessels find easy access into it, unless with fresh winds from S. W. or W. There are two roads before Fecamp, *the Great Road* lies opposite Criquebœuf, about 2 miles from the shore, and has 13 fathoms, clay bottom, mixed with sand, and exceedingly good. *The Little Road* lies over against the west side of the harbour, and has from 10 to 7 fathoms water. On any part of the coast, between St. Valery-en-Caux and Fecamp, vessels may stop a tide in 9 or 10 fathoms; the ground, a mixture of clay and sand, is good.

From Fecamp to the north-westernmost Pitch of Cape d'Antifer, or Cape de Caux, is W. ½ S. 3 leagues. The coast, all the way, is a very high white cliff. Off this cape, are rocks, called Les Eguilles, which lie near the shore. The northernmost and southernmost, are two high white sharp-pointed rocks, lying two miles from each other. The middle one is covered at high water. The flood-tide runs here, at the new and full moon, until 11 o'clock; it sets E. N. E. and the ebb W. S. W.

Cape la Hève, on which two lighthouses are erected, is 12 miles S. W. ¼ W. from Cape de Caux; at this cape the steep white cliffs terminate. About a mile W. S. W. from Cape la Hève is a ledge of rocks,

rocks, called L'Eclat, on which, in common tides, are no more than 7 or 8 feet water.

The lighthouses on the cape are of freestone, placed on a level, and of equal height. Each tower is 56 feet high from the ground; and the lanterns 15 feet. They are so placed as not to be seen, in a line, by any vessels from the north, N. W. and West, in order that, when coming in for Havre, they may never be mistaken for the lighthouses of Lailly or Cape Barfleur, which stand singly.

The tower nearest to Havre is at the distance of 50 fathoms from the edge of the cliff; and the other bears from it exactly N. E. by compass, 50 fathoms from it; hence it follows, that ships, making for Havre, will bring the towers in a line only from one point, which it will be very hazardous to do before half-flood, especially when near the coast.

HAVRE lies two miles and a half S. S. E. from Cape La Hève; the land, all the way between, is low and full of windmills. This port is at the mouth of the River Seine, and is properly the sea-port of Paris. The harbour lies within the walls of the town; it extends east and west, and can contain about 300 vessels. The entrance of the harbour is formed by a stone pier, on which is a tower on each side. The longest jetty is on the western side.

In this harbour, the water does not perceptibly ebb till three hours after high water; in consequence of this peculiarity, fleets of 120 sail have often left it in one tide, and even with the wind against them. This uncommon effect is generally ascribed to the Seine, whose current, when the sea begins to ebb, crosses the pier-heads with such force, as to prevent the water in the harbour from running out, until the water without has fallen to a certain degree below it, which generally happens about three hours after high water.

It has been remarked that in this part, at about the full and change of the moon, the currents are so strong, and the winds so high, that ships which happen to be in the roads are in danger of being lost in the mouth of the river, or driven against the coast.

It is recommended to all who are bound into the port to take a pilot, as they are always attending for that purpose, commonly as far off as Cape Barfleur, unless the weather be so bad that they cannot get off; in that case, they go to the north side of the entrance and make signals, by which you may know when you may safely enter the harbour. In doing which, take care to keep it always open, so as to see all the ships in it between the two towers; and thus steer in, passing nearer to the great tower on the larboard, than to the little one on the starboard, side.

There are two roadsteads at the entrance of the river.—The *Great Road*, which is a league and a half from the harbour, and which is 3 miles in extent from north to south, lying west from Cape la Hève; and, the *Little Road*, lying to the southward of the cape, half a league from the harbour. The two roads are separated by banks called the High Grounds of the Road and the Eclat Bank; the Little Road being within, and outer one without, these banks.

In the outer road are 9 and 10 fathoms at low water. The inner one extends about three quarters of a mile every way. Its bottom is clay and good ground, but so covered with pebbles and oisters, that ships, which lie only one tide, generally moor, to avoid damaging the cables. Ships, waiting for a tide, will, therefore, always prefer the outer to the inner road.

The best anchorage is a league to the west of la Hève, in oazy ground, and about 10 fathoms at low water, with the castle of Orcher (on a steep cliff 3 leagues to the eastward of Havre) a little open of the land of Ingouville to the northward of Havre. In bad weather, a vessel may lie here N. and S. with two anchors.

Here the flood-tide sets as follow: The first two hours South; the next two hours S. E.; the fifth hour East; and, during the remainder of the tide, it sets from N. E. to N. W.

Should it be required to go into the Little Road, at low water, either to wait for a tide or pilot, and should the wind permit, steer up between la Hève and l'Eclat, keeping the guard-house, that stands on the jetty of Havre, S. S. E. ¼ E. in a line with the chapel, called Notre Dame de Grace, that stands a little to the westward of Honfleur. Continue in this direction until the coast to the northward of la Hève is shut in with that cape. Proceed next on a south course until

til half way between la Hève and Havre, where you may anchor in from 3 to 4 fathoms at low water, but in danger of having the cables injured as before mentioned.

If a wind prevailing from between S. S. W. and W. S. W. should prevent a vessel's going within l'Eclat, from the Great Road, she may sail in to the southward, by keeping the castle of Orcher in one with the two towers of the gate of Ingouville, which appears joining to the northern part of the town; and, steering thus until the land to the northward of Cape la Hève be shut in with the cape, as before described. Without these precautions, ships may generally, between two-thirds flood and high water, pass without danger.

In any part of the channel within l'Eclat, vessels may anchor for a tide in from 3 to 4 fathoms.

Honfleur, on the opposite side of the Seine, lies two leagues S. S. E. from Havre. Between these places are several banks, some of which are frequently shifting; the largest is the Amfar, the west end of which lies about a mile to the S. W. by S. from the entrance of Havre; it extends nearly E. S. E. and W. N. W. about 6 miles in length; and, near the east end, it is half a mile broad. The other banks lie nearer to the south shore; one of them, called the *Ratier*, has its west end about 5 miles N. W. by W. from Honfleur. This bank, and also the Amfar, is in parts dry at low water. Between the Ratier and the little river of Touque, which is two leagues and a half to the W. S. W. of Honfleur, are several other banks, also dry at low water. Between these banks and the land, and also between them and the Amfar, is a passage; but those who are not well acquainted, should not attempt passing without a pilot: because the danger arising from the banks is much increased by the rapidity of the tides. The ships belonging to Havre, Honfleur, or Rouen, never enter this river without a pilot. The tide flows here on change and full days, at half past ten o'clock. *From Havre to Rouen*, one of the most considerable cities of France, the distance up the river Seine is about 22 leagues: small vessels go to Rouen.

The river of Touque is frequented by no vessels larger than large boats. Before its entrance lies the great bank called the Touville, which lies nearly in the direction of the coast, and dries for nearly a league. There are several small ones about the entrance of the river.

From Cape la Hève to Cape Barfleur, on which is a high lighthouse, the course is N. W. ½ W. about 17 leagues; and, from Cape de Caux to Cape Barfleur, the course is N. W. by W ¼ W. nearly 19 leagues. The shore all along between Cape la Hève and Cape Barfleur is rocky and full of sands. The bay, formed by Cape de Caux and Cape Barfleur, is about 7 leagues deep: on the south and west parts of it are several small harbours, of which the most particular are, *Dive*, 7 miles from Touque; the *River* of *Caen*, 5 miles westward of Dive; and *Isigny*, to the southward of Cape Barfleur. These are only capable of admitting vessels drawing but 7 or 8 feet water.

The land from Honfleur to Dive is very high; but between are three vallies by which it may be easily known. From Dive to the west of Caen is all sandy downs; at the extremity of these are three high steeples, by which it may be readily known.

Better than 2 leagues N. W. from the western point of Caen river, and two miles from land, lie the dangerous rocks called the *Shars de Langrune*. Between are other rocks, equally dangerous, called the Lion Rocks; and, to the west, lie the rocks of Calvados, which stretch along the coast and parallel to it, to the distance of a mile and a half from it, for nearly three leagues. They are partly uncovered with spring tides.—Approach no nearer to them than in 14 or 15 fathoms, as there are 10 and 12 fathoms close to.

It is high water here by the ground at nine, but, in the offing, at half past ten, o'clock.

From two leagues west of Caen river to that of Isigny, the land is of moderate height, and may be seen 6 or 7 leagues off.

About seven leagues westward of Caen, and nearly 5 from Isigny, is a fishing town named Port au Bessin, where a number of boats may be seen, hauled up on the beach. Above it, within land, are two lofty woods, appearing like little mountains, which distinguish this coast.

On the eastern side of the entrance to Isigny is a ledge of rocks stretching

stretching a mile and a half to sea, with from 7 to 9 fathoms close to. They must, of course, be carefully avoided.

St. Marcou.—South ¾ W. 4 leagues from Cape Barfleur, and W. N. W. northerly 16 leagues from Cape la Heve, lie the little islands named St. Marcou. They are of moderate height, and a vessel may sail round them, and even anchor. A long bank extends from either end. The southern one, named Cardonnet, extends to the S. E. for nearly 6 miles, and has upon it from 2 to 5 fathoms. The northern one extends nearly N. by W. 4 miles and a half, and has upon it from 3 to 4½ fathoms.

CAPE BARFLEUR.—The land of Cape Barfleur is low, and has a small harbour to the south-eastward of the light-house. The harbour is small and dry at low water. The entrance is easy; you need only keep in mid-channel; but it is not fit for vessels of a greater draught than 9 or 10 feet. The flood-tide of Barfleur, sets directly for the mouth of the Seine.

The lighthouse is situated on the point of a rock which forms Cape Gatteville; and this being level with the surface of the water, it is elevated on a base above the breaking of the sea. The body of the lighthouse is 88 feet high from this base, and the iron lantern 15 feet. The point of the cape extends about three quarters of a mile from Barfleur to the north, forming a very low rocky point, stretching 300 fathoms into the sea, in a line with the steeple of the church of Gatteville, on the summit of the coast, which is very rocky.

GENERAL OBSERVATIONS *on the uses of the Lighthouses upon Cape Lailly, Cape la Heve, and Cape Barfleur.* The four lighthouses are so situated, that those coming from the north for Havre, will see immediately the fire of Cape Lailly, which, in fine weather, can be seen till the fires of La Heve appear; ships going out of Havre down channel, will not be long, after they lose the sight of the fires of La Heve, before they perceive that of Barfleur: and ships coming from sea, for Havre or Dieppe, after they see the three lights of the Caskets, will soon perceive the fire of the Barfleur, which will direct them to the sight of the two fires of La Heve, if they are going to Havre, or to the fire of Lailly, if they are going to Dieppe.

The position of the fires of La Heve, is N. 20 deg. E. and S. 20 deg. W. corrected, or N. E. and S. W. by compass; ships in the north part therefore can never see them in a line; if you descry a single fire to the southward, without having previously seen the land, it cannot be any other than that of Barfleur, or of Lailly: and, as the mistake would be very dangerous, it will be improper to steer your course before you have sounded, to ascertain your situation.

At an equal distance from the land, you have water much deeper about Barfleur than near Lailly. From N. W. to N. of Barfleur lighthouse, five or six leagues distance, are between 35 and 40 fathoms, rotten ground. Three or four leagues from the same lighthouse, between 28 and 30 fathoms, coarse gravel; and, very near the shore, are between 20 and 22 fathoms, coarse brown sand; but at Lailly, and at the same distance of five or six leagues, from the N. W. to the N. E. of the lighthouse, are only from 20 to 24 fathoms, mixed ground, with pieces of reddish rocks, shells, gravel, and pebbles of various colours; and nearer the shore, between 2 and 4 leagues from the said lighthouse, you will find 18 and 20 fathoms, same ground as before. You may stand in 15 or 16 fathoms water to the fire of Lailly; but it would be improper to come nearer the shore.

A ship from the westward, having ascertained the fire of the Barfleur, is not to approach nearer than 20 or 22 fathoms; and, if this ship be bound for Havre, or the Seine, after having descried the two fires of La Heve, either by day or night, she should make tacks from north to south, either to wait for day-light, or for the tide, and she should not come nearer the south land than 14 or 15 fathoms. When at the mouth of the Seine, you are not to bring the two fires of La Heve in one, unless two-thirds of the flood at least are run.

To sail from Havre for the Westward in the Night, or in thick Weather, steer about N. W. or N. W. by N. frequently heave the lead, and keep, if possible, in 16 or 18 fathoms. The ground between Havre and Barfleur is composed of black, red, and grey pebbles, like small beans, with very little sand.

The little Harbour or Port of La Hogue, lies 7 miles to the south-

ward of Cape Barfleur. It is dry every tide, but will admit ships drawing 12 or 14 feet, and shelter them from all winds, excepting from E. S. E. to S. S. E. to which it is exposed. The bottom is clay, and the passage both in and out is easy. The entrance is along the land on the north side, which is preferred, because on the other side there are several rocks.

The road of La Hogue lies to the southward of the harbour, and is said to be the best of any on the coast: you may anchor in from 5 to 9 fathoms at low water; the ground, a mixture of sand and clay, is very good. Ships may ride here secure from winds at north, N. W. West, S. W. South, and S. S. E. as the sea is never so tempestuous as to force them from their anchorage, if their ground-tackle be good. The tide flows here, on the change and full-days, at three quarters past 8 o'clock, and the water commonly rises about 16 feet.

In coming either from the Eastward or from the Westward, do not approach nearer to Cape Barfleur, than from 25 or 22 fathoms, E. N. E. from the lighthouse, about 2 leagues, lies a sunken rock, called the *Granville*, on which there are only 7 or 8 feet at low water, spring-tides. The existence of this rock has been doubted; it is best, however, to suppose that it exists, and to act accordingly. The tides are so very rapid round Cape Barfleur, that the violence of their current causes great spoutings, sometimes taken for breakers, and called the *Race of Barfleur*.

Half way between Cape Barfleur and the islands of St. Marcou, at the distance of 4 miles nearly from the nearest coast, lies a small bank, called the Banc de Fer, or Iron Bank, which has only 2 fathoms over it at low water, spring-tides.

Cape Levy is about 8 miles N. W. by W. ½ W. from Cape Barfleur; the coast between rounds to the northward, and is so foul, that a ship of any considerable draught should not come into less than 22 fathoms: as that depth is not more than half a mile from the rocks, which lie more than 2 miles from shore. About 4 miles East from Cape Levy, lies the Grand Renier-rock. In sailing along this part of the coast, you must keep the mountain above Cherbourg clear of Cape Levy, which will carry you considerably to the northward of all the rocks, excepting only Le Pierre Noire, which lies N. N. E. a mile and a half from Cape Levy, and has a sunken rock on its north side.

In the bight, on the western side of Cape Levy, is good sandy ground, where vessels may anchor, and be sheltered from all winds, between E. S. E. and S. W.

CHERBOURG is two leagues West ½ South from Cape Levy: two miles E. N. E. from the town lies the rocky and sunken island, called Isle Pelée. Two heads of this isle are always above water. There is no passing betwixt it and the land to the eastward, except at high water, and then only with small vessels; but it may be safely passed on the side next the sea. *The Road of Cherbourg* lies directly before the town; the best anchoring is on the west side, in 3 or 9 fathoms at low water. The bottom being fine sand, is good for holding.

From the Isle Pelée to Point Querqueville, the distance is about 4 miles; and, between, is a dyke or mole, 2 miles and three quarters in length, leaving an opening or passage at each end, of more than 1000 yards. By this dyke the harbour is effectually sheltered from all winds that blow from seaward; and shipping lie in perfect safety in 6, 7, or 8 fathoms at low water, sandy and good holding ground. The N. E. entrance is protected by a fort on Pelée, and the N. W. by another on Point Querqueville. The water rises in the harbour, on full and change days, about 20 feet.

From the Point of Hommet, N. W. of Cherbourg, to *Cape La Hogue*, the coast stretches about N. W. 4 leagues. The land is low near the coast; but about half a league from shore it rises. Off Cape La Hogue, and along the coast to the eastward of it, are a number of small islands, with several sunken rocks; some of them more than a mile from the land, which renders it dangerous to approach within 2 or 3 miles of the shore. Cape La Hogue lies about 9 leagues N. W. by W. ½ W. from Cape Barfleur: between, the tide flows, on the change and full days of the moon, from half after seven to eight o'clock; and the flood continues to run, in the offing, until half past ten. The stream of flood sets along shore S. E. and the ebb N. W.

Direct-

Directions for ALDERNEY, GUERNSEY, JERSEY, &c.

ALDERNEY.—The south-east point of this island is 8½ miles W. N. W. from Cape La Hogue. This island is 5 miles long, and 2 miles broad. On the N. W. and S. sides are a number of rocks; the east side is pretty clean. On this side is a battery that commands the little port of Longy.

Between this island and Cape La Hogue, is the *Race of Alderney*, the current of which is supposed to run, in spring-tides, 6 or 7 miles an hour. There are some sunken rocks off the N. E. point of the island, as well as off Cape La Hogue, nearer the island than the cape, but it is best to steer nearly in mid-channel, when you go through the Race.

Two leagues to the south from the east end of Alderney, is the N. E. end of a bank, called *Banc de la Chole*, or shoal-bank; it thence extends W. S. W. about 5 miles, and lies nearly in a line from the middle of the Race, and has only 12 feet on it at low water, spring-tides. The middle part of this bank bears from the Caskets S. S. E. ½ E. 6 leagues; from the east end of Alderney, S. by W. ¼ W. near 3 leagues; and from Sark, E. N. E. 3½ leagues.

About a mile and a half N. N. W. from the north-westernmost point of Alderney, lies the little island Burhou. Two miles west from Burhou, and nearly 3 N. W. ½ W. from the north-western point of Alderney, lies *Ortac*, a remarkable large rock, which makes like a hay-rick, and is clean to the westward. You may go between this rock and the Caskets with a fresh breeze; but at least half the distance across must be left towards the Caskets.

CASKETS. About 4 miles N. W. by W. from Ortac, and 7 miles in the same direction from the westernmost point of Alderney, lie the Caskets, a cluster of rocks, some above the water, many below it. On the largest of the former, stand three lighthouses, in a triangular form, which may be seen, in clear weather, 3 or 4 leagues off. The northernmost of the rocks, off the north end of Alderney, and the Caskets, bear from each other, nearly E. S E. and W. N. W. There is also a passage between the island Burhou and Alderney, called the Passage au Singe, or Monkey-passage.

The lights exhibited at the Caskets are composed of a number of Argand-lamps, fixed on a ring, moving in a circular revolution, and presenting alternately a bright body of light in every direction.

The Passage between the Caskets and Ortac is not so safe as the Singe-Passage: nor is it used, unless in cases of necessity; for, in case of a calm, the various settings of the tides, between the Caskets and the island of Guernsey, make it dangerous. In going through this passage, you must be careful to keep well to the eastward, towards Ortac, in order to avoid the sunken rocks called *Le Quest*, or *Le Ket*, extending near 2 miles to the eastward of the Caskets, and appearing at half-ebb. From the Caskets to the nearest point of the west part of Guernsey, is nearly S. W. 16 miles. About two leagues S. W. from the Caskets, is the middle of a bank, called the Banc du Susurouais, extending nearly 5 miles S. W. ¼ W. and N. E. ½ E. and upon which there are from 7 to 11 fathoms.

About a mile and a half to the eastward of Ortac, is the inner entrance of the Passage au Singe; it is two miles and a half in length; and, in the narrowest part, which is between the island Burhou and the Corbet-rock, it is not clear for more than a cable's length from side to side. The tides set directly through this passage E. by N. and W. by S. Nearly two miles S. S. W. from Ortac, lies a rock, called *Pierre au Vrac*. This rock is to be seen only at low water, spring-tides, and in form and size it is like a boat; near to it there are 16 fathoms water. In sailing through the Singe-Passage, you may go within pistol-shot of the island Burhou, and also of the Corbet-rock; the latter lies on the Alderney side of the passage, and may be approached within pistol-shot, as may also the island of Burhou.

CASKETS, IN THE NIGHT-TIME. *If, in running up Channel, you should fall to the southward of the Caskets in the Night*, after you have the light N. N. E. from you, steer E. by S. E S. E. or S. E. by E. according to the distance you are from them: 9 or 10 miles will lead you into the opening of the Race of Alderney, which is very clean, except that from Cape La Hogue; upon the coast of Normandy, there lie several rocks at the distance of more than a mile from the shore. It is likewise safe, except in a gale of wind with a weather-

ther-tide, when the sea breaks dangerously; for, upon the springs the tide runs here from six to eight miles an hour.

GUERNSEY. This island lies 13 miles W. S. W. from Alderney. The land on the south side is high, and it lowers gradually towards the north side. Guernsey is almost encompassed with rocks; the most remarkable of which are the following; namely, the *Hanovaux*, on the west side; the *Brayes*, with many others, on the north side; and, to the eastward, are the isles of *Herm*, *Jethou*, *Sark*, and others: these again are surrounded with a number of rocks. The principal town *St. Pierre*, or *St. Peter*, is situated on the east side: the entrance of its port is formed by two stone piers, and it is 100 feet wide at the top of the piers, and 68 feet wide at the surface of the water. The roadsteads are also on the east side of the Island; and there are two channels by which ships may come into them from the northward, called the *Great Russel* and the *Little Russel*.

The Great Russel. When going through the Race, for the Great Russel, which is the easternmost passage to Guernsey, steer W. by S. ½ S. leaving the island Herm on your starboard hand. If you intend to pass through the *Deroute*, between Sark and Jersey, steer the same course through the Race as before; and, leaving Sark on your starboard side, keep about a league from it, in order to avoid a sunken rock, called the *Blanchard*; which bears S. E. by E. from the windmill on Sark-island, and is seen at low water spring-tides only.

The Great-Russel-channel lies between the island of Sark, on the south side, and the islands Herm and Jethou, on the north side. When through the Race, steer W. by S. ½ S. until almost a-breast of the Great-Russel-head. You will then see a rock about a mile to the eastward of Herm, called Noire Pute, which you must leave about a quarter of a mile on your starboard side. When you have passed this rock, bring St. Martin's Point, the southernmost point of Guernsey, on with a rock which lies S. S. W. about a mile from Jethou, called *La Goubiniere*. This mark will carry you clear of all the dangers on the side of Herm and Jethou. Continue the same course till you have brought St. Martin's Church on with the middle of Fermain-bay; then steer for Guernsey, until you have brought the isle of Brehou N. N. E. ¼ E.; or bring the Watch-house, on the South-pier-head, open to the south-west of Castle-Cornet; either of these marks will carry you clear of the rocks called *La Sardiere* and *Les Tetes d'Aval*, and you may then steer N. by E. for Guernsey-road.

In sailing through the Great Russel, you may approach within a quarter of a mile of Sark-island, without danger; for, there are no rocks but those which are seen above water, until you get near to the west point of the island of Brecqhou, or Brehou, on the west side of which are some rocks, called *La Givause*; but, as they do not lie more than a quarter of a mile from the island, you may safely turn them, should the wind be contrary. The passage is quite clear for near 3 miles.

The Little Russel. From La Hague to the Little Russel, the course is more westerly than it is to the Great Russel; it is more difficult of access to strangers than the other. In proceeding from the Race, leave the *Amfrocks* to the eastward, taking care not to come nearer to them than a mile and a half, in order to avoid foul ground that runs off to the N. E. from the *Petite Amfrocks*. About half a mile N. N. W. from the Grand Amfrocks, lies a sunken rock, called *Les Boufresses*. On the west side of the entrance of this channel are small islands, or rocks, called *Les Brayes*, which leave on your starboard hand. The mark to go just clear of them is, the north point of Herm-island, (a low sandy point) about a handspike's length open of the south end of Sark-island. When you are in the fair way, between the Amfrocks and the Brayes, steer in until you bring St. Martin's Point a sail's breadth open of the west side of Brehon-rock; this mark will carry you through, between *Roustel-rock* and Rousse. The marks to know when you are a-breast of the former are, the Tower, to the southward of Vale-castle, and the Windmill in one; and the north bluff of Herm just on with the north end of Sark. When within Rousse-rock, which you leave on the larboard side, bring Longue Pierre open to the S. W. of Rousse, or keep the lowest part of St. Martin's Point open to the westward of Brehon, by which you will avoid a sunken rock, seldom seen above water, called

called La Grune au Rouge. Continue to run with the former mark, Longue Pierre open to south-west of Rousse, until you have brought Brehon on with Crevichon, you are then clear of the Grune au Rouge; steer in the same direction towards Castle-Cornet, by which you will avoid sunken rocks, called Le Refees, or Boucees Agenor, on the starboard side.

Should a Ship, after having entered the Little Russel, between Rousse and Roustel, be obliged to turn to windward, in order to get into the road, care must be taken, when standing to the westward, not to bring Brehonnet on with St. Martin's Point; or, in standing to the eastward, not to bring Brehon, on which is an obelisk, on with the same; the former will keep you clear of Roustel, and the latter prevent your getting upon the *Genettes* rocks. These rocks lie between Rousse and Brehon, and may be avoided by keeping St. Martin's Point a sail's breadth open to the westward of Brehon. The *Angloises*, or Flafougres, lie a little more than a mile to the S. by E. of the Brayes. The mark to avoid them is, the town-church open to the eastward of Vale-castle. This church stands nearly north 3 miles from the castle. Roustel is the most dangerous rock in the Little Russel; it lies about a quarter of a mile N. N. W. from Rousse, and is never seen until half-ebb. About half a cable's length N. E. from Roustel, is a small sunken rock, which must be carefully avoided. *Longue Pierre*, or Long Stone, a rock always above water, lies about two miles east from Rousse, and its south-east point appears like a sail.

In the fair Channel of the Little Russel, are 5 or 6 fathoms at low water, spring-tides; the first of the flood-tide runs towards Herm-island, and the beginning of the ebb sets to the N. N. W.

COURSE FROM THE CASKETS TO THE LITTLE RUSSEL. If bound to the Little Russel from the west of the Caskets, the course is nearly south, distance 4 leagues. In coming in, observe that you steer towards the Amfrocks, leaving the Brayes (which lie N. E. by N. ½ a league from the Vale-point) a mile to the southward of you, till you open the town-church with the Vale-castle; then you are to the eastward of the Flafougres, or Angloises rocks, (which never appear above water,) and may run into the Russel till St. Martin's Point is within a sail's breadth of Brehon, and then proceed as before. But you may go to the westward of the Roustel and the Grune au Rouge, between them and the flat rock. In going through, you will observe a small wood upon the highland of St. Martin's, the east side of which, if brought upon the cupola at the castle, will lead you through; but, if you bring it on with the middle of the wood, it will run you directly upon the Roustel-rock, which lies a-breast of Rousse; and, when you have that rock on with the house upon Herm, you are a-breast of the former. But, in going in through this side of the Russel, do not bring Longue Pierre on with the Rousse, till the house upon Jethou be on with Crevichon, by which you will avoid the *Grune au Rouge*, and go the westward of it. You must be careful not to go too near the shore, after you have past the Brehon-rock, to avoid the rocks that lie half a mile from the shore, between St. Sampson's and the Pier, called Boucees Agenor, or Les Refees.

GUERNSEY ROAD is off the opening between Castle-Cornet and the rocks called La Blanche and Sardrette. To moor, drop one of your anchors near the rocks off Castle-point, and the other near the Blanche-rock; this last is generally a stream-anchor. In coming to anchor in this road, be brisk in veering away cable, otherwise your anchor will be apt to come home; for, although the ground be good, the anchors are often choaked with long weeds, which prevent their taking hold of the ground.

But, if bound into the Piers, it would be most advisable to take a pilot. The tide rises here 5 fathoms upon springs and 3 upon the neaps.

Ships coming from the northward for Guernsey, and round the west end of the island, must not approach nearer to it than 3 miles; as Rocks, called the Grunes and the Sambule, the most dangerous of any in this passage, lie to the E. N. E. of the Hanovaux, off the western point of the island, and about a league from the isle of Lihou: they are covered at high water. The mark to go clear of them on the west side is, a house on Lihou-island, which lies to the north-east of

of Plain Mont, on with a Watch-house on the Mount. *The Grunes* lie with Catel-church nearly on with Du Guet, a high mountain, and bearing from the rock nearly south. When to the westward of the Grunes and the Sambule, steer west towards the Hanovaus, observing to keep at the distance of a mile from their west end, in rounding them. When past the Hanovaus, steer S. by E. until the south point of Sark is open of Guernsey; then steer for that point of Sark-island, until Sark-mill is a sail's breadth open of St. Martin's Point. This mark will lead you along the south side of the island: but you must not approach nearer the shore than one mile; nor to St. Martin's Point than a mile and a half, until Vale-church is on with the west-side of Castle-Cornet, which will carry you clear of the rocks, called the Longue Pierre; these rocks lie to the eastward of St. Martin's Point. Vale-church is about 3 miles to the northward of Castle-Cornet.

When you are to the northward of Longue-Pierre-rocks, steer in for Brehou-island, which has a small pyramid on it. Large ships generally anchor half a mile to the eastward of Castle-Cornet, with the town-church open to the northward of it, in from 6 to 11 fathoms*.

To anchor on the South Side of Guernsey, which you may do in 35 fathoms, but not less water, keep the north end of Sark-island open of St. Martin's Point; then you will be far enough from shore, and may anchor in 35 fathoms, good ground: nearer to the shore the ground is foul and rocky.

About a mile E. N. E. from St. Martin's Point, and E. S. E. from Fermain-bay, is a bank called the *Grand Bank*, on which sometimes are no more than 3 fathoms. Along the south side of Guernsey, the flood tide sets along shore to the eastward, as far as St. Martin's Point; but does not run to the northward until four hours flood; so you must be careful, in light winds or calms, that the first of the flood does not carry you into the great Russel, which very often happens, when not properly guarded against.

* Between St. Martin's Point and Brehou-rock no ballast is to be cast out under a penalty. In sight of the Castle, hoist your colours, or you will be fined for every shot fired at you for contempt.

With the wind at S. W. stand to the westward towards Herm and Jethou, the Noire Pute on with the Goubinierre, till you have past the former; then bring the latter on with St. Martin's Point. But towards Sark you may stand to ¼ of a mile, it being all clear of rocks, excepting that which lies off the point of the isle Brecqhou, called Givaude.

REMARKS WHEN BOUND TO ST. MALOES, &c. If bound to St. Maloes, or any other port in Bretagne, it would be advisable to take a pilot at Guernsey; from the port, or from the S. W. end of the island, at St. Saviour's.

JERSEY. The N. W. point of Jersey lies 5 leagues S. by E. ¼ E. from St. Martin's Point in Guernsey, and 10 leagues S. W. ¼ W. from Cape la Hogue. This island is about 9 miles long, from east to west, and about 5 miles broad. The S. W. point lies 9½ leagues N. N. E. ¾ E. from Cape Frehel; and the S. E. point 9 leagues N. N. E. ¼ E. from Sezembre-island, which lies off St. Malo. Jersey, like Guernsey, is surrounded with rocks, which render the access both difficult and dangerous. It is necessary to have a pilot to enter any port. Pilots are always ready.

St. Helier, the principal town in Jersey, is situated in St. Aubin's bay, on the south side of the island, and has the best road in the whole island; but numerous rocks lie about the entrance. Ships sometimes anchor about three miles without the bay, in 15 or 20 fathoms clear ground. On the west side of the island is *St. Owen's Bay*, where large ships anchor in 12 or 15 fathoms. Three or four miles to the westward of this bay, is a bank, called Grand Banc, which extends N. N. W. and S. E. and affords good anchoring in 12 fathoms. On the east side of Jersey is *St. Catherine's Bay*, where the anchorage is good. About E. S. E. from St. Martin's church, and two miles from the shore, is a bank on which you may anchor in 5 or 6 fathoms.

In rounding St. Clement's Point, the south-east point of the island, take care not to approach any nearer to it than 3 or 4 miles, in order to avoid a ledge of rocks which runs off S. S. E. from it, called the Bank de Violet: here the tide runs very strong.

To

To the northward, and the north-eastward of Jersey, are 3 long ledges of rocks, called *the Paternosters*, the *Dirouilles*, and *Echreho*. The west end of the Paternosters lies 2 miles N. E. by E. ½ E. from the N. W. point of Jersey; they thence extend three miles S. E. ½ E. Nearly 5 miles E. by S. from the south-east end of the Paternosters, lies the westernmost of the Dirouilles; which thence extend to the east and south more than 3 miles. Immediately south of these lie the rocks of Echrehou, and l'Ecreviere Banks, which terminate gradually at the distance of about 5 miles. Some of the rocks are under water, and the tide sets over them with great velocity.

La Deree rocks, at the west end of *the Minquiers*, lie 16 miles S. S. W. ½ W. from the S. W. point of Jersey; and 13 miles N. E. ½ N. from Cape Frehel. From the Deree-rocks, the Minquiers extend 10 miles E. by N. and are above three miles across. The greatest part of the Minquier-rocks are under water; those which shew themselves are called Les Maisons. The westernmost rocks, called La Deree, are always above the water, and appear to be detached from the rocks next to the eastward of them. This ledge of rocks, and also those on the north side of the island, are dangerous; the tide sets right over them.

Between the Minquiers and the island of Jersey, lies the dangerous rocky bank called the *Grelets Bank*. Its nearest part is about S. S. W. 5 miles from Noirmont Point in Jersey, and it extends thence S. E. by E. between 5 and 6 miles. Its greatest extent in breadth is about 2 miles. From St. Clement's Point, Jersey, the eastern end bears S. S. W. westerly, distance 7 miles.

Rocks Douvre, lie 8 leagues W. by N. from the south-west point of Jersey, and 8 leagues and a half S. W. by W. from St. Martin's Point in Guernsey. The largest of those rocks are always above water, and the whole extend 3 miles east and west.

If bound to Jersey from the Race of Alderney, through the Deroute, steer for the Great Russel till you are to the westward of the Banc de la Chole; then S. S. W. leaving the island of Sark to the westward at about a league distance; then you will go one mile to the eastward of the *Blanchard Rock*, which lies S. E. by E. from the mill upon Sark, and which never appears but upon low spring-tides. You may then steer S. W. by S. to go without the Paternosters, the west end of which lies from Sark, nearly S. by E. 8 miles, and from Gros Nez, upon the island of Jersey, N. E. by E. ½ E. 8 miles. But allowances must be made for the directions and velocity of the tide.

TIDES. Between the island of Guernsey and the Caskets, the tides are never still: they set upon every point of the compass, in the course of every ebb and flood. At the Caskets and Alderney it sets, at high water, N. or N. N. E.; at a quarter ebb, N. W.; at half ebb, West: at three quarters ebb, S. W.; at low water, South; at a quarter flood, S. E.; at half-flood, E.; at three quarters flood, N. E.; and, at high water, North, as before. At the Caskets, Alderney, Guernsey, and Jersey, the tide flows, on the change and full days of the moon, at 6 o'clock; but the stream does not begin to run through the Russel-channels, to the northward, until half-flood by the shore: it then begins to run through, and continues setting to the northward for 6 hours, or until 9 o'clock. The ebb begins to run to the southward, when it is half-ebb on the shore; and it continues to run in that direction during the other six hours. Spring-tides rise 28 or 30 feet; neap-tides not more than 12 or 14 feet. On the north side of the Caskets and of Alderney, the stream of flood runs till half past 9 o'clock; and, to the westward of the Caskets, it runs only till 9 o'clock.

The Coast of FRANCE, *from* CAPE LA HOGUE *to* BREST.

THE coast from *Cape La Hogue to Cape Carteret*, trends S. by W. 7 leagues. Two miles southward of Cape La Hogue, is good anchorage in the Cove, with off-shore winds, in 4 or 5 fathoms. From *Cape Carteret to St. Germain sur Hy*, the coast bends S. by E. ½ E. nearly four leagues; and thence to *Granville*, 8 leagues S. S. W. Granville is 11 leagues S. by W. from Cape Carteret. About 5 miles south from Cape Carteret is Portbail-road, where there is good riding with N. E. East, and S. E. winds, in 15 or 16 fathoms. Between this part of the coast and Jersey are many rocks, among which the

tides render the navigation dangerous: some of the rocks are always above, and others under, water.

Between Jobourg-ness, which is one league to the southward of Cape la Hague, and Cape Flamanville, lies *Vauville Bay*, in any part of which, vessels may anchor in from 6 to 14 fathoms, sheltered from all winds between N. E. and S. S. E. only observing that the rocks called the Trepieds, or Wequets, lying 2 miles S. S. W. from Jobourg-ness, must be carefully avoided.

Port Dielette. Seven miles and a half from Jobourg-ness, and 2 miles to the N. E. of Flamanville, is Port Dielette, a small harbour, under the shelter of high hills. A pier from the south side, 360 feet long, protects vessels from westerly winds. The entrance is between two ledges, stretching two cables' length outwards, and leaving a channel of about 70 fathoms in breadth; the bottom is sandy.

Between Cape Flamanville and Cape Carteret, the land is high and appears double, with several churches and mills upon it.

Granville is on the top of a steep rock, on the south side of which the harbour lies east and west, and is formed by a jetty built of loose stones. There is no road, and ships generally anchor at Cape Lihou, where the ground is good. Granville and Cancalle-point form the entrance of a bay, called Mount St. Michael's bay: the point of Cancalle lies nearly 4 leagues W. S. W. ¾ W. from Granville.

Isles of Chausey. The principal of the isles of Chausey, lies 3 leagues N. W. by N. of Granville. Upon its southern side is anchorage, off the ruins of a fort. The range of rocks, by which this and the lesser isles are nearly surrounded, extend for 4 or 5 miles from east to west.

Mount St. Michel. The remarkable isle or rock called Mount St. Michel, having upon it a little fortified town, with an abbey, lies 4 leagues S. ¾ W. from Granville. It is inaccessible to shipping, and small craft alone can pass near it.

Cancalle, &c. Two miles and a half to the E. N. E. of Cancalle-point, are three large rocks, under which you may anchor in 8 or 10 fathoms; and, east of the town, are two other rocks, within which you may anchor in 5 or 6 fathoms. When you come from sea for Cancalle, you go between the three first rocks and the point: in this channel are not less than 8 or 9 fathoms. From Cancalle-point, the point on the east side of the entrance of St. Malo-bay, bears W. by N. about two leagues. Between these places are several points of land; also several rocks, some of which are above water.

ST. MALO stands on a rocky island, now joined to the continent by a causeway. Its harbour is one of the best in France, but of difficult access, situated at the bottom of a deep bay, which is full of rocks, some above, and others under, water: they lie scattered throughout the bay, and some are above three miles from shore. There are, however, three passages to this port, for which the following are the marks and directions.

Conchee-Passage. The easternmost of the three is called the Conchee-passage, and takes its name from a very high white rock, which serves as a mark for it. This rock is to the eastward of Sezembre-island, and must be left on the starboard side. Having passed about a quarter of a mile to the eastward of this rock, steer for the N. W. corner of the city, about S. by W. until you are within a large half mile of it; and then steer about W. S. W. between rocks called the Toad-rock and the Little-Bay-rock, and anchor off the town, in six or seven fathoms. The Great-Bay-rock lies about a quarter of a mile N. N. W. from the north-west corner of the city; and the Little-Bay-rock a little way to the N. W. of the great one. The Toad-rock has a beacon on it, and lies about north, near a mile from the Little-Bay-rock.

La Grande Porte, or the Great Gate, is the name of the next channel. In proceeding for this channel from the westward, steer for the south-west end of Sezembre-island, taking care not to come any nearer to it than one mile, until a remarkable large black rock, to the N. E. of the town, bears S. E. ½ E. and is on with a steeple, in a village 2 miles to the eastward of St. Malo, called Parame, bearing then S. E. ¼ E. Steer with these marks on, until you are within a beacon on the Jardin, a sunken rock at the end of Isle Sezembre, which must be left on the larboard side. Then bring a little tower, on the south-west corner of the city, on with the steeple of St. Servand;

vand; steer, with this mark on, about S. S. E. ½ E. which will lead you to the eastward of the Buron-rock, and to the eastward of the Little-Bay-rock. You may then proceed, and anchor off the town as before directed. On the Buron-rock stands a beacon. Sezembre-island is pretty high, and lies about three miles N. N. W. from the north-west corner of the city.

The Decolces, the passage along the shore, is very difficult, and frequented only by such small vessels as are well acquainted.

In the Mouth of Rance, or Dinan-river, is a rock under water, which lies in the middle of the channel, and may be left on either side; but, to go to *Solidore*, or to anchor close to the city, you should take a pilot. Ships, lying close to the town, are sheltered from all winds; but they lie dry at low water.

CAPE FREHEL. About 4 leagues N. W. by W. from St. Malo, is Cape Frehel, a high cape, on which is a remarkable lighthouse; between are several creeks, off which you may anchor. About a league to the south-eastward of Cape Frehel, is Point La Latte; and, to the southward of this point, is the Bay de la Fresnaye. Ships coming from Cape Frehel for this bay, either to wait for the tide to proceed for St. Malo, or to get a pilot, may steer for *Point Latte*, ranging along the coast; and, after having passed the castle, and got its bridge quite open, the castle (which stands on the extremity of the Point) will then bear about north, and they may anchor in 8 or 9 fathoms: the bottom is coarse gravel.

The Tide flows here, and at St. Malo, on the change and full days, at 6 o'clock, and the water rises 45 feet.

From Cape Frehel the north-east end of the island *Brehat* is N. W. ½ N. nearly 9 leagues. Rocks, called Les Bouillons, and Le Grand Lejon, lie about 3 leagues and a half from Cape Frehel, and almost in a direct line between it and the north-east end of Brehat; be careful to avoid them, as they are generally under water. Brehat is about one mile and a half long, lies near the shore, and has a pretty good harbour; but none who are unacquainted should go thither. Off the north point of the island are several rocks under water, which run out to the distance of 3 miles; and, about 2 leagues E. N. E. from the north end of the island, is a dangerous rock called La Horaine.

The Isle de Bas is about 14 leagues from Brehat; all the coast between, for about 2 leagues from shore, is full of little islands and rocks, some above, and others under, water. About 2 leagues from Brehat, N. N. E. lies Roc Arbel, a sunken rock, which you may pass over at high water. Two leagues N. N. W. from Brehat, lie the *Heaux-rocks*; and 6½ miles N. W. ½ N. from Brehat, lie the *Pierres Noires*. About 4 leagues W. N. W. from the Pierres Noires, are the *Seven Islands*; and 5 miles W. N. W. from the Seven Islands, is the east end of the *Triagons*, a rocky bank, extending nearly a league and a half, East and West, and above a mile broad; some of its rocks are above, and others under, the water. On the land, opposite to the Seven Islands, is a high spire-steeple; and the land opposite to the Triagons is known by a high tower. *You may sail within the Triagons*, between them and the Pongaro-rocks; rocks which lie 4½ miles S. W. by W. ½ W. from the west end of the Triagons, and 9 miles E. ½ N. from the Isle de Bas. *The Isle de Bas* is about 3 miles long, and one mile broad; and is separated from the land by a narrow channel.

Vessels sailing in this part by night, or in winter, from Ushant or the westward, must be careful not to steer more to the South than East, or E. by N. until they have the Triagons on the starboard side; for the currents set strongly to the S. E. upon the Triagons and Seven Isles: but, by day, and in clear weather, there is no danger in approaching the land, because every rock will be visible.

Roche Blanche. A rock under water, called the Roche Blanche, or the White Rock, lies 14 miles N. E. by N. from the *Isle de Bas*, nearly 25 leagues W. by S. from the Caskets, and 19 miles N. W. from the Seven Isles. Its top is said by some to appear at low water; others on the contrary assert, that it is not dangerous, although the sea breaks here more strongly than in the circumjacent places; and that there is water enough for large ships.

MORLAIX. The town of Morlaix is situated at about 4 leagues South from the East end of the Isle de Bas. In the bay between are several-

several rocks and dangers. When coming from the westward or the northward, and bound to Morlaix, steer for the east end of the Isle de Bas; and, when you have brought the Horned-rock, or Horse's-saddle, which lies to the eastward of the island, W. N. W. about 3 miles, steer for the northernmost point of land on the east of the entrance of the Bay, bearing then about S. E. by S. until you are within 2 miles of the rocks which lie off that point; then steer S. W. by S. for a little island which lies off the point on the east side of the entrance of the river; you must leave all the beaconed rocks on the larboard, and the Raguel-islands, and Women's Islands, on the starboard side. From the little island, off the eastern point, you may proceed up, until you get above the point on the other side of the river, and then anchor in 6 or 7 fathoms.

St. Pol de Leon is a small harbour on the west side of Morlaix-bay. In coming from sea from this harbour, steer for the *Great Horned Rock*, at the east end of Bas-island; when you come near it, steer for *Basse-Hastan-rock*, which lies from the other about S. S. E. a mile and a half. When you are to the eastward of Basse-Hastan-rock, steer about S. S. W. for Greenstones-island, and pass between Greenstones-island, and rocks which lie E. N. E. of it; then steer about S. by E. ½ E. for the Cows-rocks, which lie to the N. W. of the north end of Calot-island; thence proceed S. S. W. up the river, leaving the Oven-rock on your larboard side; abreast of this rock are 14 fathoms. From the Oven-rock steer for the Fig-Tree-stone, which rock lies in the middle of the river, and almost a mile above the Oven-rock; below it there are 9 fathoms water, and above it there are 5, 4, 3, and 2 fathoms.

Roscou-harbour is nearly opposite to the east end of the Isle de Bas: it was, some years ago, made a kind of free-port for the importation and exportation of rum from the French colonies; but the harbour is so small, and the passage into it so full of dangers, that it is frequented only by smugglers and fishermen. The tide flows here, on the change and full days, a quarter past five o'clock; and, in the offing, the flood continues to run until half past seven o'clock. The spring-tides rise at Brehat-island 36 feet; at Morlaix, 30; and, at the Isle de Bas, 27 feet.

Goulven Bay. About 3 leagues W. by S. from the Isle de Bas, is the Anse de Goulven, a large sandy bay, when you may anchor with off-shore winds. The coast between this bay and the N. W. point of Britanny, or the Department of Finisterre, is in most parts full of rocks and shoals, some of which extend nearly 2 miles out to seaward. Of the rocks many are high, and appear at a distance like houses. The land, which is not very high, may be seen from 5 to 6 leagues off, and many steeples and houses may be seen upon it. It is recommended, that in the night, vessels shall not approach nearer than 36 fathoms; bottom, grey sand, with small pebbles like little nuts, of various colours.

Rather more than 7½ leagues W. ¾ N. of the Isle de Bas, is a large bay, called l'Aber Vrach, but of difficult access. Two leagues to the westward of this bay, lie the Rocks of Porsal, which are mostly covered, and extend near a league from the land. There is anchorage amongst them, but the passages are intricate.

The Four, a remarkable large black rock, lies about a mile from the N. W. point of Britanny, or Finisterre, and E. by S. ¼ E. 3½ leagues from Ushant. It is called, from its peculiar shape, the *Four* or *Oven*, and is always above water. The coast, from the Porsal Rocks to the Four, trends S. W. ¼ S. for nearly 2 leagues. The land between is of moderate height, but environed by many rocks to the distance of a mile. Shipping in the night ought not to approach within 45 fathoms. The bottom generally grey sand, with small flints, &c.

USHANT, a steep craggy island, is 4 miles in length from E. to W. and 2 miles broad. On the south-west side of it there is a harbour, but its entrance is known only to the French; the rest of the island is surrounded with rocks, except where there is an anchorage on the north side, between it and a little island, named Queler, where vessels may lie sheltered from all winds, but those from the northward. Upon the N. Eastern part is a conspicuous lighthouse, which may be seen in clear weather, 4 leagues off.

N. W.

N. W. ¼ W. 4 miles and a half from the lighthouse, and nearly N. ¼ E. 3½ miles from the western part of the island, lies a dangerous bed of sunken rocks, called the *Basse Calais*, which must therefore be carefully avoided. There is also, at the distance of a mile from the S. W. point, a rock named the Jument, equally dangerous, being alternately covered and uncovered with every tide.

ST. VINCENT'S CHANNEL, &c. Between Ushant and the smaller islands to the southward, is a channel of more than one mile in breadth, called by the French the *Chenal du Frotueur*, and by us *St. Vincent's Channel*, in honour of Earl St. Vincent, under whose orders it was surveyed, by Captain, now Vice-Admiral Knight. The tide runs through very rapidly, generally exceeding 4 knots. The course through is East; but a passage should not be attempted against the tide. The dangers on the north side, do not extend half a mile from the shore.

The range of Islands and Dangers to the S. S. E. of Ushant, extend to the distance of 4 leagues. The westernmost of the dangers are, the *Pierre Verte*, a bank of sunken rocks, which appear at low water, spring-tides; and the *Buffalo*, a rock on which his Majesty's ship Magnificent was wrecked in 1804. The former lies 5 miles S. S. E. ¼ E. from the S. W. point of Ushant; the latter, or Buffalo, lies S. S. E. 10¼ miles from the same point, and has 8 fathoms close to it. Hence to the Black Rocks, upon the westernmost part of the general range of dangers, the bearing and distance are S. S. E ¾ E. distance rather more than one mile and a quarter. Between are from 10 to 22 fathoms.

PASSAGE DU FOUR. The Passage du Four is that channel, which lies between Ushant and the main. It takes its name from the remarkable rock, called the Four or Oven, heretofore mentioned. The distance from the Four to the south Point, called St. Matthews, at the entrance of the bay of Brest, is 10 miles. You must give the Four a good berth in passing, to avoid a danger called Basse Boureau, or the Boureau Bank, which is shoal, and extends a large mile to the westward. A remarkable mill, called Triezion Mill, about half way down on the coast, kept open to the westward of a house, called *Maison de Remar*, will lead clear of it to the westward.

Tides. In the Passage du Four, the tides run very strongly. It flows here on the change and full days, at half past four; but in the offing, the stream continues to run for 3 hours longer. Between the Isle de Bas and Ushant, the flood-tide sets East, and the ebb West; in the Passage du Four, the flood runs to the northward, and the ebb to the southward. Spring-tides rise at Ushant 21 feet; and upon the coast to the eastward, from 24 to 26 feet.

From the Four Rock to the Point of Conquet, the distance is 3 leagues and a quarter to the southward; between are a number of rocks, particularly the Platresses, which lie near 2 leagues S. W. ¼ W. from the Four Rock, with the Point of Conquet S. ¼ E. distant 4¼ miles. To the southward of the Platresses, is a Bank called the Porceaux Bank. There are also several other rocks in the vicinity. The marks for going clear of all which are, the old monastery, called St. Matthew's Abbey, which stands on the land at the southern extremity of the passage, and is now converted into a lighthouse; Vintier Point, at the entrance of Conquet, &c.

By keeping St. Matthew's Abbey on with the Great Valley, just within Vintier-point, you will go in mid-channel: and, when you have brought Triezion-mill E. S. E. the Platresses will be N. W. by W. from you. Within Vintier-point are two valleys; the largest, above-mentioned, is near to the point; that to the eastward of it is small. In turning to windward here, you may stand to the eastward until St. Matthew's Abbey comes a capstan-bar's length open to the eastward of the little valley; and, to the westward, until St. Matthew's Point comes a little open of the point of Conquet-haven. Were you to bring the former two ships' length open of the latter point, you would be close to rocks and banks which lie to the westward of the channel. To the eastward of the Platresses, there are two small shoals; to go to the eastward of them, keep St. Matthew's Point shut in with Point Vintier. Between Ushant and St. Matthew's Point, are several small islands and rocks.

About

About three cables' length from Vintier-point, is the *Vintier-rock*, which appears at low water, spring-tides. To avoid this rock, proceed with St. Matthew's Abbey on with the Great Valley, until you get close to the shore; then run along within a cable's length of it: when the little church upon Point Vintier bears E. S. E. the Vintier-rock will be W. N. W. about 2 cables' length distant.

To sail into Conquet-haven, run round within a cable's length of Vintier-point, as before directed, until you open the haven. Avoid the sunken rocks called the Finisterres, by running along close to the shore, until you get within the haven. The harbour is dry, and has a small fort on each side of the entrance, of which the northern one commands the entrance of the Passage du Four.

Besides the Vinotiers above-mentioned, there are other rocks called Les Renards, which make the approach to this place dangerous; and a great sea tumbles into with westerly winds; as also in the little bay, called le Vie do Boussille, which is between the south Point of Conquet and St. Matthew's Point, forming a road in which small vessels may stop a tide with the wind off the land, or from a scant wind through the passage either way.

From Conquet Point to that of St. Matthew, the distance is 2 miles and a half. Off the latter are several rocks above water, called Les Moines or the Monks; and, to the S. W. of Les Moines, are others which stretch outwards for nearly a mile.

BREST. In sailing hence into Brest-water, take care to avoid the sunken rock, called the Coq, which lies half a gun-shot from shore, about two miles to the eastward of St. Matthew's Point, with the south end of Benequet-isle on with that point. To go to the southward of this rock, steer about S. E. from St. Matthew's Point, taking care to keep the north end of Benequet-isle open of it, until the mill upon the North land comes to the westward of the trees. To sail to the northward of the Coq, proceed from St. Matthew's Point along by the North land; and, when the before-mentioned mill bears N. by West, and the trees North, you are past the Coq. The safest channel is to the southward of this rock.

About a mile and a quarter E. S. E. from the Coq, and S. by W. from Crabmear-point, is *Buzee Rock;* you may go on either side of it; but the best way, after passing the Coq is, to run along the north shore, at the distance of two cables' length. When you come into the *Gullet*, be careful to avoid the Fillettes, the Mingan, and other rocks, which lie off Camaret-point, nearly in mid-channel. Carefully avoid also the *Bagino* or *Kergutio Rocks,* which lie near the mouth of Brest water, and about two cables' length off the north shore; you may go on either side with safety, but it is usual to run to the northward of them; and, when Brest appears open of Porzic-point, steer directly for it, and anchor there in 8 or 9 fathoms. You may also anchor before the river Landernau, or go to the southward and anchor before Launno, in from 13 to 10 fathoms. In the latter case, take care to keep clear of the Renart-bank, which lies about a mile N. W. by W. ½ W. from Plougestel-point, and about 3 miles S. by W. from Brest.

In Bertheaume Bay, about 4 miles to the eastward of St. Matthew's Point, is good anchoring, with northerly and N. E. winds, in 10 or 11 fathoms. Opposite Bertheume Bay, and about 4 leagues S. S. E. from St. Matthew's Point, is the great bay called Dovernenez or Poldavid Bay. Between these bays lie many rocks, which must be carefully avoided.

REMARKS

REMARKS on the BAY of BREST and on DOVARNENEZ BAY; principally from the Observations of Mr. George Morrison, *Master of his Majesty's Ship the* Edgar.

FROM off the Jument Rock, which lies off the S. W. point of Ushant, the course to abreast the westernmost of the Black Rocks, is about S. S. E. ½ E. nearly 4 leagues. With a northerly wind you may range all the rocks and islands, pretty close to, having nothing to fear but what is described in the foregoing directions, and what the breakers will warn you of.

Many of the rocks, called generally the *Black Rocks*, are above water; but the soundings along them are from 43 to 40, 38, 35, and 32 fathoms; with 16 or 17 fathoms close to. About 3 or 4 miles to the southward of them, there is good anchorage, with easterly winds, in 35 fathoms, fine sand; two leagues from them are 40, 43, and 45 fathoms, sand; and thence to the southward, to the island of Saintes, 45 to 48 fathoms, from sand to stones, and from stones to rocks, with very uneven ground, and very deep water close to the rocks of the Saintes.

From the Southern Black Rock to the Abbey of St. Matthew's, is about 2 leagues E. by N. ½ N. There is nothing to take you up but what may be seen, with regular soundings close up to the rocks off the point. Hence to the entrance of Brest, the course and distance are about E. N. E. 3 leagues. But it is all pilotage, and recourse must therefore be had to the different land-marks, for the dangers that lie about the coast.

Of the islands in the vicinity, those of *Quemenes* and *Beniquet* are defenceless. The *Great Molene* is little better, although a large village is on it; and, in peace, many vessels trade to it. The whole are surrounded with rocks and shoals, and are to be approached only by boats and very small vessels. The bay between Beniquet and Conquet has bad ground, and is dangerous to anchor in, although there are from 6 to 12 fathoms water.

The most dangerous rocks on the South side of the entrance to Brest-water, are the Parquette, the Goemant, and the Vandrée. The first herein mentioned, namely the *Parquette*, discovers itself at about half ebb; it generally has breakers over it when covered, and lies between 4 and 5 miles nearly South from St. Matthew's Point. The ground to the eastward is foul, quite up to the Toulinguet Rocks, which lie off the West point of Camaret, and render the shore very dangerous. The principal Toulinguet is large and high. Of the rocks between, some have but one fathom, or a fathom and a half at low water, with very deep water close to them, and no breakers.

There are two passages between the rocks of Toulinquet, that vessels may run through with a fair wind; but they are very narrow, and consequently, the tide very strong. The dangers may, however, be seen. The *Bay of Dinan* lies just to the southward of these passages, where coasters frequently stop in their passages from the Pass du Raz.

The *Goemant* lies 2 miles to the westward of the Parquette. This shoal has only 10 or 11 feet on it at low water, spring-tides. The *Vandrée* lies 3 cables' length to the West of the Goemant. It has only 15 feet on it at low water. The marks for these shoals are Crodon Church Tower, a boat's length, or its own apparent breadth, open to the northward of a small peeked rock, which lies half way between the two outer islets of those called Les Pezeaux, or the Haystacks; and the spire of Locrist Church on the easternmost end of the signal house on St. Matthew's Point. A close mark will be the centre flagstaff of the signal

signal house on the tower. The easternmost and westernmost may be seen on either side of the house. The Parquette Rock will then rest half way between the bluff of Camaret, and the southernmost bluff point of the entrance into Brest.

The bearings hence will be, St. Matthew's Lighthouse, or Abbey, N. E. by. N. The Parquette, E. ½ S. Crodon Church E. S. E. ¼ S. and the Bec du Raz S. by W. ¾ W.

Between these shoals and the main land of St. Matthew's, should be the anchorage in summer, in 14 and 15 fathoms; but the ground is rather coarse and hard, with some rocks.

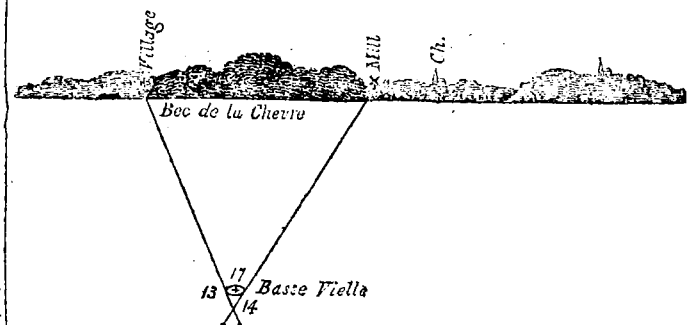
Camaret Bay has good holding ground, in from 8 to 10 fathoms, muddy bottom, and safe from E. S. E. South, and S. W. winds.

The Dangers on the North side of the Passage to Brest, are those only which have been mentioned in the preceding directions, viz. the Coq, the Buzee, &c. The coast is bold, and ships of war may approach as near as the batteries, which stand on every eminence, will admit.

CAMARET to DOUARNENEZ or POLDAVID BAY. Between the Toulinguet Rocks and the point called the Bec de la Chevre, or Chevre Point, the northern point of Douarnenez Bay, there are many large and small rocks above water: among these are particularly the Menjan, and more to the west, the Basse du Lis, both under water. Their position is generally shewn on the charts.

The Course and Distance from Ushant, to the fair way of the entrance of Douarnenez Bay, are S. S. E. ¼ E. 10 leagues. By giving an offing to Chevre Point, there is nothing to take you up, excepting a rock called *Le Basse Vielle*, about one third over from that point, and which is just above water at two-thirds ebb. It is about a ship's length in size, and steep-to, having 17, 12, and 11 fathoms perpendicular close to it, with regular sounding, and mostly sand on each side of it into the bay, which is the finest in this part of the world; and where the whole fleet may lie secure from winds, and out of cannon shot from shore.

The marks for the Basse Vielle are, a mill to the westward of St. Lawrence's Church, on with the middle of a reef of dry rocks, which lie off Point Chevre, and bearing E. by N. ½ N. and a village on with the N. W. cliff of Point Chevre, bearing N. E. by E. It lies a mile and a half W ¾ S. from Chevre Point, breaks with a western swell, and appears at low water. St. Lawrence's Church kept on with the outer point of the rocks, will lead clear of it.



Within a mile of the Point de la Chevre, the ground is stony, with rocks. It is almost steep-to. In going into the bay, to the southward of the Basse Vielle, you must sail within 2 or 2½ miles of the South shore. The best leading mark is, the high mountain Locornan, just shut in to the southward of Point Ledic, or Point de Bochelane, a blackish rock that makes the little bay of Poldavid; this mark will carry you in the direct course clear to the southward of the Basse Vielle.

You will have regular sounding in, from abreast the Bec du Raz, from 35 fathoms rocky to 26, 24, and 22, fine sand all the way till within the bay. When the little rocks Le Bouc, which lie to the N. W. of Chevre Point, appear on with the Pezeaux or Haystack Rocks, you will be near abreast of the Basse Vielle.

There is a clump of trees, with a little chapel in the midst of them, on

on the north side of the bay to the eastward of Point Chevre, (the only one remarkable on that ridge of hills) with a wind-mill to the westward, and two to the eastward of them. When you leave the wind-mill that is next to the eastward of these trees just open with Chevre Point, you are past the Basse Vielle, and may steer for what part of the bay you please, being all clear and fair, excepting what may be seen above water, and what may be close to the shore, with the most regular soundings from 24 to 18, 16, 14, 13, 12, 10, 8, and 6 fathoms. The bottom on the north side is mostly fine sand, as is the upper part of the bay, but the former appears to be farther best for anchorage.

The only Rocks at a distance from shore, are on the northern, about a mile and a half from the coast to the S. E. of St. Lawrence. Those above water, are called the Pierre Profonde, or Le Taureau, and Les Verres. They are useful as piloting marks.

You will see the town of *Crodon*, on the hill, open with Morgat Point. It is easily known by a remarkable high black tower upon it. The town is to the westward of the before-mentioned clump of trees: a wind-mill is between them, which serves, with the village of Buzec on the south shore, for the best cross mark in the bay, as they are both seen from the same spot, together with Poldavid or Dovarnenez spire, from any part of the bay.

Buzec is a small village on the south shore, with a high gothic spire to its church. It is the most remarkable place on that side, until within the Poldavids.

When Morgat is just open with the southern part of its bay, the latter appears sandy, with a village on the coast, but small straggling houses.

Point de Caon is a bluff rocky point, about 4 miles to the eastward of Morgat Point. Between it and the rock Les Verres, there appears a sandy inlet.

Point de Pembelec is another such point; the land hereabouts has a very regular ascent up to the Mount of Mencham, which is the northernmost height at the upper end of the bay, and which seems to shelter all the lower land from the N. E.

Where there are some villages dispersed between Point de Pembelec and Point Talgrith, is a large sandy bay, with a small town. Point Talgrith is a sort of double cape, and has a kind of little look-out house on each point of it, with two or three guns on the southernmost.

Between Point Talgrith and Point St. Sebastian, is a sandy beach; and there is another from Point Sebastian to Point Agaret, over which is the mountain of Locornan, with a regular ascent. This mountain appears well cultivated, and has a large village on the side of it, with many trees about it.

There is a little bay between Point Sebastian and Point de la Due, or Bochelane, in the bottom of which is the haven of *Dovarnenez*. This is a dry harbour for small coasters, and has the little island Tristan just at the mouth of it, on which there are two or three guns. This island at a distance appears like a bee-hive, and you can scarcely distinguish it from the main land. Over the island, to the eastward, you may see a large straggling village, with a large church-steeple situated under many trees, and many cultivated fields all about it. This is called Pouldregat or Poldavid, and by others Dovarnenez. It is the most remarkable village of all, as the land is mostly cultivated about it; and it has most houses, with many dispersed down to the water side, where there is a fine sandy beach, between little rocky points. The steeple of the village may be seen from all parts of the bay, and is a good cross-mark for anchoring, if you turn up so high.

The Bay in general is so fair and clean, and its soundings are so even and regular, that no leading mark is required. The upper port shoalens regularly to 8 and 6 fathoms, within half a mile of the beach, with fine sand and a sort of ooze. A large fleet may lie with as much safety in it as in Portsmouth-harbour, being almost land-locked at such distance from shore, that no shells can reach you.

It may also be observed, that the strong winds which could detain ships here, must equally keep in all the Brest fleet; and, with westerly winds, ships can turn out from the bay when none could move from Brest. So that it may be looked upon as a most useful one for his Majesty's ships in time of war; and a fleet here would be a sure and constant check upon the enemy's moving out of Brest; having, at the same time, frigates off the the Black Rocks and St. Matthew's Point, to watch their motions in Brest-water.

DIRECTIONS for sailing from the ATLANTIC OCEAN into and up the BRITISH CHANNEL.

THE SOUNDINGS off the entrance of the Channel, are not entirely to be depended upon, although some pretend to know their bearings and distance to the greatest certainty by them: you may, however, depend upon finding the ground to the southward, near the French coast, much coarser than in mid-channel or upon the coast of England; and, in approaching Scilly, it may be observed, generally, that, with the ground coarse, reddish, and inclining to stony, a ship will be to the southward of the usual fair-way.

In approaching the Channel, try for soundings in time, and run, if possible, if the wind has not prevailed from the westward or S. W. in the latitude of 49° 25′. In this parallel, with soundings of 84 fathoms, fine white sand with black and yellow specks, you will be upon the bank, and about 50 leagues to the westward of Scilly. Sixteen or 17 leagues farther to the eastward, in the same parallel, are 80 fathoms, fine sand and shells; 4 leagues more to the eastward, 76 fathoms; and, a little more to the eastward, 72 and 75 fathoms, white sand, with sometimes a mixture of green; and, in the space of 16 or 17 leagues farther to the eastward, in this latitude, are 72, 75, 77, and 70, fathoms. The soundings are, for the most part, fine sand, but different in colour: some will be fine white sand, with specks; and others fine green sand, with some mud.

In the latitude of 48° 23′ north, longitude 8° 50′ W. and 50 leagues to the westward of Ushant, lies the southern part of the Sole Bank; a bank which stretches thence to the N. N. W. 12 leagues. It is about 4 leagues in breadth, and has from 62 to 70 fathoms on it, fine grey sand.

When you have run in the above-mentioned latitude so far to the eastward as to 67 or 70 fathoms, and the soundings are shells and small yellow stones or red sand, you may conclude that you are a-breast of Scilly; if you have 68 fathoms, fine sand with grey or black specks, and sometimes shells and stones, Scilly will bear from you, about E. N. E. by compass, distant 10 leagues. Your soundings will always inform you whether you are to the northward or southward of Scilly. In the latitude of Scilly, and more to the southward, is oazy ground, in 68, 65, 58, and 56, fathoms. W. N. W. 10 leagues from Scilly, lies Jones's Bank, on which are but 32, 35, and 40 to 43, fathoms; and, a little to the southward of it, 72 and 75 fathoms. The soundings near Scilly are different from all others to the northward or southward; pieces of rotten rocks, as broad as small beans, and of a stone colour, will come up with the lead, which is not the case any where else in the same parallel. More to the southward is deeper water, fine sand interspersed with black specks, like ground pepper. In the night, or in foggy weather, come no nearer to Scilly than 60 fathoms; for, in that depth, you will not be more than 4 or 5 leagues from it. Abreast of Scilly, in the latitude of 49° 20′, you will have 70 fathoms, yellow or grey sand. To the eastward of Scilly, in the latitude of 49° 8′, there are 56 or 58 fathoms, coarse sand. Should these be met with, steer more to the northward, and endeavour to make the land about the Lizard. You may safely make it in the night, as well as in the day, if the weather be clear; for the light-houses stand so high, and the coast is so clear, that you may, without danger, come within half a mile of the point. If the weather be so thick that you cannot safely make the land, go no nearer to the Lizard than 45 fathoms; for, in that depth, you will not be more than 3 leagues off the point: your soundings there will be pebble-stones and scollop-shells.

SOUND

SOUNDINGS IN LATITUDE 49°. In the latitude 49°, are 90 fathoms, fine white sand, 66 leagues from the Lizard: but, in running up in that latitude you will possibly shoalen your water 5 or 6 fathoms, then deepen to 87 or 90 fathoms; and in 3 or 4 leagues run, will shoal the water again: but, if you find fine sand with black specks, from 90 to 64 fathoms, you may be certain you have the Channel open; and, with this ground, you may approach to about 14 leagues S. W. from Scilly. No such soundings are to be found elsewhere.

SOUNDINGS IN THE LATITUDE OF USHANT. In sailing to the eastward, in the latitude of Ushant, you will have 87 fathoms, and are then 26 leagues from the island: if you have but 70 fathoms, then your distance is 12 leagues. In these depths of water, you will have grey sand with many pieces of shells: by coarse reddish sand you may know that you are not in a fair-way, as no such soundings are to be found in the Channel.

COURSE IN THICK WEATHER. In dark thick weather, come no nearer to Ushant than 63 fathoms, or to the Saintes than 65 fathoms; as 60 fathoms is between 3 and 5 leagues only distant from the island of Ushant. Here you meet with different soundings, but mostly intersperised with small shells, resembling (and called) hakes-teeth, and between 7 and 9 leagues from Ushant you will have from 65 to 68 fathoms.

SOUNDINGS TO THE NORTHWARD, OR IN THE STREAM OF SCILLY. To the northward, or in the stream of Scilly, in the latitude 50° 0′, or between it and 50° 10, you will have, for the most part, fine sand, with oazy ground, and perhaps may fall upon a bank of oaze that has only 50 fathoms water upon it; but, between it and the islands, you will have 60 fathoms; and, to the northward of them, you will have from 53 to 57 fathoms, oazy ground. In clear weather, Scilly may be seen 6 or 7 leagues off.

After you have entered the Channel, it is not safe to keep over to the French shore. You will easily know when you are to the southward by the coarse ground, and the overwhelming of the tide, which whirls round in several places with breakers. Keep upon the English coast, from 5 to 7 leagues distant, till you are as high as Portland.

After you are past Scilly, continue running eastward, for 10 or 11 leagues, coming no nearer the English shore than 53 or 54 fathoms, or farther to the southward than 60. After you have run this distance, the Lizard will bear N. E. or N. E. by N. about 8 leagues, and you will have 55 or 56 fathoms, with various coloured shells and stones.

Ships coming into the Channel ought always, if possible, to *make the land about the Lizard;* for, should they afterwards have thick weather, they will know how to steer, and how they advance up the Channel. Some, by neglecting this precaution, have, contrary to their expectation, gotten on the south side of the Channel. This error is greatly owing to the strong indraught between the islands of Guernsey and Jersey and the coast of Britanny, or Finisterre, which ought always to be guarded against, especially in thick weather. It frequently happens, that ships, coming into the Channel, have not had an observation for some days back; which, together with the operation of scant and contrary winds, and the setting of the tides, tend to perplex and bewilder the most experienced mariner, when thick weather prevents his getting a sight of the land.

Ships, when coming from the southward into the English Channel, in thick weather and light winds, frequently get much to the northward of account, and fall either into the Bristol Channel, (which may be owing to the tide's running 9 hours to the northward and only 3 to the southward,) or to the N. W. of Scilly, owing to a current hereafter-mentioned. The unequal stream of tide begins about 14 leagues west from Scilly. It first runs N. N. W. and continues to alter until it comes to the E. N. E.; the flood-tide then ceases to run. The flood runs here, on the full and change days, until forty minutes after seven o'clock, at which time it is nearly half-ebb at the Scilly-islands. The flowing of the tide is rather uncertain. About 7 leagues W. S. W. of Scilly, it is known to flow at 25 minutes after four o'clock; and, in St. Mary's Sound, Scilly, at 40 minutes after four.

When coming into the Channel in the night, or in thick weather, you should not at any time come nearer to Scilly than 60 fathoms, nor to the Lizard than 45 fathoms. Off the Lizard, in mid-channel,

the stream of tide runs to the eastward, on the full and change days of the moon, until 55 minutes past 7 o'clock, or until it is half ebb by the shore; it then changes, and runs to the westward until it is half-flood by the shore. Two leagues without the Lizard, the flood runs east, and the ebb west; but, within that distance, the flood runs to the southward of east, and the ebb to the northward of west.

CURRENT *athwart the Entrance of the Channel.* It has been long known to mariners, that a current, (at ordinary times of little consideration), constantly sets round the Capes Finisterre and Ortegal, into the Bay of Biscay; and it has been ascertained, that, after a long and continued prevalence of westerly and southerly winds, the water, pent up in the Bay, and impelled along its coasts, sets outward in a N. W. direction athwart the entrance of the British Channel; although, after a long interval of such winds, it is almost imperceptible.

This current has been found, after the wind had set strongly for some time from different points between South and West, to have had about 60 miles of westing, and twelve miles of northing, in its course, per day, in the most rapid part of its stream.

The westerly current has appeared to extend from about 24 leagues W. S. W. of Scilly to more than 3 degrees West of Cape Clear. It is therefore supposed to go off to the N. W. in the parallel of 51 degrees, between longitude 14 and 15 and the S. W. of Ireland, but its exact direction remains to be determined.

The *middle* of the current appears to preserve its original course in a greater degree than its *borders*, and to set N. W. by W. The eastern border more North, and the western more W. so that the northern current is much stronger close to the West of Scilly than farther out.

If a ship crosses the current *obliquely*, steering a true E. by S. course, or more southerly, she will continue in it longer, and be more affected by it, than if she steered more directly across it. It will be the same if she crosses it with light winds. Allowance must also be made for the more northerly direction of the eastern border.

After a continuance of westerly gales, even should a good observation of latitude be made, it would be imprudent to run eastward, during a long night. For, a ship might remain in the current so long as to be drifted from a parallel, deemed a very safe one, to that of the rocks of Scilly. Keep at the highest in 48° 45′; for, in 49° 30′, the whole effect of the current may be experienced in the worst situation. But, from the current in 48° 45′ a southerly wind will send you into the Channel. In time of peace, coming from the Atlantic, it would be still better to make Ushant.

If it be admitted, as is suspected, that a tide, with some degree of northing in it, sets a little to the westward of Scilly, this is another reason for keeping far enough southerly.

Ships bound to the westward from the Channel, with the wind near S. W. should prefer the *larboard* tack; as they would then have the benefit of the current*.

COURSE

* These observations are extracted from a pamphlet and chart published by James Rennel, Esq. F. R. S. in 1793. They are illustrated by two remarkable examples.

The first is that of the Hector, East-India ship, homeward-bound in January and February, 1778. In lat. 49° 50′ she began to feel the current, which set her to the North of her intended latitude nearly half a degree in two days. The direction of it was much more westerly than northerly, and she crossed it so obliquely, that, being in it a long time, she was driven near 30 leagues to the westward, and to the northward of Scilly. On each of two days it was found that the current had 12 miles of northing in its course; on another day 13; and, on two others, 9 and 8 miles; in favourable weather for keeping a reckoning. Observations for the latitude were made on every day but one.

There being no time-keeper on board, the longitude was uncertain; but it was concluded that the current, at times, extends to 60 leagues West of Scilly, and runs close to the West of those islands. The breadth of the stream, where the Hector crossed over it, was supposed to be about 30 leagues.

The second instance is of the Atlas, India ship, outward-bound in January, 1787. This ship had advanced 55 leagues to the westward of Ushant when violent gales began at South, and, for four days, continued between that point and W. by S. during which time the ship was lying-to. On the 5th day the wind abated, but was S. W. Stormy weather then ensued for nine days; the wind blowing from all points between S. and S. S. W. but chiefly and most violently from W. S. W. and S. W.; and, when the ship then proceeded southward on her voyage, she was, by the reckoning, only 2 degrees and a quarter of longitude W. of Cape Finisterre; but, by time-keepers, more than 4 degrees and a half.

On the day the gales commenced, the reckoning was within 14 minutes of that by the time-keepers; the latter being more westerly, which is supposed owing to the current. On the third day after, the difference was but 24 minutes, when

COURSE ABREAST OF SCILLY. After you are abreast of Scilly and to the southward 5 or 6 leagues, the course to the same distance off the Lizard is E. S. E. 15 leagues; then haul in and make the land.

FROM THE LIZARD TO THE START. The course from the Lizard to the Start is E. by S. 20½ leagues. In running up, go not into less water than 45 fathoms; for 40 fathoms is in the stream of the Eddystone. Neither go without the depth of 50; in this depth of water, you will have sand with small brown stones and shells abreast of the Start.

FROM THE START TO PORTLAND. From the Start to Portland, the course is E. ½ S. distance 16 leagues. Here you may run up between 30 fathoms in-shore to 35 or 38 fathoms water to the southward, most part sand with shells; but, if you are inwardly, in 26 or 25 fathoms, you will have oaze and sand.

Between the Lizard and the Eddystone, you may stand towards the shore in 42 fathoms, and off to 50. As there are 40 fathoms in the stream of the Eddystone, you will, by keeping without that depth, go quite clear of that danger. Abreast of the Eddystone, in mid-channel, the flood runs to the eastward, on full and change days, until 5 minutes after 9 o'clock.

From the Eddystone to the Start, you may stand towards the shore into 32 fathoms, and off to 46. Within half a mile of the Start-point are 15 fathoms water. Between the Start and Portland, you may stand towards the shore into 30 fathoms, and off to 36. By not standing farther to the southward than 36 fathoms, you will avoid the strong indraught between the islands of Guernsey, Jersey, &c. (*See page* 84.) Off the Bill of Portland, the flood runs to the eastward, on the full and change days, until 15 minutes after ten o'clock.

FROM THE START TO DUNNOSE the course is E. S. E. ¼ E. 32 leagues; where you will have 35 to 40 fathoms, as high as Portland; after which approach no nearer to the shore than 25 fathoms, especially when you are above the high land of St. Alban's, as with strong winds southerly, or in little winds, the tide of flood sets directly in for Christ-church, the Needles, and Freshwater-bay, as described in the particular directions for the harbours in the Channel.

DUNNOSE TO BEACHY-HEAD. The course from Portland is E. S. E. 16 leagues to Dunnose.

In running up from Dunnose to Beachy-head, keep within to 20 fathoms water, and without to no more than 23; but, off the Head, you will have 17 and 18 fathoms, five or six miles from the shore. The course up is E. S. E. 7 leagues clear of the Owers, and thence E. S. E. ½ E. 11 leagues, to Beachy-head.

BEACHY-HEAD TO DUNGENESS. From Beachy-head to Dungeness the course is E. ½ S. 9½ leagues. Here, in a fair-way, you will have 20 or 22 fathoms water.

DUNGENESS TO THE SOUTH-FORELAND. From Dungeness to the South-Foreland the course is nearly E. N. E. ¼ E. between 6 and 7 leagues. Keep no farther off than 16, nor closer in than 14 fathoms.

In coming up the Channel, after you are as high as the Start, endeavour to make the coast of England, to avoid the Island of Alderney, the Caskets, &c, but if you cannot safely, with a scant southerly wind, when the tide, both ebb and flood, has an inclination into every bay upon the coast, then keep your lead going; and, if you fall into

when the ship was 25 leagues S. W. from Scilly, in soundings at 70 fathoms. The ship in long. 8° 28', had now entered into the stream of the current; and, its course *being opposite to that of the Hector, it facilitated her progress* and carried her clear of the south-west coast of Ireland.

Afterward, in the course of 51 hours, the ship had set 2 whole degrees to the westward of her reckoning; and, in the following 45 hours, she had a farther set of 28'; so that, in four days, she had been carried by the current 2° 23'; and, since the gale begun, 2° 32' of longitude, or 93 marine miles.

It appears, therefore, that the westerly current was felt from about 24 leagues W. S. W. of Scilly, to near 4 degrees of longitude West of Cape Clear, where its effects were imperceptible; and it is therefore inferred, that the stream goes off to the N. W. *in the parallel of 51° between long.* 14° and 15° and the south-west coast of Ireland.

No northern set is, however, indicated in the journal of the Atlas. This would have been remarkable had the weather permitted nice attention to the reckoning. Observations on the latitude were not regularly made; and, besides, the great distance of 36 miles was allowed for only 29 hours drift to the N. W. when the ship was *lying-to*.

into 50, 55, or 60 fathoms, coarse ground, then you are in the stream of the Caskets, and must run to the northward, in 40 or 35 fathoms, sand and shells. You will then be to the northward of them, and in a fair way.

CASKETS. The Caskets bear from the Start S. S. E. ½ E. 18 leagues, and from the Bill of Portland S. S. W. nearly ½ W. 15 leagues.

Being too far to the southward, and mistaking the Casket-lights, at first sight, for those of Portland, has often proved fatal, and occasioned the loss of many ships upon the dangers adjacent.

Between the Bill of Portland and Dunnose, you may stand towards the shore into 25, and off to 35, fathoms. By not standing into less than 25 fathoms you will keep without the indraughts of the Needles and Freshwater-bay. When you stand towards the Isle of Wight, in thick weather and light winds, you should keep your lead going; the neglecting of this precaution has been the loss of many a ship. Off Dunnose, in mid-channel, the stream or flood runs to the eastward, on the full and change days, until 45 minutes after 10 o'clock.

Between Dunnose and the East Barrow-head, you may stand towards the shore into 20 fathoms; and off to 32 fathoms. In light winds and thick weather it will be necessary to keep your lead going when you stand towards the Owers; because the tides, during the last quarter flood and the whole of the ebb, set strongly over that dangerous bank, for St. Helen's road.

In approaching the Owers floating Light, bring it to bear not farther to the south-westward than S. by W. nor nearer to it, in passing, than a mile and a half. When the light-vessel bears N. E ¼ E. the Elbow, or south-easternmost part of the Owers, is then right between it and your ship; and, when it bears N. N. E. you are a-breast of the Elbow. *A description of the situation of this light-vessel is contained in page 25.*

If it be necessary to run into Selsey-park for shelter, with contrary winds, pass to the eastward of the light-vessel, and afterwards be sure not to bring it to the southward of S. S. W.; keep your lead going, and, when two miles and a half N. N. E. of it, you may steer for the anchorage in the park.

Between the East Barrow-head and Beachy, you may stand towards the shore into 18 fathoms, and off to 28. The former depth will carry you without the shoals, which lie off the latter place. Here the stream runs to the eastward, on full and change days, until 40 minutes after 11 o'clock.

Between the shoals which lie off Beachy-head and Dungeness, you may stand towards the shore into 12 fathoms; and off to 20. By not approaching nearer to the shore than 12 fathoms, you will go clear of the shoals which lie to the westward and eastward of the Ness-point. Here the stream runs to the eastward on full and change days until 3 o'clock.

Between Dungeness and the South-Foreland, after you are to the eastward of the rocky shoal which lies to the westward of Folkstone, you may stand towards the shore into 10 fathoms, and off to 18. By not standing farther off than 18 fathoms, you will keep clear of the Varne, which, with the Ridge, is described in this book in page 21.

When going between Dover and the Downs, observe, that 17 fathoms will carry you without the south Sand-head; that 13 fathoms will lead you within it; and that 15 fathoms is in the stream of it.

TIDES. From the Lizard to the Isle of Wight, *the flood* sets E. by S. and *the ebb* W. by N. from the Isle of Wight to Beachy-head, *the flood* sets S. E. by E. and the *ebb* N. W. by W. From Beachy-head to Dungeness, *the flood* sets E. and *the ebb* W.

OBSERVATIONS on STORMS in the BRITISH CHANNEL.

THE most dangerous storms are those from S. S. E. to S. S. W. Those from West, N. E. and E. N. E. are not so destructive: for, if a storm suddenly arise at N. E. the ships in the *Downs* can all get under way and proceed down Channel: or, if homeward-bound, and they do not chuse to ride it out, they may run within the Isle of Wight or to Portsmouth.

Ships in the same Time at Margate-Road may either purchase their anchor or slip their cables, and run into the Thames or Medway. If they

they cannot weather the fair-way buoy, they may run up into the East Swale, and anchor in safety. See page 12.

Storms blowing from S. E. to S. S. W. are particularly dangerous for ships riding in the Downs, as a great sea is forced in there by those winds. The ships often ride very near each other, and the greatest strength of tide, owing to its flowing-tide and half-tide, happens at high water, when there is most sea. Besides, the anchorage in the Downs has been so cut up by anchors, that the ground is not very good for holding.

Ships to the westward of the Isle of Wight may run into Portland-road, and lie in safety.

When a ship cannot safely run to a place of shelter, she had better lie-to. The sea will seldom hurt a good ship, when a touch on a rock or a sand might prove destruction.

A TIDE-TABLE, for the South and South-west Coasts of GREAT BRITAIN and IRELAND, on the Days of the Moon's full and Change.

Places' Names.	Vertical Rise Spr. ft.	Vertical Rise Nps. ft.	Time of High Water h.	Time of High Water m.
NORTH FORELAND	10	7	11	15
Ramsgate	18	12	11	20
Deal	18	12	11	20
South Foreland			11	6
Within the Goodwin Sands, the stream runs to the N. E. till 45 minutes after 2 o'clock. *(See p. 16.)*				
Dover Pier	20	14	11	16
Folkstone	20	14	10	51
Dungeness	28	16	10	51
Off Dungeness the stream runs eastward, till 3 h. o'				
On the Ridge	22	15	2	50
Rye Harbour *(See page 23.)*			10	51
Hastings	22	14	10	36
Beachy-head, Seaford, and Newhaven	20	14	10	16
Off Beachy-head, the stream runs eastward, till 11 h. 49′.				
Brighthelmstone	16	10	10	16
New Shoreham and Arundel	16	10	9	21
The Park, Selsey Bill and Harbour	15	10	11	15
Owers and Loo Stream	15	10	11	20
On the Owers the eastern stream is done at 9. 36.; it then runs 8 hours westward for St. Helen's Road.				

Places' Names.	Vertical Rise Spr. ft.	Vertical Rise Nps. ft.	Time of High Water h.	Time of High Water m.
St. Helen's	16	10	11	50
Within Dunnose, and in Mid-channel, the eastern stream runs till 45 min. after 10. *(See pages 30 and 33.)*				
Portsmouth Harbour	18	12	11	35
Chichester Harbour	18	12	11	30
Southampton	18	12	11	45
Cowes	15	10	11	15
Hurst Castle			9	36
Needles	9	6	8	56
Within the Isle of Wight at Spithead, the eastern tide runs till ¼ past 9, and through the Needles till ½ past 9.; off the Needles, in the Channel, the flood runs till ½ past 10. *(See page 33.)*				
Christchurch and Poole Harbours.				
First Flood	6	4	9	0
Second Flood *(See page 33.)*	½	¾	12	0
Weymouth Harbour	7	5	6	45
Portland Road	8	6	6	15
Bill of Portland			7	15
Lyme Cob			7	5
Exmouth Bar	14	9	6	25

Places' Names.	Vertical Rise Spr. ft.	Vertical Rise Nps. ft.	Time of High Water h.	Time of High Water m.
Torbay and Dartmouth	18	10	6	0
The stream off Portland runs eastward, till 15 min. after 10.				
Start Point	20	14	5	55
Start Bay	20	14	6	5
Salcombe Harbour, Bolt Head, and Bigbury Bay	20	14	5	55
Plymouth-Sound, Hamoaze, and Catwater	18	12	6	5
Eddystone	18	12	5	50
Before the flood at the Eddystone runs eastward, it is half flood in Plymouth-Sound; and off the Eddystone, in the Channel, the stream runs till 5 min. after 9 o'clock.				
Falmouth	18	12	5	45
Lizard	18	12	4	55
Off the Lizard the stream runs eastward, till 55 min. after 7.				
Mount's Bay	18	10	4	55
Scilly Islands *(See page 51.)*	19	12	4	40
Near Scilly Islands the tide is said to run 9 hours northerly, and only 3 southerly.				
Cape Cornwall *(See pages 47 and 48.)*	22	14	4	25
St. Ives	24	11	5	15
Padstow	24	13	5	15
Barnstaple	24	16	5	50
Lundy Island	30	20	5	45
Minehead *(See pages 54 and 55.)*	36	21	6	0
Flatholm Island	36	21	6	40
King's Road	42	30	6	45

Places' Names.	Vertical Rise Spr. ft.	Vertical Rise Nps. ft.	Time of High Water h.	Time of High Water m.
St. Gowan's Head	36	25	5	30
Milford Haven	36	0	6	0
Banks off Chester and Liverpool *(See Directions)*	26	14	10	30
IRELAND.—Saltee Islands *(See page 75.)*			4	30
Hook Point (Waterford)	13	0	5	30
Waterford Quay			6	0
Off the Hook Point, 3 or 4 leagues distant, the eastern stream runs till 30 min. past 8.				
Between Waterford and Youghall			5	0
Between Youghall and Dundedy Head	11	7	4	30
Cork Harbour	16	9	4	30
Cape Clear	11	7	4	30
Between Waterford and Youghall the eastern stream runs till 8 o'clock in the Offing; and between Youghall and Cape Clear, the eastern stream in the Offing runs till ½ past 7.				
Bantry Bay	11	5	3	45
Kenmare River	11	5	3	30
The stream of flood sets from the N. W. round Mizen Head, till 45 min. after 5.				
Dingle Bay	11½	7½	3	30
Blaskets	8½	4½	3	45
Shannon Mouth	12	8	3	45
Scattery Island	12	8	4	0
Foyn's Island	16	9	5	0
Limerick	16	9	6	0
Off the Skelligs the flood tide parts, and sets northward across the Shannon's Mouth.				

*** The description of the tides, with the times of high water, on the coast of France, and at the Islands of Guernsey, Jersey, &c. will be found incorporated with the Sailing Directions.

A TABLE of the LATITUDES, and LONGITUDES from GREENWICH, of the PRINCIPAL HEADLANDS, HARBOURS, &c. in the BRITISH CHANNEL.

BRITISH COAST.	Lat. d.	Lat. m.	Long. d.	Long. m.	BRITISH COAST.	Lat. d.	Lat. m.	Long. d.	Long. m.	IRELAND.	Lat. d.	Lat. m.	Long. d.	Long. m.	FRANCE.	Lat. d.	Lat. m.	Long. d.	Long. m.
LONDON, (St. Paul's)	51	31	0	5½ W.	Hand Deeps	50	15	4	20¾ W.	Wexford (Entrance)	52	22	6	18 W.	Boulogne	50	43½	1	37 E.
Greenwich Observa.	51	29	0	0	Ram Head	50	19	4	12 W.	Tuskar Rock	52	15	6	7 W.	Etaples	50	31	1	38 E.
Woolwich	51	30	0	4 E.	Plymouth Sound (Drake's Island)	50	21½	4	8¼ W.	Carnsore Point	52	12	6	13 W.	St. Valery en Caux	49	52½	0	43 E.
Gravesend	51	27½	0	24 E.	Fowey	50	20¾	5	38 W.	The S. Point of Saltee Island	52	6	6	29 W.	Dieppe	49	55	1	5 E.
Rochester	51	24	0	31 E.	Falmouth	50	9	5	3¾ W.	Hook Lighthouse	52	5	6	54 W.	Fecamp	49	46	0	22 E.
Sheerness	51	27	0	45 E.	Lizard Point	49	57½	5	11 W.	Dungarvon (Ent.)	52	1	7	28 W.	Cape La Heve	49	51	0	4 E.
North Foreland	51	23	1	27 E.	Mount's Bay	50	6½	5	28 W.	Youghall	51	53	7	49 W.	Havre de Grace	49	29	0	6½ E.
S. Foreland Light	51	8	1	22 E.	Land's End	50	4	5	42 W.	Cork Harbour	51	46	8	12 W.	Cape Barfleur Light	49	42	1	16 W.
Dover (Castle)	51	81	1	19 E.	The Seven Stones	50	6	6	8 W.	Kinsale Harbour	51	40	8	25 W.	Cherbourg	49	38½	1	37¼ W.
Dungeness (Lighth.)	50	55	0	58 E.	Scilly Isl. S. W. Part	49	52	6	26 W.	Old Head of Kinsale	51	37	8	26 W.	Cape la Hogue	49	43	1	56½ W.
Beachy Head	50	44	0	15 E.	St. Agnes' Lighthouse	49	54	6	19 W.	Seven Heads	51	35	8	39 W.	Alderney, W. Point	49	43	2	18 W.
Selsey Bill	50	45	0	46 W.	St. Martin's Daymark	49	58½	6	14½	Dundedy Head	51	33	8	51 W.	Casket Lights	49	45	2	25 W.
Owers	50	40	0	40 W.	St. Ives	50	14	5	25 W.	Stags off Toe Head	51	27	9	10 W.	Guernsey, W. Point	49	29	2	42½ W.
Portsmouth (Church)	50	48	1	6 W.	Padstow (Entrance)	50	35	4	54 W.	Baltimore Harbour	51	28	9	21 W.	Sark, S. Point	49	24	2	22 W.
Bembridge Ledge	50	41	1	2¾ W.	Hartland Point	51	1	4	26 W.	Cape Clear	51	24	9	30 W.	Jersey, N. W. Point	49	15½	2	16 W.
Dunnose	50	37	1	11½ W.	Mort Point	51	12	4	7 W.	Fasnet Rock	51	22	9	35 W.	Coutances	49	3	1	26½ W.
St. Catherine's Point	50	34	1	18 W.	Lundy Island (Mid.)	51	13	4	39 W.	Mizen Head	51	26	9	49 W.	Granville	48	50	1	36 W.
Needles Lights	50	40	1	34 W.	Bristol	51	27	2	35½ W.	Grelagh Rocks	51	30	10	14 W.	Avranches	48	41	1	22 W.
Poole (Church)	50	43	1	59 W.	Worms Head	51	35	4	12 W.	Dursey Isl. W. Point	51	35	10	18 W.	St. Malo	48	39	2	1 W.
St. Alban's Head	50	35	2	3 W.	Smalls' Lighthouse	51	47	5	35 W.	Bull Rock	51	35	10	24 W.	Cape Frehel Light	48	41	2	19 W.
Portland Lights	50	31	2	27 W.	St. Anne's Lights	51	45	5	7 W.	Bray Head	51	55	10	33 W.	St. Brieux	48	32	2	43 W.
Berry Head	50	24	3	28 W.	Ramsey Island	51	55	5	15 W.	Loop Head	52	34	10	8 W.	De Brehat Isle	48	51½	2	56 W.
Dartmouth	50	22	3	35 W.	St. David's Head	51	57	5	14 W.						Roche Blanche	49	1	3	56¼ W.
Start Point	50	13	3	38 W.	Strumble Head	52	3	5	2 W.	FRANCE.					Ushant Light	48	29	5	2½ W.
Praul Point	50	12½	3	44¼ W.	Cardigan Harb. (Ent)	52	10	4	37 W.	Calais	50	57½	1	51½ E.	Brest	48	23	4	29 W.
Eddystone Lighthouse	50	11	4	15 W.	Bardsey Island (Mid.)	52	42	4	49 W.	Cape Griz Nez	50	53	1	34 E.	CAPE FINISTERRE	42	56	9	16 W.

The positions of places on the coast of Great Britain, as given in this Table, have been deduced from the Grand Trigonometrical Surveys of England, made by order of the Board of Ordnance. Those of Ireland from the Observations and Surveys of Admiral Knight; and those of France from the Grand Trigonometrical Surveys of that country. By these the bearings and distances have been regulated; and it is presumed that the whole will be found more correct than any other that has hitherto appeared.

PART II.

SAILING DIRECTIONS for the DIFFERENT CHANNELS of the RIVER THAMES, the NORTH SEA, and NORTHERN NAVIGATION.

Directions from the NORTH FORELAND through the SOUTH CHANNEL to the NORE.

For the Directions from the Nore through these Channels to the North Foreland, see page 10.

Description of the BUOYS, *&c. which point out the Track, with their Depth of Water, and the Side they are to be kept on.*

EAST Buoy of Margate-Sand — — —	black — —	No. 15,	4½ fms, starb.
Hook-Spit-buoy chequered —	black & white,	No. 38,	2½ fms, starb.
Searn buoy — — — —	black — —	No. 37,	10 feet, starb.
Woolpack-buoy — — —	red — —	No. 33,	2 fms, starb.
Spell-buoy — — — —	white — —	No. 32,	10 feet, starb.
Three Buoys on the Last —	black,	No. 34, 35, 36,	2 fms, larb.
Beacon on the Red Sand —	———	———	4 feet, starb.
East buoy of the Spaniard —	black — —	No. 31,	10 feet, larb.
Gillman-buoy — — —	red — —	No. 30,	7 feet, starb.
West buoy of the Spaniard —	white — —	No. 29,	2 fms, larb.
Buoy on Middle Ground —	black & white,	———	10 feet, starb.
Spile-buoy — — — —	black — —	No. 28,	2 fms, starb.
Oaze-Edge west buoy — —	red — —	No. 27,	4 fms, starb.
Buoy of the Cant-Edge —	white — —	———	4 fms, larb.
Nore-Light — — — —	———	———	4 fms, larb.

THE *Time of the Tide and Strength of the Wind* should be considered before ships come the length of the North Foreland, that the sails may be so disposed as to carry them to the buoys in the Narrows at half flood or the beginning of the last-quarter flood.

Long-Nose-Ledge, at the entrance of the south channel, runs out N. E. about three quarters of a mile from Foreness-point; to avoid it, keep Birchington Seed-mill W. ½ N. a sail's breadth open of Ledge-point. *From off Fore-ness*, steer W. by N. or W. by N. ½ N. according to the draught of water and distance from land, for Westgate-bay; then bring Reculver church a sail's breadth open to the northward of the clump of trees near Bishopton, bearing about W. ½ N.; keep this mark on until middle of Lower-Hale-grove comes on with Monkton-mark, bearing then S. by W. ¾ W.

From abreast of Fore-ness, about a mile from the shore, stand to the northward until you shoalen to 4 fathoms at low water; then tack and stand into 4 fathoms on the other side. Be careful not to stand into less than 4 fathoms on either side, until you have got as far up as Westgate-bay. Ships, drawing 15 or 16 feet, must stop in this road until the tide has flowed at least three hours; they will then have a sufficient depth for turning through.

The South Channel, from Fore-ness to Herne-bay, bounded on the south side by the coast of Kent, and on the north by Margate-sand, is, for the most part, about two miles wide; but several banks, which lie in it, particularly at the west-end of Margate-sand, narrow that part to about one-third of a mile over. In going round the North Foreland, the common track is in 6 or 7 fathoms water. In Mar-

gate-road is good anchorage with southerly winds. West-gate-bay, because more sheltered from easterly wind, is superior. If the wind be from N. E. North, or N. W. the best anchorage is near Margate-sand, between the Middle Ground and Hook, in 5½ or 6 fathoms.

The Gore-patch lies nearly a mile W. N. W. from the buoy on the Hook; to avoid it, keep St. Peter's Church on with the middle of Westgate-bay, bearing S. E. ¼ E.

Ships, drawing more than 15 feet, should not attempt to go through this channel, nor pass the Hook-spit, without a leading-wind to carry them through the *Narrows*. Vessels of a draught of 12 feet may sail from the Hook at half-flood, and have a sufficient depth throughout. When turning to windward, stand no nearer to the south side than till St. Peter's Church comes on with the barn in Westgate-bay, nor to the north side, than till that church comes on with the easternmost house in Galeings. [*See page* 12.]

From the Fair-way off the Hook-spit, the course to the east buoy of the Last is N. W. ¼ W. about 2 miles. St. Peter's Church on with the easternmost house in Galeings, is the leading mark all the way.

The Course through the Narrows, between the Woolpack and Spell, on the north side, and the Last on the south side, is, first W. N. W. ¼ N. until abreast the buoy on the elbow of the Last; then W. until you have passed the west buoy of the Spell. Keep near this buoy, in order to avoid a ledge, which lies about one third of a mile S. W. from it; and on which are only 5 feet at low water.

When the west end of Reculver-church comes on with Chislet-mill, bearing S. W. by S. the channel becomes narrower between the east buoy of the Last, to the southward, and the Searn-buoy, to the northward.—*In turning through the Narrows*, the buoys are the best guide. Stand no nearer to the Woolpack than till the red buoy, on its west end, bears N. W. by W. ¼ W.; nor to the Last, than till the black buoy, on its elbow, bears W. N. W. ¼ W. When to the westward of the elbow-buoy, stand no nearer to the Last than till the black buoy on its west end bears W. S. W. ½ W.; nor to the Spell, than till the white buoy on its west end bears W. by N. ¼ N. Observe that, the channel is narrow between the west end of the Spell and the Knowl to the S. W. of it. To the westward of the Spell-buoy is plenty of room for turning to windward for the east buoy of the Spaniard, between which are from 10 to 14 feet at low water.

Horse-channel. One mile W. ¼ S. from the buoy on the east end of the Last, lies the east end of the *Horse*, a sand which extends W. ½ S. and E. ½ N. a mile and a half, and is above a cable's length broad. The middle and the westernmost end are dry at low water, spring-tides: on the easternmost end are 6 feet. The mark for this end is, Chislet-mill, S. S. W. on with George's Farm-house. The mark for the west end is, Monkton-mark, S. E. ½ S. on with the house next to Reculver-church, on the west side. To avoid the east end of the Horse, in sailing between it and the Last, go no nearer to the former than till Margate-church comes on with the west part of Northdown-trees. To avoid the Last, go no nearer to it than till the buoy on its west end bears N. W. by W. ½ W. This is called the *Horse-channel*; it is about one-third of a mile wide, and has from 18 to 12 feet in it at low water.

To go through the Copperas-House-channel, between the Horse and the shore, keep Stud-hill, bearing west, a little open to the northward of the northernmost house of Hampton-hill. Approach no nearer to the shore than till Stud-hill comes on with the outermost house of Hampton-hill; nor to the Horse-sand than till Stud-hill comes open about a sail's breadth of that house. This channel is about half a mile wide, and has from 10 to 16 feet at low water.

Black Rock, near which is but three feet water, lies near the shore, and about three quarters of a mile from Reculver-church. The mark is, St. Nicholas Church-steeple on with the house next to Reculver-church, on the east side; the steeple, bearing S. S. E. ½ E. then appears as just touching the east side of the westernmost of the three houses at Marsh-bay.

From the Buoy on the west End of the Spell, to the Buoy on the east End of the Spaniard, the course is N. N. W. ¼ W. 5 miles. Between are 10, 12, and 14, feet, at low water.

To go through the Five-Fathom-Channel, you must keep near the Spaniard, in order to avoid the Gillman and the Middle ground which lies

lies to the westward of it. The east end of the Gillman is a mile and a half N. N. W. from the east buoy of the Spaniard. The leading mark through this channel is, Minster-church, (on the Isle of Sheepey) W. by N. kept on with the middle of Bradgate-bay.

Having passed to the northward of the east Buoy of the Spaniard, you will have good turning room through the Five-Fathom-Channel. Vessels, of a suitable draught of water, in moderate weather, may stop a tide in any part of this channel, as the ground is clear. At the upper part, on the starboard side, will be seen the chequered buoy on the Middle Ground, the marks for which are given in page 10.

From the buoy of the Middle ground to the new white buoy on the Cant edge, the course and distance is N. by W. ½ W. 2 miles; and, thence to the Nore Light W. N. W. ½ N. 2¾ miles.

Having passed the buoy on the Oaze on the larboard-tack, stand no farther on the contrary, or starboard-tack, than till the buoy on the Oaze bears E. N. E.; as hence you will have plenty of turning-room *across the Warp, and up to the Nore*. On the Warp there are 6, 5, and 6, fathoms, at low water. On the North and South side of this sand there are from 8 to 12 fathoms.

Besides the Places already mentioned for anchoring, vessels often lie safely a-ground, on soft mud, in East and West Herne-Bays. The marks for the best place in East Herne-Bay are, with the public-house S. ½ W. about half a mile from shore; and the Copperas-House-point on, or nearly on, with Hampton-Hill-point. The marks for the best place in West Herne-bay are, West Herne public-house bearing S. W. and the Copperas-House-point on with Hampton-Hill-point. Here, at about half a mile from shore, you may lie a-ground, upon the falling of the tide, in soft mud. The shore, from West Herne-bay upwards, (excepting the Ledges,) is equally good to lie a-ground on, when vessels are compelled to run on shore.

For a more particular description of the various shoals in this navigation, and the marks for the different buoys and beacons, see the directions for outward-bound vessels, pages 10, 11, 12.

DIRECTIONS for sailing from the NORTH FORELAND, through the QUEEN's and NOB CHANNELS, to the NORE.

For the Directions from the Nore, through these Channels, to the North Foreland, see page 13.

Description of the Buoys, *&c. which point out the track, with their Depth of Water, and the Side they are to be kept on.*

EAST buoy of Margate-Sand — — —	black	— No. 15,	4 fms, larb.
East buoy of the Tongue	— red and white,	No. 16,	4 fms, starb.
N. Spit-buoy on Margate Sand,	black	— No. 17,	4 fms, larb.
West buoy of the Tongue,	— white	— No. 18,	3 fms, starb.
Buoy on the Wedge	— red	— No. 19,	4 fms. larb.
Buoy on the Pan-Patch	— white	— No. 20,	2½ fms, starb.
Pan-Sand-beacon	— ———	— ———	——— starb.
Buoy on the South Knowl	— black	— No. 21,	9 feet, larb.
Buoy on the Pan-Sand	— white	— No. 22,	2 fms, starb.
Buoy on the North Knowl	— red and white,	——	2½ fms, starb.
Buoy on the Girdler	— black	— No. 23,	3 fms, starb.
Buoy of the Shivering	cheq. bl. & white,	No. 24,	3 fms, larb.
Buoy of the Nob	— red	— No. 25,	4 fms. starb.
East Buoy of the Oaze	— white	— No. 26,	3 fms, larb.
Buoy of the Mouse	— black	— No. 2,	4 fms, starb.
Blacktail-Beacon	— ———	— ——	—— starb.
West Buoy of the Oaze	— red	— No. 27,	4 fms, larb.
Buoy of the Cant-edge	— white	— ——	4 fms, larb.
Nore light —	— ———	— ——	—— larb.
Shoebury-Buoy —	— black	— No. 1,	4 fms, starb.

If the passage be intended through the OAZE-CHANNEL, then, after passing the Shivering-buoy on the larboard-side, leave the buoy of the Nob and the East buoy of the Oaze on the starboard; then the new beacon on the Red-sand, larboard; the black buoy of the Spile, larboard;

board; the West buoy of the Oaze, starboard; and, the white buoy of the Caut-edge as above.

At the North Foreland, the time of tide, your draught of water, and the strength of the wind, must be considered before you make sail, so that you may reach the Flats about the beginning of the last-quarter flood. If there be little wind, make proper allowance for the various directions of the tide. If you have advanced in this channel either too soon or too late for going over the Flats, it will then be safest to anchor, and wait until a proper time of the tide.

Vessels may anchor, in moderate weather, in any part of this channel. With the wind fresh from the southward, anchor near Margate-sand, off Scarn-swatch, or in Horse-Shoe-hole: or, which is better, with any wind, with the buoy on the Pan-patch N. N. E. in about 4 or 5 fathoms at low water, and the South-Knowl-buoy N. W. by N. The best anchorage in Horse-Shoe-hole is, in 3½ fathoms at low water, about half a mile from the Woolpack-sand, with St. Peter's Church S. E. ¾ S. and the Reculvers S. S. W. ½ W.

When steering for the Queen's Channel, or the east buoy on Margate-sand, keep the North-Foreland-lighthouse S. S. W. Should the buoy be gone, go no nearer to the sand than in 5 fathoms. St. Peter's church S. S. W. on with the east part of Northdown, and Minster-mill S. W. ¼ W. on with Nayland-mill, are the marks for the buoy: be careful therefore not to bring the former mark on, before the latter one be on. When the last mark is on before the first, you are to the northward of this end of the sand.

From the East Buoy to the North-Spit-buoy the course is N. W. by W. about 4¼ miles. The sand at the North-Spit-buoy, and for about 2 miles to the eastward of it, is steep; do not therefore approach it nearer than in 9 fathoms. In mid-channel, between Margate-sand and the Tongue, are 12 and 14 fathoms.

Near to the east end of Margate-sand, the first of the flood-tide sets S. by W. the middle West, and the latter part N. N. W.; the first of the ebb sets N. E. the middle S. E. by E. and the latter part S. At the North Spit, the flood sets nearly in the direction of the channel, W. by N. and the ebb E. by S.

From the Fair-way, off the North-Spit-buoy, the course to the buoy on the Pan-patch is W. N. W. ¼ W. 4 miles. In mid-channel, between the North-spit and Tongue, are 14 fathoms at low water: in that between the Wedge and the west end of the Tongue, are 10 and 11 fathoms. The Wedge-sand, as well as the North-spit, is steep-to. From abreast of the Wedge-buoy to abreast of the Pan-Patch-buoy, the water shoalens gradually from 10 to 4½ fathoms.

From the Pan-Patch-buoy to the buoy on the west end of the Pan-sand, the course is W. N. W. ¼ W. about 2 miles and a half. In the fair-way, from the Pan-Patch-buoy to the Pan-Sand-beacon, are from 4 to 5 fathoms; and, from the beacon to the buoy on the west end of the Pan-sand, the water shoalens gradually from 4½ to 2½ fathoms. With the Pan-sand beacon, N. E. by E. three quarters of a mile distant, and the buoy on the west end of the sand N. W. by N. distant about 1 mile, is very good riding in 4 fathoms at low water.

From the Buoy of the Pan-sand to the buoy on the east end of the Spaniard, is W. by N. about 3½ miles. Between them are 2½, 2, 2¼, and 2¼, fathoms, at low water. To go through the Five-Fathom-channel, between the Spaniard and Gilman, you must proceed for the Nore, according to the directions before given; but, to go through the *Nob-channel*, steer for the buoy on the Girdler, which bears from the buoy on the Pan-sand N. N. W.; the distance 2 miles and a quarter: between are 2½, 3, and 3½, fathoms at low water.

Courses through the Nob-channel. When about a quarter of a mile W. N. W. from the buoy on the Pan-sand, the courses through (leaving the buoys on the Girdler, Nob, and Mouse, about a quarter of a mile on the starboard side, and those on the Shivering and Oaze ¼ of a mile on the larboard) are as follow: N. N. W. 2 miles, N. E. ¼ E. 1 mile, N. by W. ½ W. 1¼ mile; and N. W. 2½ miles. When you have rounded the buoy on the east end of the Oaze, the course to the Nore is W. by N. nearly 10 miles. In steering these courses, from the Pan-Sand-buoy to the white buoy on the Oaze, you will go across the tide, and must make an allowance for its operation, according to the time of it and the wind.

OAZE CHANNEL.—But if, when the red buoy on the Nob bears East,

East, you intend to go to the southward of the Oaze-sand, through the Oaze-channel, steer W. ¾ N. 7 miles; and thence N. W. by W. ½ W. 3½ miles to the Nore-light; leaving, in this track, on the *larboard* hand, the new beacon on the Red-sand, (represented in the margin) the black buoy of the Spile, and the white buoy on the Cant-edge *(see page 14)*; and, on the *starboard* hand, the buoys on each end of the Oaze. In the channel are from 6 to 10 fathoms at low water. When the red buoy, on the west end of the Oaze, bears N. N. E. about half a mile distant, you may steer directly for the Nore.

The Shivering-sand, Red-sand, and Spile, now form one sand; which extends, from the buoy on the Shivering to that on the Spile, W. ¼ N. 6½ miles, and is about one third of a mile broad at the broadest part. The Shivering-sand is dry at low water, spring tides; on the Red-sand are but 2 feet, and on the Spile 2 and 3 feet at low water. The Oaze-sand, from the white buoy on the east end to the red buoy on the west, extends W. ½ N. nearly 6 miles. On the east end of this sand are 12 feet; on the middle 9 feet; and on the west end 14 and 15 feet, at low water.

When sailing up the Queen's Channel, you may find it convenient to go to the *northward of the Pan-speck and the Pan-sand;* in that case, your course, from a fairway north of the Pan-speck to the buoy on the west end of the Girdler, is about W. N. W. ½ W. 3½ miles, which will carry you through between the Girdler-sand to the northward, and the North-knowl to the southward; and you will have, as you proceed from the Pan-speck, 5, 4, and 3½, fathoms at low water. The latter depth is between the Knowl and the buoy on the Girdler. As there are to the eastward of this place 4 and 5 fathoms, ships may anchor in any part of the way. On the shoalest part of the North-knowl are only 9 feet water: on the west part of it is a buoy, painted red and white, in 2½ fathoms. The north part of the Knowl lies three quarters of a mile from the south side of the Girdler-sand. The Girdler-buoy bears, from the buoy on the Knowl, nearly N. by W. above a mile and a half; and the buoy on the east end of the Spaniard W. ½ S. three miles and three quarters. From off the Girdler-buoy, proceed as before directed.

Anchorages. Between the buoy on the Girdler, and that on the Shivering-sand, is good riding, in Girdler-hole, in 9 or 10 fathoms at low water. There is also good anchorage between the buoy on the Shivering-Sand and the white buoy on the Oaze, with the Nob-buoy bearing from E. N. E. to E. S. E. in 7 or 6 fathoms. With the Nob-buoy S. by E. ½ E. and the Oaze-buoy S. W. by W. about three quarters of a mile from each buoy, you will be nearly a mile from the Mouse-sand, having at the same time a spit from the Knock-John to the N. N. E. of only 3 fathoms; and may ride well with N. N. W. and N. W. winds, in 7 fathoms at low water. The Nore-light bears from the black buoy on the west end of the Mouse nearly west, distant nearly 9 miles.

DIRECTIONS from the NORTH FORELAND, round the LONG-SAND-HEAD, to the Black Buoy on the East End of the GUNFLEET.

THE course from off the North Foreland to the Kentish Knock in a fair-way is N. E. ¼ E. 6 leagues. In the fair-way are from 6 to 16 fathoms; and, when you have 18 or 20 fathoms, soft ground, you are the length of the Knock.

Near the east part of the Knock, are but 5 and 6 fathoms; but, about 1½ or 2 miles to the eastward of it, 15 or 16 fathoms, at low water. The mark to run directly for it is, Reading-mill and St. Peter's-church in one, bearing S. W. ¼ W. To go clear of it, keep St. Peter's-church on with Reading-trees, in 15 or 16 fathoms; and do not go nearer to it than in 9 fathoms.

The Long-Sand-head in 6 fathoms lies N. by E. ½ E. nearly 5 miles from the east part of the Knock; between, are from 8 to 12 fathoms, at low water. In working, stand to the Knock in 11 or 12 fathoms, and off to the eastward to 20 fathoms; and, in rounding the Long-sand-head, go not into less than 12 fathoms, especially at the first of the

the flood, as the first two hours of it sets in W. by S. between the Knock and Long-sand, and with great velocity between the Long-sand and the Sunk: the ebb sets in a contrary direction, according to its strength and that of the wind.

The Long-Sand-head and the head of the Sunk are dry at low water, and lie from each other E. S. E. and W. N. W. 4½ miles distant. The channel between, called the Sunk-channel, is 2 miles and a half wide, and has in it from 10 to 14 fathoms. The course from about one mile off the Long-Sand-head to the buoy of the Gunfleet is N. W. by N. with a flood, and N. W. by W. ½ W. with an ebb, tide; distance nearly 9 miles. On this course are from 14 to 17 fathoms. By hauling round, at the distance of about 2 miles from the Sunk Light-vessel, you will come directly into the fair-way of the Swin, or King's-channel.

The mark for running directly to the black buoy of the Gunfleet, is, the Naze-tower bearing N. N. W. ¾ W. as the mark for the buoy is, the Naze-tower, the easternmost of three trees, and a white house farther inland, bearing N. N. W. ¾ W. on with each other. N. E. for a considerable distance from the Long-Sand-head the sea is quite free from shoals. In sailing thence toward the Gunfleet with a contrary wind, should the Sunk Light-vessel be gone, you should not bring the Naze-tower farther to the northward than N. W. by N. until you are northward of the Sunk. The Naze bears from the Long-Sand-head N. W. ½ N. distance 13 miles.

Off the Long-sand head, the tide flows on full and change days at a quarter past 11 o'clock.

DIRECTIONS from the NORE through the SWIN and KING'S CHANNEL, to the EAST END of the GUNFLEET.

*** *For Directions for the River Thames, from London to the Nore, see page 1.*

The Track from the Nore, through the Swin or King's Channel, which is bounded on its northern Side by the Maplin, Buxey, and Gunfleet, Sands, and on its Southern Side by the Mouse, East and West Barrows, Middle or Heaps, and Sunk, Sands, is pointed out by the following Buoys, &c. to the Names of which we have annexed their Colour, Number, the Depth of Water they lie in, and the Side they are to be kept on, in sailing to the East End of the Gunfleet and Sledway.

SHOEBURYNESS-buoy	— black,	— No. 1, 4 fms, larb.
Nore-light	— —	— — 2 fms, starb.
Buoy on the West end of the Oaze,	red	— No. 27, 4 fms, starb.
Blacktail beacon	— —	— — larb.
Buoy on the west end of the Mouse,	black,	— No. 2, 4 fms, starb.
Shoe buoy and beacon	—	— — larb.
Buoy on the Middle	— black,	— No. 3, 3 fms, starb.
Whitaker-beacon & white buoy on the N. E. p. of the Maplin,		larb.
Buoy on the Buxey or Spitway	— black,	— No. 7, 2½ fms, larb.
Buoy on the Heaps, chequered,	b. & w.	— No. 8, 3 fms, starb.
Gunfleet-beacon, on the Gunfleet-land		— — larb.
Sunk light-vessel	— —	— 8 fms, starb.
East buoy of the Gunfleet	— black,	— No. 9, 4 fms, larb.
Buoy on the Rough	— red,	— No. 10, 3 fms, larb.

FROM the NORE, along the Maplin-sand, to a good birth between the buoy on the Mouse and the Blacktail-beacon, the course is E. ¾ N. and the distance 3½ miles. In turning down below the Nore, keep upon the Warp-sand, till you are nearly as low as the Blacktail, as there is deep water, 9 or 10 fathoms, close to the sand. The ebb-tide here sets to the S. E. Upon the upper end of the Warp is about 4½ or 5 fathoms water, declining gradually downward, to athwart the Blacktail, where there are 7, 8, and 9, fathoms.

The Blacktail-beacon stands upon the North or Maplin-sand, having Leisdon-church and trees in Sheppey, a ship's length open of the land's end, bearing, nearly, S. S. W. ¾ W. the red buoy of the Oaze-edge S. W. ½ S. and Shoebury-ness buoy W. ¾ N. distance from the latter 6 miles.

From the Blacktail-beacon, the Mouse-buoy bears E. by S. ½ S. distance 3¼ miles, and the Shoe-beacon E. ¾ N. 5 miles. The Shoe-beacon bears from the buoy of the Mouse N. E. by E. 2¾ miles.

When

When you are as low as the Blacktail, if the wind or time does not permit you to go through the Swin, come to an anchor.

The course from off the Blacktail to the Shoe-beacon, in a fair-way, is from E. ½ N to E. by N. or more northerly, according to wind and tide. Distance 5½ miles. This part of the navigation is very difficult. The water is deep, from 11 to 13 fathoms, mid-channel, and on each side steep-to; therefore put about the first shoal-cast of the lead on either side, as a fast sailing ship may shoot on shore before a second cast can be hove. But, in working down from the Warp with little wind, do not stand too far over towards the Oaze, lest the tide should set you to the southward of the Mouse, and prevent your getting into *Shoe-hole*.

The Mouse is now joined to the *West Barrow-sand;* they extend in a curve. The Mouse nearly E. ¾ N. about 4 miles, the West Barrow thence N. E. by E. 4 miles. They are half a mile broad, and dry at low water.

The East Barrow extends nearly E. ¾ N. and W. ¾ S. about 6 miles. Its western end lies to the northward of the eastern part of the West Barrow; between, is a narrow channel of 4, 5, and 8, fathoms. There is also a channel to the northward of the East Barrow, between that and the Middle-sand, or Heaps, having in it from 4 to 6 fathoms.

When you are down as far as the Mouse stand into no less than 10 fathoms. The Shoe buoy and beacon, in one bear N. N. W. and with this mark the foregoing courses are terminated. The course hence to a fair-way between the buoy on the *Middle* and Whitaker-beacon is N. E. ¼ E. distance, 5½ miles; but allowance must be made for the tide, which sets strongly.

About 3 miles E. ¼ N. from the Shoe-beacon, and 2¼ miles S. S. W. ¾ W. from the Middle-buoy, is a small *knowl*, on which are but 9 feet at low water. This knowl is about a quarter of a mile from the West Barrow; between, are eight fathoms. The mark for it is, the Whitaker-beacon open to the westward of the buoy on the Middle.

Roadstead. Between the Shoe-beacon and buoy of the Middle is an excellent road for ships upward or downward bound, in 6 or 8 fathoms, any where within a mile below the Shoe to within a mile above the buoy of the Middle.

In working down, stand to the North, or Maplin sand, into 4 or 5 fathoms, and put about when you come into 9 fathoms, lest you get upon the Barrow-knowl.

The Buoy on the West end of the Middle, or Heaps, bears from the Whitaker-beacon S. by E. ½ E. 1 mile and a half, and, from the Shoe-beacon, N. E. by E. ¼ E. 5 miles. The sand extends hence E. ¾ N. nearly 5 miles.

The marks for the chequered buoy on the East end of the heaps are, the Naze-tower, N. N. E. ¼ E. Great-Holland-church N. and the Whitaker-beacon W. ¼ N.

The Channel between the Whitaker-beacon, on the N. E. point of the Maplin-sand, and the west end of the Middle-sand, or Heaps, is about a mile and a quarter wide, and has from 5 to 10 fathoms water.

About ½ a mile W. S. W. from the black buoy on the west end of the Middle, lies the N. end of a small ground, which extends thence 2 miles to the S. W. and is about half a mile broad: on the northernmost part are 5, and on the southernmost 6, fathoms, at low water. On the west side of it are 7 and 8, and on the east 8 and 9, fathoms.

The Whitaker Beacon, which stands upon the eastern spit of the Maplin Sand, is situated S. W. ¼ W. nearly 5 miles and a half from the Shoe beacon, and N. by W. ½ W. one mile and a half from the black buoy on the west end of the Middle. To the eastward of the beacon, upon the extremity of the Spit, lies the white buoy before mentioned.

The black buoy of the Buxey, or Spitway, is nearly 2½ miles N. E. by E. ½ E. from the Whitaker beacon, and lies on the S. E. point of the Buxey sand. Within, on the Western point of the Gunfleet, is a red buoy. These buoys mark the Spitway into the Wallet, between the two Sands.

The Gunfleet Sand is 12 miles in length, and half a mile in breadth. It is steep-to, and partly dry at half-ebb. Its direction from the Western end, is in a curve, but nearly trending E. ¾ N. for 7½ miles,

to

to the beacon which stands upon the Hook: and thence, to the black buoy upon the eastern extremity, N. E. by E. ¼ E. Distance between the latter four miles and a half. The broadest part is at the Hook or elbow, half a mile below the beacon.

The beacon stands with the Naze-tower N. by E. a little easterly, and the buoy of the Buxey W. ¾ S. The buoy lies with the Naze tower and Walton hall, (a white building farther inland,) being N.W. by N. on with each other; the beacon S. W. by W. ¾ W.; and Harwich Lights about N. ¾ W.

The course and distance, in a fair way, from the black buoy on the west end of the Middle, to the Gunfleet beacon, are E. by N. nearly 10 miles; and thence to the black buoy, N. E. by E. ¼ E. 5 miles. Approach no nearer to the sand in any part than 9 fathoms.

Nearly parallel to the lower half of the Gunfleet, at the distance of between three and four miles, lies the sand named the Sunk, of which from a survey made by Mr. Fotheringhame, in the year 1793*, we have the following particulars. Its upper or western end is about 2½ or 3 miles from the chequered buoy on the Heaps: it lies with the Naze-tower and Gunfleet beacon in one, and a little to the westward of the end of the sand called *Knock-John*, between which and this sand is a swatchway about half a mile wide. The Knock-John extends half a mile down at the back of the Sunk, and is dry at half-tide.

From the buoy of the Heaps to the upper end of the Sunk, is a regular flat, having from 5, to 6, 7, 8, and 9, fathoms.

The greater part of the Sunk is dry at Half-tide. The whole length of this sand, which is narrow, extending E. by N. ½ N. and W. by S. ½ S. is 6½ miles. It is steep to on both sides, and a considerable part of it is dry at low ebbs. The lower end lies with the Naze-tower touching on the northernmost trees near Walton-hall, bearing N. N. W. The Gunfleet-beacon W. by N. ¾ N. and the east buoy of the Gunfleet north, 4½ miles distant.

Observations upon working down from the Buoy of the Middle, to that of the GUNFLEET, &c.

IN working down, when above the *Middle*, you must not stand too far to the eastward, lest you get to the southward of the Middle, as the tide sets strongly through between that sand and the Barrows; and observe, that near the Whitaker the sand is steep-to, though below the beacon is the shoal stretching downward from it, called the Whitaker-spit, which has, near the sand, 2 fathoms, then 2½ and 3 to 4 fathoms. Between this and the Buxey sand to the westward is the entrance in the WHITAKER-SWATCH, where there are 6 fathoms.

If you are at the buoy of the Middle, and have a working-wind, stand to the Whitaker into 7 fathoms, and off to the Middle into 9; then put about, as upon that side is the deepest water, and that very near the sand; but, after you are one mile below the Whitaker, you

* The reasons which induced Mr. Fotheringhame to make this survey, were the following; which we give in his own words, as addressed to Sir Andrew Snape Hamond.

"When master of his Majesty's ship Braakel, off Harwich, I was of opinion that the situation of the Lower Swin was erroneously laid down in the latest chart then published, which I firmly believe occasioned the loss of La Reunion frigate, and it has likely proved fatal to others who were not sufficiently well acquainted. I examined it, and found, that the distance between the Gunfleet and nearest sand, (the Sunk) to the South, was but little more than three miles; which sand extends six miles and a half in length, and is partly dry at half-tide; whereas the chart which I have alluded to made the distance between those sands nearly ten miles; and, where I found a dry sand at half tide, that chart has from twelve to fifteen fathoms, and a clear space of the distance above-mentioned, as the *King's Channel*. I knew his Majesty's ship Inflexible, (with two pilots on board) to get up at the South or wrong side of the Sunk, on the supposition that she was in the Swin Channel; and the pilots whom I took with me, when surveying, had not the least idea of the Swin Channel's being so narrow.

"The only chart of this part that I have seen, nearly correct, is that taken from the surveys made by *Admiral Knight*. It is published by *Steel*; and in this the above-mentioned survey of the lower Swin will be seen; which indeed, was made known to the public before the Trinity-House plan was given out. At present the light-vessel is laid near the lower end of the Sunk; but there are charts, *apparently newly published*, wherein the said sand is laid down in a *curve* to the N. E. in order to make it appear somewhat near the situation of the light-vessel; although the Sunk runs in an E. by N. half N. direction, or nearly in a parallel to the Gunfleet."

may

may stand across the Swatch to 5 fathoms upon the Buxey, and to the Middle into 7 or 6, mid-channel 8 fathoms.

Below the Spitway, in standing from the northward, you will have, going over toward the Middle or Heaps, from 5 to 6 and 7 fathoms, then 5 upon a middle ground between; then again 7 and 8 fathoms to the southward. When you are about two miles below the Spitway, approach no near the Gunfleet than 8 or 7 fathoms, and then put about, crossing over 9 or 10 fathoms, then upon the middle-ground 6 or 7. After you are over, do not stand too far towards the Heaps, as its buoy is not always to be seen; after you fall off the middle, you may safely stand from 10 to 9 or 8 fathoms, and then about with the wind to the eastward of the South, you may keep the lead along the middle in 7 fathoms.

From the fair way hence to the eastward, the floating light on the eastern end of the Sunk, (hereafter described) will be the best guide down this channel in the night; as it may be safely approached, bearing East or E. ¼ S. to 9 fathoms.

If it be low water when you are as low down as the Gunfleet buoy, with the wind to the north-eastward, it will be better to run into the Wallet, through Goldemer's Gat, and come to an anchor, under shelter of the west rocks, described hereafter, in 6 or 7 fathoms; with Walton-Hall, the house upon the Naze, a sail's breadth open to the westward of the Tower.

The head of the Long Sand bears from the buoy on the Gunfleet, S. E. by S. 7 miles and a half; between are 6, 10, 13, 14, 13, and 10 fathoms; thence decreasing in depth to the Long Sand, part of which is dry at half ebb."

*** *For Directions for sailing up the King's Channel from the Gunfleet-buoy, see "Directions for Ships returning from the northward to the River Thames," inserted hereafter.*

DIRECTIONS from the East Buoy on the GUNFLEET, through the SLEDWAY, to HOSLEY-BAY and ORFORDNESS; and thence westward, to HARWICH, and over the Naze, into the WALLET.

BETWEEN two miles and two miles and a half N. E. by E. from the east buoy of the Gunfleet, lies the S. E part of the West Rocks, a rocky shoal nearly dry at low water, which extends more than 3 miles E. S. E. and W. N. W. and nearly 2 miles broad. The channel between this sand and the Gunfleet is called Goldemer's Gat, and is a mile and three quarters wide. It has from 8 to 6 fathoms at low water. The outer part of the rocks lies with the Naze-tower N. W. ½ W. off with the westernmost tree upon the Naze; the body of them E. S. E. ¼ E. from the tower, and the E. end S. by W. ¼ W. from the beacon on Bandsey cliff.

Cork-sand and Ledge. Off the north side of the west rocks lies the *Cork-sand*, the east end of which bears about N. ½ W. from the east part of the west rocks; it thence extends W. N. W. ½ W. two miles and a half, and is a mile and a quarter broad; part of it is dry at low water. Near the N. W. part of the Cork-sand lies the south end of the *Cork-ledge*, which thence extends N. by W. ½ W. three quarters of a mile, and is about one-eighth of a mile broad: there are 2¼ fathoms on it at low water. The marks for the north end of it are, Harwich church-steeple, N. W. ¾ N. just open to the westward of Languard-fort, and the Cork-land W. S. W. ¼ S. just appearing without the Naze-land.

On the East Side of the Sledway, lie the Shipwash, Bandsey-sand, Kettle-bottom, and *Whiting*, besides several other dangers nearer to the shore. Before proceeding to a description of them, it is necessary to premise the following observations.

In the year 1802, a *light-vessel* was placed at the eastern end of the *Sunk*. This vessel shews a light in the night, and a flag at the mast-head during the day. In foggy weather a bell is rung every half hour, and it strikes six times every ten minutes, to distinguish this from

from other vessels. From the light vessel the beacon on the Gunfleet, bears W. N. W. 5 miles and three quarters, the Naze-tower N. N. W. ¾ W. 9 miles and a half; the buoy on the east-end of the Gunfleet N. by W. four miles; the red buoy of the Ruff N. N. E. 8 miles and three quarters; the white and black chequered buoy on Baudsey-sand N. N. E. ½ E. 12¼ miles; Orfordness N. E. ¾ N. 20 miles; the buoy on the Shipwash N. E. ¼ E. 8 miles and a half; and the Long-Sand-head E. S. E. 4 miles and three quarters. In working between this sand and the Gunfleet, stand no nearer the Sunk than the Light bearing E. as the buoy of the Heaps bears from the light about W. half S.

BAUDSEY SAND is about 3 miles in length and three quarters in breadth, near the S. W. end. The soundings are very irregular upon this shoal; we have not found less than 10 feet at low water, spring tides, any where upon it; but, from the unevenness of the ground, there may be knowls with less water. Upon the south part of the shoal a white and black chequered buoy is placed, from which the high light of Orford-ness bears N. E. ¼ N. 7 miles and a half; Baudsey beacon N. W. by N. 4 miles; the buoy of the Ruff S. W. ¾ W. 3 miles and a half; the Sunk-Light S. S. W. ¾ W. 12 miles and a quarter; the N. E. end of this sand bears from Orford high light S. W. by S. 5 miles.

The SHIPWASH is a very narrow ridge of sand, extending about N. E. and S. W. 7 miles and a half. Some parts of it are said to dry in low ebbs, and are steep-to on both sides. This is a dangerous bank, as ships coming in from sea have not sufficient warning by the lead in approaching it. A white buoy is placed at the S. W. end of it, from which the Sunk-light bears S. W. ¼ W. 8 miles and a half; the buoy on the Gunfleet W. by S. 7 miles and a quarter; the Ruff N. W. ½ W. 4 miles; the buoy on Baudsey-sand N. 4 miles and three quarters. The marks for this end in 5 fathoms, are, Harwich light-house, between the Flagstaff and west end of the garrison; and Orford-mill open on the west side of Orford castle. The N. E. end of this sand bears from the high light of Orford-ness S. ½ E. 4 miles and three quarters. In sailing along this sand, care must be taken to give an allowance in the course for the set of the tide, the flood setting about W. S. W. and the ebb E. N. E. about two points athwart the sand.

The KETTLE-BOTTOM is a small shoal lying three quarters of a mile to the N. N. W. of Baudsey-sand, about which there are very uneven soundings; the least water found was two fathoms and a half, though some parts may have less. The marks are, Naze-tower W. by S. ½ S. Orford high light-house N. E. and Felstow mill, a ship's length open to the north-eastward of the public house in Woodbridge haven. Between it and the Baudsey-sand is a channel of 6 fathoms, but it is not more than a quarter of a mile wide.

The WHITING is a narrow bank, upon the N. E. end is placed a white buoy, not a mile distant from the beach; Orford church bearing N. by W. It extends S. W. by W. ¼ W. 3 miles. The marks for the buoy are, the remarkable trees called the Hunters, open of Baudsey-cliff, and Orford-mill open to the eastward of the church.

The two light-houses on Orford-ness in one, lead close upon the inner side of this sand; therefore, in working through Hosley-bay, the lower or easternmost light must be kept in sight to the northward of the high light. In 1801, upon turning into Hosley-bay, to the eastward of the buoy, at half-flood, Mr. Fotheringhame found only 13 feet water, where he expected 24 feet. It therefore appears that the Whiting was growing up.

The CUTLER is a rocky shoal with uneven soundings; the outer edge of which is between one and two miles without Baudsey-cliff. The lights of Orford-ness in one lead upon the outer part of this shoal; therefore, in passing it, the lower or easternmost light should be kept open to the north eastward of the high light, if the weather permit them to be seen.

KING's CHANNEL to HOSLEY-BAY. From off the east buoy of the Gunfleet, the fair-way course for Hosley-Bay will be N. E. by E. ¼ E. 4 miles; which will end about a mile beyond the point where Baudsey church and beacon appear in one bearing N. by E. Then steer N. E. 2¼ miles, which will lead to the eastward of the Rough; whence the sunk light-vessel will bear S. W. by S.—A course N. by

E. ¾ E. for 7 miles, will now lead directly to the anchorage in the Bay.

In the foregoing courses allowance must be made for the tide, according to ebb or flood. The ebb sets E. N. E. and the flood W. S. W.

The ROUGH lies about 5 miles and a half N. E. ½ E. from the buoy on the Gunfleet. It is a small hard shoal of three fathoms. The marks for the red buoy upon its North end are, Baudsey church N. ¾ E. *and Ramsholt church* N. ½ W. *on with two trees which stand* to the westward of Felstow cliff. Between the Gunfleet, the West Rocks, and the Rough, are 6, 8, 9, to 6 and 5, fathoms at low water.

WEST ROUGH.—W. S. W. ½ S. one mile from the red buoy of the Rough, lies a shoal of 18 feet, called the West Rough, with Ar*warton church, on the S. W. part of* Landguard Fort, and Baudsey church, on with Baudsey Beacon.

In turning to windward between the King's Channel and Hosley-Bay, stand no nearer to the west end of the Shipwash than till Baudsey-church comes on with the N. E. end of the long wood to the eastward of Baudsey-cliff, nor to the West Rocks than till Alderton church comes on with Baudsey church, appearing then on the rising part of the cliff. Stand no nearer to the West Rocks than 5 fathoms, nor to the Shipwash than 8 fathoms. Having passed the Rough, stand no nearer to Baudsey-sand than till the tree, to the northward of Orford church, comes near to the west side of that church; *nor to the* Cork-sand or Cork-ledge than till Harwich church steeple comes on with a brewhouse which stands a little to the northward of Landguard-fort; in the night stand no nearer than 5 fathoms. About half a mile S. E. from this end of the Cork-sand are 8 fathoms, in what is called the Cork-hole.

In the night, be careful not to stand into the Swatch between the Cork and West Rocks, which it will be difficult, in dark weather, to get out of.

The best anchorage in Hosley Bay is, with Hosley church and the parsonage house on with each other, in 5 or 4 ½ fathoms at low water.

HOSLEY BAY to ORFORDNESS.—The course from Hosley Bay to a fair way between the buoy of the Whiting and Orfordness, is E. by N. northerly, distance from 4½ to 5 miles. With a turning wind stand no nearer to the Whiting, on the starboard side, than 7 fathoms.

In working through, (as before mentioned) the lower or easternmost light must be kept open to the north eastward of the high light, if the weather permit them to be seen.

A black buoy was laid down in Hosley-bay in January, 1801, *on the* wreck of a Danish brig, which lay sunk in 6½ fathoms at low water, with the following marks, viz. the northernmost of the two trees on Felstow-cliff, called the Hunters, just on with Baudsey-cliff, bearing W. by S. southerly; Orford-castle N. N. E. ¾ E.; and Orford high light N. E. by E. ¾ E.

In mid channel, between Orfordness and the Whiting, are from 10 to 12 fathoms. Should the buoy of the Whiting be gone, open the mill to the eastward of the church, and then you are below it. *When below the buoy,* do not stand to the beach in less than 8 or 9 fathoms; as thence to the Ness it is very steep, and must be carefully avoided.

Above the Ness is a flat which runs off from the shore about two cables' length; the bottom is hard, and there are 6 fathoms close to it; you will have 8 fathoms at one cast; and, before the lead can be hove again, may be ashore. A little westward of this shoal is a contra-tide, caused by the point above the Ness, which runs down during the flood with considerable velocity. Ships have sometimes, by getting into it, missed stays with a turning wind, and run on shore.

From Hosley-Bay bound to sea, you may, after passing the buoy, steer S. E. by E. or East; and, if bound to the northward, keep along shore; observing not to shut Baudsey-cliff with the point of Orford-beach till you open Dunwich-cliff with Thorpness.

After you are below Orfordness, be careful to avoid Aldbro'-knapes, the body of which lies with Orford church and Castle, on with each other, and Iken-church on with the limekilns at Aldbro', which stand to the southward of the Fort; but Orford church and castle, a sail's breadth either way, will carry you clear of them.

Orford-

Orford-lights in one, bearing S. W. by W. ¼ W. lead in a fair way between Aldbro'-knapes, and the shore to the westward.

Upon Orford-Beach, about 400 yards from the sea-side, is an excellent spring of *fresh water*. The mark to find it is, to bring the mill upon the chancel of the church, which will lead you directly to it.

HOSLEY-BAY to HARWICH, &c. Between Hosley-bay and Harwich-harbour are several dangers hereafter-described. The first is the *Cutler*, before mentioned, a shoal sometimes nearly uncovered at low water, lying off the middle of Baudsey cliff.

The course up to this shoal, from the lower part of Hosley-bay, is S. W. by W. or S. W. according to the tide, bringing, while within the Whiting, or until the entrance of Orford-haven bears N. N. W. Orfordness low or easternmost light open to the North-east of the high light; and, when above it, the low light open to the Southward of the high light, until you bring Harwich church-steeple nearly midway between Felstow-cliff and Landguard-fort; approaching no nearer to the Cutler than 5 fathoms. When Ramsholt church and barn are open to the westward of Baudsey-cliff, you will be above the Cutler; and, if the wind be north-westerly, may haul in towards shore.

Between the Cutler and shore are 4 fathoms, and close to the shoal on the other side are 3 fathoms, water.

In running out from Hosley-Bay, be mindful not to bring a bluff tree, to the northward of Orford church, more than a sail's breadth open to the north-westward of the church, until Harwich Church-steeple appears well open of every part of Felstow-cliff. Harwich-steeple, W. N. W. ½ W. well open of Felstow-cliff, will lead you above a quarter of a mile without the sand in four fathoms at low water; when Baudsey church bears North, you are a-breast of the west end of the shoal. If so near to the west end of the Cutler, steering W. by S. will carry you into 5 fathoms at low water, about half a mile without a shoal called the *Platters*, near the entrance of Harwich. If you are further to the southward of the Cutter, steer west

The mark to lead clear of the Platters is, Orford church and castle, a sail's breadth open of Baudsey-cliff. The Platters extend nearly a mile from shore, and are sometimes dry at low water; go no nearer than 5 fathoms.

When Harwich-steeple is a sail's breadth open to the westward of Landguard-fort, you may haul in towards the *Andrews*, which runs off from the Fort-point, taking care to keep Baudsey church open of Felstow-cliff until the two lights come in one, bearing N. N. W. ½ W. With a turning wind you will find the soundings in some places irregular, from 4 to 6 or 7 and 5 fathoms. Stand no nearer to Felstow-cliff, nor to the Platters, than 5 fathoms, nor to the southward near Cork-sand or Cork-ledge than 7 fathoms; or the S. W. land just open of the Naze.

When Harwich lights come on with each other, run in with them so until you are past the Andrews. This sand runs off above a quarter of a mile S. S. W. from the stony-beach at Landguard-fort, and dries at low water. As the Andrews is steep-to on the west side, and as the first half-ebb runs strongly over it to the eastward, you must be very careful in passing with an ebb-tide. The channel between the Andrews and the shoal, called the *Ridge*, is more than half a mile wide, with 3, 4, and 5 fathoms in it at low water.

HARWICH. When past the Andrews, keep close to the beach, half a cable's length from the shore, to avoid the *Altar*, a small stony shelf, lying about a cable and half's length W. N. W. from the beach off Landguard-fort, which has only one fathom on it at low water. Vessels of 9 feet water may go into the westward of the Altar, and proceed thence between two shoals called the *Gristle* and the *Guard*. The Guard runs off about half a mile east-northerly from the shore by Harwich church; and the Gristle lies off it nearly in mid-channel: the passage between is about a cable's length wide, and called the West channel. In this channel is a wreck with a small flag on it.

Ships, drawing more than 15 feet, should wait for the flowing of the tide, before they attempt to pass up the eastern channel, as a narrow ridge, named the *Glutton*, stretches athwart it, a little to the

northward of the brewhouse, near Landguard-fort; this ridge has but 16 feet on it at low water. The best direction for sailing over it is, to run along the east shore, till the flag-staff of Landguard-fort comes on with the clock-house; then the fort will appear in three distinct parts like two streets, which may be plainly seen in the night. When over the Glutton, continue to keep near the beach, in order to avoid the Gristle, which lies above it about half a mile from shore. This is a small shoal of only 3 feet at low water; in the channel, between it and the eastern shore, are 4 fathoms. With the before-mentioned mark for the Glutton, keep the eastern shore on board, at a cable and a half's length distance, until Dover-court church is open to the northward of the houses of Harwich: then you are past the Gristle, and may either anchor in the middle of the channel or run up a-breast of the town, and anchor in 5 fathoms; or you may go into the mouth of Ipswich river, and anchor in 1 fathoms. Here the small ships ride out of the way of the large ones, and have much better riding with westerly winds. On the west side of the entrance of this river a long shelf runs off from Shotley or Ozen point, extending nearly half a mile from shore. Harwich church kept on with the south end of the Storehouse will lead clear of it.

COMING FROM THE SLEDWAY FOR HARWICH. In coming from the Sledway, steer to the northward, until Harwich church-steeple be on with the brewhouse to the northward of Languard-fort, bearing N. W. ¼ W. then, in order to avoid the *Rough*, which is to be left on the larboard, bring the church to the northward of the brewhouse; the church on with the brewhouse will afterward carry you about three quarters of a mile to the eastward of the Cork-ledge, until the Cork-land is shut in with the S. W. part of the Naze-land. Now steer W. ¼ N. taking care not to bring Orford church and castle within less than a sail's breadth open of Baudsey-cliff, until Harwich lights are on with each other. Hence proceed as before directed.

To anchor in the Rolling-ground, without Harwich-harbour. So soon as you are within the east end of the Ridge, which is nearly three quarters of a mile to the southward of the Andrews, steer about W. N. W. towards the cliff; and when you have brought the inner lighthouse a sail's breadth open to the westward of the outer one, and the high part of Baudsey-cliff a sail's breadth open of Felstow-cliff, you will have good ground in from 6 to 4 fathoms at low water.

The *Ridge* extends about a mile W. S. W. and E. N. E. and is half a mile broad. On the middle of it are only 7 feet at low water. The mark for the shoalest part is, Arwarton church-steeple, N. by W. ¼ W. well on with Harwich Beacon cliff. The N. E. point of the *Pye-sand*, which runs off from the shore, bears from the westernmost part of the Ridge, N. W. by W. ½ W. nearly one mile; between, are from 12 to 6 feet at low water. The Pye-sand extends a mile and a half N. E. by E. ½ E. from Stoney-point, and nearly 3 miles N. N. E. ½ E. from the Naze: part of this sand is dry at half tide. The N. E. point of it bears, from Harwich-Beacon cliff, S. S. W. a mile and a half: between, is the entrance of *Handford-water*, where there are 6 feet at low water, excepting on the *Hollidays*, a small sand, which is at low water uncovered.

HOSLEY-BAY, &c. TO THE NAZE AND WALLET. To go over the Naze into the Wallet, after passing the Cutler, as directed above, steer W. S. W. ¼ W. for the Naze, taking care not to have the Cork-land open of the S. W. part of the Nazeland, until Harwich lights appear in one. Then steer W. S. W. ¼ S. for the Naze, or just open the Cork-land with the S. W. part of the Nazeland, until Harwich church steeple comes on with Harwich cliff; or until the two mills to the westward of Harwich appear in one. Keeping the latter mark on will carry you through between the Naze rocks and the Stone-banks, near half a mile to the eastward of the latter, and in the deepest water.

The Stone banks lie a mile and a half E. S. E. ¼ E. from the Naze, and three quarters of a mile W. ½ N. from the west end of the Cork-sand; nearly half a mile long, a quarter of a mile broad, and with only 5 or 6 feet on them at low water. The marks are, Ramsey church, on with a farm-house, bearing N. N. W. ¼ W.; Pain's tree,

to

to the southward of Harwich, on with Harwich-cliff, bearing N. ½ E.; and the northernmost of the trees on the Cork-land, just open of the Naze-land, bearing W. by S. In the channel, between the Naze and the Stone-banks, are from 6 to 9 feet at low water; the former depth is about half a mile from the Naze, and the latter about three quarters of a mile distant: there are only 9 feet in the deepest channel at low water. *In rounding the Naze*, the soundings are very irregular.

When the Tower on the Naze bears W. N. W. the course to the Wallet-buoy on the Spits is W. S. W. ¼ S. about 11 miles; with a flood-tide rather more southerly; and, with an ebb-tide, more westerly. In proceeding, you will have 3, 4, 5, 6, 7, 6, and 5, fathoms at low water; the latter depth is off the Spits-buoy, which is red, and lies in 2½ fathoms on the N. E. end of the Buxey-sand.

In turning to Windward for the Naze, between the Platters and Ridge on the north side, and the Cork-ledge, Cork-sand, and Stone-bank, on the south side, of the passage, stand no nearer to the Platters than till Orford church and castle come within a ship's length of Baudsey-cliff; and, when standing to the southward, you must not bring the Cork-land open of the Nazeland until you are to the westward of the Cork-ledge. The channel, between the Cork-ledge and Platters, is about a mile wide, and has in it from three to six fathoms at low water. The marks for the north end of the Ledge have already been observed: they are Harwich church-steeple just open to the westward of Languard fort, bearing N. W. by N.; and the Cork-land just appearing without the Nazeland, bearing S. W. by W. ¾ W. When farther advanced towards the Naze, you must not, when standing towards the Ridge, bring Orford church and castle on with Baudsey cliff, nor bring the tower on the Naze farther to the southward than S. W. by W. ½ W. and, when you stand towards the Cork-sand, or the Stone-bank, you must only open a little of the Cork-land without the Nazeland. The channel between the Cork-sand and the Ridge is about a mile and a half wide; in the middle of it are 7 and 6 fathoms at low water. The channel between the Ridge and the Stone-bank, is about a mile and a quarter wide, and there are in it 3 and four fathoms at low water.

WALLET. There is plenty of turning-room in the Wallet, it being 4 miles wide, with good anchorage every where. The Swin-buoy, on the Spits, is black, and lies on the east end of the Buxey-sand, in 2½ fathoms. But that within, on the Gunfleet, is red, and the Spitway lies between. This passage out of the Wallet into the Swin, between the Gunfleet and Buxey, alters so often, that none but those who frequently use it are qualified to carry a vessel through with safety.

GOLDEMER'S GAT. To go through Goldemer's Gat from the Wallet, bring the Naze-tower N. W. ½ N. and steer S. E. by E. with a flood-tide, and S. E. by S. with an ebb-tide, or otherwise according to the wind and tide. The leading mark is Walton-hall, heretofore mentioned, just open to the westward of the tower, which will carry you out in 6, 7, and 8, fathoms, until the water deepens to the southward of the Gunfleet. In working out through the Gat, you may stand to the northward, until the house comes on with the tower, in 6 or 7 fathoms; and between the west rocks and the Gunfleet-sand you may stand each way into 5 or 4 fathoms.

Northward of the Gunfleet, and about 2 miles above the buoy, is exceedingly good riding with S. E. southerly, and S. W. winds; for, there the sand dries at the first two hours of the ebb. If, when you are the length of the buoy on the Gunfleet with a S. W. wind, bad weather appears to be coming on, the best method will be to work up to the northward of the sand, about two miles above the buoy, and anchor in 7 or 8 fathoms. You will have better riding there with half a cable on the small bower, than you would have had with both anchors and whole cables ahead on the south side of the sand in the Swin.

The same may be observed by ships bound down, having N. E. and northerly winds. Being down to the buoy, you may go into the Gat, and anchor under the rocks in 6 and 5 fathoms, having the square house, called Walton-hall, on or open to the westward of the tower; for, farther to the eastward, the ground is not so clear.

DIRECTIONS for sailing out of the KING's CHANNEL, either within or to the Southward of the SHIPWASH, &c.

IN proceeding from the Gunfleet-beacon the course to the southward of the Shipwash is E. by N. ½ N. the soundings are variable, as 8, 10, 11, 9, 8, 10, fathoms. In 14 or 15 fathoms you will be without the Shipwash, and may then steer N. E. by N. within Aldborough Knapes, past Orfordness; or N. E. by E. without the Knapes, out to sea.

There is a good Channel within the Shipwash, between it the Baudsey Sand, and Whiting. From the buoy of the Gunfleet, steer N. E. by E. ½ E. 8 miles, leaving the buoy of the Rough to the north-westward. The least water you will have is 5 fathoms. The leading mark to Orfordness will then be, Aldborough mill on with the low light upon the Ness, bearing N. N. E. ¾ E. which will lead over the tail of the Baudsey Sand, in 5½ fathoms at low water. Distance, upon this course, about 10 miles.

From HOSLEY-BAY, and from the GUNFLEET-BUOY, round the LONG-SAND-HEAD to the DOWNS.

SHIPS bound from Hosley-bay to the Downs, with an easterly wind, should turn down to Orfordness with the ebb, according to the preceding directions, and proceed to the eastward of the Shipwash.

Orford-mill open to the eastward of Orford church, or Orford high light bearing N. by W. ½ W. will lead clear of the N. E. end of the Shipwash into 11 or 12 fathoms. This end of the sand lies, as before-mentioned, S. ½ E. 4¾ miles from the high light; and, in sailing along it, care must be taken to give an allowance in the course for the set of the tide, the flood setting about W. S. W. and the ebb E. N. E. about two points athwart the sand.

From the depth of 12 fathoms, with the high light on the bearing above-mentioned, the course to the eastward of the Kentish Knock, in about 14 fathoms, will be S. S. W. or more to the west with an ebb tide, and more to the southward with the flood. The distance 6 leagues.

In parting with Orfordness, and meeting contrary winds, stand to the Shipwash into 12 and 14 fathoms, and off to 20; to the Long-Sand-head to 9 and 10 and off to 20; and to the Kentish Knock into 12 and 13, fathoms.

From the extremity of the Long-Sand-head the eastern part of the Kentish Knock bears S. S. E. ¼ S. The channel between is about 2½ miles wide. The Knock is two miles and a half in length, and two miles in breadth. To the southward of the Knock the ground is, generally, soft and muddy.

It flows at the full and change at the Long-Sand-head at half past eleven; the tides meet then, and the ebb runs thence to the southward.

From the termination of the above-mentioned course, without the Kentish Knock, and upon which the sunk light-vessel will bear about N. E. the course and distance to the North Foreland, are S. W. ½ W. 6½ leagues; or, to the entrance of the Gull-stream, S. W. ¼ S. 7½ leagues.

FROM THE GUNFLEET-BUOY the Long-Sand-head, in 7 fathoms, bears S. E. ½ S. nearly 7½ miles; and from the sunk light-vessel, E. S. E. 4¾ miles. The course from the Gunfleet-buoy to a fairway clear of the Long-Sand-head is, therefore, S. E. ½ E. and distance about 8 miles: but allowance must be made for the tide, which is nearly on the beam.—Being clear of the Long-sand, a course S. ¾ E. will clear the Knock, &c.

Great part of the Long-Sand-head now dries at half-tide. On the Knock in some parts is but one fathom at low water. To the latter approach no nearer than 9 or 10 fathoms, nor stand farther to the eastward than into 25 fathoms. When to the southward of the Knock, you will have very soft muddy ground.

Approach no nearer to the Long-Sand-head that 10 fathoms. Off the head the ground is sandy; near to the north end of the Gallopery described hereafter, it it coarse, and towards the south end the ground is soft. When the N. Foreland bears S. W. by W. ½ W. steer S. W. by

by W. until the west land is shut in with Foreness; then proceed for the Downs, according to the directions on page 17.

The floating light on the Goodwin North Sand-head is chiefly intended for the Use of Vessels from the Northward; see page 17.

GALLOPER, &c. Nearly S. S. E. 7 leagues from Orfordness, lies the north end of a shoal called the Galloper, which thence extends S. S. W. about six miles and a half. It is about one mile across in the broadest part, and has, where shoalest, only nine feet over it at low water. The channel between it and the Long-Sand is six leagues and a half wide, and has from 15 to 24 fathoms. Near the sand, on the east side, are 20 fathoms; and, 2½ miles from it, on the same side, are 27 fathoms, coarse ground, with small black stones. Near the south end are 16 fathoms, stony ground; about three quarters of a mile without the north end are 14 fathoms, with coarse stones; and, close to this end are 12 fathoms. On the north end are six fathoms at low water.

Pursuant to the directions of the Lords of the Admiralty, in the year 1804, a vessel has been moored at the S. W. end of the Galloper, in which two lights are exhibited from sun-set to sun-rise for the benefit of his Majesty's cruizers: and, in order to prevent any mistake or this for the other lights in the vicinity, it is to be observed that the vessel has two masts, with a light at each mast-head, that it may be readily distinguished from the Sunk and Goodwin lights, the former of which is exhibited with one light only, and the latter with three.

The vessel was originally moored within less than half a mile of the sand, in 13 fathoms; but it now lies in 15 fathoms about two miles S. W. from the shoalest part of the sand. N. E. by N. 3 miles from the light, there are 6 fathoms. With the light N. W. by W. vessels may cross the sand in 5 fathoms.

Within the light vessel a buoy is placed that the usual situation of the light vessel may be known, should it drift or be taken from its place.

Garbard. About 5 miles north-westerly from the north end of the Galloper lies the south end of the Outer Garbard, a shoal extending N. N. E. ½ E. 2 miles, and half a mile broad, with 16 feet at low water. Between the Galloper and Garbard are from 12 to 19 and 15 fathoms. The low light at Orford, bearing N. N. W. ½ W. will lead to the southward of it. The sand lies about 4 leagues and a half from the Ness; between are from 13 to 10 fathoms at low water.

Inner Garbard. Within the Outer Garbard, at the distance of 5 miles, lies another shoal, in the same direction, named the *Inner Garbard;* it is about a mile in length, and has only 15 feet upon it at low water.

The south End of the Falls, a long narrow bank or ridge lies at the distance of about 6 leagues E. ¼ S. from the South Foreland, having on it from 6 to 7 fathoms water. The sand extends hence nearly 20 miles N. E. ½ N. and is about half a mile in breadth. On the middle parts are from 3½ to 4 fathoms; and, on the north end, 6 and 7 fathoms, at low water, gradually deepening to 10 fathoms. The north end bears, from the east part of the Kentish Knock, S. S. E. about 14 miles; and, from the south end of the Galloper, S. W. by S. 12 miles. Between the north end of the Falls and the east part of the Kentish Knock are 11, 12, 26, 20, 19, 16, and 9, fathoms; the latter depth is near the Knock. Between the north end of the Falls and the south end of the Galloper are 8, 10, 20, 12, 18, 25, 15, and 12, fathoms; the latter depth is close to the south end of the Galloper.

SAILING-DIRECTIONS for the EASTERN COASTS of GREAT BRITAIN, from ORFORDNESS to the PENTLAND-FRITH; and the Islands of ORKNEY and SHETLAND.

ORFORDNESS to FOULNESS, including YARMOUTH ROADS and HASBOROUGH GAT.

IN sailing from Orfordness to the northward, steer N. E. by E. carefully avoiding the *Onion*, a sand, of which the outer part is nearly a mile from shore: its south end is a mile E. by N. from the low light, whence it extends 1 mile N. E. is one-third of a mile broad, and has but 5 feet on it at low water. To avoid this shoal, keep Baudsey-cliff open of Orford-beach until Dunwich-cliff comes well open of Thorpness; you may then, if bound for the Stanford, steer N. E. ½ E. 19 miles, or until Lowestoffe lighthouses appear in one.

In turning to Windward, from Orfordness to the northward, stand off to 12 or 14, and into 9 or 8, fathoms. The soundings are regular; but be careful, in standing off, not to bring Orfordness lower light westward of W. S. W. and getting upon Aldborough-Knapes; and if, in standing towards the shore, you bring the light to the southward of S. W. you will approach too near to Sizewell-bank. Orfordness lights in one, as heretofore mentioned, bearing S. W. by W. ¼ W. is the mark for sailing in mid-channel between these shoals.

Aldborough-Knapes is a shoal of 10 feet water, lying with the marks given in the preceding directions for sailing from Hosley-bay to Orfordness. It extends N. E. by N. and S. W. by S. about 2 miles and a half, and is half a mile broad. The north end lies about E. N. E. ¼ E. 7 miles from Orfordness, and the south end E. ½ N. more than 6 miles from the same. Iken church, inland, on with Slawden house, and bearing nearly N. W. will lead clear of it to the southward.

The South End of Sizewell-bank, on which are but 8 feet at low water, is about three quarters of a mile East from Thorpness; extending thence two miles to the N. by E. and East, half a mile broad. The shore about Thorpness is rocky; between it and the south end of Sizewell-bank are 10 feet; and thence, towards the north end, 4 and 7 fathoms at low water. The mark for the south end of this shoal is, Orford castle open to the southward of Aldborough church; but you should not bring them on with each other until Blythborough lodge, (a farm-house standing in the midst of a grove of trees), comes open of Dunwich-church: these marks will carry you clear without it, in 8 or 9 fathoms.

In Aldborough-bay is good anchorage, with off-shore winds, in 8 or 9 fathoms, Orfordness bearing S. W. by S. and Aldborough church N. W. by W. ¼ W.

In sailing from Orfordness to Lowestoff, go no nearer to the shore than 8 or 9 fathoms; this depth of water will carry you without the Onion, Sizewell-bank, and the *Barnard-sand.* The soundings towards and in the Offing are regular. Between Sizewell-bank and the Barnard lies Sole-bay, or Southwold-bay, where is good riding with off-shore winds, in 8 or 9 fathoms.

The South End of the Barnard lies E. and about ¼ of a mile from the shore, off Covehithe church. This sand extends a mile and a half

N. E.

N. E. by N. and is a $\frac{1}{4}$ of a mile broad, having 2 feet on it at low water. Between the south end and the shore are 9 feet water; and, towards the north end, 6, 4, and 3, fathoms. To keep clear of the Barnard, avoid bringing Southwold church on with Hustinghouses until Lowestoff church comes open of Paketield-cliff. Go no nearer to this sand than 9 fathoms, as, close to it, on the east side, are 8 fathoms.

The course from off the south end of the Barnard to a black buoy on the Holm-sand-head, is N. N. E. $\frac{1}{2}$ E. 5 miles. Between are 8, 7, 6, 4, and 3, fathoms at low water.

The NAMES of the BUOYS, &c. with their Depth of Water, and the Side they are to be kept on, in sailing within the Sands, from LOWESTOFF to HASBOROUGH.

BUOY of the Stanford, on the Holm-head — — —	black — —	$2\frac{1}{2}$ fms, starb.
S. W. buoy on the Newcome, to the S. of Lowestoff — — —	red — —	$2\frac{1}{2}$ fms, larb.
N. E. buoy on the Newcome (*in quarters*)	bl. & wh. —	13 feet, larb.
Buoy on the Holm-hook, or Holm-buoy,	white — —	$3\frac{1}{2}$ fms, starb.
Buoy on the N. W. end of the Corton —	black — —	$5\frac{1}{2}$ fms, starb.
Buoy of St. Nicholas' Bank — — —	white — —	5 fms, starb.
Buoy of the Scroby — — — —	white — —	4 fms, starb.
Buoy of the Tongue — — — —	white — —	4 fms, starb.
Buoy of the Barber — — — —	black — —	6 fms, larb.
Buoy of the Cockle — — — —	black — —	6 fms, larb.
Buoy on the Sea Heads — — — —	red — —	5 fms, starb.
Fairway buoy — — — — — —	black — —	$5\frac{1}{2}$ fms, larb.
Newarp buoy (*red*) and floating light —	———	——— starb.
Buoy on the S. end of Hasborough-sand,	black — —	7 fms, starb.

STANFORD The Holm-sand extends N. E. by N. 3 miles from the buoy on its head, increasing to the northward to the breadth of one mile, where it unites to that called the Corton. The channel or passage of the Stanford lies between this sand and the Newcome, which is a narrow ridge or bank stretching S. W. by S. and N. W. by N. one mile in length to the southward of Lowestoff. The channel between is three quarters of a mile in breadth, and has in its shoalest part but 16 feet at low water. The leading mark in, to half a mile within the Stanford buoy, is, the lights in one, bearing N. $\frac{1}{4}$ E.

Buoys, &c.—The buoy of the Stanford, which is black, lies with the high light a sail's breadth open to the northward of the low light; distance from the latter two miles. The buoy on the north end of the Newcome is painted black and white in quarters, and lies in 13 feet at low water, the low light bearing N. by W. $\frac{1}{2}$ W. the buoy of the Stanford south, and the buoy of the Holm E. by N. The buoy on the south end of this shoal is red, and lies in 15 feet at low water, with the high light just open of the north end of the town of Lowestoff, and the buoy of the Stanford S. $\frac{3}{4}$ E.—The white buoy of the Holm lies in $3\frac{1}{2}$ fathoms, one mile and three quarters N. W. by N. from that of the Stanford, with Lowestoff high light S. W. $\frac{3}{4}$ W.

In going through the Stanford, you must observe that the flood sets strongly south westward upon the Newcome and the ebb, on the contrary upon the Holm-head.

From the Holm-sand the west side of the Corton extends three miles and a half N. by E. $\frac{1}{2}$ E. The black buoy on the N. W. part of this sand, lies 4 miles and a half N. by E. $\frac{1}{2}$ E. from that of the Holm, in $5\frac{1}{2}$ fathoms, with the following marks; *Long-mark*, the Children's Hospital (a large house in the centre of Yarmouth, with a large chimney at each end, and a turret in the middle) just open to the northward of the southernmost mill (painted white) on Yarmouth-denes, bearing N. $\frac{1}{2}$ W. *Thwart-mark*, a large red tiled farm-house, with a chimney at each end, over-end with a break like a skate's nose in Hopton-cliff, bearing W. $\frac{1}{2}$ S. From this buoy, the N. E. buoy bears S. E. by E. half a mile. The soundings between are $5\frac{1}{4}$ and 6 fathoms. Between the N. W. buoy and the Holm-buoy is good riding with easterly winds in 7 and 8 fathoms.

Lowestoff to Yarmouth.—Having run into Stanford, as directed above, and passed the outer buoy, steer N. N. E. until you have passed

passed the N. E. buoy of the Newcome; thence in a fair-way along shore, to abreast of Yarmouth jetty, the course is N. N. E. and distance 6 miles. In working you may stand towards the shore into 5 or 4 fathoms, and towards the Corton to 7 fathoms. In all the space within the Corton there is good anchorage; but the best is with Corton church N. by W. ½ W. and Lowestoff high light S. W. by W. in 7 and 8 fathoms. Off the south part of Corton-road is also good riding with southerly winds, in 6 fathoms; with easterly winds you may ride well, near the sand, in 8 fathoms; but, with the wind northerly, you will ride best to the northward of Yarmouth-jetty.

St. Nicholas' Bank, &c. A mile and three quarters N. E. ½ E. from the N. W. buoy of the Corton, lies a white buoy, upon the S. W. part of St. Nicholas-bank, with the following marks: Yarmouth town jetty N. N. W. ¼ W. between the second and third southernmost mills upon Yarmouth-denes, and Yarmouth-haven house, open to the southward of the pier, bearing W. ¾ N.

St. Nicholas' Bank forms the north side of St. Nicholas Gat, the principal entrance into Yarmouth-roads. The inner part of this bank is connected with another, called the *Scroby*, of which the southern part is more than a mile in breadth, and partly dry at low water. Between are 3¾ and 4 fathoms. The Scroby hence diverges into two spits to the northward, which bear different names; the inner one being called the *Tongue*, and the outer one the *Sea-heads*. Each is marked with a buoy, as heretofore mentioned.

From the white buoy of St. Nicholas Bank to that of the Scroby, the bearing and distance are N. by E. 4 miles; and, from the buoy of the Scroby, to that of the Tongue, N. N. E. ¼ E. three quarters of a mile. The latter lies with Yarmouth church just open of the north battery, and Castor church W. ¼ N.

COCKLE GAT. The Cockle Gat is formed by the Scroby, Tongue, and Sea-heads, on the eastern side; and by the Barber and Cockle on the western side.

The Barber, which is nearly dry at low water, extends N. E. by N. one mile and a half. It is separated from the Cockle by a swatchway of 2 and 3 fathoms, leading into deep water of 10, 11, and 12, fathoms, within the sands. Its buoy, which is black, lies N. ½ W. one mile from the white buoy on the Scroby, and N. W. westerly, half a mile from that of the Tongue, in 6 fathoms as before mentioned.

To the northward of the Barber lies the *Cockle-sand*, extending first N. E. half a mile, and then north for two miles and a half; shoaling off, at that distance, in 6 and 7 fathoms. The southern part is nearly dry at low water; and off this part the buoy is placed, in 6 fathoms, N. E. by N. one mile from that of the Barber.

The breadth of the Cockle-sand is from half a mile on its southern part to one quarter to the northward. The mark for passing over its north end, in 3 and 4 fathoms, is, Winterton church on with a remarkable clump of trees standing to the southward of Sumerton, bearing W. by N.—Or, half a mile more to the southward, in 4 fathoms, Winterton and Sumerton churches in one, bearing N. W. by W. ½ W.

Immediately within the Cockle-sand, between it and a narrow bank, called Winterton-middle, is a clear space of nearly half a mile in breadth, having from 7 to 8, 10, and 11, fathoms.

N. ¼ W. one mile from the south buoy of the Cockle, lies its north or *fairway buoy*, which is black, in 5½ fathoms. The red buoy of the *Sea-heads* bears from this buoy S. E. by S. ¼ E. one mile and a quarter, and from the Cockle-buoy E. ½ S. three quarters of a mile.

The leading Mark through the Cockle Gat from Yarmouth Roads is, Yarmouth-key mill (the southernmost mill on the Denes, painted white), and Gorlestone old steeple in one, bearing S. W. by S. ½ W.—Or, with the ebb, Yarmouth church on with the north battery S. W. ½ S. Either of these marks will carry you clear through between the Barber and Cockle, on the larboard, and the Scroby on the starboard, side: steering N. E. by N. 5 miles, will also carry you, from abreast of the jetty, in 5 fathoms, through the gatway.

With a turning wind, avoid standing too near the Scroby, as it is very steep. So soon as you have shoalened your water upon it, you should tack. The flood sets strongly over the Scroby, and the ebb over the Cockle. Having passed the buoys of the Scroby, you may stand towards the Cockle in 6 or 5 fathoms; but observe that the sands are steep, as near them will be found from 8 to 10 fathoms at low

low water. The channel-way, between the Barber and Scroby is but half a mile wide: between the Cockle and Sea-heads, three quarters of a mile.

Without the Cockle-gat on the western side, is a spit of 5 and 6 fathoms, lying with Winterton-church W. by N. It gradually deepens to the E. S. E. without danger.

The Soundings in sailing from Winterton-ness to Foul-ness are regular all the way. The course is N. N. W. 19 miles. Between these places in the Fair-way are 10, 11, and 12, fathoms. You may stand towards the shore in turning to windward, to any depth you choose, and off to 14, 15, or 16, fathoms; but stand not farther off than 18 fathoms, or you will be close to Hasborough-sand; the channel between which and the shore is 7½ miles wide. Foul-ness is rocky for three-quarters of a mile from shore; approach no nearer to it than 9 fathoms.

Nearly in the Fair-way, off Hasborough, is a bank called the *Ridge*, lying nearly N. N. W. and S. S. E. a mile and a quarter: it is a quarter of a mile broad, and has 5 fathoms on it at low water. The mark for the middle of it is, Hasborough great light S. W. by W. westerly, distance 3½ miles. The inner side of this bank is 3½ miles from the shore, and the outer side about 4 miles from Hasborough-sand. Near it, within, are 12 fathoms, and, without, 15 fathoms, at low water.

W. S. W. ½ W. 3¼ miles from the south end of the ridge, and N. E. by E. half a mile from Hasborough great light is a small *knowl* with 3 fathoms on it at low water, which lies about half a mile from shore. Between this knowl and the Ridge are 4, 5, 6, 8, 10, and 12, fathoms at low water. In passing the knowl, ships should not approach nearer to the shore than 7 fathoms. Unless the swell of the sea happens to be high, mariners need not avoid the Ridge; nor need they when in the fair-way be alarmed at quickly coming from 12 or 15 into 6 or 5 fathoms water.

ST. NICHOLAS's GAT. This passage is the principal channel way into Yarmouth-roads; and, consequently, that most frequented by ships of war. It lies between the Corton-sand and St. Nicholas'-bank, and the buoys on either mark the edge of the shoals. On the starboard hand is a red buoy on the south part of the Cross-sand, and a white buoy within it on St. Nicholas'-bank. On the Corton, on the larboard hand going in, are black buoys, four in number. The leading mark in is, the south-mill on Yarmouth Denes (painted white) on with the turret of the chapel, (the southernmost steeple) bearing N. by W. ½ W. which will lead in a fair channel in 8, 7, and 6, fathoms, half a mile from the east side of the Corton. The chapel open to the eastward of the mill, and bearing N. by W. ¼ W. leads in mid-channel.

The mark most conspicuous from the offing, and especially useful to ships from the northward, is, Gorleston old steeple on with the southernmost part of the opening of the town of Gorleston, bearing N. W.

The Gatway is between 3 and 4 miles in length, lying N. N. W. and S. S. E. having from 10 to 7 and 8 fathoms. The flood here sets strongly to the south-westward, or S. W. by S. over the Corton, and the ebb to the contrary. The turning-mark into and out of the Gat is, to stand to the northward until the beacon upon the Denes comes nearly on with Gorleston old steeple, and to the southward until it comes nearly on with the houses next to the northward of the same.

The first Buoy on the western side is an additional one in 5½ fathoms, to be continued during the present war. It lies on the outer edge of the shoal, grown up and trenching from the N. E. end of the Holm-sand. The marks are, Lowestoff-church open to the northward of the mill bearing West, and Yarmouth-church bearing N. by W. *The next buoy*, upon the Corton, lies in 5½ fathoms, with these marks; Kessiland-steeple a large sail's breadth open to the southward of Lowestoff-ness, bearing S. W. ½ S. or Lowestoff low-light on with the westernmost tuft of trees, that stands to the westward of Kessiland-church; Hopton-steeple upon the south end of Blunderstone-wood, bearing W. N. W. ½ N. and Yarmouth-steeple open to the west of the second south mill upon Yarmouth-denes. The buoy next to this on the

the same side is the *N. E. buoy of the Corton*, the marks for which are, Gorleston new steeple over the South pier-head, bearing N. N. W. ½ W.

These three buoys lie nearly in a line, with the second mill, from the southward, on Yarmouth-denes and Yarmouth-church in one.

The first Buoy on the eastern side is red, and lies upon the Cross-sand in 5½ fathoms, with Kessiland-church a large sail's breadth open of Lowestoff-ness, and Gorleston old steeple on with the Old Jetty. *The next buoy* on this side, is the white buoy on the extremity of St. Nicholas's Bank, the marks for which have already been given.

☞ *For Directions to Ships sailing through this Gat toward Lowestoff, see "Directions for Ships returning from the northward," given hereafter.*

The anchorage in Yarmouth-Roads is off the town. It is extensive, and there is room for any number of ships; but it is better calculated for a summer than a winter roadstead, as it is, for large ships, accessible only in the day-time from want of light-houses. The ground in the anchorage is sandy, and ships in hard gales from N. N. E. or S. S. W. sometimes bring home their anchors.

From Yarmouth-Roads ships bound to the northward may pass through the Cockle-gat, according to the preceding directions; as this gat has plenty of water in it; but the stream of tide is very strong.*

BACK of YARMOUTH-SANDS and HASBOROUGH-GAT.

In sailing from Aldborough-bay for the back of Yarmouth-sands, or Hasborough-gat, proceed with Orfordness lights in one as described in the directions for sailing to the Stanford. With the lights in this direction, at the distance of 6 miles, the course and distance to the entrance of St. Nicholas'-gat will be N. E. easterly, 22 miles; and thence to abreast the Light-vessel off the North end of the Newarp-sand, N. N. E. ½ E. 11 miles; making proper allowance for the operation of the tides. The soundings are generally regular, excepting that there are several ripplings to the eastward of the Newarp, but no danger.

The Newarp is a dangerous bank, and the easternmost of those called Yarmouth-sands. Its north end, upon which a red buoy is placed, forms the south side of Hasborough-gat; and its extent from the buoy is 5 miles S. W. by S. ½ S. towards the Cross-sand, a bank which is equally dangerous; its northern part, for 2 miles, being almost dry at low water.

Between the Newarp and Cross-sand is a swatchway three quarters of a mile in breadth, and having a depth of 4 and 5 fathoms, through which vessels may pass, near the end of the Cross-sand, with Yarmouth-chapel open between the third and fourth mills from the southward, bearing nearly W. by N.

* Upon Yarmouth-Roads and the navigation in the vicinity, we have been favoured with the following observations, as addressed to Sir Andrew Snape Hamond, Bart. Comptroller of the Navy, &c. by Mr. Thomas Fotheringhame.

"Having long observed that the charts extant of Yarmouth-Roads were erroneous, which I formerly supposed was occasioned by the shifting of the sands, I examined them, and found that this shifting was in some degree the case; but, by no means, equal to the errors found generally in them. It became my opinion, that no regular survey had been made for many years, which induced me to take an opportunity of ascertaining the correct situation of the channels and shoals adjacent, while in his Majesty's ship Veteran; and my first care therefore was, to obtain the correct situation of the different objects along the coast, with respect to each other, and to form a continued chain of base line for the whole extent, with a line of 92 fathoms, well stretched, and frequently measured, accompanied by sextant angles, and azimuth bearings. This completed, for about 20 miles, the whole extent between Wintertonness and Pakefield, I proceeded to the survey, with a cutter, and as many of the ship's boats and buoys as were at different times necessary I had nearly finished when the ship was ordered to be paid off; but soon after, as master and pilot of the Amazon, and afterwards in the Magicienne frigate, I completed the whole.

"It appears to me as absolutely requisite that Yarmouth-Roads and the adjacent shoals should be known better than they are at present; as I am fully convinced that there are many who undertake the charge as pilots of his Majesty's ships on the North Sea station, who are but ill acquainted with the real situation of the above and many other places in their district. As it is not possible that a complete knowledge of any place can be acquired by transiently passing and repassing, but by a minute attention and steady perseverance; taking the necessary methods at all opportunities, which is more in the power of masters in the navy than most other persons, provided that the commanding officers will furnish the use of boats, when they can be spared; but, frequently, for want of which, much is omitted and lost."

Mr. Fotheringhame's survey is now published, and may be had at the price of 4s. of the proprietor of this work.

HASBO-

HASBOROUGH-GAT lies between the south end of Hasborough-sand and the north end of the Newarp, off which the floating light is placed. This light is now moored with the following marks and bearings, *viz.*

The Newarp Buoy, S. by W. one mile and a quarter.
Gorlestone Old and New Steeples in one, bearing S. W. ½ W.
Yarmouth Steeple, S. W. by W.
Winterton Church W. by N.
Marham Church, midway between Winterton High Light and Winterton Church.

It having been found necessary, for the safety of the light-vessel, to moor her somewhat farther from the sand than she was formerly placed, she is moored in the station above-mentioned, where the light will be seen in the best direction to guide ships navigating that part of the coast. As the safe riding of this vessel at her station is of the utmost importance to navigation, all masters are cautioned to observe, in passing her, that they keep their ships at a proper distance to the eastward, in order to avoid any risk of running on-board her, as the Corporation are determined to prosecute them with the utmost rigour for any damages so occasioned, which can only happen through their negligence and inattention.

Hasborough-sand, from the buoy on its south end, extends N. N. W. and N. by W. 11¼ miles; is one mile across, from 4 fathoms water on one side to 4 fathoms on the other, at the broadest part; and in some places it almost dries at low water, spring-tides. Near the north end are, within ¼ of a mile of the outer and inner edges of the sand, from 18 to 20 fathoms. On the east side of the south end of the sand, the water is much shoaler: but the soundings are irregular. A mile and three quarters, N. E. ½ N. from the buoy on the south end of the sand, is a small knowl, on which are 3 fathoms at low water. Between this knowl and the sand are 12 fathoms.

This sand is distant from the shore about 2½ leagues. Near the northern part, on the western side, are 17 fathoms; the water shoalens thence in shore towards Mundesley; keep therefore towards the shore in 12 or 13 fathoms. Off Waxham or Mock-beggar is 23 or 24 fathoms, about two thirds from shore between that and the sand. The spring-tides rise over this sand about 10 feet.

From the Buoy on the South End of Hasborough-sand, which is black, and lies in 7 fathoms at low water, are the following bearings and distances; namely, the light-vessel off the north end of the Newarp, S. by W. ½ W. distance 6¼ miles; the buoy of the Fair-way, S. W. ½ S. 9½ miles; Winterton light S. W. by W. 9½ miles; Hasborough great light W. by N. ½ N. 10½ miles; and Cromer-light N. W. ½ W. 19½ miles. From the north end of the sand, Cromer-light bears W. ½ N. distant 11½ miles; Hasborough great light S. W. by S. southerly 10½ miles, and Winterton great light S. by. W. ½ W. 16½ miles.

The south end of a knowl, called *Hammond's knowl*, lies 3¾ miles, S. E. by E. ½ E. from the buoy on the south end of Hasborough-sand; it thence extends N. N. W. 2½ miles, and has 3 fathoms on its shoalest part at low water. Between the north end of this knowl and a small knowl of 3 fathoms, lying to the north-east of the buoy on Hasborough-sand are 17 fathoms water.

The South End of the Ridge, a dangerous sand, lies S. E. ¼ S. 8 miles from the buoy on the south end of Hasborough-sand; and E. by N. 7½ miles from the floating light; it thence extends north-westerly 2¾ miles, is little more than a quarter of a mile in breadth, and has only about 7 feet on its shoalest part at low water, spring-tides. The east side of this bank is, in most parts, very steep. From the north end, in 4 fathoms, the floating light bears S. W. by W. distant 8¾ miles. Between this end of the Ridge and the south end of Hammond's knowl, are 13 fathoms water. When the eye is 12 feet above the level of the sea, at half-tide, from the south end of the Ridge, Winterton-church appears just in sight, bearing W. ¼ N. 4½ leagues distant. From the north end, this church bears W. ¾ S. about the same distance.

SMITH'S KNOWL. By the explanatory remarks on the Trinity-house plan of Hasborough-gat, published in the year 1790, it appeared that the long sand, called Smith's Knowl, lay 2 leagues to the eastward

ward of the Ridge, with soundings of 4 fathoms from the following bearings: *viz.* Yarmouth-church W. by S. ½ S. 7½ leagues; the light-vessel at the north end of the Newarp, W. by S. 4¾ leagues; and Winterton great light, on the nearest part of the coast, 6¼ leagues. But, by a subsequent notice from the Trinity-house, 1798, we learn that a spire-buoy was, at that time, laid down on the southern part of the knowl, in latitude 52° 50′ in 4 fathoms at low water with Yarmouth-church bearing W. ¼ S. by compass; and, from the angle thus given, we infer that the shoal lies farther off than as at first mentioned, and the place of the buoy nearly with the following bearings and distances. Yarmouth-church W. ½ S. 26½ miles; the Floating-light in its present situation, W. ½ N. 19 miles; and Winterton-light W. ¾ N. 25 miles.

The south end of the knowl is nearly east of Yarmouth; the sand thence extends north, a little westerly, 12 miles; on this end of it are 7½ fathoms; and, on the middle 4 and 5 fathoms: the shoalest water is 3¼ fathoms, about 7 miles from the south end. The breadth is three quarters of a mile. The general soundings between it and the Ridge, are from 15 to 20 fathoms, excepting on a small knowl, lying between, on which they may probably be found from 4 to 8 fathoms. The sea hereabout is famous for flat-fish.

The east side of Smith's Knowl is so steep, that, within three quarters of a mile of it, in 4 fathoms, you will have 27 fathoms water. Ships, in coming from sea, and getting quickly from 29 and 30 fathoms into shoal-water, may certainly conclude that they are upon Smith's Knowl; for there is not so deep water to be found any where within it.

Too much dependence should not be placed on seeing the buoy, as it has several times drifted off the sand.

SAILING INTO THE GATWAY. In sailing for the Gatway from sea, if the light-vessel, off the north end of the Newarp, bears to the eastward of North, you must steer eastward until you bring it to bear N. or N. N. W. When it bears N. N. W. you may safely steer for it, as the tide runs nearly in that direction; the flood sets S. S. E. and the ebb N. N. W. Having passed the light-vessel, continue steering N. N. W. or more westward, until Hasborough lights be on with each other, bearing N. W. ¼ W. from you. If you do not see Hasborough lights, you may take your soundings from the shore in 12, 10, or 8, fathoms. Should you be a mile or two to the eastward of the floating-light in passing it, the tide of ebb will set you in a fair direction through the Gatway.

If bound for Yarmouth-roads, through the Cockle-gat, having passed the light-vessel, steer such a course as will (allowing for the crossing of the tide) keep her E. by N. from you, and you will pass to the northward of the buoy on the Sea-heads; round which you may haul, and proceed through the Cockle-gat, leaving the buoy of the Sea-heads, and those of the Tongue and Scroby, on the larboard, and the buoy of the Fair-way, and those of the Cockle and Barber, on the starboard, side. It is needless to observe, that this passage ought not to be attempted but in the day time, when the buoys can be seen, which are a sufficient guide.

THE TIDES set fair in the Gatway, the stream of flood S. S. E. southerly, and ends at half past 10, on full and change. The ebb sets in the opposite direction, with nearly the same velocity, which is 3 knots 5 fathoms. The strongest springs will take a vessel about 4 leagues in a tide; moderate springs, about 3 leagues; and neaps, about 5 miles. The flood-tide sets more southerly without Hasborough-sand, and on the Ridge nearly S. by W.; but not quite so strongly.

It is high water by the shore, on full and change days, near Hasborough, at a quarter past 6; and on the Ridge at 7 o'clock.

DESCRIPTION of the SHOALS, and Directions for sailing between FOUL-NESS and FLAMBOROUGH-HEAD.

TO the northward of Hasborough-gat, or rather between Foulness and the Spurn, there are so many shoals and shifting overfalls, as to render this part of the North Sea unsafe for line of battle ships, except in neap-tides and very moderate weather. The following is a description

description of the principal banks and overfalls which impede this navigation.

LEMAN and OWER. The body of these dangerous shoals, which have been growing up for a long time past, is now, in some places, nearly dry at low water. The body of them lies E. by N. 9 leagues from Foulness; S. E. by E. 11 leagues from the Dudgeon Floating-light; and S. E. 22 leagues from the Spurn. The Leman extends about 5 miles and a half nearly S. ½ E. and N. ½ W. and is more than a mile broad. The Ower lies nearly parallel with the Leman. It is about 4 miles long, and a mile broad. Between the sands is a channel of from 10 to 18 fathoms. Near the southern part of the shoals are 9 fathoms; and, near the northern, 15 fathoms. Near the Ower, on the east side, are 17, and near the Leman, on the west, 20 fathoms, at low water. On the east side of the Ower, the tide runs in various directions; the first of the flood runs E. by S. and afterwards S. E. for the greatest part of the tide: near high water, it runs S. W. by S. and the ebb-tide in contrary directions. The tide flows here, on full and change days, at 7 o'clock, and the stream runs till half past 10 o'clock.

HADDOCK-BANK. N. ½ E. 15 miles from the north end of the Ower, and 35 miles N. E. from Foul-ness, lies the south end of the Haddock-bank, extending 6½ miles N. N. W. ½ W. 1¾ mile broad. On the middle of this bank are 5 fathoms; and, towards each end, are 6 and 7 fathoms at low water; near it, on each side, are 14 fathoms. Between this bank and the Ower are from 14 to 24 fathoms. N. by W. 12 miles from the north end of the Haddock-bank, and N. N. E. ½ E. 50 miles from Foul-ness, lies the N. N. E. hole, in which are 40 fathoms water. Between this hole and the Haddock-bank, are from 13 to 16 fathoms.

CROMER OUTER BANK. N. W. by W. 10 miles from the north end of the Leman, 14 miles N. by E. ½ E. from the north end of Hasborough-sand, and 19 miles N. E. ½ E. from Foul-ness-light, lies Cromer Outer-bank. This bank extends N. W. and S. E. 1½ mile, and ¾ of a mile broad. On its south-east end are 2½ fathoms, and, on the north-west end, 3½ fathoms, at low water.

CROMER INNER BANK. W. S. W. 7 miles from Cromer Outer-bank, N. by W. ½ W. 9 miles from the north end of Hasborough-sand, and 11 miles N. E. ½ N. from Foul-ness light, lies Cromer inner bank, extending 1¾ mile N. W. by N. and S. E. by S. It is a mile broad. On the middle of this bank are 4 fathoms, 6 on its north end, and 7 on the south end, at low water. Between this bank and the outer one are 17 fathoms: between the inner bank and Hasborough-sand are 12, 20, and 18, fathoms; and between it and Foul-ness are 16, 18, 16, 12, and 9, fathoms at low water.

OVERFALLS. Parallel to, and about 5 miles from the shore, extending N. W. by W. ½ W. lie two narrow banks, called *Sheringham and Blakeney Overfalls*. The east end of Sheringham-overfall, on which are 4 fathoms, bears N. from Cromer; it thence extends about 5 miles. The shoalest water on it, 2¼ fathoms, is on the middle of the sand: on the west end are 5 fathoms, and thence to the east end of Blakeney-overfall, nearly a league distant, are from 6 to 7½ fathoms. On the east end of Blakeney-overfall are 5 fathoms; on the west end 3 fathoms; and, with Blakeney-church bearing S. but 10 feet at low water. In the middle of the channel, between these overfalls and the shore, and N. W. by N. 10 miles from Foul-nes, is a small shoal, called the *Pollard*, on which are but 3½ fathoms at low water. N. W. 4½ miles from Blakeney, and 2 miles north of Stuky, is also a danger, more than a mile in length, called *Stuky-Overfalls*, on which are but 9 feet at low water. The depth, between this shoal in mid-channel and the shore is 4 fathoms.

DUDGEON. A floating light lies 24 miles North of Foul-ness light, which carries two lights in the night, and rides a little to the westward of the shoal called the Dudgeon. The shoal extends N. N. W. and S. S. E. is about 3 miles long, and one broad, with 10 feet on its shoalest part, near the light, at low water. On the southern part are 5 and 6 fathoms. About a mile N. E. from the north-east part of the shoal, lies a small knowl, of 3 fathoms water: and, 2¼ miles N. ½ W. from the north-west part of the shoal, is another small knowl of 2 fa-

7 fathoms. Near these knowls and Dudgeon's shoal and bank, on all sides, are from 7 to 10 fathoms at low water.

Here the Tide flows, on full and change days, at 6 o'clock, and the flood continues to run till half past 7: the flood runs S. and the ebb N. Ten miles N. N. W. from this shoal, the flood sets S. S. W.; the ebb the contrary.

To the S. W. of the Dudgeon is a shoal, of which, from a cursory survey made of it, by order of the Corporation of Trinity-house, in 1801, we have the following particulars. From the shoal the Dudgeon light bears N. E. about 6 miles; Blakeney Church S. ½ W.; Cromer or Foul-ness light S. by E. ½ E. and Holkham Church S. W. ½ W. the north end is nearest the light, but that is not the shoalest part; the south end has about 3 fathoms at a low neap-tide; but, at a low spring, not more than 14 feet; it is very narrow, and ranges about N. and S. in length, from 7 fathoms at one end to 7 fathoms at the other, about 3 miles.

OUTER DOWSING, &c. The south end of the Outer Dowsing lies 33 miles N. ¼ E. from Foul-ness, extending 5 miles N. ½ W.; and S. ½ E. half a mile broad: on its south end are 6 fathoms, on the middle 4, and, on the north end, 2½ fathoms at low water. Near this bank, on the west side, are 6 and 7 fathoms; and, on the east, 9 and 10 fathoms, at low water. N. W. ⅙ W. 4 miles from the north end of the Outer Dowsing, is a small shoal of 3 fathoms; and 6½ farther, on the same bearing, lies the Little Silver-pit, with between 40 and 50 fathoms of water. Between this pit and the shoal are 12 and 13 fathoms, at low water. The tide, on the north side of this shoal, sets in various directions. The first-quarter flood S. W. by W.; half-flood S. E. by S.; near the latter part of the flood E. N. E.: and the ebb in contrary directions.

INNER DOWSING. N. N. W. ¼ W. 36 miles from Foul-ness, 13½ miles N. W. by W. from the floating-light, 22 miles S. by E. ¼ E. from the Spurn, and 10 miles E. by S. from Trusthorp-church, lies the north end of the Inner Dowsing; it thence extends 5½ miles S. S. W. and is a mile broad. On this sand are only 6 feet at low water; close to it, on the west side, are 10 fathoms; near the east end, 9 fathoms; near the south end, 8 fathoms; and, near the north end, are 10 fathoms at low water. On the south end is a black buoy in 3 fathoms. This buoy lies 9½ miles E. ⅛ S. from Ingoldmels-church; between, are 10, 14, 12, 9, 8, 7, 6, and 5, fathoms, at low water. Between the Inner Dowsing and the floating-light are 9, 12, 14, 10, and 7, fathoms, at low water; and between the former and the Spurn are 10, 6, 10, 8, 10, 9, and 6, fathoms. The tide, near the Dowsing, flows, on full and change days, at half past 5 o'clock: the flood sets about W. S. W.; the ebb the contrary.

DOCKIN-SAND, &c. N. W. ¼ W. 27 miles from Foul-ness, 8 miles S. by W. from the buoy on the S. end of the Inner Dowsing, 12 miles S. E. from Ingoldmels-church, and 11 miles N. E. ¼ E. from Hunstanton light-house, lies the north end of Dockin-sand, extending 3½ miles S. W. ½ S. three quarters of a mile broad at the broadest part, near the south end, and narrows to a point at the north end. The south end of this sand lies a mile from the north side of Burnham-flats, but is joined to the flats by a narrow ridge, on which are 2, 3, and 3½, fathoms at low water. A mile N. E. by N. from the north end of Dockin-sand are two overfalls, extending about 1½ mile farther in the same direction, with 2 and 3 fathoms at low water. Between the north end of Dockin-sand and the buoy on the south end of the Inner Dowsing, are 6 and 8 fathoms; and, between the former and the Lincolnshire shore, (by Ingoldmels-church,) are 9, 10, and 5, fathoms at low water. The flood-tide, on the west side of Dockin-sand, runs about W. S. W. and the ebb the contrary.

COURSE FROM FOUL-NESS TO THE HUMBER, &c. The course from the fair-way off Foul-ness, (that is, from nearly mid-way between Foul-ness and the north end of Hasborough-sand, to the Humber and the westward of the Dudgeon, is first N. N. W. 8 leagues, and then N. N. W. ½ W. 11 leagues. To sail without or to the eastward of the Dudgeon, the courses are N ½ W. 8 leagues, and N. W. ½ N. 12 leagues. In crossing the deeps allow for the tide; the flood setting westward, and the ebb the contrary; and be cautious of the Cromer-banks, the shoal to the S. W. of the Dudgeon, &c.

DIREC-

DIRECTIONS from FOUL-NESS to LYNN-ROAD and BOSTON-DEEPS.

SEVERAL places off the coast, between Foul-ness and Blakeney, are rocky. In proceeding for Blakeney, from the depth of 12 fathoms off Foul-ness, steer N. N. W. ½ W about 5 leagues, or until Blakeney-church bears South; taking care to avoid the Overfalls, &c. before described, and those of Stukey, which lie to the westward. The depths will be 10, 9, and 7, fathoms.

The flood-tide here sets along shore to the eastward, and the ebb contrary.

To the westward of Blakeney, between it and Wells, a shelf of sand, about a mile in breadth, stretches from off the shore; vessels should not, therefore, approach nearer to it than in 5 fathoms.

The harbour of Wells lies 4 miles and a half to the westward of that of Clay or Blakeney, and each is regularly buoyed.

BLAKENEY-HARBOUR is the best on this part of the coast. Its entrance bears from Cromer N. W. ¾ W. distant 4 leagues; and, from the Dudgeon floating-light S. by W. 6 leagues. The church, in a clear day, may be seen from the float.

The channel, at the entrance, is one third of a mile wide, and is pointed out by buoys on the western side. The sands on both sides are dry at low water; on that on the larboard are 5 black buoys; and, also, a beacon, which stands near a mile within the entrance. A quarter of a mile E. S. E. of the beacon, in mid-channel, is a white buoy; to the eastward of this buoy the water is shallow, although above it is good anchorage. The water is deepest when the wind blows strong from the northward. When the wind is west, keep westerly, as the tide of flood sets strongly eastward to within the second and third buoy. The harbour is safe for ships of 500 tons, in a gale of wind dead on the coast. When boats cannot get off, a flag is hoisted on the church, as a signal to denote that ships may run for the harbour.

The tide flows up and down, on the full and change, at 6 o'clock; but the tide without runs to the southward 3 hours longer, which must be particularly attended to in going in.

If a ship be caught by a hard gale of wind at North or N. E. she may run boldly in, with the church at South. When within 2 miles of the shore, bring the church to S. E. by S. as this will run you to the first buoy, which is black; leave it within a ship's breadth on the starboard side; or, with a scant wind at W. N. W. and a flood-tide, you may go to the windward of it. From the first to the second and third buoys, which are all black, the course is S. W. or S. W. by W. With flood: you leave them all on the starboard side.

After running a tow-lines' length above the third buoy, let go your anchor near the beacon, and moor to the southward.

The bar at low water spring-tides is nearly dry; but in strong north winds the perpendicular rise is 4 fathoms. You must be careful to allow for the tide with the wind at W. N. W. for the flood then sets you to leeward. There are two white mills a mile to the N. W of Blakeney, which are the proper marks for running in by. They are to be kept on with a bank of earth, described on the charts, bearing nearly S. S. W.

There is a sandy hillock half a mile to the southward of the harbour's mouth, which may be seen 3 leagues off. Keeping the church half a cable's length open to the N. W. of it, will run you to the first buoy.

Vessels may sail out with the wind at E. S. E. There are 14 feet on the bar at high-water neap-tides.

To anchor in Wells-Road, bring Wells-church S. by E. ½ E. Holkham-church S. W. by S. and the north part of the Scaldheads, a range of sand-hills on the shore, W. by N. You will then be one mile and a half from shore, in 3 fathoms at low water.

DANGERS on the South Side of the Entrance to LYNN-DEEPS.

BURNHAM-Flats is a large sand on the south side of the entrance to Lynn-Deeps, extending 6 miles and a half E. and W.; it is 3 miles broad at the broadest part. Part of this sand is dry at low water;

water; its east end lies N. N. E. ½ E. 3 miles from the east end of the Scaldheads; and its west end 2½ miles N. ½ E. from St. Edmund's Point. The channel, between the Flats and the Scaldheads, is a mile and three quarters wide, with from 3 to 2 fathoms at low water. To the westward of Brancaster-harbour, the inner edge of the Flats lies 2 miles from the shore; between, are 2 and 2½ fathoms,

The Bright-girdle, a small sand, lies 2 miles N. E. by E. ½ E. from the east end of an island t e eastward of Brancaster-harbour, extending 1 mile N. by W. ½ and S. by E. ½ E. a quarter of a mile broad. Between this sand and the island are only 5 or 6 feet at low water. Its south end lies a mile and a half from the Salt-marsh off the shore, with 2 fathoms water between. Its north end lies nearly 1¾ mile from the east end of Burnham-flats, with 3 and 3½ fathoms between at low water. From this end of the Bright-girdle, a ridge extends to within half a mile of the edge of the Flats, and a mile and a half to the westward of their east end, having only 6 feet at low water; between this ridge and the Flats are 3 fathoms.

In steering for the Passage, between the Bright-girdle and Flats, do not bring Holkham-tower open to the westward of Holkham-church, (which is the mark for the east side of the Bright-girdle,) until Brancaster-mill comes on with the middle of the Sand-hills, called the Scaldheads; the mill on with the west end of the Scaldheads will lead you through in the best depth. When the east end of the Scaldheads bears S. by W. you are to the westward of the ridge, and may steer west along shore.

SAILING FOR LYNN-DEEPS. Some who are acquainted, when coming from the southward, go between Burnham-flats and the shore; the course from Stuky-overfalls to the entrance of the passage between Burnham-flats and the Bright-girdle, is nearly W. by N. 6 miles; between, in the deepest water, are 6, 5, and 4, fathoms. This passage is, however, dangerous; as, in some places, the depth is no more than 1 fathom at low water.

It is necessary to observe, that, 4 miles East from the east end of Burnham-flats, and N. by E. from Wells-church, 5 miles from the shore, lie some overfalls, with 9 feet on them at low water.

Westward of Thornham-church, and a mile eastward of St. Edmund's Point, near the shore, lies a buoy; keep near this buoy to avoid some overfalls in mid-channel, between it and the Flats, on which are only 5 feet at low water.

Middle and Sunk. W. by S. half a mile from the west end of the Flats, is a sand called the *Middle*, extending a mile and a half W. N. W. and E. S. E. a mile broad at the broadest part, near its west end. The mark for the west end is, Thornham-church open to the eastward of St. Edmund's Point. The channel between the Point and Middle-sand is a mile and a half wide. The east end of Hunston-cliff bears from the west end of the sand S. S. W. 2½ miles; and the east end of a sand, called the *Sunk*, bears S. W. ½ W. 1¼ mile; a ridge extends from the one to the other, on which are only 6 feet at low water. The mark to run over this ridge into the Well is, Thornham-church on with St. Edmund's Point; ships must wait for the flowing of the tide, according to their draught. When over the ridge, they will quickly come into 8 and 10 fathoms, and may then steer about W. S. W. for a buoy on the Hook of the Sunk. This sand, near to its east end, is steep: but, when within 1½ mile of the buoy, you may approach towards it in 6 fathoms. When a-breast of the Sunk-buoy, proceed as hereafter directed.

The Course from off Stuky, between the north-east end of Docking-sand (being nearly midway between both shores) and the buoy on the south end of the Inner Dowsing, is about N. W. by N. But allowance must be made for the tide; the flood sets W. S. W. and the ebb E. N. E. Continue to steer N. W. ½ N. until Addlethorp-church, bearing N. W. by W. comes on with Ingoldmel's-church; steer with this mark on until Hunstanton light-house bears S. S. W. ½ W.; you will then have passed through between the tail of Docking-sand and the overfalls of 3 fathoms, which lie about two miles N. N. E. from it. The buoy on the south end of the Inner Dowsing will then bear N. E. by E. ½ E. 5 miles; the buoy on Lynn-knock S. W. by W. ½ W. 5 miles. From off Stisky or Stuky overfalls to this place, are 8, 9, 10, 7, 9, and 10, fathoms at low water. *The course up Lynn-well* for the buoy on the Hook of the Sunk will then be S. W. ½ S. 12½ miles; and

and observe to pass a mile and a half to the eastward of Lynn-Knock-buoy.

Lynn-knock is a small shoal, of 7 feet at low water, with a buoy on its north end, in 3½ fathoms. The marks are, Snetsham-Spire-steeple en with Hunston-light-house, bearing S. by W. ¼ W. and Boston-Knock-buoy N. W. by N. two miles. The Well, between the Knock and Burnham-flats, which extends 5 miles off from the eastern shore, is 4 miles wide, and has from 7 to 16 fathoms at low water. Between Lynn-knock and Boston-knock are 6 and 5 fathoms. The buoy on the Sunk bears from Lynn-knock-buoy S. S. W. ½ W. 8½ miles; between, are 6, 9, 12, 15, 18, 12, 16, 10, and 7, fathoms at low water. The Hook of the Longsand bears from Lynn-knock S. W. distance 3½ miles; between, are 6, 9, 12, and 10, fathoms at low water; the latter depth is near the Hook of the Longsand.

BOSTON-DEEPS, *and* LYNN-WELL. The *Longsand* extends W. by S. and E. by N. 10 miles; it is a mile and a half broad at the Hook, and dry in some places at low water. This sand, at the east end, at the Hook, and for two miles westward of the Hook, is very steep; but thence to the westward, are 6, 5, and 4, fathoms along its south side. The Well between the Hook of the Longsand and the Middle, which lies between the west end of Burnham-flats and the east end of the Sunk, is 3 miles wide, with 10, 20, 18, 16, 14, 10, 8, and 6, fathoms at low water: the latter depth is near the Middle. Lynn-well, between the Longsand and the Sunk, is 3 miles and a half wide, with 7, 10, 16, 12, 9, 7, and 5, fathoms at low water; the latter depth is near the Sunk. *The marks for the Hook of the Longsand* are, Docking-steeple just open to the westward of Holm-steeple, bearing S. by E. ½ E. and Hunstanton-light-house S. ½ E. 5½ miles distant. In turning to windward, stand no nearer to the Longsand than 12 fathoms, until above the Hook; on the east side you may stand into 10, 8, and 6, fathoms as you advance upwards. The ground on the east side is so soft, that the lead will stick in it.

The Buoy on the West End of the Sunk lies 4½ miles S. by W. ½ W. from the Hook of the Longsand, and 2½ miles S. E. ½ S. from Hunstanton-light-house. Between the Hook of the Longsand and the Sunk-buoy are 10, 16, 20, 14, 10, 8, and 6, fathoms at low water; the latter depth is near the buoy. Three miles S. W. from this buoy lies a buoy on the north end of the *Ferrer-sand*; between, are 6, 5, 4, and 3, fathoms at low water. Ships, when waiting for day-light to pass the Ferrer-buoy, generally anchor near the sand southward of the buoy on the Sunk, with Hunstanton-light bearing from S. E. by E. to E. S. E. soft ground.

The Course in going down Lynn-well, from the buoy on the Ferrer-sand to that on the Sunk, is N. N. E. ½ E. 3 miles. When abreast of the buoy on the Sunk, the course to go between Lynn-knock and Boston-knock is N. N. E. ½ E.; and, to go to the eastward of Lynn-knock, it is N. E. ½ N. 9 miles; allowance must be made for the operation of the tide: the flood sets S. W. by W. and the ebb N. E. by E. Between the Sunk and the knock are 7, 10, 14, 17, 22, 20, 15, 12, 9, 7, and 6, fathoms at low water: the latter depth is between Lynn-knock and the Dog's Head; the passage is a mile wide.

BOSTON DEEPS lie between the Longsand and the bank which stretches off the north shore; and the entrance into them between the Dog's Head, Knock, &c. has the following buoys and beacons, which, in sailing inwards, should be left on each side thus:

Fair-way buoy — — —	white,	starb. or	larb.
Buoy on the N. end of the Dog's Head —	chequered, —		larb.
Three buoys on Boston-knock —	black, —		starb.
Buoy on the S. end of the Dog's Head —	chequered, —		larb.
Buoy on the E. end of the Scullrig —	red, —		larb.
Buoy on the W. end of the Scullrig —	chequered, —		larb.
Four beacons on the Bank off the N. shore,	—	—	starb.
Buoy within the Roger-sand — —	black,	—	larb.

The Dog's Head extends 3 miles S. S. W. ½ W. and N. N. E. ½ E. and is about three quarters of a mile broad at the broadest part, near the west end, which lies very near to the east end of the Longsand. The east end is very narrow, and lies about half a mile south from the east end of Boston-knock.

Boston-knock extends 2½ miles S. W. by W. and N. E. by E.; it is about

about half a mile broad at the middle, and dry at low water. The buoys are placed on its south edge; one on each end, and one on the middle. The marks for the east buoy are, Snetsham steeple on with the west end of Hunstanton-cliff, Burgh-church on with Skegness-church, bearing N. W. ½ W. and a house to the northward of Addlethorp-church, between it and Winthrop-church, bearing N. N. W. Between this buoy and the east end of the Dog's Head is the entrance of *Boston Channel*. As a ridge stretches across this entrance from point to point of the sands, on which are but 6 feet at low water, ships must wait for the flowing of the tide, agreeably to their draught of water. The passage between the two sands widens, after you are over the ridge, to about three quarters of a mile; in it are 4, 5, and 6, fathoms. About half a mile from the north side of Boston-knock, with 9 feet water between, lies Skegness-middle: it stretches off N. E. ½ E. from the shore, about two miles to the northward of Gibraltar-point; its length is about three miles and a half, and breadth, a quarter of a mile. The east end of this sand is two miles and a half N. ½ W. from the buoy on the east end of Boston-knock, and about two miles and a half E. ½ N. from Skegness-church.

Inner Knock, &c. Within and to the eastward of Boston or the Upper Knock, lies another sand, called the Inner Knock, which is dry at low water. Between this shoal and the shore there was formerly a channel, but it is now grown up. To the westward of it is Gibraltar-point and the entrance of Wainfleet-haven, a creek which can be entered only at high water.

Scullrig, &c. A mile and a quarter from the bar of Wainfleet-haven, lies the red buoy on the east end of the Scullrig, a narrow sand which lies nearly in the middle of the channel, extending about a mile and three quarters W. S. W. ½ W. When you are a-breast of the buoy on the west end of the Outer Knock, your course in, between the buoy on the east end of the Scullrig and the Wainfleet-sand or Flat, is S. W. by W. distance about three miles: you may go on either side of the Scullrig, but the north channel is the best, because the Flat is beaconed all the way up. On the north side of the Scullrig, are 4, 5, and 6, fathoms; and, on the south side, are 8 and 7 fathoms at low water. The Flat extends about a mile and three quarters from the Saltmarsh, and has 5 beacons standing on its edge; from the east end, or Wainfleet-haven, to the beacon on the west end, it extends 11 miles W. S. W. ½ W. The course along the edge of the Flat, to the 5th beacon, is W. S. W. ½ W. eleven miles. The channel between the Flat and the Scullrig is about a mile wide. To the westward of the Scullrig, the channel between the Flat and the north side of the Longsand, is about a mile and three quarters wide; it narrows to the westward; and, at the 4th beacon, it is about a mile wide. In this channel are from 6 to 10 fathoms at low water. The sands on both sides are steep, especially the Long-sand. Ships generally anchor between the 4th and 5th beacons, and wait for a pilot to carry them through the New Channel to the Scap, where they lie aground upon soft clay at low water.

TIDES. In Wells-road the flood-tide sets W. by N. ½ N. and it runs on the new and full days of the moon until four o'clock; four miles farther from the shore, it sets W. ½ N. and runs until half past four o'clock. Between the north end of the Docking-sand and the south end of the Inner Dowsing, and also without the north end of the Dowsing, the flood sets S. W. by W. ½ W. and it runs until half past five o'clock. About midway between the Dowsing and the Lincolnshire shore the flood sets S. S. W. and it runs until six o'clock. The perpendicular rise of the tide in Lynn-well, is 20 feet.

DIRECTIONS from BOSTON DEEPS to the HUMBER.

THE direct course from without Boston Knock to the Humber, within the Inner Dowsing, is N. by E. distance 10 leagues; but there are several overfalls in this track, hereafter described. The safest course will therefore be N. E. ½ N. 5 leagues, and N. by W. nearly 6 leagues; making proper allowance for tides, &c.

On Ingoldmel's Flat, which extends 3 or 4 miles from the shore to abreast of Ingoldmel's church, you will have 5 fathoms at low water; farther

farther off are 7, 8, 9, and 10, fathoms. Between Ingoldmel's and Trusthorp-ridge are 6 and 7 fathoms. Trusthorp-ridge is an overfall of soft ground, lying three miles and a quarter E. S. E. ½ E. from Trusthorp-church, with only 9 and 10 feet on it at low water. About a mile to the southward of Trusthorp-church lies the north end of the Clay-huts, which extend about two miles to the southward, and are, in some places, nearly three-quarters of a mile from the shore. E. ½ S. from Thedlethorp church, one mile from shore, lies a knowl of 6 feet at low water. E. by S. from Thedlethorp church, near 6 miles from shore, lies an overfall, on which are only 2 fathoms at low water. Between Trusthorp-ridge and the Rose-hole, are 7 and 8 fathoms; these places are distant from each other about five miles. The Rose-hole lies E. ½ S. from Saltfleet church, and two miles and a half from shore; there are 9, 10, and 11, fathoms in it at low water. About six miles and a half N. by E. from the Rose-hole, lies the N. E. part of the Sandhale, a great flat which stretches from shore without the south side of the Humber; and the mark for going clear of which is, Patrington steeple on with the Spurn light, bearing N. by W.

When Grimsby church comes on with Clea church, bearing N. W. by W. you are to the northward of the Sandhale; and may, if going into the Humber, steer N. N. W. in order to go between a red buoy on a shoal called the Bull and the Spurn-point. The edges of the Sandhale are so very flat, that you may approach them to what depth you please; taking care to allow for the operation of the flood-tide, which sets strongly on the N. E. part of the sand.

Three miles E. S. E. from the Spurn-lighthouse lies a black buoy on the New-sand in 3 fathoms at low water, with Easington-mill on with Kilnsey North-cliff, and the high land of Dimlington open of the Cliff, bearing N. by W. Within the buoy, there is, upon the sand, a depth of only 8 or 9 feet at low water; and the shoal extends to a hard bank called the *Stone Bank*, which lies at a short distance from the point. Between the Stone Bank and shore there is a narrow channel of 3 fathoms, rounding to the point.

The channel between the New-sand, on the north side, and the Sandhale, on the south side, is more than 3 miles wide, and shoalens gradually from 12 to 3 fathoms; the greatest depth being near the New-sand.

In making the entrance, bring and keep the high light a handspike's length open to the southward of the low light, until you advance to the distance of two miles from it; then steer in W. N. W. allowing for tide, until the lights bear N. N. E. when you may haul round the point.

The lights when in one bear N. W. ¾ N. or N. W. by N. ¼ W.

The flood without the Spurn sets W. S. W. and the ebb contrary.

Bull, &c. About a mile and three quarters S. W. from the lighthouse lies the red buoy on the east end of the Bull; which formerly extended thence a mile and three quarters, but a great part of it has been washed away. Its present extent is N. W. by N. one mile, and least depth 2 fathoms. The marks for the buoy are a black buoy on the point of Cleaness-sand N. N. W. ½ W. 2 miles. Patrington steeple N. ½ E. 8¼ miles; and, the Spurn-light E. ¼ S. 2½ miles.

In midchannel between the Spurn-point and Bull are 9, 10, and 11, fathoms at low water.

The buoy on the point of Cleaness-sand lies about 2 miles E. N. E. from Cleaness; and 4 miles N. W. by W. ½ W. from the lighthouse. In midchannel are between 7 and 8 fathoms at low water spring tides.

Within the Humber, between the Spurn-point and the Bull-sand, the stream of flood veers about to the northward of West; when the lighthouse bears N. E. the flood sets N. W.; as you bring the lighthouse more eastward, it sets N. N. W. and, near the Hawke or Trinity sand, it sets North. With northerly and easterly winds, you may anchor in the Hawke, a mile or two above the Spurn-point, with that point bearing E. S. E. or S. E. by E. in 6 or 5 fathoms at low water. To run up to the Sunk-island, you may steer about N. W. by W. edging off, and on Trinity-sand, in 7 and 6 fathoms. Good riding is off this island, with Humberstone church on with Clea-mill, in 6 or 7 fathoms at low water; higher up, with Patrington steeple and the middle house on Sunk-island in one.

To anchor in the Hawke, which is the best road, in N. E. and easterly winds, bring the point to E. S. E. or S. E. by E. or the small light, open a sail's breadth to the eastward of the great light; then anchor in 5 or

6 fathoms at low water; for, here it rises from 12 to 19 feet upon a common tide; and, upon spring tides, 26, 27, or 28, feet.

At the Spurn, full and change, it flows at ¼ past 5; on the Sandhale at 6; but, in the offing, at the distance of 7 or 8 miles, it flows at ½ past 7 o'clock.

The flood runs across the mouth of the Humber ¾ of an hour before it bends in; after which it sets across towards the Lincolnshire coast, W. S. W. till you bring the Spurn lights N. E.; then it runs to the N. W. and N. by W. into the Hawke, and sets directly upon Trinity-sand.

N. B. The ebb tide comes down in the Hawke some considerable time before it is high water on the shore.

In running into the Humber, observe not to borrow too close upon the Sandhale, unless the wind be in the S. W. quarter; as the N. E. hook lies so far off, that it could not, with a flood tide, be weathered with a S. E. wind, if you are running along it in 5 or 4 fathoms.

After you have passed the Spurn, with a southerly wind, and intend to anchor, the best place will be Grimsby-road. After you have passed the buoy of the Bull, run up N. W. in 6 or 7 fathoms along the sand.

In the Night, keeping the low light a handspike's length open to the southward of the high light, will carry you up into the road.

Steering these courses, you will leave the white buoy of the middle to the northward.

Grimsby-road, with southerly and S. W. winds, is much preferable to the Hawke: to anchor in it, steer about N. W. along the north side of the Bull-sand, in 6 and 7 fathoms water. In the channel, between the west end of the Bull and the buoy on Cleaness-sand, the flood tide sets strong to the northward, and the ebb to the southward. After passing the buoy on Cleaness-sand, steer W. N. W.; and, when you are about three-fourths of the way towards a black buoy on the east side of the sand called the Burcum, you are in Grimsby-road; large ships lie a little way without the stream of the buoy, in 5 or 6 fathoms at low water. Small ships lie within the buoy, and a very little below it, in 9, 10, 11, or 12, feet; observe the time of the tide at which you anchor, and whether spring or neap tides. The water rises, with spring-tides, from 20 to 30 feet; and, with neap-tides, it rises from 12 to 15 feet.

The buoy on the east end of the *Burcum* lies 2½ miles North from Cleaness; 2½ miles N. W. by W. from the buoy on Cleaness-sand; and 6 miles N. W ¾ W. from the Spurn-point. The thwart-mark is, Grimsby church S. W. by W. ½ W. The Burcum-sand extends from the buoy about 3 miles N. W. and is one quarter of a mile broad. Between the buoy on the Burcum and that on Cleaness-sand, are 5, 6, and 7, fathoms at low-water; and, between the latter and the Spurn-point, are 5, 7, 8, and 7 fathoms. Between the Burcum and the south shore, are 8 and 9 feet at low water, all the way through to Stalingborough-kiln.

The Buoy on the Middle lies two miles E. ¾ S. from the buoy on the Burcum; 2 miles and a half North from the buoy on the point of Cleaness-sand, and 4¼ miles N. W. ¼ W. from the Spurn-point; it is white, and lies in three-fathoms. From this buoy Patrington church bears nearly N. N. E. and Grimsby church W. S. W. ¾ W. The Middle extends from the buoy, about a mile W. N. W. and is a quarter of a mile broad. On the east end of this sand are 3 fathoms at low water; and on the west end about 15 feet; this end lies about a mile E. ⅛ N. from the buoy on the Burcum; between are 7 and 8 fathoms at low water; the leading mark through this channel is, Killingholm church open to the northward of Stalingborough-kiln. In the channel, between the east end of the Middle and the buoy on Cleaness-sand, are 5, 7, and 4, fathoms; and, between the former and the Spurn-point, are 4, 8, 10, 9, and 7, fathoms, at low water. The channel on the north side of the Middle is a mile and a quarter wide, and has 8 and 9 fathoms in it at low water. A good mark for it is, the low light just discernibly open to the southward of the high light.

Intending to go up to White Booth-road, or to Hull, you must leave the Burcum-buoy on your larboard side. The leading mark along the north side of the Burcum is, Killingholm church open to the northward of Stalingborough-malt-kiln (a large red house on the Lincolnshire coast), the course about N. W.; in mid-channel are 10 or 12 fathoms water.

water. If the wind be scant in the S. W. quarter, keep towards the sand in 5 or 6 fathoms; but, when higher up, do not approach nearer to the sand than 7 or 8 fathoms; and, near to the Stalingborough-flats, which are very steep, and, extend about a quarter of a mile from shore, edge over towards the buoy on the Foul-holm, until Immingham church comes on with the Shepherd's-house on the Lincolnshire shore. This mark will lead you through, about W. N. W. between the upper part of the Flats and the buoy on the Foul-holm; the mark for the upper end of the flats is, Patrington steeple open of the upper end of the Sunk-island.

The buoy on the Hook of the Foul-holm is white, and lies in 4 fathoms at low water: be careful to go to the southward of this buoy; for the flood tide sets strongly upon this dangerous Hook. Below the buoy and within it, are 9 and 10 fathoms; if you are caught in this bight with a flood tide, you must immediately come to an anchor; and, if you cannot drive to the southward in little winds, let go your anchor instantly. In mid-channel, a little below the Foul-holm-buoy, are 12 and 14 fathoms at low water. When abreast of this buoy steer N. W. until Grimsby church comes on with Stalingborough-kiln; steer with this mark on, about N. N. W. for Whitebooth. In turning to windward, you may open the church about a ship's length of the kiln upon each tack.

In the bight upon the S. W. shore, are two shoals, with ten fathoms water close to them. Upon the Middle-ground, are 4 and 5 fathoms; and, *between the Middle-ground and Foul-holm, are 6 and 7 fathoms* at low water. All the town of Paul kept just open to the westward of Paul-cliff, will lead you fairly along the edge of the sand up to Paul-road. In the channel are 9 or 10 fathoms to abreast of the Middle-ground, which lies to the eastward of Whitebooth-road, where there are only 3 or 4 fathoms at low water.

In Grimsby-road it is proper to take a pilot, if you are not acquainted; especially as the tides, upon the springs, are so exceedingly rapid, that if a ship touch upon Skitter-sand or the Foul-holm, she is in the greatest danger of upsetting as soon as she comes upon the ground.

The channel for Whitebooth lies near the west shore. At the south or lower end of the road, are two little thatched huts; about one-third of the way up from them, towards Skitter-house, and near to the shore, is the best of the road. The leading mark is, Grimsby church a handspike's length open to the westward of Stalingborough-kiln; and the thwart mark is, Patrington church just open to the northward of a remarkable tuft of trees, called Saltrush; with these marks on, you will have 5 or 6 fathoms at low water. A little to the eastward of the road is a middle-ground, on which are only 15 or 16 feet at low water; to the eastward of this middle-ground, between it and Foul-holm, are, 6, 7, and 8, fathoms water.

A beacon is placed on the N. E. part of the Skitter-sand, with the cupola of Marfleet chapel, bearing N. by E. on with the inner end of Marfleet jetty, and the southernmost house, adjoining white windows in Paul, open of Paul-jetty, bearing S. E.

As a long flat extends from the west shore, a little above Whitebooth-road, about one third of the way over the river, on which are only 10 or 12 feet at low water, let the water flow about an hour before you weigh in the road to proceed upwards. When under way, run over to the eastward, until you open the street of Paul town, which is the leading mark to Paul-cliff; then steer up the channel N. N. E. and N. by E. in 5 and 6 fathoms; abreast of the cliff are 7 fathoms. A little below the cliff, and close in shore, is Paul-road; but the hardness of the ground, and the rapidity of the tides, make it the worst road in the Humber.

From Paul-road, steer N. W. by N. and N. W. *round the Skitter-sand*, taking care to keep Marfleet church a ship's length open to the eastward of Marfleet-jetty, until the southernmost house in Paul comes on with the jetty: run with this mark, until Marfleet church and jetty come on with each other; then the windmill near the lime-kilns will be just open of the jetty at the west end of the town, which is the leading mark up to Hull-road. In the channel from Paul, almost up to Hull-road, are 9 and 10 fathoms. With a contrary wind, after you are round the point of Skitter-sand, stand towards it into 6 or 5 fathoms water; but, when standing towards the Flats, which run a good way off from the north shore, and are steep, go no nearer to them than

than 8 fathoms; for, as the tide, both flood and ebb, sets strong upon them, it is with difficulty that ships, which happen to ground there, are got afloat again.

The Anchorage in Hull-road is abreast of the garrison, or a little below it, in 5 or 6 fathoms. If you intend going into the harbour or the dock, you should, if the tide be then flowing, run on shore at the Dolphin-point, and get ready for warping in.

Tides. Without the Spurn, the flood sets over towards the Sand-hale, as before mentioned; between the Spurn and the east end of the Bull, it sets to the N. N. W. and, farther in, it runs N. W. up the channel. At Hull it flows at 6 o'clock, and the water rises about 20 feet. The spring-tides runs so strongly in the Humber, that, should a ship get round on the Foul-holm, or on Skitter-sand, she would be in great danger of immediately oversetting.

DIRECTIONS from the HUMBER to the FRITH of FORTH.

WHEN you have passed the Spurn-point, the Stone-bank, and New-sand, and Dimlington high land appears open without the land to the southward of it, you may steer N. ½ E. 33 miles, for Flamborough-head. If you come out in the night, so soon as you have passed the west end of the Stone-bank, steer E. S. E. along its edge, in 4 or 5 fathoms, until the water deepens to 12 fathoms. This course will lead clear without the New-sand, and a vessel may then steer for Flamborough-head, as above mentioned*.

Burlington-bay, Smithic, &c. Two miles and a quarter S. W. ½ W. from Flamborough-head, lies the N.E. end of the Smithic-sand; extending thence 2½ miles S. W. ½ S. and half a mile broad. On the N. E. end of this sand are 3 fathoms, on the middle 2 fathoms, and on the S. W. end 4 and 5 fathoms, at low water. Near the S. W. end, and within it, is a small knowl, of only 2½ fathoms at low water. This end of the Smithic lies a mile and three quarters from shore: between are 6, 5, 4, and 3, fathoms at low water. Between the other end and Flamborough-head, are 4, 7, 9, and 7, fathoms; near the middle of the sand without, are 3½ fathoms; and, between the sand and the shore, are 3, 4, 5, 4, and 3, fathoms at low water. There is very good riding, with northerly winds, in any part of the bay; but the best place is with Burlington Key-street open, in 5 fathoms at low water. The tide flows here, on the full and change days, at half past four o'clock. All along this coast, the flood tide sets nearly along the shore to the southward, and the ebb in a contrary direction. In the offing, the flood continues to run for three hours after it is high water on the shore, or until it is half ebb. Near to the head, on the south side, the flood tide sets S. W. by W. and the ebb N. E. by E.; therefore ships bound to the southward, with a scant wind off the land, should not pass the head until the flood tide is in their favour.

From abreast of Flamborough-head to Scarborough the course and distance are, N. N. W. ¼ W. 5 leagues. Scarborough is a pier-harbour, and the vessels lie aground in it at low water. The best times for going in are, at half flood, or after the first quarter ebb, when ships may be run aground: the bottom is clean sand. Should the wind, by being northerly at your going in, render it necessary to stand over towards the Spa-house, be careful to avoid rocks, which lie at a considerable distance from the shore to the southward of the Spa, dry at low water. The swell which comes round the Pier-head, when northerly or easterly winds blow strongly, causes the ships in the harbour to range very much when afloat. It is then necessary to moor them with their cables

* We take this opportunity of noticing that the *general appearance or heights of the land from the Thames northward*, are as follow: First, the coast of Essex is generally low; but those of Suffolk and Norfolk present, in parts, loamy or clayey precipices, hillocks of sand, and low flat spaces. To the southward of the Hasborough lighthouses a cliff begins, which increases to the northward: being, at Mundesley and Foulness from 50 to 60 feet high. Hunstanton cliff rises to the height of about 80 feet, and is composed of chalk, friable stone, &c. The coast of Lincolnshire is flat, and so low as to be distinguishable only by the churches and buildings. Hence to Burlington-bay are generally clay cliffs. Flamborough-head is, however, a cliff of limestone, of magnificent height; and Scarborough stands on a vast rock projecting into the sea. It may also be observed that, generally, the land from Flamborough-head to Duncansby-head is bold, and may be seen from the distance of 7 to 14 leagues off: although to the southward of Bamborough castle, the coast is mostly formed of low cliffs of limestone, &c.

cables to the Dolphins or Piers; but, in strong northerly winds, it will be necessary to get your cable-ends out, as the drawback of the sea runs exceedingly violent. Scarborough has a good outlet for ships bound to the southward, but bad for those bound to the northward. You may anchor in Scarborough-wick, in 5 or 6 fathoms water, but it is not safe to continue there long, and it has often proved fatal*.—The tide flows here, on the change and full days of the moon, about 4 o'clock.

Seven miles N. by W. from Scarborough is the south cheek of *Robinhood's Bay;* you may stop a tide under the north cheek of the bay, in 8 or 9 fathoms, but not lie there long, especially in winter.

WHITBY. The harbour of *Whitby* lies nearly 7 miles N. N. W. from the south cheek of Robinhood's-bay. It is a pier-harbour, and ebbs almost dry at low water. Without the entrance, on the east side, is a ledge, called *Whitby Rock*, extending three quarters of a mile to the north, from shore; but having a passage within named the Sledway. It is composed of a hard black rock, with large stones lying down to low water-mark; but is quite clear without, its head bearing from the west pier, N. E. by N. ¼ E. nearly one mile distant. As the tide of flood sets strongly across the harbour's mouth to the southward, this rock is very dangerous.

The Sledway, between rocks to the north and south, is 300 yards in breadth.

Two miles N. W. by W. from the head of Whitby-rock is *Sandsend-bay*, or road, where vessels may safely lie with southerly winds, in from 8 and 7 to 4 fathoms, at low water. Nearly half way between, a large rock, called the Upgang-rock, having only 4 and 5 feet over it, stretches from the shore, with its outer part bearing N. N. W. nearly one mile and a quarter from the west pier. Between are 5, 4, and 3, fathoms, at low water.

In approaching Whitby from the Southward, the mark for avoiding Whitby-rock is, the north cheek of Robinhood's-bay S. by E. ¼ E. open of High Whitby, (which lies a league to the northward,) until a remarkable house in the country, named Larphill-house, appears in a line with the east pier-end of Whitby, bearing S. S. W. ¼ W.

The Road lies between Whitby-rock and the Upgang-rock, and has from 5 to 3 fathoms at low water. The mark for it is, Larphill-house, over the middle of the town, bearing S. S. W. The mark for Sandsend-road, to the westward, is, the middle of Sandsend-town and Mulgrave-castle in a line bearing W. by S. ¼ S.

When boats dare not venture off, if a flag be hoisted upon the cliff, you may safely run for the harbour; but if, instead of the flag, a fire appears in its place, attempting to go in would be attended with imminent danger.

It ought to be observed strictly, by those who come from the southward to the harbour, that, at spring-tides, when the wind blows hard from any point between S. S. E. and East, vessels of 10 feet draught may come through the Sledway, if the signal be hoisted to shew that there is water on the bar; but vesels of greater draught must haul round the north part of the rock. Losing the flood-tide, so soon as you come within the rock, haul up until the Burgess or second pier-head, on the eastern side, is brought nearly a sail's breadth open of the east pier-end; then stand in for the harbour. It is also to be observed that there have been many instances of vessels not fetching in, merely by giving the rock too great a berth; this occasioned their hauling up so much as to lie parallel with the surge; which, by checking the headway, caused them to fall to leeward and go on shore.

The mark for sailing through the Sledway is, the second nab, on the west side of the harbour, open of the west pier-head.

Spring-tides flow on the shore at half past three o'clock, but without, in the offing, at six. The perpendicular rise of spring-tides is about 15 feet; of neaps, 10 feet. At high sea the water appears all broken between the rock and main; and, when this occurs with easterly winds, there is but little tide setting to the southward.

Runswick Bay, a good retreat for vessels in gales of wind, lies nearly 2 leagues N. W. by N. from Whitby. It is clear from rocks, and will contain about 18 sail in 5 or 6 fathoms at low water, but is open

* At the time this work was sent to press, it was expected that *tide-lights* would be established on the pier-head of Scarborough, to shew vessels when they may enter.

open to the north. The mark for running into the bay is, an inland hill, named *Brown Hill*, kept on with the lime-kiln, on the west side, until the bank or cliff upon which it stands, shuts in the high land behind it; this will be in about 4½ fathoms, clayey ground.

Vessels upon the coast, to the north of Runswick-bay, between it and the mouth of the Tees, may clear the land all the way, by keeping Whitby-abbey open without Kettleness-point, the eastern point of the bay.

About 13 miles to the northward of Whitby, is the remarkable cliff called Hunt-cliff. The courses are N. N. W. 7 miles and W. N. W. 6 miles. From Hunt-cliff Hartlepool is N. N. W. 3 leagues, and Suter-point North 7½ leagues. The entrance of the Tees lies between Hunt-cliff and Hartlepool; distance from the latter 7 miles.

When bound into the Tees, steer to the north-westward from Hunt-cliff, and bring a remarkable hill, which stands near to the southernmost extremity of the high land in Durham, on with the middle of Seaton; steer with this mark on until you pass the Scars, which have but 3 feet on them at low water; they lie 2 miles N. W. from Redcar: bring the above-mentioned hill on with the south end of Seaton, which will lead to the outermost buoy. When at this buoy, Stranton-church will be between the two mills to the northward of Seaton. This buoy lies in the middle of the channel, and may be left on either side. Leave the second, third, fourth, and fifth, buoys, on the starboard, and the sixth, on the larboard hand; here you may anchor in 10 or 11 feet at low water. If, with strong easterly winds, you get within the northernmost sand, called the Gare, go close to the breakers; the sand is steep. Should any of the buoys be gone, keep Stockton-church nearly a ship's length open to the northward of a remarkable house which stands on the Durham side of the river, called Holmhouse. This mark will run you safely above the third buoy, in 12 feet at low water. When you are above the third buoy, you may run to the fourth; you then should keep along the north shore, and may anchor in the hole under Seaton-snook, in 12 feet at low water, and moor with a stream-anchor and cable carried out upon the shore.

If bound into the Tees from the northward, keep the west end of Barnaby-moor S. W.; or keep a mill, which stands on the high land in Durham, on with Stranton-church; these marks will bring you in sight of the beacons, which are on the south side of the channel, and bear, when in one, S. W.; they will bring you to the outer buoy, which lies upon the Bar, in deepest water. Upon the Bar are about 7 feet at low water, spring-tides. The tide flows here, on the change and full days of the moon, at half past 3 o'clock; spring-tides rise 16 feet, and neaps 10 feet. You may anchor before the mouth of the Tees in 8, 9, or 10, fathoms, clear ground.

Hartlepool is situated on a promontory, almost surrounded by the sea, within which is the harbour. The latter was, for a long time, almost choaked up by mud; but some projected improvements, with the addition of a new pier, flood-gates, warping buoys, &c. promise to increase its consequence and utility. Light colliers may here find a secure road when not able to reach their destination at Newcastle, Shields, or Sunderland.

Spring-tides generally rise 17, and frequently 20 feet.

Nearly midway between the Tees and Hartlepool, is a ridge nearly dry at low water, called the *Long Scar*. It extends nearly east and west three quarters of a mile from shore, and must be carefully avoided.

Sunderland lies 5 leagues N. ½ E. from Hartlepool, and has an excellent pier; but, as the harbour is shallow at low water, it is inconvenient for vessels which draw more than 12 feet. On the Bar are but 2 feet at low water; but within it are 18 feet. The road is without, and distinguished by buoys. Large colliers sometimes receive there the last part of their cargo; but they generally go out with their whole loading.

It is, however, to be observed, that Sunderland harbour has recently been much improved. In high spring-tides there are frequently 16 or 17 feet water; and with neap-tides 10 to 12 feet, on the bar, at high water. Upon the north pier-head is a substantial light-house, near 90 feet high, in which the light is kept burning through the night.

There

There is also, on the south pier, a temporary or tide-light, which is lighted at tide time only, as a signal when vessels may go over the bar into the harbour. The present channel in lies close to the north pier.

From the lighthouse the surrounding objects bear as follow:

Suter or Souter-point, N. E. by N.—The outer part of Whitburn-rocks, N. E. ½ N.—The North buoy of the Roads, N. E. by E.—The South buoy of the Roads, E. S. E.—The outer end of the South Rocks, S. S. E.—The outer part of Hendon-rocks, S. S. E. ½ E.

The tide-light is nearly south from the light-house on the north pier, and so near it that the bearings of the one may be adopted for the other.

The buoys for the Roads are laid in 5 fathoms and a half at low water; and there is also a beacon upon the extremity of the rocks.

Vessels off the coast should be cautious that they do not mistake the light-house of Tinmouth for that of Sunderland.

Tinmouth. Three miles N. E. by N. from Sunderland is Suter-point; and nearly N. by W. 5 miles from Suter-point is *Tinmouth Haven*, which is easily known, in the day, by the castle on the north side of the entrance; and, in the night, by a revolving light, constantly kept there. Within the river, on the north side, there are two light-houses, as a guidance over the bar, upon which, at low water, the greatest depth is only 8 or 9 feet. On the south side of the entrance, on the part called the *Law*, are two beacons, for the use of ships, from the northward, which are to be brought and kept in one, until the high and low lights appear in a line with each other; or, rather, in order to pass over in the deepest water, until the high light is open to the northward of the low light, bearing W. N. W. ¾ W.

Within the river there are three warping anchors; two on the south side, and one on the north side. There is, also, a distinguishing buoy, without Clifford's-fort on the north side, in which the low light stands; and, likewise, a beacon, or *post*, on the south side, near the town of South Shields, with a flag which is exhibited at tide-time, to denote when vessels may pass over the bar into the harbour.

No vessels are permitted to hang at the post or anchors above ½ tide, wind and weather permitting them to sail in or out.

Observe, that the greatest depth is on the north side of the entrance; from 8 and 9 feet, at low water, to 12, 14, 16, and 10, feet.

Off Tinmouth-castle are 7, 8, and 9, fathoms; in which vessels may anchor, with the castle by day, and the light by night, bearing W. by N.

The coast between Sunderland and Tinmouth is generally rocky, and therefore requires a good offing.

Thirteen miles N. by E. from Tinmouth-castle is Newbiggin-point; between, are the small harbours of *Hartly* and *Blyth*, which are dry at low water. Off Blyth, are rocks, called the Sow and Pigs, which appear at the last quarter-ebb: by keeping Tinmouth-castle open of, or without Hartly-Bates, you will go clear of them. The Bates is a rocky point or ridge, which extends out a considerable way from shore, to the southward of Hartly-harbour.

Coquet-island lies 12 miles N. by E. ½ E. from Newbiggen-point; Sunderland-point is North 15 miles from Coquet-island; between, is the creek or harbour of Alemouth, where small vessels load corn: it is N. W. 4 miles from Coquet-island.

From Tinmouth-castle to the Staples is N. ¼ E. 12½ leagues, and to Sunderland-point N. ½ E. 11½ leagues. From this point Fern-island is N. by E. two miles and a half, and Bamburgh-castle N. N. W. three miles and a half; off the point is a reef of rocks, half a mile from shore, nearly dry at low water, but with 7 fathoms close to them: ships should not approach nearer to it than 9 or 10 fathoms.

Between Bamburgh-castle* and Holy-Island are *Warnham-flats*, nearly dry at half-ebb. *Holy-Island-bar* is at the south end of these flats.

FERN.

* At Bamburgh-castle is a most excellent institution, made by the benevolent Nathaniel Lord Crewe, Bishop of Durham. The following is an explanation of the signals made there, and of the assistance rendered to shipwrecked mariners.

A gun (a nine-pounder,) is placed at the bottom of the Tower, and is fired thus: *Once* when a vessel is stranded or wrecked upon the island or any adjacent rock: *Twice* when a vessel is stranded or wrecked behind the castle, or to the northward of it: and *Thrice* when a vessel is stranded or wrecked to the southward of the castle; that the custom-house-officers and others may hasten to give assistance, and prevent the wreck from being plundered.

FERN ISLANDS and STAPLES. The Crumstone and Navestone are the two outermost rocks of the Staples; the first lies from Fern-light-house E. by S. two miles and a quarter; the latter E. by N. three miles, off the extremity of a large danger eastward of the Staples. If, when near the Staples on the south side, it should fall calm with the ebb, which sets directly on them, anchor in time, and approach no nearer to the Staples than in 25 fathoms.

Off the S. E. point of Holy-island are two rocks, called the Plough and Goldstone: the Plough is near three quarters of a mile from the S. E. point of the island, and appears at a quarter-ebb; the thwart-mark is, the ruins of an abbey just open to the southward of the castle. The Goldstone is about two miles S. E. by E. ¾ E. from the same point of the island, and is covered at half-flood. There is a channel between these rocks, a mile in breadth. With the abbey-ruins on with the castle, you are to the northward of them both. There is a passage between the Plough and Holy-island, which, with a fair wind, is practicable by night as well as by day. By keeping along shore, in 4 and 5 fathoms, you will certainly go within to the westward of the Plough, near which, on this side, are 7 fathoms at low water.

When passing without the Staples with little wind and a sea, be careful that the tide do not set you among the rocks, especially when to the northward and in a flood-tide, which sets in among them. In the night, or in foggy weather, go not within 34 fathoms, which is not more than a mile off. Twenty-two fathoms are close to the rocks.

The usual Channel for Ships through the Staples is generally between Fern-island and the Main. In the Fair-way south of Fern-island, on which is the light-house, are 14 fathoms, which shoalens to 10 fathoms between the Main and Island. In sailing through, bring the south end of Hallidown-hill, (the south end of a high ridge of land between Eyemouth and Berwick,) open to the westward of Holy-Island-castle; or between the castle and the Lookout-hill, a high green bank between the upper part of Holy-Island-harbour and the town: steer with this mark on till the Staples light-house comes open north of the Megstone, a conspicuous rock or small island one mile to the northward of Fern-light; this will clear the Swadman, a reef of rocks nearly dry at half-ebb, which stretches west off the Megstone. Edge to the eastward, until the Megstone be on with Fern-island; and, keeping this mark on, will carry you through between the Seat, a reef off the S. E. point of Holy-island, dry at spring-ebbs, and the Goldstone, a small rock, almost dry, which lies one mile and a quarter E. S. E. from the Seat. If, when past the Megstone, the wind should head before you are through, you may with safety stand out to the eastward, taking care to avoid Gussard-seat, a large rock of 12 feet water, half a mile south of the Goldstone, by keeping Key-law-trees W. by N. (a cluster of trees below the ridge between Wingate and the

In a storm, two men on horse-back are sent out to patrole along the coast, from sun-set to sun-ri-e; that, in case of an accident, one may remain by the ship, and the other return to alarm the castle. Whoever brings the first notice of a vessel in distress, is entitled to a premium, in proportion to the distance from the castle; and, if between twelve o'clock at night and three in the morning, that premium is doubled.

A large flag is hoisted, when a vessel is seen in distress upon the Fern-islands, or Staples, that the sufferers may know that their distress is perceived from shore, and that relief will be sent as soon as possible. In bad weather, the flag is kept up, a gun fired morning and evening, and a rocket thrown up every night from the north turret, until relief can be sent. There are also signals to the Holy-Island-fishermen, who can put off for the islands, when no boat from the main land can get over the breakers. Premiums are given to the first boats that put off to give assistance to vessels in distress; and provisions and liquors are sent in the boats.

A bell on the south turret is rung in every thick fog, as a signal to the fishing-boats; and a large swivel on the east turret is fired every fifteen minutes, as a signal to ships without the islands.

A large weather-cock is fixed on the top of the flag-staff, for the use of pilots.

A large speaking-trumpet is provided, to be used when ships are in distress near the shore, or are run aground.

A watch-tower is made on the east turret of the castle, where a person attends at day-break in winter, to see if any ships be in distress.

Commanders of vessels in distress are desired to make their usual signals.

Rooms and beds are provided for shipwrecked seamen, who are maintained in the castle several days. Cellars and a storehouse are ready for goods, where they may be deposited for a year, in order to be claimed. Screws for raising stranded ships; a pair of chains for weighing ships of even 1000 tons lost in deep water; mooring chains, &c. are also ready for use.

Dead bodies cast on shore are decently buried gratis.

Scores)

Scores) open south of the Laws on the west side of the entrance to Holy-Island-harbour, till the Megstone appears without the west side of Fern-island. When the Megstone is on with Sunderland-point, you will be without the Stiel, a narrow reef, which stretches E. S. E. from the Goldstone.

A large rock, called the *Iselstone*, which is dry at half-ebb, runs a mile off the shore a little distance south of Bamburgh castle on the Main. Nine fathoms are close to it, and but 10 in the channel between it and Fern-islands; therefore, in turning between those islands and the Main, stand no nearer to it than to bring the south end of Hallidown-hill nearly on with the Lookout-hill on Holy-island; and stand no nearer the Swadman than to bring the south end of the hill on with Holy-Island castle. Fern-island, as well as the Iselstone, is steep; stand no nearer to it than 7 fathoms. Betweeen the Seat and Goldstone, the turning-mark is, the Megstone from side to side of Fern-island.

The Mark to sail between the Staples and Fern-island is, the south end of Hallidown-hill shut in over Emanuel-head, the east point of Holy-island, or any way between the head and the red cliff within it. Keep this mark on until Bamburgh-castle appears north of the Megstone, and you will be clear of the Oxscare, a small rock lying half a mile E. N. E. from the Megstone. You may then steer to bring the Megstone on with Fern-island, and so sail through between the Seat and Goldstone; or you may steer eastward out to sea in any direction between the Longstone (a large rock to the eastward of the Staples, extending a mile north and south, and but half covered at high water) and the Goldstone. But take care not to open the Megstone without Sunderland-point until you are clear of the Stiel. Biel-town and trees just open without the Laws is a good mark to sail through this channel with; *but be careful to edge to the eastward when near the* Oxscare, in order to avoid it.

If when abreast of the Megstone, there is but little Wind, and the ebb is coming on, the best way is to go without the Goldstone: as, in this channel, should the wind fail, the ebb-tide will carry you clear of danger.

In this channel the turning-marks are, to the Fern side until the south end of Hallidown-hill is on with the red cliff within Emanuel-head, or Biel-town and trees just shut in behind the Laws: to the Staples, till the south end of Hallidown-hill is near Emanuel-head; but be careful not to bring it on the head until past the Gunrock, which lies a cable's length west from the north side of Staples-island; and, to avoid the Oxscare, keep Biel-town well open east of the Laws.

A Mark to sail into Holy-Island-harbour is, keep half the gabel of a little tiled house open north of the Granary, a large house by the water's edge, on the south side of Warnham-flats. With Hallidown-hill on the open in the Links, the high lands which run off towards Holy-island, you will be in the shoalest water.

The Mark to sail between the Plough (which lies rather more than half a mile E. by S. ½ S. from Holy-Island-castle) *and Holy-island*, is the east end of the Granary, bearing nearly S. by W. on the west end of Kettle-Bottom-hill, which will carry you near to Holy-Island-bar. Another mark is, Outchester-houses, just open of the south end of the sand hills on Ross-island, bearing about S. W. Here the flood sets to the south-westward, and the ebb contrary.

Holy-Island Bar is about half a cable's length from east to west, and there are 8 feet on it at spring ebbs: the leading mark to run in over it is, Keylaw trees on with the Laws; and the thwart mark is, Outchester bluff on with the end of the Links.

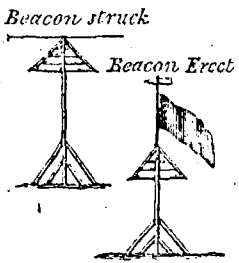
At the east end of the bar is the Stone Ridge, a rocky reef, which continues up the east side of the channel to the harbour, having the north end (or that next the harbour) covered only at spring floods.

At the west end of the bar is the Baat, a small rocky flat, of only two or three feet at spring ebbs. The mark for it is, St. Nicholas'-church on with the Laws. *From the west shore, reaching out toward* the Baat, is a rocky reef, mostly dry at low water, called the Parton Stiel; having between it and the Baat a small channel of 4 feet at low water, called the Tours; the mark for which is, the church-bellfry on Holy-island on with a small ridge in the brae, a little north of the beacon.

Within

Within the bar the channel winds to the northward, turning narrower and deeper as you go in till abreast of the upper end of the ridge, where it is only about two ship-lengths broad, and has 4 fathoms at low water. The tide in the harbour runs very strong during the last half-flood and first half ebb; that is, from the time the flats are covered until they dry again.

The directions at present for sailing into the harbour are, to bring the two beacons which now stand upon the Old Law in one, bearing W. by N. which will lead over the bar until a beacon upon the Heugh bearing N. W. by N. and the church-steeple come on: keeping them so leads up to the anchorage before the town in 3½ fathoms at low water.



When the weather is bad, and pilots cannot get off, the flagstaff of the beacon upon the Heugh, will be struck across, as shewn in the margin, until a proper time of tide for ships to enter; when it will be raised erect, and a blue flag hoisted.

At the bar it flows at nearly three quarters past two o'clock, full and change. At high water there are from 26 to 28 feet upon it; and not less, at low water, than 8 feet.

When coming from the northward for Holy-Island, keep Outchester-houses open south of the Links, which will carry you close to and without the bar; another mark to sail over which is Keylaw-trees, on with the Laws: or, keep the Laws any way between Wingate-gap and the Scores; when over the bar, steer up, edging the Laws towards the Scores, until the bellfry on Holy-Island-church comes within it sown breadth of the beacon on the brae over the landing-place; with Emanuel-head just shutting out of sight, steer toward the beacon, so as to have the beacon open the breadth of the bellfry east of it, when passing the height of the ridge on the island side; being past the ridge edge east to the town's end, till St. Cuthbert's Island, at the head of the harbour, comes on with Snook-end, or N. W. part of the island, and anchor with that mark, where there is 16 feet at low water.

Scate-Road, which lies half way between Warnham-flats and Holy-Island-bar, is the only anchorage within the Staples, every other part being rocky. To anchor, bring the south part of Hallidown-hill on with, or a little open to, the eastward of the Lookout-hill on Holy-island, in from 7 to 5 fathoms, at low water, sandy ground. Without this mark the bottom is rocky.

Vessels may stop a tide on the south side of Fern-islands, in from 9 to 12 fathoms clean ground.

The course and distance from Emanuel Head to Berwick are N. N. W. three leagues; to Whapness, or Eyemouth, N. by W. ½ W. nearly 5 leagues; and, to St. Abb's Head, N. by W. ¼ W. nearly 6 leagues.

The *Snipe Point* lies N. W. half a mile from Emanuel Head, having a reef of rocks reaching N. E. half a mile from it; there are 9 or 10 fathoms close to the outer end of this reef; keeping Bamburgh-castle without Emanuel Head clears it.

North and N. N. W. from Emanuel Head, are four reefs or hirsts of sunken rocks at a distance from the shore. The southernmost of the two outer reefs is called the *Park Dyke;* it lies one mile and three quarters north from Emanuel Head, and has only 10 feet at low water on it; the next is the *Tours*, lying a mile north from the Park Dyke, and three miles north from Emanuel Head, having 12 feet. There are 7 and 9 fathoms between these reefs; the same depth between them and the Snipe-reef; 12 and 13 fathoms close to the outer or east ends of them; with 15 and 17 fathoms a little out from them. The mark for the outer end of these two reefs is, Bamburgh-castle on Emanuel Head; and, for the inner ends, Bamburgh-castle on with Snipe Point. Thwart mark for the Park-dyke is, Keylaw trees on the Snook end (or N. W. point of Holy-island); and St. Nicholas'-church on Biel-town leads clear to the northward of the Tours.

The northernmost of the two inner reefs is called the *Bean-stack*, having 17 or 18 feet on it at low water; it lies W. N. W. three quarters of a mile from the Tours, and N. N. W. three miles and a half from

from Emanuel Head: the other reef is called *Wingate-reef*; it has 12 feet on it at low water, and lies a mile nearer the head, and in the same direction from it. The mark for these reefs is, Fern-island shut in with Emanuel Head: and the thwart mark for the Bean-stack is, St. Nicholas'-church on with Biel-town. There are 6 and 7 fathoms between these reefs, 8 and 9 fathoms between them and the outer reefs, and 6, 5, and 4, fathoms between them and the shore.

Spittal Hirst, another reef, lies S. E. by E. five miles and a half from Berwick, and North, westerly, five miles from Emanuel Head. With heavy gales of wind and spring-ebbs, the breach of the sea is seen on this reef both from Berwick and Holy-island, but there does not appear to be less than 5 fathoms upon it at low water, with 17 and 18 fathoms round it. The marks are, Bamburgh-castle a little shut in on Emanuel Head and the northernmost houses of Scarmerston (a farm-town on the height) on with the lime-kilns on the shore, four miles south of Berwick, bearing west.

Vessels steering to the northward from Emanuel Head, must keep Bamburgh-castle open without it, in order to avoid the Snipe-rocks, Park-dyke, and Tours Reefs; and, when St. Nicholas'-church opens north of Biel-town, you may stand in and make bold with the shore all the way to Berwick.

Berwick. The southern side of the entrance into Berwick is a sandy bay, but the north side has a reef of rocks that dry a long way out, having beacons on them, close to the north side of the channel into the harbour. The bay, or road, is mostly clean sandy ground, having 12 or 13 fathoms a mile from the shore, and farther out deeper.

Those bound in should have a pilot, because of the freshes that frequently run out. When sailing into the harbour, steer close to the south side of the outermost beacon, and so along the rest of the beacons, keeping them on the starboard-side. There are 18 or 20 feet at high water, but the channel is narrow.

The anchoring marks in the bay are, Holy-Island-castle S. by E. ½ E. and Berwick-steeple N. W. or N. W. by W. 10 or 12 fathoms, sandy bottom.

North from Berwick, about half a mile, is Bottleness; off which is a reef of rocks reaching two cables' length from the shore; some of which are always above water.

From Bottleness, Whapness lies north 6 miles; the shore steep, rugged, and rocky, having 24 fathoms near it and 30 a little way off. On the west side of Whapness, in a little bay, is the harbour of *Eyemouth*, a tide-haven, with some small rocky islands at the mouth of it.

About half a mile N. W. of *Eyemouth*, vessels may anchor in a small spot under the high cliff, about a quarter of a mile from shore, in 14 or 16 fathoms; but the finding of this place is rather difficult.

The course and distance from without the Staples to Berwick is N. W. ½ N. 16 miles.

St. Abb's Head is about three leagues to the northward of Berwick. Give Bottle-ness, to the westward, a birth of about half a mile, in order to avoid some rocks which lie from off it. The shore, from this place to St. Abb's Head, is steep and rocky. Close to it are 24 fathoms water.

FRITH of FORTH. From St. Abb's Head to Dunbar is N. W. ½ N. 14 miles. Between Dunbar on the south, and Fife-ness on the north, side, is the entrance of the Frith of Forth, which is, between these places, about 26 miles broad. N. N. W. six miles from Dunbar, and about one mile from shore, is the high rock, or small island, called the Bass; and, N. E. ¼ E. from the Bass, is a small island, called May-island, on which is a light-house.

Dunbar is a Pier-haven, the bottom solid rock. Here you may anchor about a mile off shore, with off-shore winds, in 7 or 8 fathoms, clean sand. Off from the west side of the harbour is a reef of rocks called the Staples, some always above water, but with deep water close on the outside.

N. W. by W. two miles and a half from the Bass and a mile from shore is a large rock, called Craig-Leith; a mile west of Craig-Leith is another called Lamb-isle; N. W. a mile from Lamb-isle is a black rugged rock, called Fidra: a mile west from Fidra, and half a mile from shore, is a low black rock, called Ibris, connected by a rocky ridge

to

to the shore. In sailing from Dunbar, care must be taken to go clear of the South Carr, a reef of rocks stretching half a mile from Scoughal point, mostly dry at low water, and which lies four miles N. N. W. ½ W. from Dunbar. These rocks are steep; 7 fathoms are close to them at low water; and they are particularly dangerous in N. E. winds.

The light on *May-island* may be seen in clear weather 6 leagues off. Between this island and the Bass, the depth is about 26 fathoms; and, between it and the Fife shore, 22 fathoms.

The Passage between the Bass and Shore is nearly a mile wide, and has in it from 16 to 9 fathoms. Ships from the southward, after giving the Carr a good birth, need only give a moderate birth to the shore all the way to Craig-Leith. To go within Craig-Leith, keep close to it, and out between it and Lamb-isle; the depths are various, and the ground rocky.

To sail up the Frith, from without the Bass, steer nearly N. W. by W. till past Fidra, and from thence W. by N. to Inchkeith, an island with a lighthouse in the middle of the Frith. The course to Inchkeith from midway between the Bass and May-island is W. by N. and from the south end of May-island W. ½ N. about 22 miles. If close in with Fife-ness, steer W. S. W. 9 miles, to abreast of Elly-ness, and from thence W. to Inchkeith.

If Ships, turning to windward in the Mouth of the Frith, take the first of flood close to the south shore, and keep the last of it on the north, they will have 7 hours tide in their favour. Observe, that the stream continues to run south round Fife-ness half an hour after it changes on the north side of May-island, and an hour after high water at the Bass.

If you are bound up the Frith from the northward, you must be careful to avoid a rocky ledge, called the North Carr; which stretches off N. E. about a mile from Fife-ness, and is covered at half-flood. This ledge is steep on both sides: 9 fathoms are close to it; by keeping the spire and some of the other part of the steeple of Crail in sight above the land, you will pass clear to the eastward of the ledge: In the night, approach no nearer to it than 16 or 15 fathoms water.

There is good Anchorage in Aberlady-bay, and on the south side of the Frith, any where in 16 fathoms, between Gullen-ness and Inchkeith: as also on the north side in Largo-bay is good anchorage (excepting on the N. E. of the bay, which is rocky) in from 14 to 9 fathoms, gravelly ground. On the east side of Inchkeith is also good anchorage with westerly winds in from 7 to 12 fathoms.

The Channel mostly used when going up the Frith is on the north side of Inchkeith. In sailing through this channel at low ebbs, large ships must be careful to avoid the Blea, a rocky flat of 3, 4, and 5, fathoms at low water, on which runs a rapid tide with great rippling. The mark for the shoalest part is, the south point of the high land over North Queen's-ferry (or Carling's Nose) open S. of Inchcolm, and Petty-Cur pier at Kinghorn-ness, bearing N. To avoid it, keep therefore the Carling's Nose well open S. of Inchcolm. This mark will also lead clear of a sand bank which lies in and off the bay between Kinghorn-ness and Burnt island.

In Burnt Island Road, a little westward of the pier, is a good anchorage; but be careful not to anchor too far to the westward, because of the Commons, a rocky reef, which runs half a mile off from shore.

Inchkeith lies nearly N. and S. and is ¾ of a mile long; on the highest part of it, near the north end, are the ruins of a fort; and, near the middle of it, is a lighthouse. Near its south end is a narrow black rock, always above water, called Long-craig; from thence a reef of rocks, called the Brigs, which are seen only at spring ebbs, extend S. by E. ½ E. ¾ of a mile, separated only by a narrow channel of 10 or 12 feet at low water. To the southward of the Brigs is Harwit, another reef seen at spring ebbs, which stretches S. E. by S. a mile from the Brigs; between is a channel of 3 fathoms at low water; and, close to the outer point of Harwit, on which a black buoy has been placed, are nearly 15 fathoms water, which shoalens off to the southward.

Inchcolm is a narrow island W. ½ N. 5½ miles from Kinghorn-ness; on the east end of it are the ruins of an old monastery; and S. E. ¼ of a mile from it lie the Oxcars, rocks which appear at 4 hours ebb, in the

the way of ships going up and down the Frith, on the north side of which are 12 fathoms, and on the W. 8 fathoms. Upon the north side of them is a beacon. In the channel of the Frith between, which is ¾ of a mile broad, are 22 fathoms water.

S. ½ *a mile from the Oxscars*, is *Mikry-stone*, a high black rock, and other small rocks; and, half a mile S. of Mikry-stone, is Mikry, a small rocky island; between, are two fathoms at low water. Crawmond, a small green island, lies S. W. by S. one mile from Mikry; between are from three to five fathoms. The passage between these islands and the main is very shallow at low water.

In proceeding for Leith-road, with a large ship, be careful to avoid the Gunnet-rocks, which lie 1¼ mile W. from the north end of Inchkeith; they are half a cable's length long, and have 10 feet on them at low water. A white buoy is on their west side. Between it and the island there are 3½ fathoms. To go clear of this shoal, keep the high mountain called Largo-law, a sail's breadth open to the northward of Inchkeith, until Newhaven, to the westward of Leith, comes on with the east part of Edinburgh castle; this mark will lead to the westward of it; and, when North Berwick-law comes on with the low black rock, near the south side of Inchkeith, called Black or Long Craig, you are abreast of it, on the west side. Your course thence for Leith-road is S. W. 2½ miles. You may anchor off Newhaven, with the Hound-point between Crawmond island and Mikry-stone, in 7 fathoms at low water; or, with Edinburgh castle open to the westward of Newhaven, and Lord Roseberry's house, which is white, and stands by itself on the south shore, open to the northward of Crawmond island, in 5 fathoms at low water. Large ships should anchor with the white house a ship's length open of Crawmond island: the ground is reckoned good. To the eastward of the road is a ledge of rocks, which must be left on the larboard hand in going for Leith harbour; a beacon is on its outer end, and it is dry at low water.

The Lighthouse on Inchkeith is situated in the middle of the isle, it was first lighted on the 1st September 1804, *and continues, every* night, from the expiration of day-light in the evening until day-light in the morning. The light is from oil, with reflectors, elevated above the level of the sea at high water of spring tides 229 feet, of which height the building forms 45 feet.

The light is seen from every point of the compass; but strongest from East, North, and West, of the lantern, where the greatest number of reflectors are placed.

The bearings by compass, and distances in nautic miles, from the lighthouse, are *according to Mr. Downie's Survey*, as follow:

Ellyness, E. by N. 14¼ miles; May light, nearly East, 20 miles; Island of Fidra, E. S. E. ½ E. 13 miles; Craigwaugh rock, S. S. E. 4¼ miles; Leith harbour light, S. W. ½ S. 3½ miles; Gunnet rock, W. ¾ N. 1½ mile; Oxscars, W. by N. ¾ N. 5 miles; Inchcolm, W. N. W. 5¼ miles; Pettycur harbour light, near Kinghorn, N. N. W. ¼ N. 2¾ miles; and Kinghorn-ness, N. N. W. ¾ N. 2⅚ miles.

It is to be observed that the harbour lights are only used from half of flood to half of ebb.

In proceeding from Leith-road up the Frith, with a flood tide, steer over to the northward, until you shut in Lord Moray's house with the west end of Inchcolm; steer with it so, and you will go clear of the Oxscars. If the weather be thick, and you cannot see Lord Moray's house, steer over until the water deepens to 15 or 16 fathoms, which will be to the northward of the Oxscars; you may then steer for Inchcolm, taking care to keep near to Carcraig in passing it, in order to be sure of avoiding the Oxscars. The Carcraig is a high round rock, lying about a quarter of a mile E. N. E. from Inchcolm, and is steep on its south and east sides. The Oxscars lie ¼ of a mile S. from Carcraig; they appear at 4 hours ebb*.

To go up on the South Side of Mikry Island, you must keep a small island, called Inchgarvy, just shut in behind the Hound-point, until abreast of Mikry, which will lead you clear of a small reef of rocks extending about half a cable's length from the S. E. point of the island, and dry at low water. On the south side of Mikry are 8 fathoms at low water. In passing the island, give it a cable's-length's

* It is proposed to have a leading light, that vessels may, with safety, pass the Oxscars in the night.

berth, and steer across the tail of the Drum-sand, which runs off from shore towards Mikry island, for the north channel, where there are not less than 12 feet at low water. You may go through between Mikry isle and Mikry stone; the channel is clear, and 12 feet are in it at low water. Near to Mikry stone, on the west side, are 3 fathoms. When above Mikry stone, take care to keep the Long-craig its own length open to the northward of Mikry stone, until all the houses of South Queen's-ferry are open without Hound-point. Thus you will go clear of the Drum-sand, which dries from the Hound-point half way down to Mikry island and Mikry stone: close to its elbow are 10 fathoms at low water.

Inverkeithing, or St. David's-road, lies about 2 miles west from Inchcolm; the marks for anchoring are, Kinghorn-ness open to the northward of Inchcolm, South Queen's-ferry open to the southward of Inchgarvy, and St. David's pier N. N. W. in from 7 to 10 fathoms, muddy bottom: in the east part of the road is most room. In proceeding between Inchcolm and this place, you must keep the Hay-stack, a high rock N. W. of Inchcolm, open to the northward of that island, until the westernmost houses in South Queen's-ferry pass Inchgarvy, in order to avoid a rock, which lies S. by E. ½ E. from St. David's pier-head, and three cables-length's from shore, called Doig's-rock: this rock lies with the middle of Inchgarvy on with the westernmost houses in South Ferry; on it are only 3 feet at low water.

You may sail on either side of Inchgarvy; but the north channel is the widest, and most used. When you have passed Inchgarvy, you will see Bimer-rock, which is round, and nearly covered at high spring tides; you may go on either side of it, but on the south side is most room. Between Inchgarvy and Bimer, the rapidity and whirling of the tide make it sometimes difficult to steer a ship in light winds. Thirty-five fathoms water is on the south side of Bimer, and 10 fathoms between it and the Long-craig on the north shore.

To go on the north side of Bimer, be careful to avoid a sunken rock lying above a cable's length S. S. W. from the Long-craig, and one-third of a mile E. by S. from Bimer, on which are only 11 feet at low water, spring tides. Very near it, on the south side, are 25 fathoms; and between it and Long-craig are from 5 to 3 fathoms. The thwart-mark is, a farm-house, a little to the westward of North-ferry, on with a round hill a little above it, bearing N. by E. The long marks are, Bimer on with the west corner of the wood to the westward of Hopeton-house, bearing W. by N.; and the house upon Inchgarvy on with the pigeon-house in Lord Roseberry's park, bearing S. E. by S.

When past Bimer, steer N. W. ½ W. keeping a little to the northward of mid-channel, to avoid the Society-bank, which extends nearly one-third of a mile from the shore at the Society-houses, and mostly dry at low water; its outer edge is steep. After passing Dove-craig, you may anchor any where in Limekiln-road; the anchorage is with Dove-craig S. E. by E. or E. S. E. one mile distant, and Limekiln-pier N. E. or N. E. by N. in 7 or 8 fathoms, muddy ground. Dove-craig is a small island, about 2 miles from the North-ferry, and ¼ of a mile from shore: a flat extends about a cable's length from its south side. From Bimer to Limekiln-road, the water in the channel gradually shoalens from 16 to 8 fathoms.

The PASSAGE on the S. SIDE of the FRITH, and between Inchkeith and the shore, is very good; the leading marks are, North Berwick-law open to the northward of a notch in the high land over Gullen-ness; and Lord Roseberry's house on with the north point of Crawmond island. Either of these marks will lead up or down in midchannel between a black buoy on the Harwit, and red on the Craiswaugh, a small round rock, 2½ miles S. S. E. ½ E. from Harwit, on which the sea-weeds appear only at low spring ebbs. In this channel the ground is soft, and the tides easy.

OBSERVE that, in general, a good berth must be given to both shores of the Frith; as near them, in shoal water, are numerous dangers.

DIRECTIONS from the FRITH of FORTH to BUCHAN-NESS.

WHEN bound from the Frith of Forth for Dundee, be careful to avoid the North Carr, which is the outer end of a steep reef of rocks extending a mile off shore, a little N. of Fife-ness, and lying a mile

mile N. E. by E. from the Ness. On both sides 9 fathoms are close to it. By keeping the steeple of Crail in sight above the land, you will go clear to the eastward of it. From the Carr-rock to the entrance of the river Tay, the course is N. ¼ E. and the distance above 3 leagues. Between, is St. Andrew's Bay; the best anchoring in which is, with the harbour S. W. and the church-steeple on with Drumcarrow-craig, in 6 or 7 fathoms, clean sandy bottom.

When round the Carr, steer first so as to shut May-isle in behind Fife-ness, and then with it shut in until the Tay-lights can be seen. When the great light comes to the eastward of the notch in Sedley-hills, at two hours flood, and the bar smooth, ships, drawing 15 feet, may steer right in for the lighthouse; keeping it open a ship's length E. of the notch, will lead close to the east side of a buoy on the east side of the entrance.

The Cap or Bell Rock, a very dangerous rock, lies N. E. by E. 9½ miles from the North Carr, and in the same direction 10¼ miles from Fife-ness; N. E. 14 miles from May-isle; S. ¾ W. 10½ miles from Redhead; and nearly the same distance S. E. by E. from Button-ness, at the entrance of the Tay. This rock extends nearly a mile N. E. and S. W. and is half a mile broad; it appears at half-ebb, and lies with the following marks:—the Isle of Bass on with the north side or sloping part of May island; St. Andrew's college steeple on with East Lomond; and Dick's Mount on with the Pot. Dick's Mount is a round hill, lying in-land above Aberbrothic; and the Pot is a remarkable hollow in the cliff, which is about a mile to the north-eastward of Aberbrothic. From the S. W. part of the Cap-rock extends a ledge, which does not appear until about low water. Close to the inner side of this rock are 4 fathoms water: and, a little farther to the westward, or towards the shore, are 6 fathoms. Close to the outer or east side, are 7 fathoms water; at a cable's length are 16 fathoms; and, half a mile from it, on this side, are 29 and 30 fathoms. The isle of Bass kept open to the eastward of May-isle, will carry you clear without the rock; go no nearer to it than 27 fathoms water. In the night, or in thick weather, go no nearer to it on the outside than 32 fathoms; nor on the inside than 12 fathoms. Between the rock and shore are 18 and 20 fathoms. It has been determined that, so soon as the assent of the legislature can be obtained, a lighthouse shall be erected on the Bell Rock*.

Ships bound northward, to steer without the Cap-Rock, in light clear weather, should bring the Bass open E. of May-isle, and steer with this mark until the small Lomond is open N. of the northernmost steeple of St. Andrew's. If in the night, steer out of the Frith with May light bearing N. E. by E. or E. N. E. about 18 miles from May isle, allowing for the tide: afterwards N. or N. N. W. for Redhead; to which approach no nearer than 18 fathoms in the day, and 30 fathoms in the night.

Steering N. N. E. from the Carr will lead midway within the Cap-rock. The depths in this direction are from 13 to 15 fathoms. When the southernmost or small Lomond is open N. of St. Andrew's, you may steer more to the eastward.

In thick Weather, or in the Night, steering in 18 fathoms will lead down the Frith close to the Fife shore, and round clear of the Carr, into St. Andrew's bay. If, in crossing the bay, the water should shoalen, you may, when Button-ness light bears W. by N. stand out again to 18 fathoms; keeping in that depth will lead to a clear berth without Redhead.

In turning to Windward, across St. Andrew's Bay, stand no nearer the North Carr than 20 and 18 fathoms; from the Carr to Barbet-ness, into 12; from Barbet-ness to Tay-bar, into 10; from Tay-bar to Arbroath, into 13; and, from thence to Redhead, into 15 and 16 fathoms. You may stand off to the Cap-rock to 19 fathoms; and in that depth, to the southward or northward of this rock, you will be in a line either between it and Fife-ness, or between it and Redhead.

When clear of and round the Carr, you may, if bound to *St. Andrew's*, steer along the south shore, going no nearer to it than 9 fathoms till abreast the town, and there anchor, about half a mile from

* Nothing now seems wanting to complete the safety of the navigation of the Frith of Forth, &c. but a lighthouse upon the Bell-rock, and a beacon upon the North Carr; both of which the Commissioners for the Northern Lights have in contemplation.

shore, in from 7 to 10 fathoms, sandy ground. If bound into the harbour, run a little to the southward, until the pier is nearly end-on, then steer for the south side of the pier-head, keeping up close along it into the harbour.

In easterly winds, ships in St. Andrew's Bay must allow for the flood-tide, which sets strongly to the westward, and slowly to the eastward: therefore, during flood, they should turn short boards close to the south shore, until the ebb makes; then, stretching over to the N. the tide will carry them out.

When bound for the River Tay, after you are round the Carr, steer so as to shut May-isle in behind Fife-ness; then with it just shut in, until the Tay lights can be seen. When the great light comes to the eastward of a remarkable notch in Sedley-hills, at two hours flood, and the bar smooth, ships drawing 15 feet may steer right in for the lighthouse; keeping it open a ship's length E. of the notch, will lead close to the east side of a buoy on the east side of the entrance.

On each Side the Entrance of the Tay is a dangerous sand; that on the north side, called Gaa, extends nearly three miles S. E. from Button-ness, and dries at low water; that on the south side, called the Abertay, stretches off about 4 miles E. S. E. from Tentsmuir-ness. These sands are flat on the outside, but on their insides steep. The entrance between is nearly 2 miles wide: a bar called the Cross-sand, lies across, which is more than half a mile over, and has, beginning at the south side, 2, 2½, and 3, fathoms at low water, the deepest water is nearest the Gaa-sand. When coming in from the sea, the water shoalens gradually from 8 to 3 fathoms; but, over the bar, are 5, and from thence 7 and 9, fathoms water. To sail into the harbour, bring Button-ness N. N. W. ½ W. and steer with it so, until the two lighthouses, upon the point under the hill, come on with each other; running them thus, will carry you safely in, either by night or day. In the day-time bring the old tower, called Broughty castle, within a span's breadth of the north side of Dundee-law; which will serve as a very good mark for carrying you either in or out. Button-ness is rendered remarkable by some red sand-downs; the other parts are low and sandy.

As the water, notwithstanding its depth, breaks from side to side of the entrance, in bad weather, especially when the tide runs against the wind, a stranger's going in at such times, must be attended with danger. Such should, if possible, wait until the flood tide is well made: and, when over the Cross-sand or bar, they ought not to go nearer to the Gaa, than 5, nor to the Abertay, than 6, fathoms. If obliged to attempt the harbour with an ebb tide and outerly wind, carry very little after-sail, that your ship may quickly wear from either side, when the tide, by taking her upon either bow, shall render such celerity necessary.

Drumland-sand lies on the north side off the church and village of Money-frith; you will avoid it by not going into less than 3 fathoms water on that side. On the south side of the channel, from the Abertay-sand round Tentsmuir-ness, and up as far the South-ferry, it ebbs dry a long way off from shore. The Mussel-scars lie upon the outer edge of this bank or flat at low water mark. The Horseshoe runs off E. S. E. from Broughty, towards the easternmost scar, and has 8 or 9 feet on it at low water: here the tide runs strong, the channel is not above half a mile wide, and has only 3 or 4 fathoms in it at low water. Below and above the Horseshoe-sand there are 7 or 8 fathoms water. From Broughty up to the Ferries, there are 11 or 12 fathoms in the channel. Off the west end of the town of North-ferry, you may anchor in 7, 8, or 9, fathoms; and, off the South-ferry with the town bearing S. in 5 or 6 fathoms. *From the South-ferry up to Dundee*, the course is W. and W. by N. about 3 miles. The small sand, called the Newcome, is the only danger lying between them; it lies about a mile above the South-ferry, and dries at low water. You will avoid it by not going within half a mile of the south shore: in the channel, just to the northward of the Newcome, are 6 fathoms at low water. The channel, from the Ferries up to Dundee, shoalens gradually from 9 to 3½ fathoms. The best road is off the west end of the town, in 3 or 3½ fathoms at low water. The pier-harbour of Dundee falls dry at low water: at high water, spring tides, are 14 or 15 feet feet water in it; and, in neap-tides, 9 or 10 feet. Here the tide flows

on the change and full days, at a quarter past two o'clock; and the water rises at the bar, or Cross-sand, 18 feet.

Red-Head. Eleven miles N. E. by E. from the entrance of the Tay, is Red-head; which may easily be known by its high red cliffs. Off this head the tide runs very strongly, which often causes a rough sea, especially when the stream goes against the wind. Within a mile of the shore, are 20 fathoms water; in the night, or in hazy weather, keeping in about 28 fathoms will be the best depth on this part of the coast.

Six miles N. E. from the Red-head, is *Scurdie-ness*, or *Montrose-ness*, the south part of the entrance of MONTROSE: between, lies the bay of Lunan, where ships may ride with off-shore winds, about a mile and a half to the northward of Red-head, in 6, 7, or 8, fathoms water. The common mark is, to bring Red-head to bear S. or S. by W. Montrose is a place of much trade: but the rapidity of the tides, the narrowness of the channel, and the Annet, by its extending three quarters of a mile from the north shore into the sea, render it extremely dangerous for a stranger to attempt the harbour without a pilot. Scurdie-ness is a low rocky point, with a battery upon it. Off the ness, more than a cable's length, lie two rocks, called the Outstone and the Instone, you will avoid them by not coming any nearer to the ness than 6 fathoms water. The best mark for anchoring in Montrose-road (which is a little northward of the harbour) is, the town spire-steeple on with Tarin-hill, in 9, 8, or 7, fathoms water, clean ground; more to the southward, the ground is foul and rocky. The town of Montrose stands on the north side of the river, about a mile and a half above the entrance. Here the tide flows, on the change and full days of the moon, at half past one o'clock.

To run into Montrose, you must have plenty of sail. The marks for entering are, two stone beacons on the south shore in one. When in, near the south point, edge to the northward, and give the Instone a berth. If the weather be clear, a house on the Inch on with the middlemost of the Three Horses is the best mark to run in by. (The house will then appear a little without the Black Rocks on the south shore.) When in, near the point, edge to the northward, to avoid the Instone. Then steer up mid-channel to Ferrydan, when you may anchor; or from Ferrydan to the northward, if bound up to the town, keeping the starboard shore aboard all the way up to the quay; in order to avoid the Muscle-scap, which lies off the N. E. side of the Inch, covered at half flood, and over which the tide sets strongly.

Tod-head lies 3½ leagues N. E. by E. from the entrance of Montrose; it is low, and therefore not easily distinguished; the high hill of Craig-Davie, which stands to the northward of Inverbervie, is generally mistaken for it.

From Tod-head to Girdle-ness the course is N. E. 17 miles; between, about 7 miles from Tod-head, lies the pier-harbour of Stonehive, or Stonehaven, in which there are 16 or 17 feet water at high water spring tides, and with neap tides 10 or 11 feet. Easterly and north-east winds cause a swell in the harbour.

To sail into Stonehive, run in close along the rocky shore, on the south side of the bay, until within a cable's length of the Pier-head, then steer for the Pier-head so as to go round the south end of it into the harbour.

Ten miles N. E. by E. from Stonehive is *Girdle-ness*; at a little distance off which, lies a dangerous rock, called the Girdle. Give the shore between these places a cable's length berth.

Aberdeen. Aberdeen-bay is just round to the northward of Girdle-ness; here ships ride well with off-shore winds, the Ness bearing S. by W. or S. S. W. in 7, 8, or 9, fathoms. Those unacquainted, who are bound into the harbour, should have a pilot, as the sands frequently shift, and the entrance is difficult. The harbour of Aberdeen lies close in along the north side of Girdle-ness; and has, on the north side, a long pier with a flag-staff on it; and, on the south side, another pier along the shore. Near half a cable's length from the outer end of the south pier is a beacon, which stands on the outer edge of a reef of rocks stretching out from the south shore: at half a cable's length east from the outer end of the beacon, is another reef, called the Short-ness, lying also out from the south shore at about the same distance. From the Short-ness the bar crosses the harbour's mouth to within a little more than half a cable's length without the outer end

of the north pier-head. There are only two feet on it at low water, with a foot or two more within the piers. The marks for the bar are, the north side of the south pier in sight, and Old Aberdeen church, with two pointed steeples, on with the east side of the Broad-hill. Between the piers the course in is W. by S. ½ S. The channel is nearest the south pier; and thence, close along the end of the jetty, which runs out from the inner end of the north pier. At high water there are from twelve feet and a half, on neap tides, to sixteen feet at springs, upon the bar.

Upon the flag-staff erected on the north pier a flag is exhibited by day, and a light by night, as a signal when vessels may enter the harbour.

If bound into the harbour, with a South or S. W. wind, and you wish to keep as closely as possible to the south shore, steer so as to open the northernmost whale-fisher's boiling house without the north pier-head; keeping that mark on until the north side of the south pier begins to appear in sight; when you may haul up directly into the harbour. The foregoing mark leads over the south end of the bar, where there is, perhaps, a foot or two less water than on the middle of it.

To sail over the deepest part of the bar, steer in with the harbour fairly open; and, when Old Aberdeen church steeples are shutting in behind the eastern end of the Broad-hill, you are passing the bar: when in between the piers, keep rather nearest the south side, and close past the end of the low jetty that runs out from the inner end of the north pier. The pilots will then direct you where to lay your ship.

For anchoring in Aberdeen Road, the marks are, the two steeples of Aberdeen in one, and Girdle-ness S. S. W. or S. in about 8 fathoms, clean sandy ground.

N. E. ¼ N. 11 miles from Aberdeen, is *Newburgh*, a safe harbour, having about 12 feet water at common tides; but, as the bar often shifts, it should not be attempted without a pilot. In sailing from Aberdeen, go no nearer to the shore than 8 fathoms, especially a little to the southward of Newburgh.

Buchan-ness lies N. E. one third E. 8 leagues from Girdle-ness; E. N. E. and N. E. 13 miles from Newburgh; N. E. by N. 32 leagues from St. Abb's Head; N. by E. ¼ E. 49½ leagues from Tinmouth-castle; and N. ¼ E. 70 leagues from Flamborough-head. The shore from Newburgh and Buchan-ness is bold, excepting Cruden-scars, rocks above water, and the Buss, a sunken rock, which lies a cable's length off the ward of Cruden, and a little S. W. of Slain's castle. Ships from Girdle-ness, turning in the night, or in thick weather, may first stand into 25 fathoms; but, near Buchan-ness, no nearer than 30 fathoms; and, off the Ness, no nearer than 40 fathoms.

The TIDES in general on the EAST COAST of SCOTLAND.

MARINERS sailing off these coasts must be particularly careful to allow for the operation of the tide: round Buchan-ness it sets with great rapidity; and from thence south-westward, parallel to the shore, into St. Andrew's Bay, where the stream runs no longer than until the tide flows on the shore: in other places, the stream at a distance from land runs usually for some time after it changes on shore, and the difference of time of flowing is in proportion to the strength of the current and its distance from land. The greatest difference on this coast is about 3 hours. Its greatest velocity past Buchan-ness is 4 miles an hour in spring, and 2½ miles in neap, tides. From thence it decreases in strength; past Girdle-ness, the strongest stream in springs is but 2¼ knots, and in neaps 1½, and, off St. Andrew's, it is scarcely sensible; thence again it sets with accelerated force round Fife-ness.

In the Frith, the stream is easy; upon the south shore, as observed in the sailing directions, it sets west past the Bass half an hour sooner than to the north of May island; especially with S. or S. W. winds.

The tide on the shores, south of the Frith, sets to the southward past Eyemouth and Berwick to Emanuel-head at the rate of nearly one mile and a half an hour, and parallel to the shore. Its strength increases at Emanuel-head, and its course alters along the Holy

Island

Island-shore, running towards Bamburgh-castle at the rate of 3 miles an hour, in spring-tides. Between the Staples and Fern-islands it runs with great rapidity, as it likewise does into most of those harbours which have narrow entrances.

The wind alters the tide considerably; gales from W. S. W. to N. W. raise the flood higher on the shore, and cause the stream to run longer in the offing. S. E. and easterly winds have a contrary effect. Gales across the stream also alter its direction, particularly in bays and off the Frith.

For the time of flowing, and the perpendicular rising, of the tides, see the tide-table subjoined to these directions.

DIRECTIONS from BUCHAN-NESS to PENTLAND-FRITH, and for the ISLANDS of ORKNEY and SHETLAND.

THE *Skerry* or *Calk-inch*, a rock always above water, lies 8 miles N. N. E. from Buchan-ness; and, nearly midway between the Calk-inch and shore, is another rock, only seen at low spring-ebbs. Between these rocks is a channel of 12 fathoms, clean ground. Within the Calk-inch is *Peter-head*, a dry harbour, fit for small vessels only. Ships bound to the northward may, with steady N. W. winds, anchor to the southward of the Calk-inch, in 8 or 9 fathoms.

N. N. E. 8 miles from Buchan-ness, is Ratter, or *Ratrie-head*, from which runs out a ledge of rocks called Ratter-Brigs, easterly, one mile from shore. To avoid this ledge, go no nearer than 13 fathoms, or keep Moor-Mount in sight above the land of Ratter-head. This mountain is remarkably high, and appears when seen between S. W. by W. and W. by N. like a saddle. It stands inland from Peter-head, and, in clear weather, it may be seen 10 or 11 leagues off.

From Ratter-Briggs, the course and distance to Suenburgh-head, the southernmost point of Scotland, are N. E. by N. easterly, 44 leagues; to Fair-isle N. N. E. ¼ E. 36½ leagues; N. Ronaldsha N. by E. ¼ E. 36 leagues; and Kinnaird's Head, on which is a light-house, N. by W. ½ W. and W. N. W. 8 miles.

If bound from Buchan-ness through Pentland-frith, and you are 3 or 4 miles off Peter Head, steer N. N. E. 9 miles, or till Kinnaird's-head-light bears westward of N. W. in order to clear Ratter-Brigs. The course is then N. by. W. 25 leagues to Duncansby-head. Should the wind be scant, steer a little more northward; and, with it easterly, and a sea with it, you may steer nearly north; as ships, sometimes, when bound to the westward through Pentland-frith, after falling to leeward with easterly winds, are obliged to bear away for Cromarty, and so lose a fair wind. But if, by steering north, you are so far to the eastward as to fetch the Pentland-Skerries, you will, if the weather be not very thick, see the light-houses upon them, or Duncansby-head, from which they are but 3 or 4 miles distant.

When bound from Peter-head up to the Murray-frith, steer N. or N. N. E.; and keep Buchan-ness in sight, without the outermost houses of Peter-head. Then you may steer N. by W. ½ W. until you open Troup-head without Kinnaird's-head; or until Kinnaird's-Castle appears westward of W. N. W. which will clear Carnbulg-Brigs, a reef of rocks reaching three quarters of a mile from the point at the side of Carnbulg-town, lying 5 miles N. N. W. from Ratrie-head. In the night, steer N. N. E. from Peter-head, till the light on Kinnaird's-head bears N. W.; then steer N. by W. ½ W. until the light is westward of W. N. W.; you may then haul to the westward, but approach no nearer to the shore than 16 fathoms.

About N. W. by W. ½ W. 16 leagues from Kinnaird's-head, is Burgh-head. There are several rocks between Kinnaird's-head and Burgh-head, but Halliman's Scars are the principal; they lie 6 miles east of Burgh-head, and have 8 fathoms water close to them. In running up the Frith, give the shore a good berth, and go no nearer to it than 20 fathoms water in the night.

From Burgh-Head to Fort-George, at the entrance of Inverness, the coast lies about W. 7 leagues; between, is the small tide-haven of Findhorn, which lies about 5 miles W. from Burgh-head; S. ½ W. 4½ leagues from Tabert-ness; and S. E. by E. 3½ leagues from Cromarty. If bound for Inverness, and not well acquainted with it, take a pilot.

CROMARTY lies about 2 leagues N. E. by E. ½ E. from Fort-

George, and has an excellent harbour: its entrance is nearly a mile wide, the water is from 30 to 22 fathoms deep, and the shores, excepting the south point, are clean. Close to the south point lies a small rock, called the Shur, the only danger in the entrance. When in the harbour, you may shoalen your water to what depth you please on either side; but the best anchorage is on the south side, just within the entrance, in 7 or 8 fathoms. From this anchorage up to Inverbrechy is about 5 miles N. W. by W. ½ W.; here are 12 fathoms water; in the next 5 miles the water shoalens gradually to no more than 5 fathoms. Cromarty is on the south side of the entrance into the harbour.

E. ½ N. 4 miles from the entrance of Cromarty, lie the Three Kings, small rocks, about a mile from shore, which appear at the last quarter ebb. The mark for going clear of them is Captain M'Kenzie's house, which stands on a rising ground to the southward of Cromarty, open of the point on the east side of the entrance. From the Three Kings to Tabert-ness is N. E. ½ E. 8 miles. Excepting the Three Kings, the coast from Cromarty to Tabert-ness is clean. Off Tabert-ness there are some rocks. The Culloden-rock lies a mile east from the ness, with only 9 feet on it at low water.

The Frith of Tain lies to the north-westward of Tabert-ness: there is good anchorage in it with all winds but those from E. and N. E. North-west, 6 miles from Tabert-ness is the Tain-bar, on which are only 4 feet at low water; this being a very indifferent place, it is necessary for those bound up to Tain or Dornoch to take a pilot.

Courses, &c. From Tarbet-ness to Ordhead, the course is N. E. 17 miles; from Ordhead to Clyth-ness, E. N. E. ¼ E. 5 leagues; from Clyth-ness to Noss-head, N. E. by E. and N. E. ½ N. 11 miles.

Duncansby-head lies 3½ leagues N. N. E. ½ E. from Noss-head; between, is Sinclair-bay, where ships, waiting for an ebb-tide to go through Pentland-Frith, may anchor in clean ground.

TIDES. The tide of flood, which sets from the northward, diminishes in strength as it runs to the southward. Off Clyth-ness, it runs at the rate of only 3 knots in spring-tides, and 1½ in neaps. Off the entrance of Cromarty, it runs 3½ or 4 knots in springs and 2 in neaps. At Fort-George, it runs very strongly. The stream off Kinnaird's-head runs about 2 knots in springs; and, increasing as it passes round till off Peter-head, runs there at the rate of 4 knots on spring, and 2½ on neap, tides. But observe, that here the flood without sets partly on the shore; which, if not attended to, in little winds and a heavy sea, will be dangerous.

PENTLAND-FRITH and ISLANDS of ORKNEY and SHETLAND. The Pentland-Frith is that passage, or strait, which forms a communication between the North Sea and the Western Ocean, lying between the north part of Caith-ness, in Scotland, and the Orkney-islands, through which runs the most rapid tide, and with the greatest diversity, of any stream upon the coast of Great Britain. The most common passage through this frith for ships coming from or going to the westward is between the islands Stroma and Swona, and between Duncansby-head and the Pentland-Skerries. If you are to the southward, and bound through the Pentland-frith, be careful not to mistake Noss-head, which is on the south side of Sinclair bay, for Duncansby-head, (as it has a very similar appearance,) and thereby get imbayed on the east coast of Caith-ness. But, if you are at a distance from the land, Duncansby-head is easily known by a large rock, about a mile to the southward of the Head, commonly called *Johnny Groat's House*, or the *Castle of Duncansby*. This rock appears over the land like a house upon the hill, and may be seen, in clear weather, 5 leagues off.

The Tide, upon a spring, runs with the velocity of 9 miles an hour; but, upon a neap, scarcely 3. In the middle of the Frith the flood runs, full and change, until 11½, and the slack continues about half an hour; but, upon the south side of the Frith, in Gill's Bay and at Duncansby-head, it runs until 8½ only.

In sailing westward through the Frith, with an ebb-tide, keep nearer to Duncansby-head and the island Stroma than the Pentland-Skerries and Swona; but, with a flood-tide, coming from the westward, the contrary is to be observed; the flood setting to the southward, and the ebb to the northward: but, if the wind be scant south-

southerly, then, with a flood, keep close to Stroma; by which you will avoid the danger of the Pentland-Skerries and the foul ground between them.

The Pentland-Skerries lie from Duncansby-head E. by N. 3 miles; and the islands Stroma and Swona lie N. E. by E. and S. W. by W. from each other, near a league distant. From the entrance of the Frith, between Duncansby-head and the Skerries, to the north end of Stroma, is 5 or 6 miles N. N. W. ½ W.; then your course to the westernmost part of the Frith, between Dinnet-head, on the coast of Caith-ness, and Thur-ness, upon Hoy-island, is W. N. W. and N. W. by W. 8 or 9 miles; then W. N. W. ½ W. or N. W. by W. will run you clear out between the Stack and Skerry and Cape Wrath. *The Stack and Skerry* bear from Hoy-head N. W. by W. ¼ W. 3 leagues, and N. E. ¾ E. 9 leagues from Cape Wrath.

It is reported, with some degree of credit, that a very dangerous rock lies nearly North 5 or 6 leagues from Cape Wrath.

The islands of *Barra* and *Rona* lie from Cape Wrath N. N. W. 40 miles.

Two light-houses are erected on the Pentland-Skerry, which lies in 58° 43′ north latitude, and 3° 2′ west longitude from Greenwich. They stand by compass N. N. E. and S. S. W. with each other, 60 feet distant. The high light is 90 feet in height, and the low light 48 feet. They are now exhibited on the improved principle, with Argand-lamps and reflectors, which produce a very bright and conspicuous light, visible at a much greater distance than the light formerly exhibited.

The magnetic Bearings and the Distances of the most conspicuous head-lands from the above lights are as follow, viz. The island of Copinsha E. N. E. 14 miles. Roseness-head, which forms the east side of Holm-sound, N. E. ½ N. 9½ miles. The S. E. end of Barra, N. N. E. ¼ E. 3 miles. Halcrow-head, in South Ronaldsha, (which is the southernmost head of it,) N. N. E. ¼ E. 5¼ miles. And Barth-head, (the westernmost head of the island,) N. by W. 4 miles. Between this head and the light lies the Loather-rock, 3 miles from the light, and a little more westerly than the head. The island of Swona bears N. N. W. ½ W. about 5 miles. Brimness-head, or S. W. point of the island of Walls, N. W. ½ N. 41¾ miles. North end of the island Stroma, W. by N. ¼ N. 6½ miles. Duncansby-head, bears W. S. W. 5½ miles. Noss-head, in ditto, S. W. by S. 15 miles. The Little Pentland-Skerry bears S. by E. 1¼ mile. And the outermost rock of the foul ground, S. E. by E. distant 1¾ mile.

In coming from the eastward to the southward, the high light may be seen eight or nine leagues off; as can the light of North Ronaldsha; and perhaps Kinnaird's-head light may be seen at this distance, which is the only danger for shipping when falling in with Pentland-Skerry-lights. But, to make sure, approach till you are within three or four leagues of the light, so as you can raise the low light; as you cannot depend upon seeing it at a greater distance. Observe that, if you have the Skerry-lights bearing nearly on, you will be longer in distinguishing them, owing to the distance being so small between them, that the reflexion of the high light falls upon the lower, and appears like one, till perhaps you may be within three or four miles of them. In this case, you may form an angle in the course, either towards the right or left, till you make a difference in the bearing of about two points, and both lights will be seen.

In coming from the Westward, through the Pentland-frith, the lights can serve no other purpose than, when a ship is in the fair way, to keep them on the larboard-bow, which leads clear to sea, and is not such an intricate passage for shipping as going to the north-eastward of the lights; however, there is plenty of water and room through it; excepting that, in a calm, the Loather-rock, off the south end of South Ronaldsha, becomes dangerous, particularly with an ebb-tide, in coming from the eastward.

Observations on the TIDES in the Pentland-Frith and Orkney-Islands.

IN the Pentland-frith and Orkney-isles, the water flows about 8 feet with an ordinary spring-tide, and about 3½ upon a neap; though sometimes, by the wind's blowing hard from the W. or S. W. spring-tides will rise 14 feet, and neaps 6, or 6½. N. E., East, and S. E. winds, which cause lower tides, may sometimes occasion the springs not

not to rise above 6 feet, and the neap-tides 2 feet. The greatest tides are generally on the fourth day after full and change, and the smallest at the same time after quarter-day.

The velocity of spring-tides in the Orkneys, among the southern islands, in the narrow sounds, is about 8 miles an hour, and the neaps 2 or 2½; but, amongst the northern islands, the springs run, in different places, from 4 to 6 miles an hour, and the neaps in proportion: but, in the Pentland-frith, the springs run 9, though the neaps run hardly 3, miles an hour. The slacks continue upon a spring half an hour; and, upon neap-tides, one hour and a half.

The body of the flood comes from the N. W. through the Orkneys and Pentland-frith; but, upon the coast of Caith-ness, it sets along shore; although, at the distance of a league and a half, or two leagues from the land, the stream of the tide is scarcely sensible, unless it be obstructed by rocks or shoals that lie not many fathoms under the surface. During the time the flood runs, the stream gradually alters its direction from the E. towards the S. and the ebbs the contrary. W. and S. W. winds make high tides, and contrary winds the reverse.

If an island or rock lie directly in the tide-way, the stream will divide some time before it comes to it, and one part set round one side or end of the island or rock, and the other part round the opposite side or end, and will set the ship off in such a manner, that she will not come near it; so that, in a calm, a ship, which is apparently driving on a rock or island, will be set off in such a manner as not to be in the least danger. If the island be clean round, with a sufficient depth of water, the stronger the tide the less danger.

☞ *This remark is not more particularly adapted to these places than to all others where a rapid stream runs, as at Guernsey, Jersey, and the islands in their vicinity, as well as among the Milford-islands in St. George's Channel.*

After the two tides have passed the island or rock, they meet again at some distance from it. The larger the island, and the stronger the tide, the longer will be the eddy caused by the interruption of the course of the stream. Those under Stroma and Swona are the largest in the Pentland-frith.—But the eddy caused by the Pentland-Skerries, with a flood-tide, gradually loses itself in the North Sea; as the tide, which is parted by them, never meets or unites together again.

These eddies and the edge of the proper stream near the islands cause whirlpools, or wells, in form of a bell with the mouth upward. With a spring-tide and calm weather, the wells will draw in and swallow up a boat, and will turn round, but not injure, a vessel. After these whirlpools are formed, they set with the tide, and diminish gradually till they quite disappear. In blowing weather, or when the sea breaks, there are no whirlpools.

In strong springs, during the last hour or last half hour of the tide, in mid-channel, and sometimes at the distance of a mile and a half from the shore, the water will appear as if it ran over shoal-ground, and as breakers, where there is no danger. The like appears in other places, where the tide runs strongly, and begins to run narrow.

But, where the tide sets directly over a rock steep-to, that lies under water, and then falls immediately to the bottom, swelling and agitated like boiling water, it brings up with it sand, shells, and other loose bodies; and, at some distance from the rock, it acquires a circular motion, and a whirlpool begins, which is carried away by the tide till quite extinguished: another then begins, which continues till the tide cease, or the water rise or fall so far above or below the surface of the rock, that the cause ceases. There are several other places on the coast of Orkney, called Rosts; upon which, during the tide of ebb only, the sea breaks with great violence and height, even in calm weather; but they are not the least dangerous upon a flood. They rage most upon a spring-tide, and with westerly winds.

From Duncansby-head, at two hours flood, over towards Stroma, is a very hot tide, called the Boar of Duncansby, which, with an easterly wind and spring-tide, breaks very much. This is occasioned by a ledge of rocks in that direction, which lie about 8 fathoms below the surface.

Hell-ebb

Hell-ebb is another violent breaking-tide, which runs from Duncansby-head, but more to the eastward. This breaks most with an ebb and westerly winds.

There is a small ledge of rocks, some of which appear at low water, lying off from St. John's Head, called the Men of May; from which, towards Waes, or Walls, at half-ebb, a very strong tide sets over, being joined by another, which runs from the north end of Stroma: these two united are joined by two others off Redhead, the one from Swona, and the other from Cantac-head, upon South Waes. When these are united upon a spring-tide, and strong westerly winds, it is nearly impossible to pass them. They then set into the N. W.

PENTLAND-FRITH. The best passage through Pentland-frith, with the flood-tide against you, is between Duncansby-head and the south side of the isle of Stroma, or otherwise between Pentland-Skerries and the north side of that island. From Duncansby-head, the Great Skerry lies E. $\frac{1}{4}$ N. 4 miles; the north end of Stroma, N. by W. $\frac{1}{2}$ W. 4 miles; and the south end of Swona, N. by E. $\frac{1}{4}$ E. 5 miles. From the south end of Swona, the north end of Stroma is S. W. by W. $\frac{1}{2}$ W. $2\frac{3}{4}$ miles; and the Skerries S. S. E. $5\frac{1}{2}$ miles.—The course from the entrance of the Frith to a fair berth between Stroma and Swona, is N. N. W. $\frac{1}{2}$ W. 5 miles; and thence to the westernmost part of the Frith, between Dinnet-head, on the coast of Caith-ness, and Thurness, on Hoy-island, is N. W. by W. $\frac{1}{2}$ W. about 8 miles.

With a neap-tide, the stream in Pentland-frith is generally weak (less than 3 miles an hour); so that it cannot carry a vessel much out of its direct course. The spring-tides, which, when strongest, run about 9 miles an hour, must be particularly observed. As the ebb-tide sets to the northward, and the flood-tide southward, in going to the westward with ebb, keep nearer to Duncansby and Stroma than to the Skerries and Swona: and, in sailing eastward with the flood, keep nearer to Swona than to Stroma, unless the wind be scant in the southern quarter; in which case, pass close by Stroma, in order to enable you to weather the Pentland-Skerries.

The tide runs nearly 3 hours longer in the middle of the Frith than near the sides; ships, in passing through, should avail themselves of the difference: if, when coming into the Frith from the southward, the flood-tide be against you, go between Caith-Ness-shore and Stroma-isle. In going through, be careful to avoid a small rock lying about a cable's length S. S. W. from the S. W. point of Stroma-isle, which appears about half-ebb; and also a flat that runs N. N. E. a quarter of a mile from St. John's Head, in Caith-ness. Should the tide be unfavourable before you get through, you may anchor in Gill's Bay, to the eastward of St. John's Head, on clean ground, out of the tide-way.

The tide, on coming within a quarter of a mile of the middle of Stroma and Swona, divides into two branches: which, after passing their north and south ends, run to a considerable distance before they join again; ships, therefore, that do not get through the Frith before the tide runs against them, may be kept under weigh in the eddies; or may, with a flood-tide, anchor therein, on the east side of Stroma and of Swona. About half a mile off the middle of Stroma is good anchorage in 16 fathoms, where the bottom is a mixture of sand and shells. The eddy here extends about a mile eastward of the island, where the two streams, which form it, again unite. A cable's length off North-haven, on the east side of Swona, you may anchor in from 16 to 20 fathoms, in an eddy which extends a mile and a half to the eastward, the bottom smooth and rocky: hence the water deepens to the eastward. The North-haven is a narrow cove near the northernmost house on the east side of the island.

Eddies are formed on the west sides of Stroma and Swona, with the ebb, as extensive as those on the east side with the flood, if not more so; but there is no anchoring on the west side of either island. Half a cable's length from the west side of Swona, lies a rock, called the Westerbow, seen only at very low spring-tides.

Near the south end of Swona, with a flood-tide, and near the north ends of Swona and Stroma, with an ebb, are whirlpools, but not so large as to prove dangerous to ships. From the north end of Stroma, westwards, there is, during the ebb-tide, a great swelling sea, and frequently breakers, even in the calmest weather; this is called the Swelky of Stroma, and should be avoided. From the south end of Stroma,

Stroma westwards, there is also, with a flood-tide, a rough breaking sea.

In approaching Pentland-Frith from the northward, you must not approach Old-head, on its north side, within less than half a mile: for, Old Skerry lies about a quarter of a mile E. S. E. from the head. You will avoid this rock by keeping the North Kirk of South Ronaldsha in sight without Halcrow-head. The Loather is a rock which lies off the south-west point of South Ronaldsha, and is never wholly covered but at high water. It may then be distinguished by the rippling of the tide, or the breakers on the midde of it. By keeping half a mile from the shore of South Ronaldsha, when going to the westward with the ebb, and a mile from the shore, when going to the eastward with the flood, the stream will carry you clear of it. If you be so near to the land that you cannot go to the southward of it, you may safely keep the middle of the channel.—Between it and South Ronaldsha, the water, though always rough and breaking, even in the calmest weather, is deep enough for any vessel.

The course through the Frith, between South Ronaldsha, Swona, and South Walls, on the north side, and Pentland-Skerries, Stroma, and Dincet-head, on the south side, is W. N. W. ½ W. But always allow for the tide. The flood sets to the southward, and the ebb to the northward. If you meet with the flood tide before you get so far to the westward as the eddy on the east side of Swona, you may keep under-way in Liddle's Eddy, on the south side of South Ronaldsha; or, if the wind be not sufficient to work the ship, you may anchor about half way between South Ronaldsha and the Great Pentland-Skerry, the west end of the Great Skerry bearing S. by W. in 17 or 18 fathoms; the bottom a mixture of sand and shells. In keeping under sail in this eddy, and in all the other eddies, be particularly careful not to go beyond its boundary, lest you should be hurried away by the rapidity of the tide, and be prevented from fetching into it again. The boundary is easily distinguished. This eddy, or westward stream, begins before it is half-flood on the shore, and extends by degrees southward. About the fourth hour of flood, it spreads half way to the Great Pentland-Skerry; and, near to the latter end of the tide, approaches within a cable's length of the Skerry.

There is an Eddy also on the east side of Pentland-Skerries, in which you may anchor with a flood-tide. The streams which form it do not join again, but open wider as they run, until they are lost in the sea. Half a mile S. S. E. from the Little Skerry, you may anchor in 14 fathoms. You may also anchor in this eddy with the following marks: the middle of the Little Skerry on with the middle of the Great Skerry; or the east end of the Great Skerry on with Sandy-hill on South Ronaldsha; or the west end of the Little Skerry on with the hill of Hoy, and the east end of the Great Skerry on with the Wart-hill of Orfer. The ground is a mixture of sand and shells. There is also an eddy on the west side of the Skerries with the ebb; but it does not extend above a quarter of a mile from the Great Skerry.

A mile S. E. from the east side of the Great Pentland Skerry, and ¼ of a mile E. N. E. ½ E. from the Little Skerry, lies Cleta-Skerry; its top is always above the water. About half way between Cleta-Skerry and the Little Skerry lies Lotha-Skerry, a very dangerous rock, which appears at half-ebb. The water is shoal all the way between Cleta-Skerry and the Little-Skerry, though Lotha only appears above water.

Remark. In most of the eddies, especially those on the east side of Stroma and Swona isles, be sure, with a spring-tide, to have your anchor up before the ebb begins to run; otherwise, you will be obliged to cut or slip your cable, and afterwards find it very difficult to clear the land.

If, from the southward, you are crossing the east end of Pentland-frith, for Orkney, with an ebb-tide, pass near the west side of Pentland-Skerry, to avoid being carried by the stream to the westward of Swona, as there the ebb would be against you. In crossing from north to south with a flood-tide, pass as near to Swona as you can, that the tide may afterwards be more in your favour. In crossing the east end of the Frith either way with a flood-tide, endeavour to get

get into the eddies of Stroma and Swona, in order to enable you to make an advantageous use of the tide. If crossing Pentland-frith with the latter end of a tide, allow the stream to carry you as far as possible, as you will have the greater advantage from the succeeding tide.

If becalmed in Pentland-frith, and you cannot come to an anchor in any of the eddies, there is little to fear from being carried backwards and forwards with the stream. It may carry you near the islands,—it will also carry you past them. The stronger the stream is, and the longer the side of the island which deflects it, the greater will be your distance from it. Should you drive between the Great and Little Skerries with a flood-tide, the stream, if you are nearer to the Great Skerry than to the Little one, will carry you safe to the northward of all the shoals that are near them. If you are likely to drive near the Little Skerry with a flood-tide, you should endeavour to avoid it by getting to the northward, not to the southward; because the stream will assist you in the former, but hinder you in the latter case. If between Swona and Pentland-Skerries about the latter end of a flood-tide, and in so as to have the Little Skerry about a sail's breadth open of the Great Skerry, the tide will carry you near to these islands, which you must avoid by towing to the northward, until you bring them on with each other, and then you will drive clear of them.

The Course between Stroma and Swona to a Fair-way between Dinnet-head, upon the coast of Caith-ness and Thur-ness, upon Hoy-island, is W. N. W. or W. N. W. ½ W. 8 or 9 miles, which will bring you to the west entrance of the Frith: thence a W. N. W. ½ N. or N. W. by W. course will run you between Cape Wrath and the Stack and Skerries; they bear N. E. by E. from Cape Wrath 9 leagues, and from Hoy-head N. W. by W. ½ W. 8 leagues.

There are many Passages, sounds, &c. which go through the islands of Orkney, in which are a great number of excellent harbours; but, if you are not acquainted, it is best to take a pilot. In the Orkneys you may procure a pilot for the Highlands and western islands of Scotland, to the Irish Sea, to Liverpool, Dublin, &c.

After passing the Frith, when bound to the westward, there is no place, between the Orkney and the Lewis Islands, into which a stranger can put, with any degree of safety, *except*

LOCH-ERIBOL. This Loch is all clean, and lies 3½ leagues to the eastward of Cape Wrath. In going in, leave the island Haa on the starboard side, and the Whitenhead to the eastward. The Whitenhead is a low bluff point of a whitish colour, and makes with two ascents like steps: the land to the eastward is high and regularly formed, but highest in the middle. You may occasionally borrow near the Whitenhead; then run up above the island Chorrie, where there is good anchorage, for any number of ships, in 12 or 14 fathoms water. The best anchorage is athwart two rivulets that run from a hill on the west side of the Loch.

You may also anchor on the south-east side of the rock, in Camisin-bay; also in other places of shelter; as Scrabster-road, in 6, 7, or 8 fathoms, good holding-ground, and you may moor to rings fixed in the rocks. At Inchcomb, on the south-east side, ships may ride in 3 or 9 fathoms. Also, between the Rabbit-islands, in 4 or 6 fathoms, and lie land-locked by the island Rona.

East side of ORKNEY. From the south-east point of South Ronaldsha, called Old-head, the course to Copinsha-island is N. E. by E. ½ E. 13 miles; and from Old-head to Grim-ness N. E. by N. about 5 miles. Old Skerry extends, as before observed, ¼ of a mile E. S. E. from Old-head. You will avoid this rock by keeping the north kirk of South Ronaldsha in sight without Halcrow-head. Halcrow-head lies 1¼ mile N. N. E. from Old-head. Between Halcrow-head and Grim-ness, off the middle of the bays of Lyths and Windwick, you may anchor on clean ground, keeping Roseness in Holm on with, or rather a little without, Grim-ness. Between Halcrow-head and Grim-ness, the tide, during the first 4 hours of flood, runs to the northward; and, from that time to the last of the ebb, the stream runs to the southward.

N. E. ¼ N. 3½ miles from Grimness, is *Rose-ness*; between, lie the entrance of Water-sound and Holm-sound, both of which are dangerous in a gale of wind from seaward, and a flood-tide, but particularly

ticularly Water-sound. Water-sound lies between Grim-ness and Burra-isle; and Holm-sound between the north-east point of the island Burra and Roseness. Between Grimness and the entrance of Water-sound is good anchorage, on clean ground, half a mile from shore.

If, when a Vessel is coming from the South for Copinsha, there is high land in head, it is to the north-eastward of her; and, if 5 leagues to the south westward of this island, land cannot be seen farther, on the starboard hand, until she approaches nearer to it, when she will raise the island of Stronsa, &c. This remark is made, because Duncansby-head is frequently mistaken for this island, owing to a low neck of land behind the head, making its shape similar to Copinsha; but then you have all the south isles upon your starboarb-bow, and a-head, which distinguishes one from the other. The flood here, on the east coast, sets southward, and the ebb contrary. On the west of Orkney, the tides are not so regular or sensible; but observe, that the tide is 2 hours at least longer in the offing than on the shore. With a flood-tide here, and a gale of wind out from sea, it is scarcely possible for a ship to endure on the east side of Orkney, so that an ebb-tide must be taken in coming in with the islands. Between Copinsha and the main, is a tolerable passage of 3½ fathoms. The fair-way is one-third from the little island on the north-west end of Copinsha. When this passage is used by a large ship, it must be with a leading-wind.

Copinsha-Island extends about a mile N. E. and S. W. and is half a mile broad: on the south side a vessel may stop a tide about half a mile from the shore. About half-way, between Copinsha and the Horse, is a small sunken rock, on which are only 9 feet at low water, spring-tides. To avoid it, when going through this channel, keep to on either side, but rather towards the Horse; because there is deep water within 20 yards of that island. A flat extends about a cable's length to the westward, from the westernmost of the Holms of Copinsha, and a rock lies nearly ¼ of a mile eastward of the Point of Air, visible only at low water, spring-tides. Ships will avoid the shoals, on each side, by keeping a third of the distance from the Holms, and two-thirds from the Point of Air. In this passage are 3 fathoms at low water.

When sailing along the East Side of Dear-ness, be sure to keep more than half a mile from shore, as a flat runs off from the Kirk of Dearness, about half a mile E. S. E. which is almost dry with spring-tides. A little to the northward of the outer end of this flat, and S. E. from Sand-side, lies a rock, which is dry at half-ebb.

Moul-head, on the east side of the entrance of Dear-sound, lies 3¼ miles N. by W. ¼ W. from Copinsha-island; Auskery-island bears N. E. ¼ N. from it, 6½ miles; and Fair-isle bears N. E. by E. ¼ E. about 15 leagues.

A quarter of a mile E. N. E. from the northernmost part of Auskery-isle, lies a sunken rock of 6 feet at low water; and, about a cable's length from the N. W. part of the island, are three small rocks, two of which are always visible. About a mile N. E. ½ N. from the N. W. part of Auskery, and three quarters of a mile from shore, lies a rocky shoal, called Ingald, which appears at two hours ebb: between the west end of this shoal and the shore, it almost dries with low spring-ebbs. By keeping in the middle of the passage, those who go through between Auskery and Stronsa will avoid the dangers on both sides.

Rousholm-Bay, on the south side of Stronsa island, is clean ground, and a convenient place to anchor in; the west side of the bay is the safest in winter. Miln-bay, on the east side of Stronsa, is also clean ground, and convenient to stop a tide in. Off Rousholm-bay, and between Auskery and Stronsa islands, the stream, during the first 3 hours of flood, runs to the eastward; and, from that time until low water, it runs to the westward.

About two miles and a quarter N. E. ¼ E. from the S. E. part of Auskery, is *Lamb-head*, or S. E. point of Stronsa-island. From Lamb-head, the Start, or N. E. point of Sanda-island, bears N. E. ¼ E. 12 miles and a half. *Odnes-ness* is about two miles and a half N. N. E. from Lamb-head.

Above half a mile N. N. E. from Odnes-ness there lies a rock called the *Pea*; it appears only at spring-tides. By keeping Burrow-

head

head without Odnes-ness, you will go clear of it on the east side; and, to go clear of it on the north side, when going into Miln-bay, keep about half way between Odnes-ness and Grice-ness; then steer to the westward, and anchor in 4½ or 4 fathoms water; the bottom is sand and shells.

About N. E. by N. 6 miles from Odnes-ness, is *Tres-ness*, the S. E. point of *Sanda;* N. E. ¾ E. from this point lies some rocky shoals, which extend a mile and a half from the end of Tres-ness: some parts appear at low water, spring-tides. To go clear of them on the east side, in sailing northwards or southwards, approach no nearer to Tres-ness than till the easternmost houses of Newark come on with the chapel of Arstas.

The Start Point of Sanda, upon which a light-house now stands, lies nearly 5 miles E. by N. from Tres-ness; between, lies Newark-bay, in which you may anchor on clean ground, within half a mile of the shore; avoid the east and west sides of the bay. The most convenient part for anchoring is off the sand, with the house of Newark bearing W. N. W. three quarters of a mile distant.

Brides-ness, or S. E. point of North Ronaldsha, lies N. by E. ¾ E. four miles and a half from Start-point; between, is the east entrance of North Ronaldsha-frith. About a mile and a quarter S. E. ½ E. from Brides-ness, and 4 miles N. E. by N. from the Start, lies the outer edge of the middle of the Reef-dike, which thence extends N. N. E. and S. S. W. about three quarters of a mile each way; and is, at its middle, or broadest part, nearly half a mile across.—This is a sunken rock, and has on its shoalest part, that next to Brides-ness, only 5 feet at low water, spring-tides. There are always breakers on it with an ebb, and often with a flood, tide; open vessels cannot go over it without danger. When the water is smoothest, the rock may easily be distinguished by a dark-coloured ripling tide running along it; the water gradually shoalens towards it.

In sailing westward, between Sanda and North Ronaldsha, with a flood-tide, proceed through the middle of the Friths, and the tide, if the wind fails, will carry you southward of the Reef-dike. If an ebb-tide be against you in going through from the westward, keep as close to the shore of Sanda as the flats will permit; for, there the stream is weakest, and may be more easily thwarted when occasion require. If you happen to be near the south side of North Ronaldsha, and find that you cannot go to the southward of the Reef-dike, you may safely go through between Brides-ness and the rock, by keeping about 2 cables' length from the Ness in passing. If, when between the Reef-dike and North Ronaldsha, it be doubtful whether you can clear Dennis-ness, on which the light-house is erected, especially with a flood-tide, you may tack, or may come to an anchor in Lincelot-bay, on clean ground, rather than attempt going to the southward of the island, because there the flood runs directly towards and over the shoal.

Dennis-ness lies N. E. 1¾ mile from Brides-ness, and N. N. E. ½ E. 6 miles from the Start. About ½ a mile to the northward of Dennis-ness, lies a rock, called Selch-Skerry; a small part of it always above water: between this rock and the shore it is almost dry with spring-tides. The Altars of Linay extend above a quarter of a mile to the northward from the shore of the north-west part of the island. Ships, in passing by the south-east part of Dennis-ness, should give it a berth of about a cable's length. Off Dennis-ness, and thence southward, without the north end of the Reef-dike, the stream, during the first 3 hours of the flood, runs S. S. W.; and, from that time, until low water, it runs N. N. E.

About a mile northward from Dennis-ness, there is, even in the calmest weather, a rough breaking-sea with the ebb; which, with spring-tides and westerly winds, is exceedingly violent. Between this rough sea and the shore there is an eddy, during the flood-tide, in which a vessel may sometimes continue tacking until the tide is done.

OBSER-

OBSERVATIONS on making SANDA and NORTH RONALDSHA.

THE islands of *Sanda* and *North Ronaldsha* are extremely low, and the land is almost imperceptible when at a few miles distance from them. Even in summer, a clear atmosphere is uncommon.—Hence mariners have frequently been inextricably involved within the land. So violent and tempestuous indeed are the gales of wind common at Orkney in winter, that those situated in better climes may reasonably deem the report of them incredible.

The Island of Stronsa bears two remarkably high heads, the one to the southward, called Lamb-head, the other to the northward, next to Sanda, called Burrow-head. North Ronaldsha lies N. E. about 6 leagues from this head; the south part of Sanda, north-westerly, about 2 leagues; and the north and east end, called the Start, about 4 leagues.

Between this Point and Tres-ness, the southern point of Sanda, is a deep-bay, where the land cannot be seen when 2 leagues off, in the clearest weather; it is therefore often mistaken for the opening betwixt Sanda and North Ronaldsha, called North Ronaldsha-frith; but, if the Burrow-head of Stronsa appear bold, assure yourself that you are in this bay, instead of North Ronaldsha-frith; because, when in the Frith, or the opening of it, the head is sunk, unless in very clear weather, when it is seen dipping equal with the horizon. This can only serve in the day. Should you be obliged to pass through North Ronaldsha-frith, in coming from the eastward, keep mid-channel between Toftness and North Ronaldsha, till you are fairly past it; then steer N. W. by N. northerly, which will lead you north-eastward of a rock called Runnabrake, when you can shape any other course.

The Light-house upon the Start Point of Sanda, was first lighted under the direction of the Commissioners of the Northern Lights, on the 1st of January, 1806. It stands in latitude 59° 18′, longitude 2°.34′. From this light-house that of North Ronaldsha bears N. N. E. ½ E. 8 miles distant, and the Lamb-head of Stronsa, S. W. 15 miles.

The light is from oil, with reflectors, visible from every point of the compass, and elevated above the level of the sea, at high-water, spring-tides, 100 feet; of which height the building forms 90 feet: and, that it may be distinguished from all others on the coast, the reflectors are made to revolve once in every two minutes, exhibiting light one minute and disappearing the next, an effect fully sufficient for the purpose; as the light increases from darkness to full strength during one minute, and, during the next, declines in strength to total darkness.

The Light-house on the N. E. Point of North Ronaldsha, latitude 59° 24′, longitude 2° 35′ W. is intended to prevent mariners from running on shore, or upon the rock called Reef-dike to the south-westward of the light-house, from which the centre of the rock is 2½ miles distant.

The bearings from the light-house are as follow, viz. Moul-head of Papa-Westra, W. N. W. ¼ northerly, distant 15 miles; east end of the rock called Reef-dike S. by W. and west end of the same, S. W. by S. distance to the centre 2½ miles; Start-point of the island of Sanda, S. S. W. 6 miles; south end of Fair-island E. and the north end of the same nearly E. ¼ N. distant about 26 miles.

The lantern is 80 feet from the surface of the water, at high-water-mark; and it is lighted from S. W. by W. ½ W. to W. N. W. ¼ W. round to the S. E. and northward, the rest being kept dark and obscure, because there is no clear fair-way for shipping, excepting in the day, and even then dangerous; but a faint light will be seen from the lamps, unaided by the reflectors, farther West than these two points.

If Mariners happen to fall in with Burrow or Lamb-head of Stronsa, with an ebb-tide, and want to steer northward, they should steer N. E. by E at least, supposing the wind to be out from sea, until the light of North Ronaldsha bears upon the lee-quarter, when they may vary their course as convenient.

Steering

Steering from the sight of this light, be careful to allow for the tides, because the tide of ebb sets directly upon the island of Papa-Westra, and the flood to the contrary. In either sailing to the eastward or westward, half a point at least is necessary to be allowed for the offing.

The S. and E. parts of Sanda are lighted, because they are low necks of land, and the only nett for shipping on this coast. The house of Newark stands near the south end of this low land, close by the sea-side, and is the only remarkable large house thereabout. As you approach the Start-point, you raise another remarkable house called Lop-ness, which is next to the Start; coming round which to the northward, you raise the whole island of North Ronaldsha.

TIDES. On the east sides of Stronsa, Sanda, and North Ronaldsha, the stream of flood, as on the other parts of Orkney, comes from the N. W. and runs E. between Sanda and North Ronaldsha; south along the west side of Sanda, and between the Red-head of Eda and the Calf of Eda; and continues its progress through Stronsa-frith, until it loses itself in the open sea. That part of the flood which sets on North Ronaldsha divides opposite to the Kirk, about ½ of a mile from the shore; one branch of it runs northward to the Selch-Skerry, and thence eastward to the sea; the other runs close along the south side of North Ronaldsha, over the Reef-Dike-rock, and thence to the north-eastward. The stream, near the north side of Sanda, runs along Ire and Riv to Tafts-ness, from Tafts-ness to the Start, and from the Start to Tres-ness, beyond which it is scarcely perceptible. On the east side of North Ronaldsha, the stream runs mostly northward. Along the east side of Stronsa, the flood runs S. E.; along the west side, S.; from Rousholm-head to Lamb-head, the stream, for the first 3 hours of flood, runs N. E.; and, from that time until it is low water, it runs S. W. When the south-westward stream of flood has got to the S. W. part of Rousholm-head, it meets the stream of flood from Stronsa-frith, and is thereby turned S. E. towards Copinsha.

The stream in Stronsa-frith runs about 4 miles in an hour, with spring-tides; and, with neap-tides, 1 or 1½. On the north and east sides of Stronsa, the stream is scarcely perceivable, except near Burrow-head and Lamb-head, where it runs almost 3 miles an hour when strongest. On the south side of Stronsa, spring-tides run about 2 miles an hour.

In North-Ronaldsha-frith, spring-tides run about 5 miles an hour, neap-tides 1½ mile. On the south side of Sanda, the stream is scarcely perceptible, except from the Start to Tres-ness, where it runs about 3 miles an hour when strongest.

FAIR-ISLE lies about 11 leagues E. by S. ½ S. from Dennis-ness, on North Ronaldsha. It lies N. N. E. ½ E. and S. S. W. ½ W. about 2 miles, and is half a mile broad at the broadest part, which is near its north end. The land of this island is very high; and the water, within half a cable's length of the shore all round, is deep. The only place where a vessel can moor, and that only in summer, is a small cove on the east side of the island, called North-haven; it is capable of containing only one or two small vessels at a time.—Near to the north end of this cove is a rock above water, to the north end of which you must make fast. As there is a rock on the larboard-side going in, which appears at low water, you must keep in the middle of the passage. The least water in this cove is 12 feet.

The flood at Fair-isle, as at the isles of Orkney, sets in from the N. W.; it divides near to the shore on the north-west part of the island; and, running along the north and south ends of it, forms a large eddy on the east side. The stream, when strongest, runs about 6 miles in an hour; neap-tides not more than 2. It flows here, on the full and change days of the moon, at 10 o'clock. Ordinary spring-tides rise 4 feet, extraordinary springs 6, and neap-tides seldom more than 2 feet.

West side of ORKNEY. On the west side of these islands, mistakes cannot so readily happen in making the land as on the east; because Hoy-head, the first to be made coming from the westward, is a remarkable high cape or promontory of land, and forms one side of Hoymouth, which leads into Strom-ness, a commodious and excellent harbour; the best for ships bound westward, and the place of greatest resort for all strangers.

In sailing past Hoy towards the north-eastward, the only danger is a rock, called North-shoal, which you will see in its proper place in the chart,* relative to this description. There is a fair-way for ships through the sound, called Enhallow-sound, formed betwixt the main and the island of Rousay, but takes its name from the island which lies in the middle. This island, in coming in, must always be kept on the larboard-hand, and a pilot is highly necessary; but, in case of emergency, keep mid-channel as near as possible, or rather to the island-side; and, *when within, a boat will not be wanting, if a signal* be made.

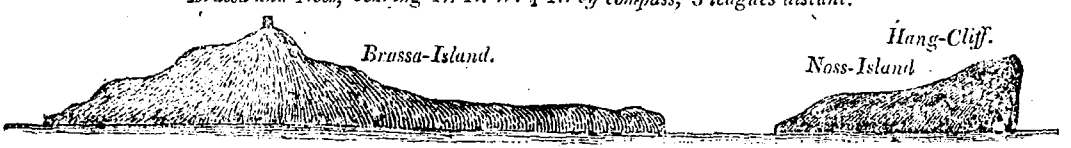
About 6 miles northward of Enhallow-sound, you open Westra-frith, an inlet for any ship, and plenty of room to work to windward.—There is a ridge of rocks, called the Skerries of Skea, on the Westra side. To avoid them, strangers ought to tack ship by the time they guess themselves half over from the Rousay side, which forms the other tide of this frith, and is quite bold; insomuch, that they have nothing to fear but what is visible. With the assistance of daylight and a good chart, they may come in from the westward through here, and out to the eastward, as also from the eastward out westward, without the aid of a pilot, only attending to the tides. All ebbs set to the westward and northward through the islands of Orkney, and the flood contrary.

SHETLAND. Sumborough or Suenburgh Head, the south point of Shetland, lies N. E. by E. 7 leagues from Fair-isle; and N. E. ¼ N. 43 leagues from Kinnaird's Head. From Suenburgh Head, your course to Mousa-island is about N. E. ¾ E. and the distance 11 miles: between are several inlets, which are only frequented by small vessels *in the summer time: the first is East Voe, in which you may anchor* in 3 or 4 fathoms water. About 3½ leagues to the north-eastward, there is an inlet a mile wide, in which there are two bays, called Lewinwick and Sandwick, where vessels may ride in 7 or 8 fathoms water. Within Mousa-island there is a small inlet, called Aith's Voe, but there is not more water in it than 10 or 12 feet.

From Mousa-Island to Brassa-head, the course and distance are N. E. ½ N. 7 miles. The entrance of Brassa-sound is easily known by the islands Brassa and Noss: the former is remarkably high in the middle, and goes sloping to the westward; but, to the eastward, it ends with a perpendicular cliff. The Isle of Noss has an acclivity from the west towards the east, and terminates with a high cliff that hangs over the sea, and therefore is called Hang-Cliff. Its latitude is 60° 8′ North.

* These are the remarks of Mr. George Funson, Branch-Pilot, of Kirkwall, Orkney, who has executed a large correct chart, from an actual survey, which exhibits the whole of these islands, &c. at one view. This chart is now published by the Proprietor of this work.

Brassa and Noss, bearing N. N. W. ½ N. by compass, 3 leagues distant.



BRASSA or BRESSAY SOUND. Being bound into Brassa-sound, you may run, without fear, round the west side of Brassa-island into the sound, the entrance of which is half a mile broad; and run in N. E. by E. till you open *Lerwick*, then N. by E.; after which, run up and come to an anchor off the old fort, in 8, 9, or 10, fathoms, where you will be land-locked; you will then have a little island called

called the Holm of Cruester N. or N. by E. and the old platform, or fort, W. N. W. or W. by N. This sound is 3 miles in length. The entrance is a quarter of a mile broad, deep water and clean, without danger. This is a harbour of the greatest resort in Shetland, as being well sheltered from all winds, having good anchorage, and being sufficiently large to contain a fleet of ships of war. It has been the the resort of the English and Dutch white herring-fishery. But here, as in the Orkney-isles, is little to be purchased except poultry, eggs, milk, and fish, which are in great plenty. Many of the inhabitants speak Dutch.

NORTH-SOUND. If you are bound out to the northward, through the North-sound, (which will not be prudent to attempt with a ship of above 16 feet water, and then not without an inhabitant as a pilot,) keep the main land on board, which is bold, till you have passed the small island or holm, called Cruester: for, mid-channel from that holm lies the Loofabar, a sunken rock, which is one mile from the town; after you have passed this rock, you will observe, that, in the first narrows, which is a little more than a quarter of a mile over, is a middle ground of 15 feet water, though on each side are nearly 3 fathoms; but it is best to keep towards the main, it being steep-to. *After you have passed this narrow*, you open a bay on either side, and have another strait to pass, little more than two cables' length over: keep close to the westward, and very near the small island called Scotland, to avoid a ledge of rocks that runs out from Brassa, half-channel over. Here are about 3 fathoms at low water. After you are clear of these dangers, steer E. by N. or E. N. E. to sea, leaving the Boesters to the southward and Green-holm to the northward of you. This passage is not to be attempted without a breeze and a leading wind.

The Sound of Bressay, or Lerwick Harbour, has been surveyed by an ingenious officer, Mr. Jos. Foss Dessiou, of the Royal Navy; from whose survey, published by the proprietor of this work, we have copied the following directions.

"The south entrance is bold; the only dangers known are laid down in the chart, with the mark to lead clear of them. You pass the shoal on your larboard side, with the leading mark on, in 8 fathoms water. You may anchor any where before the town in 8 or 10 fathoms, or run past Northness and anchor westward of the Loofabar in 5, 6, or 7, fathoms, fine clear ground and good for holding.

"To sail from Lerwick, through the North Sound, keep nearest to the main, till you have passed the Holm of Cruister, to avoid the Loofabar. Off the point of Hogan the water is shoaler than on the main side. This point is the S. E. point of the narrows. When through, sail out between the islands Beoster and Greenholm, leaving the sunken rocks which lie off the latter on the larboard side.

"It is high water, on the full and change, at three quarters past nine o'clock; spring-tides flow 10 feet, and neap-tides only 5 or 6 feet. The stream runs very slowly in the harbour."

Upon the N. E. side and north part of the island of Shetland are several other good harbours, four of which lie between the isle of Brassa and Mull of Eswick. Deal's Voe in the southernmost; then Laxfrith-Voe, Wadbester's-Voe, and Catfrith-Voe. Coming from the northward, and having passed the Out-Skerries, haul in S. W. by W. 13 or 14 miles for the Rumble; then W. S. W. 10 miles towards Eswick-Mull, which will lead you between the House-stack, a high round rock, and the Green-holm, a small island. (These are about 2 miles distant from each other, and between them are 10 fathoms water, clear on either side.) Then haul up W. N. W. for an island lying near the main, and seemingly joined, called Glit-ness, by which you will avoid a rock, called the Toagrode, a half-tide rock, which lies N. by E. three quarters of a mile from Kibester's Point, which is the south point into the four Voes, as Glit-Ness-island is the northernmost. These voes are all clean, and good anchoring ground.

The FOUR VOES. Deal's Voe lies in S. W. by W. one mile and a half; and you may anchor in from 10 to 5 fathoms water, mid-channel: the higher up, the less water.—Lexfrith-Voe lies W. S. W. or S. W. by. W.; the anchorage, &c. is the same.—You may anchor in Wadbester's Voe in 7, 5, or 3, fathoms; this Voe lies W.—But Catfrith-

Catfrith-Voe is the best by far, and will contain upwards of 100 sail. You may anchor in any part of the Voe in 7, 6, or 5, fathoms. The course in will be from N. to N. N. W.

OTHER HARBOURS. Besides these harbours upon the main island of Shetland, to the eastward are several others, upon the island of Yell, two upon the island of Unst, (the north-easternmost of Shetland,) and in the Out Skerries is a good harbour for small vessels.

N. E. 20 miles from Noss-island, or Hang-cliff, lies the outermost of the Skerries; and, from the Out-Skerries to Clibberstak-isle, off the N. E. point of the island Unst, is N. ½ E. and the distance 19 miles. The water, on the east side of the Shetland-isles, is very deep, from 120 to 150 fathoms, within 2 leagues from the shore: in 35 or 40 fathoms you will not be more than one league from the shore.

The tide flows, on the change and full days of the moon, at half past 9 o'clock. Spring-tides rise 6 or 7 feet, and neap-tides rise 3 or 4 feet.

WEST SIDE OF SHETLAND. To the N. W. of Sumborough-head lies Fitfill-head, which is a very high land, as are most parts of Shetland. Between, is an anchoring place, called Quendal-bay, before which lies Cross-island; you run in N. E. between this island and Fitfill-head, and anchor in 8 fathoms on the west side, sheltered from all but S. S. W. S. W. and W. S. W. winds. To the eastward of this, and between Scate-ness and Sumborough, is another small place, called West Voe, where you may anchor in 7 or 8 fathoms. The entrance of Cliff-sound is 8 or 9 miles to the northward of Fitfill-head: go in between the islands of St. Ronan and Havery. This sound lies N. by E. 7 or 8 miles in length. Having-House-island to the westward, and Cliff-hills upon main land to the eastward, there is good anchoring, from 15 to 5 fathoms water, over towards House-island. Through this sound is a passage for small vessels to Scalloway, but for no other, as there is a bar between Tondra-island and the main land of 2 fathoms water.

The best channel into Scalloway is between Burra-island and Oxna and Papa islands. The course and distance from Fitfill-head to Oxna-island are N. N. E. ¾ E. 13 miles. Bring Scalloway-castle E. by N. ½ N. and it will then be just open to the southward of Green-island, which is high and round: keeping it thus will lead you between Green-island and the small island called Merry-holm, which you must leave on the starboard side. There are 4 fathoms water between these islands, which lie near together. After you have passed them, run in and anchor before the town, in 4 or 5 fathoms water. You may also go in to the northward of Oxna and Chanes islands, between them and the island of Heldazoo, which you must leave to the northward, as well as the island Longa. After you are passed Longa and Papa, which must be left to the southward, steer east, and leave three island-rocks on the starboard hand, which lie to the northward of Green-island. After you are past these rocks, stand to the southward till you open the castle; then run in and anchor as before. You may also go to the northward of Heldazoo-island, leaving the Sandistura-rocks to the northward. These island-rocks lie N. N. W. nearly one mile from Heldazoo. Then leave Longa-island to the southward, and proceed as before.

VALLEY-ISLAND-SOUND. Valley-Island-sound bears from the entrance of Scalloway N. W. 9 miles; it is a good harbour, and has two entrances into it. The west sound is difficult to strangers, as a rock lies in the middle; therefore, it is best to go into the east sound. Steer in for the S. E. of Valley-island, which is high and bold; and, upon the main land, about a mile to the eastward, stand the ruins of an old round castle; this castle stands very high, and is an excellent mark to know the land by. In sailing in, leave Valley-island to the westward, and the rock called Flass-island, to the eastward; then steer N. N. W. into Valley-sound; in which you will observe that Longa-island must be left on the starboard side; then haul to the northward of the island, and anchor in 9, 7, or 6, fathoms. But do not anchor too near the north shore, by which you will avoid a sunken rock that lies there.

GRUETING-VOE. Just to the eastward of Valley-island lies Grueting-Voe, another excellent harbour, where you may anchor, land-

land-locked, in from 14 to 5 fathoms water. If you are bound in, steer as before between Valley-island and Flass-island towards Green-head, which, with Valley-sound, you must leave to the larboard, and the old castle upon the starboard side. When you are the length of Green-head, you will see the harbour open; the entrance is deep water, 20 or 18 fathoms. After you are in, run up N. E. or N. E. by N. and anchor where you please.

If, with a westerly wind, you should be imbayed in St. Magnus's Bay, and cannot get out, the only resource you have to save the ship is, to run in between Muckle-Roe-island and Vamantree-island, through Swarbuck's Mine, which is an inlet to several harbours; and you may anchor any where within these islands in from 20 to 15, 9, or 8, fathoms.

N. W. ¾ N. from Fitfill-head, nearly 8 leagues, lies *Fula* or *Foul island*.—This island is very high, and foul round about, especially the north end. S. E. 4 miles from it, lies a ledge of sunken rocks, (called Haverdegrind,) which has but 4 feet water. These rocks lie N. W. ¾ N. 6½ leagues from Fitfill-head, and W. by N. from the southern entrance into Scalloway, 6 leagues.

The Tides flow here, full and change, 9 hours, or 9¼; and rise upon the springs, 6 or 7 feet; and, upon the neaps, 4 or 5. On the east coast, is very deep water, 120, 140, and 150, fathoms, within 2 leagues of the shore; and you will not be above a league from the shore in 35 or 40 fathoms.

SAILING-DIRECTIONS for the Coasts of FRANCE, HOLLAND, and GERMANY, from CALAIS to the SKAW-POINT, including the Rivers ELBE and WESER.

DESCRIPTION of the BANKS and NAVIGATION off the FRENCH COAST, between CAPE GRISNEZ and OSTEND.

THE coast of France, from Calais to Ostend, is flat, and bordered with sandhills throughout the whole length; but the objects on shore may be seen from a considerable distance. It is all along bordered with sand-banks, of which a description is subjoined.

The first bank on the coast is within, or rather to the E. N. E. of, Cape Grisnez. It is called the *Auclin Bank* or *Banc la Ligne;* is two miles and a quarter in length, and has, as heretofore mentioned, from one to five fathoms on it at low water. Vessels may stop a tide near the bank, in from 10 to 17 fathoms, good ground.

The next shoal to the northward is called the *Quenois Bank*, the inner side of which lies north a large mill from *Blancnez;* extending thence, for some distance, N. W. by N. and lengthwise to the E. N. E. deepening, in that direction, from 2 fathoms near the end to 6 and 9 fathoms.

Waldam lies 5½ miles to the eastward of Calais*; the land between is low; several small sand-hills appear in hummocks. On each side of the church, which is flat, with a little spire-steeple, stands a windmill and several farm-houses.

About 3 miles eastward of Waldam, is Oye-church; it has a spire-

* For directions for Calais and Calais-road, and thence to the westward, see page 76.

steeple, is larger than that of Waldam, and may be known by a windmill a little to the westward of it.

GRAVELINES is 11 miles E. by S. ¼ S. from Calais, and 2½ miles to the eastward of Oye; its church has a tall spire-steeple. This town may be known by two windmills, one to the east, and the other on the west, side of the town. In approaching from the sea, the town appears like an island. The harbour is dry at low water. There are *two beacons, which, when on with each other, will lead between the* jetties. A little to the eastward of the town is an old monastery.

The marks for anchoring off Gravelines, to the westward of the Banks, are, Gravelines South, and Calais cliff W. by S. in from 15 to 10 fathoms at low water.

About 5 miles to the eastward of Gravelines is Old Mardyke; this place may be known by its low, flat, square, steeple, with several other steeples near it. New Mardyke, or Mardyke-harbour, is 2½ miles farther eastward, and has a spire-steeple.

DUNKIRK lies 21 miles E. by S. ½ S. from Calais; about 2½ miles eastward of Mardyke-harbour; and about 10 miles E. by S. from Gravelines. This town may easily be known, when coming from sea, by its square steeple, which is the highest of the kind on this coast, and may be seen, in clear weather, 5 or 6 leagues off. When approaching towards Dunkirk, you will, at about 4 leagues distance, raise the Stadthouse, which is a large square building, with a small spire, near the church. The directions for the harbour will be found hereafter.

Between Gravelines and Dunkirk there is a high land, up in the country, called *Mount Cassel*, which, in clear weather, may be seen from sea, and distinguishes this part from every other along these coasts.

NIEUPORT lies 15½ miles East of Dunkirk. It has several steeples and mills, appearing from sea like a fleet of ships; but the great church-steeple, which is square, with a turret on its top, is larger and appears more conspicuous than the rest.

One mile and a half to the E. N. E. of Nieuport is *Lombardzyde*, with a small spire-steeple; and, one mile farther, in the same direction, is Westhende, with a spire-steeple; two miles to the north-eastward of Westhende, is Middlekirk, with one similar. To the N. E. of Middlekirk is the remarkable place called the Hole in the Wall; two miles eastward of the Hole in the Wall is Fort Albertus; a square building, with a mill standing by it; and, one mile eastward of Albertus, is the town of Ostend.

OSTEND lies 10 miles E. N. E. of Nieuport, and appears at a distance like an island; it has a church with a large spire-steeple; a town-house with a large square tower on it; a high light-house, like a stone beacon, and three wind-mills. Two of the mills may be seen very plainly, one at each end of the town; but the other seems to stand in the middle of it, and therefore cannot be so readily discerned.

FLEMISH BANKS, &c.—*Calais-bank*, (sometimes called *Calais-Cliff-Bank*) is a shoal, about one mile in breadth, extending E. N. E. and W. S. W. 3 miles and a half. On its shoalest part, which is nearly in the middle, are not more than two fathoms and a half. This part, which is a coarse gravel intermixed with stones, is a mile in length, and the sea breaks very heavy on it before low water. The marks for the north-east end of the shoalest part are, Gravelines-steeple S. S. E. about 11 miles distant, and Oye or Dasan-steeple S. ½ E. 10 miles. Those for the south-west end of the same are, Gravelines-steeple S. S. E. ¾ E.; Oye-steeple S. ¾ E; and Calais-steeple S. W. ½ S. On the extremity of the south-west end of the shoal are 13 fathoms, with Calais-steeple S. S. W. ½ W.; Oye-steeple, S. S. E.; Gravelines, S. E. by S.; and Calais-cliff, S. W. by W. ¼ W.

In the year 1797, his Majesty's ship Glatton grounded on this bank, nearly at low water, with Gravelines-steeple bearing S. S. E. ½ E.; Calais S. W. ½ W.; the outer part of Calais-cliff, S. W. by W. ½ W.; and the South Foreland, N. W. by W. in 20½ feet water.—Just before the ship touched, there were from 17 to 8 fathoms water; and, so soon as it had passed over the bank to the northward, the water deepened from 7 to 18 fathoms; then the cliffs of Calais appeared

peared with the westernmost part open to the westward of the highland thus:

About two cables' length to the westward of the Glatton, the Pearl frigate touched the ground. The ebb-tide sets rapidly towards the cliff to the S. W.

The Polder or Pollaert Bank, a shoal of from 10 to 14 feet water, lies with Calais W. S. W. 17 miles, and Dunkirk S. S. E. 12 miles. It is between 2 and 3 miles in length from N. by E. to S. by W. is steep and therefore dangerous. The bearing and distance from the Goodwin light are S. E. 24 miles.

In running into Gravelines Pits, between the Polder and Calais Bank, observe not to bring Gravelines steeple to the eastward S. by E. as keeping it thus will carry you over the N. E. end of the latter bank in 7 or 8 fathoms; but, with it S. S. E. you would run on the shoalest part in 2 fathoms and a half.

The Cliff Bank lies a league to the E. N. E. of the Polder, with Calais bearing W. S. W distant 22 miles, and Dunkirk South 12 miles. It extends N. E. and S. W. for 3 miles, and has from 5 to 13 fathoms on it at low water. The least depth is nearly on the middle of the bank.

Within this bank to the S. W. lies another, namely,

The Out Ruttinge. The east end of which lies with Calais W. S. W. ¾ W. 17 miles, and the entrance of Dunkirk S. S. E. 9 miles. It is about 6½ miles long from W. S. W. to E. N. E. and has from 3 to 7 fathoms on it; excepting that, near its south end, there is a shoal place of only 2½ fathoms at low water.

The Hind Ruttinge. This bank lies at a small distance within, and parallel to, the Out Ruttinge. It is about 5 miles in length, and has from 4 to 8 fathoms on it. Between the two banks are 6, 10, and 12, fathoms.

The Dyck is a long sand within the former, extending 11½ miles E. ½ N. and W. ¼ S. The east end lies with Dunkirk S. S. W. 9 miles, and the west end with Gravelines S. S. W. 6 miles. At four miles from its west end it shoalens to only 2 feet at low water; and, at two miles from the east end, to one fathom and a half. On other parts there are from 3 to 6 fathoms. The distance between this bank and the Hind Ruttinge is about one mile, and the channel has from 10 to 13 fathoms.

The Hind Rateel. Within, and nearly parallel to, the eastern half of the Dyck, lies the Hind Rateel. The eastern end lies with Dunkirk S. S. W. westerly 7½ miles. The sand, extends thence West, 6 miles, and has a narrow channel between it and the Dyck. Near its west end are only 3 feet; but, farther eastward, are 4 and 6 fathoms. The Dyck lies about a quarter of a mile on the outside of this bank.

The Breedt or Broad Bank. This bank is of very irregular breadth, and extends, with its inner edge nearly parallel to the coast, for about 19 miles.

From the west end, on which there are 3½ and 4 fathoms, Gravelines bears S. W. by S. distant 5½ miles; a mile and three quarters thence to the eastward there is only one fathom. The breadth of this part is not more than half a mile; but, towards the middle, it increases; and, at its broadest part, which is nearly north of Dunkirk, it is a mile and a quarter broad.

The eastern part branches out into two banks distinguished by the names of the Buyten Breedt (the outer) and the Binnen Breedt Bank. On the eastern parts are two and 3 fathoms, excepting at 7 or 8 miles from the end, where there is a spot of only 4 feet, between which and the extremities are several others of one fathom and one fathom and a half. From this end, on the Buyten Breedt, Nieuport bears nearly S. S. E. 5½ miles distant.

The Geere. Without the eastern part of the Breedt bank, nearly N. E. 3 leagues from Dunkirk, lies the middle and shoalest part of the Geere Bank, having 3 fathoms over it. This bank is about 3½ miles in length, and lies close on the outside of the Breedt Bank, commencing at the distance of 5 miles and a half from its eastern end.

Rateel or Cull Bank. This bank lies nearly east and west from about a mile without the east end of the Geere and Buyten Breedt Bank. Between are from 9 to 14 fathoms. On the middle of it are only 4 feet of water; and, from this part Nieuport bears S. S. E. easterly, 9 miles distant. Its length is 8 miles; depths variable, from 2½ to 6 fathoms.

Nieuport Outer Bank. This, as denoted by its name, is the northernmost of the shoals lying off Nieuport. The middle of it lying with Nieuport S. by E. 12 miles distant. It extends nearly E. and W. 3½ miles; and has, on its western part, 5 fathoms. On the other parts are from 6 to 9 fathoms. It lies about two miles and a half from, and nearly parallel to, the Rateel. Between are 14, 15, and 16 fathoms.

We shall now return to the southward, and commence a description of the inner banks, beginning with the Splinter and Snaw, which form the south side of the entrance to the road of Dunkirk.

Splinter and Snaw. These banks, which lie at the distance of 2½ miles from the shore of Mardyck, form the south side of the channel to the *Road of Dunkirk;* as the western part of the Breedt Bank forms the north side of the same. The west end, or *Splinter*, which has a black buoy upon it, lies N. E. by E. 5¾ miles from Gravelines, and at the distance of two miles and a half N. E. ½ N. from Gravelines point. To the west is a flat of 5 and 7 fathoms, connecting with a shelf, which stretches over from Gravelines to two miles from shore, and upon which are 3, 4, and 5, fathoms.

The banks, or rather bank, extend about 2¼ miles E. S. E. and have a black buoy upon the eastern extremity, also another, nearly in the middle, on the north side of the sand. There is likewise a buoy upon the southern point of the Snaw a mile to the W. S. W. of that on the east point of the land. Between these banks and the shore there is good turning room, and a depth of 8 and 10 fathoms.

Brak Bank, called, also, *Hill's Bank.* E. S. E. a large half mile from the buoy on the east end of the Snaw, lies a white buoy on the western extremity of the Brak or Hill's bank. Between is the entrance of the Road of Dunkirk. The bank thence extends E. ¾ S. 7 miles. The middle part, at about N. N. E. of Dunkirk jetties, nearly dries at low water; and, farther eastward, are but 3 or 4 feet. Near the west end are 3 and 4 fathoms. This bank forms the north side of the channel from Dunkirk towards Nieuport, the boundary of which is shewn by a white buoy on the inside near the east end.

Smal Bank. At the back, and to the eastward of, the Brak Bank lies the Smal Bank, which continues to form the north side of the channel to Nieuport, it lying between the *Binnen Breedt Bank* and shore. The west end, which has 4 fathoms over it, lies 5 miles down from the east end of the Brak. The sand is nearly 12 miles long, and has on its east end 5 and 6 fathoms. The shoalest part is that nearest the end of the Brak, where there is less than one fathom; and there are, also, some patches of 1¼ and 2 fathoms to the eastward. The east end lies with Nieuport nearly S. E. 2 leagues distant, and 3 miles from the nearest shore.

The Trapegeers or Cams Bank lies to the eastward of the Brak Back, stretching off to the distance of two miles from shore. It has a black buoy upon its N. W. point, between which and the white buoy on the east end of the Brak lies the channel between Dunkirk and Nieuport. Near its extremity are only 6 feet at low-water.

The Broers or Brothers Sand lies to the eastward of the Trapegeers, and stretches from shore to the westward of Nieuport for nearly 6 miles. On its N. W. point are 4 fathoms, at the distance of about 2 miles from the land. At a little distance within there is only one fathom. Between this and the Trapegeers vessels may anchor in from 5 to 13 fathoms.

Stroom Bank. Nearly in a line with the Smal Bank, to the eastward, lies the western part of the Stroom Bank. This bank is about 4 miles long from west to east, and about one mile in breadth. It has but six feet on its shoalest part at low ebbs. On the west end are 4½ fathoms. This end lies with Nieuport S. E. by S. 4 miles distant. Between it and the end of Binnen Breedt Bank is a passage of 9 fathoms, three quarters of a mile in breadth; with good anchorage within, in the road of Nieuport.

Middelkirk

Middelkirk Bank. This bank lies nearly parallel to the shore, between Nieuport and Ostend, at the distance of a mile. On the west end are 4 fathoms, on the middle only one fathom, and on the eastern side 2 fathoms and a half. There is a passage between it and the shore. Between it and the Stroom Bank there is, also, a passage of 4½ and 5 fathoms.

The Boone Land lies to the N. E. of the Stroom Bank, and better than a mile without Middelkirk Bank. It is about 3 miles long and one broad, with 2 and 2½ fathoms on it at low water. Between it and the Stroom is a passage of 5 fathoms, leading to Ostend.

Neuge Vams Bank. Without the Boone land, leaving a passage between of 7 fathoms, this bank extends E. N. E. and W. S. W. nearly 3 miles, with 4 fathoms upon it. The N. E. end joins the Witter Bank hereafter described. The S. W. end lies with Nieuport nearly S. S. W. distant 6½ miles, and Ostend E. S. E. 7 miles.

Lastly, N. W. by W. from the Entrance of Ostend lie two little banks, not hitherto described, both of which lie to the eastward of the Boone Land. The first of these extends about a mile and a half from E. S. E. to W. N. W. and lies E. S. E. of the Boone Land, having 2 fathoms and a half over it. The second is a smaller bank of 2 fathoms to the south eastward of the former, with Ostend lighthouse S. E. ¼ S. 2½ miles distant.

DIRECTIONS for SAILING from GRAVELINES to OSTEND.

IN sailing from the westward for Dunkirk-road, observe that, when Gravelines steeple bears S. S. W. you will be abreast of Gravelines hook, on which there are 4 fathoms at low water. The marks here will be Gravelines steeple S. S. W. and St. George's spire-steeple, which is to the eastward of Gravelines steeple, bearing S. ¼ W.

The channel hence, as before-mentioned, lies between the Breedt Bank on the north, and the Splinter and Snaw on the south, side. At the entrance of the channel between these sands is a bar-flat of 6 and 7 fathoms, called the *Traversin* or *Geere.*

The course and distance from the above-mentioned point to this flat are E. by N. 2 miles and a half. The channel within it is nearly a mile wide, and has a depth of 11, 12, and 13, fathoms. You may therefore either sail in, steering E. S. E. ½ E. 3½ miles; or turn in by the lead according to circumstances. The Brake is so steep that you should not approach it to nearer than 10 fathoms, but you may stand in towards shore to 5 fathoms.

With Gravelines steeple nearly S. W. by W. ½ W. and Old Mardyck steeple south, you will be abreast the first black buoy, and may thence steer along the edge of the Splinter and Snaw, leaving the other black buoys on the land or starboard side; or turn in until Bergues or Wynoxburg is open to the eastward of New Mardyck tower, or until Mardyck tower be on with the west jetty or pier-head. You may then haul in, between the Brak and Snaw, directly for Mardyck pier-heads, until you have shot within these banks, which will be known by the buoys, and deepening of the water. You may then steer E. S. E. or by the lead, into the road at pleasure.

The Road lies at the distance of a mile and a half northward of the town, extending with the Brak bank for nearly 5 miles. Ships may anchor with the great steeple on with the fort, and Gravelines steeple about a ship's length without Mardyck beacon, in 9 fathoms; or, with the jetty S. W. at half or three quarters of a mile distant, in 6 or 8 fathoms good ground, being clay and sand; or further westward in 6, 8, or 10 fathoms, it shoaling thence gradually to the shore.

To sail into the Harbour, bring the innermost beacon a handspike's length to the eastward of the outermost; and steer in that direction, close to the eastern beacon, till you get into the channel between the jetties, which will carry you safely into the harbour.

To sail from Dunkirk-Road to the Eastward, or to Nieuport, steer along shore by the lead, borrowing to the main, that side being more gradual in its ascent than the other; continue to go on thus until Bergues (or Wynoxburg) steeples come within half a ship's length of the west side of Zuytcoote or Southcote steeple; and keeping them so will lead directly out between the white buoy on the east end of the Brak, and the black buoy on the end of the Trapegeers or Cans bank. In this passage there is not less than 4 fathoms at low water; but, so

soon

soon as the water is found to deepen to 9 or 10 fathoms, you will be in the eastern channel, and may haul up S. E. by E. till the water shoalens to 7 or 6 fathoms on the Trapegeers or Cams bank; and thus, edging off and on the Cams and Broers banks, or steering outwards into 10 or 11 fathoms, on E. ½ S. or E. ¾ S. course, for about 3 leagues, will carry you to Nieuport.

NIEUPORT. Across the mouth of Nieuport harbour is a bank, extending from the E. side of the harbour a league to the eastward. It is dry at half ebb, and has but 8 feet over it at high water. To enter the harbour, sail in from the west to the southward of this bank, between it and the land, until the inner beacon comes even with or to the eastward of the outer one; then run in mid-channel, directly by them, between the two heads.

Within the entrance are buoys on both sides of the channel, between which you may steer up to the town. The harbour has 13 feet water at common tides, but is dry at low water.

Vessels may come directly in from sea, for Nieuport, with the town S. by E. over the outer bank, in 6 or 7 fathoms; the Ratcel or Call Bank, in 5 or 6 fathoms; and the Stroom bank in 3 or 4 fathoms; at low water.

OSTEND. Ostend, as before-mentioned, lies 10 miles E. N. E. of Nieuport. To sail into the inner road of this place, with a ship drawing 15 feet water, you must wait until half flood; then bring the town-house S. E. and steer with it so, until you are near the Middlekirk bank, in 7 or 8 fathoms: then steer to the eastward until the town bears S. or the middle mill is just open to the southward of the town-house; you may then anchor about three quarters of a mile from shore in 6 or 7 fathoms at low water, soft ground.

The Marks for anchoring in the Outer Road are, the steeple S. E. or the middle mill on with the town-house, and Nieuport steeple just within a large sand-hill, bearing W. S. W. ½ S. where you will lie about 3 miles from shore, in 7 or 8 fathoms at low water.

In June 1802, the French minister of the marine gave notice to navigators, that the lighthouse at Ostend was re-established. It is situated to the north of the town, at the distance of fifteen toises from the bottom of the Dyke, and of 110 from the western extremity of the port. Its elevation, above the level of the sea, is 80 feet.

There is generally a pilot vessel lying at sea, with a blue flag hoisted, in order to put pilots on board those ships which want them; and, at tide-time, flags are hoisted on shore, which have the following significations: a small blue flag when 14 feet water is on the bar, a large blue flag when there are 17 feet, and a red flag when there are 24 feet.

If the weather prevents a pilot from coming on board, and the wind blows hard from the northward, so as to compel you to run for the harbour, sail in about S. with two flag-staffs on the ramparts, on the west side of the harbour, on with each other, until abreast of the east pier-head. No attention need be paid to the great lighthouse: In the night a light is hoisted on each of the flag-staffs at tide time, to answer the purpose of the flags by day. Be careful not to open the farthest light to the eastward of the other, lest you be carried by the flood stream, which sets strong to the eastward, either against the east pier-head, or eastward of it. Each of the pier-heads has on it a pole, with a basket on its top.

At Ostend, the tide flows, on the new and full days of the moon, at half past 12; but the stream, about 2 miles from shore, runs to the eastward until 4 o'clock. At the mouth of the harbour the tide rises 18 feet; and there are 6 feet at low water.

The Spanish Sand-hills, about one mile to the eastward of Ostend, are somewhat higher than any other part of the land thereabouts.—Three miles eastward of them is a large sand-hill, which appears of the same height; and 3 miles eastward of this sand-hill is a church with a square steeple; to the eastward of which, about 3 miles distant, lies Blankenburg, which has a beacon, a church with a square steeple, and a mill to the S. W. of it. At this place a great number of boats lie hauled up on the sandy shore. In coming towards it from sea, you will see the large spire-steeple of Bruges, which is about 7 miles up the country. The coast from Ostend to Blankenburg lies E. ½ N. about 9 miles.

Sluys. About 8 miles E. ½ N. from Blankenburg is the entrance of

of Sluys, where there are two bluff steeples and a grove of trees.—Between Blankenburg and Sluys are several other bluff steeples, and one spire steeple.

When sailing from Ostend to the Swin of Sluys, keep along shore within the sand called the Hardt Sand, hereafter described, in 5 or 6 fathoms, until near Blankenburg; then keep off into 6 or 7 fathoms, to avoid the flat, which extends farther from the shore off Blankenburg than it does either to the westward or eastward of that place. When to the eastward of Blankenburg, you may keep more in shore, and proceed near it in 5, 4, or 3, fathoms, until you come to the buoy of Sluys, which lies on the point of a sand called the Predermark, at the entrance, and must be left on the larboard side. Between Ostend and Sluys there is but one spire steeple, which is near to the latter place, with a square steeple betwixt them. When the spire steeple comes between the two sand hills, and the square steeple on with a large sand-hill, which lies to the eastward of the others, with a windmill standing between them, you are abreast of the buoy on the Predermark; the town of Sluys bears, from the buoy, S. by W. From the buoy steer S. E. for the bluff part of the island Cadsand.

The Island of Cadsand lies to the eastward of Sluys, it is about 11 miles long, and 5½ miles broad; the land is low and level, and there is a church, with a spire steeple, nearly in the middle of the island.

Two dangerous Banks, the *English Pol* and *French Pol*, lie off the entrance of the Swin of Sluys. The latter, which has only 4 feet near its middle, divides the channel called the Wieling into two parts, namely the Outer and Inner. Of these the inner, although much the narrowest, is a channel for vessels of 12 or 14 feet water, and is that mostly used by smugglers. It is very close to the shore. The Outer Wieling is described hereafter. The French Pol is nearest to the shore; extending, without the Hardt Sand, directly athwart the Swin of Sluys. The English Pol without lies nearly parallel with it, on the inner edge of the Rypt Hardt Sand described beneath.

Northward of Cadsand, on the opposite side of the Scheld, lies the island *Walcheren*, which is about 10 miles long, and 7 miles broad. The land on the west side is rather high, with large sand hills appearing at a distance in hummocks; the east side is not so high, but it appears in hummocks. The whole coast is full of white sand hills. On the west part of the island is West Cappel, having a bluff steeple, with a short turret on its top: a little to the westward of West Cappel is a windmill; and, to the north of the mill, a tall beacon: to the north-eastward of West Cappel is Domburg, with a tall spire steeple: and, eastward of Domburg, is East Cappel, with a square steeple, and a small spire on its top. Middleburg steeple is high, and may be easily seen when coming in from the sea. Flushing lies 7 miles S. S. E. of West Cappel. It has two harbours, the entrances to which are between jetties; they dry at low water; but the easternmost has a bason, in which ships are kept afloat at all times of the tide.

FLUSHING. To go from Sluys to Flushing, through the Inner Wieling, steer at first E. by N. along shore, in 5, 6, or 7, fathoms, until the leading mark is brought on, which is Flushing steeple, a tall spire, just open to the southward of the Stadthouse, a large building. There is a sand bank, which lies near the N. W. part of Cadsand, the thwart mark for which is, a spire steeple, on the island of Cadsand, and a small house, on with each other, bearing S. E.; the latter is covered with red tiles, and stands near the shore. *In turning through the Inner Wieling*, you may stand towards the shore to 6 or 5, and off to 8 or 7, fathoms; in the mid-channel are 8, 9, and 10, fathoms. In standing to the southward, you may open Flushing steeple about a sail's breadth of the Stadthouse; and, when standing to the northward, you may bring them nearly in one. Advancing up this channel, keep over to the southward, to avoid the Elleboog, a sand, hereafter described, which is dry at low water: when past it, edge over towards Flushing, and anchor in 10 or 12 fathoms.

DESCRIPTION of the BANKS and NAVIGATION off FLUSHING. Communicated by an OFFICER of the ROYAL NAVY, 1803*.

THE Banjart Bank, lying off the west end of the Isle of Schowen, and before the entrance of the port of Cam-Veere. It is, in parts, nearly dry at low water, but has several swatchways through it, as well as a narrow channel between it and Schowen. On its west end a buoy used to be placed called the *Risgues* or *Risgens*, the marks for which are, Middleburg steeple a ship's length west of East Cappel church, and the west point of Schowen bearing E. ½ S. the N. E. point of Walcheren S. E. and West Cappel S. W. by S.

I had no opportunity of gaining farther knowlege of this bank, having only once been where the buoy of the Risgens used to lie, in 5 fathoms at one quarter ebb by the ground. It is steep-to. Ships looking into the Veere-Gat will see better from the back of the Banjart.

The Querens, a shoal joined to the Sconce-point on Walcheren by the reef of East Cappel. There is, I believe, no channel within it, unless for very small vessels. Off this shoal to the northward is a long flat, called *Domburg-flat*, on which you may stand by the lead.

At last quarter flood we stood in, for nearly 2 miles, in 6½ fathoms, and tacked on shoaling to 6 fathoms, with West Cappel S. S. W. in the first swamp, or hollow, of the outer rough sand hills; Middleburg steeple being to the eastward of the first hummock east of Domburg church; the latter then on with the signal-house, and bearing south.

Calloo Bank. Between this bank and the Querens lies the Oest or East-gat, a deep but narrow channel (by which the Pluto sailed) through which we had not the good fortune to catch a leading mark, the beacon being down; but the channel is said to be well open with West Cappel church bearing south. In sounding the Calloo, after crossing its end in 5½ fathoms, we tacked in the channel in 6 fathoms, with West Cappel church S. ¼ E. Domburg steeple S. E. ½ E.: to the westward it shoalens gradually, and may be approached by the lead; but, to the N. E. it is reported steep. To avoid its end, East Cappel church must be kept open to the eastward of the high white sand hill, on which stands Domburg signal-house.

Rassen Bank, on which the sea breaks in some parts at low water. It shoalens gradually to, and may be approached by the lead, both on the north and west sides. Between this bank and the Calloo, is the narrow channel of the Botkil; used, I believe, principally by the fishermen, and in which we discovered two small buoys, apparently to mark the channel. In sounding the Rassen, we tacked on its north-western edge in 4 fathoms at two-thirds flood, with Zoutland signal-post S. E. by S. West Cappel church E. S. E. East Cappel church E. ½ S. and on with a little rough topped land about half a point, or more, open to the southward of Domburg, then bearing east nearly; and we crossed its end in 5½ fathoms at two-thirds flood, with East Cappel and Domburg churches in one, bearing E. by S. southerly.

Stone Bank. The west end lies about 6 miles N. N. W. from West Cappel, and thence extends in an E. or E. by N. direction beyond the tail of the Banjart, leaving a good channel between, though of what extent or depth, I know not; but, having observed the Stone bank to trend more to the eastward than the charts allow, I am led to believe from that, and the appearance of the ripple of the banks, that it is not so wide as the charts lay it down. To cross the west end of the Stone Bank, in coming in from the sea, keep the windmill of West Cappel just on with the eastern part of the sand hills forming the west face of the island, which now shew nearly in one; or, Middleburg on the middle of the long black land east of West Cappel church; the latter will then bear S. E. by S. You will have, with this mark, 7 fathoms on its tail's end; and, when you bring also East Cappel church over the middle of the first white sand hill, far east of Domburg signal-house, you are within the bank. It is steep on both sides, and on

* The original, from which these directions have been printed, is in the possession of the proprietor of this work.

on neither end has more than 11 feet at low water spring tides, if so much; but, in the middle of the bank, there is said to be a good swatch, with Middleburg a ship's length east of Domburg steeple, having nearly 4 fathoms at low water. With West Cappel S. S. E. and Liswegan S. S. W. ½ W. Middleburg steeple being a ship's length west of a swamp to the westward of the white sand hills by Domburg, you are just on the west end, close to which we tacked (on the inside) in 9 fathoms, in working up to Cam Veere, and again in 8¾ about the middle of the bank's edge. Middleburg on a lump in a swamp of the sand hills, a ship's length west of Domburg, bearing S. S. E. ½ E. and West Cappel church S. ½ E. In this part 11 fathoms was the deepest water in crossing the *Stone Deep*, and we carried 9 fathoms for a long way to the bank. We tacked again on the inner edge of its E. end with East Cappel S. ¾ E. and Middleburg in the second swamp a large ship's length west of it. On the east end, at a quarter ebb, we once had 3 fathoms.

The Stone Deep, lying between the *Stone Bank* to the northward, and the *Querens, Calloo, and Rassen*, to the southward, have from 12 to 15 fathoms, in the deepest part, at high water. Shoaling to each side as described above, in the account of the Stone Bank, Domburg Flat, &c.; but, in standing to the Calloo, we tacked at high tide in 7 fathoms, with the guard-house on the point of West Cappel shut in with the sand hills about Zoutland, bearing S by E. ½ E. East Cappel church on with the west end of a grove of trees behind the green-topped sand hills, E. S. E. and Domburg spire S. E. by E. The bottom of the Stone Deep is remarkably good, being clay and mud; and here the fishermen constantly traul, considering it as their best ground. In my opinion, it is a perfectly safe anchorage.

The Middle Stone Bank, of which the west end bears N. ½ W. about 10 miles from West Cappel, has 7 fathoms on it, and 19 or 20 between it and on the Stone Bank.

The Bree or Outer Stone Bank has 8 or 9 fathoms on it, and 16 or 17 between it and the Middle Stone Bank.

Droog Raen, or otherwise the *Droogen*. Between this bank and the Rassen lies the *Duerloo* or principal channel to Flushing; to point out the entrance to which, three buoys used to be placed. Our pilot's mark for the situation of these buoys was, a small hummock of wood, behind West Cappel, lying between the long black land and the sand hills on the west side of the island; West Cappel windmill on the east end of the wood, and Bruges steeple a sail's breadth open to starboard, or westward, of Heyst church, gave the place of the western buoy *(red)* lying in 4½ fathoms. The windmill on the middle of the same hummock, gave the middle buoy *(black)* in 5½ fathoms, and the windmill on the west end of the hummock gave the eastern buoy *(white)* in 6 fathoms.

The Droogen is nearly dry in some places, and steep-to on the northern and eastern sides, to which you cannot well trust the lead. We commonly tacked on the north eastern side of it, in 8 fathoms, with Middleburg on a remarkable sand hill about a cable's length south of Zoutland signal-house (known by its standing in a hollow way between the sand hills). This mark is a very short one; and, if necessary, you may stand in safely to 6 fathoms. To the N. W. the soundings are regular, and shoalen gradually on that side; therefore the lead is always the best guide.

The Vlake Raen, on which we suppose there are 2 fathoms at low tide, lies to the westward of the Droogen, with regular soundings, shoaling gradually on all sides, and particularly on the westward, where it joins and forms a continuation of Blankenburg-flat. On the Vlake Raen the following soundings were taken at about three quarters flood, on the neap tides, viz. with West Cappel E. by S. and Liswegan S. by W. ¾ W. 5¾, 5½, and 5, fathoms; then, steering in a S. by W. direction, till West Cappel bore E. ½ S. and Liswegan S. S. W. 4¾ fathoms, until East Cappel was brought midway between Domburg and the highest sand hill to the westward of West Cappel, bearing E. ½ N. the water then deepening on a S. S. W. course to 5 and 5¼ fathoms, until West Cappel bore East, and the south part of the isle of Walcheren S. E. by E. ½ E. and to 5¾ fathoms, when West Cappel bore E. ¼ N. Liswegan S. S. W. and the south part of Walcheren S. E. by E. ¼ E. To this bank the lead is much the best guide, the soundings being very irregular. When to the westward of the

Droogen

Droogen you may stand to the Vlake till Middleburg steeple is on with Zoutland signal-house.

Blankenburg Flat extends from the Vlake Raen westward beyond Blankenburg, and into the main, including the banks within. The soundings on this flat are regularly 6 or 7 fathoms.

Rypt Hart Sand, extending from the Elleboog, where it forms the Weiling channel to Flushing, and near which it has a swatch with very little water. For this I have no mark, but it is reported steep-to. At half tide by the ground, being just at the change of the stream, we crossed the Rypt Hart Sand in 5 fathoms, with Bruges steeples just open west of Leswegan, from whence our pilots concluded that it shoalened towards the Pol, and we always tacked short of it, when Bruges opened to the eastward of Liswegan, being guided by our lead.

To the westward of Liswegan till beyond Blankenburg; this bank loses itself nearly in the flat, being very little more shoal till it joins the Witter Bank. It is a mud, through which you may track the ship, when in 7 fathoms, or less. In crossing from the Rypt Hart Land and Blankenburg Flat, to the northward, you deepen to 9 fathoms, and then shoalen again to 6 and 7 fathoms on the Smal-bank.

The Smal-bank, which is 8 or 9 miles from the main land, and rather without the stream of the Raen, near which it terminates. This bank extends about E. N. E. and W. S. W. and loses itself to the westward, on the Blankenburg Flat, where, I suspect, it joins the Rypt Hart Sand, although I had no opportunity of ascertaining whether it absolutely did so. The soundings to the Smal-Bank are regular, and, with the lead going, it is an excellent warning when standing in by night or thick weather. It should not, however, be crossed when you are doubtful of your situation, for fear that the tide should have carried you farther to the eastward; and that, instead of the Smal-Bank, you should find yourself on the *Droogen*.

The Ridge (at least we so called it) although it nearly corresponds with respect to situation and depth with the White Bank; it differs, however, very materially in every other particular. It extends in a W. S. W. direction from the Stone Bank; of which it is, in fact, a continuation, dividing the deep water channel (or *Schoneveldt*) into 2 parts. The Ridge lies about 3½ miles from the Small-bank, and 4 miles from the Droogen. It is nearly half a mile across, and has from 8 to 10 fathoms water, deepening gradually off on both sides.

White Bank, so called by us, from its shape being similar to that laid down in the charts for the White Bank, although its situation corresponds with that assigned to the Oester, or, as called in the English charts, West, Bank; it lies a full mile and a half outside of the Ridge, extending E. by S. and W. by N. its eastern end losing itself in broken soundings of 8 and 10 fathoms, and afterwards in a flat of 12 or 14 fathoms close to the Rough Ground next to be described; the broken end of the bank lies about 13 or 14 miles N. W. by W. ½ W. from West Cappel.

About the middle of this bank, on its inner or southern edge, lies a shoal place, by us called

Thornton Ridge, from one of the pilots who sounded it. It is about a mile in extent E. by N. and W. by S. and (as the bank) very steep-to; shoaling, suddenly, from 19 to 6 and 2½ fathoms, very narrow, not allowing more than two casts in rowing across with a boat; and deepening gradually to the northward to 6 or 7 fathoms, the general depth of the White Bank. This ridge has not more than 13 feet at low tide; its eastern end deepening gradually to 4 or 5 fathoms, but the west end more suddenly from 3 to 5 fathoms. When on this ridge, Bruges steeples shew nearly midway from Blankenburg to to Liswegan; the latter place bearing S. ½ E. and West Cappel E. S. E. each about 5 leagues distant. Just to the westward of Liswegan is a hummock on the sand hills; Bruges brought on with this hummock carries you close to the eastward of this ridge, clear of it; and to the eastward of Blankenburg is a small remarkable nab of land, which, brought on with Bruges steeples, carries you clear to the westward of it. It is, however, to be remarked that, as the land is low and distant, these marks will scarcely be seen from the deck of a low vessel

The White Bank has, in other parts, 6 or 7 fathoms steep-to from the southward, but deepening gradually off to the northward as far as 19 or 20 fathoms. The west end of the bank I do not know, but it loses

loses itself amongst the ends of the Bree, &c. from the Flemish coast.

Rough Ground, with a bank on its eastern side, extending full two miles N. N. W. and S. S. E. not generally laid down in the charts, and called by us, from the very uneven soundings, and after our pilot,

Wascalls Rabs. They begin nearly astream of the White Bank, and join the east end of the outer bank, called from the Dutch charts the Oester. These Rabs are two or three ridges of very rough uneven ground, in which you have most irregular soundings from 4 to 10 fathoms, being unlike any other soundings hereabout, excepting the end of the White Bank, which is too narrow to be mistaken for them, even by night. In some spots they have scarcely 17 feet at low tide. They are about 4 leagues from West Cappel; which steeple, on with Middleburg, bearing S. E. ¼ E. leads you on their south end, when Bruges steeples will be just open to port of Liswegan (bearing, I think, S. ¼ W. or S. by W.); but the latter is so long a mark that it will but be seen in very clear weather. The ripples of the tide and the lead, however, point it out with sufficient certainty.

Outside of the Rabs, at the distance of 5 or 6 leagues from West Cappel, the ground is equally rough, though not so shoal, having uneven ground from 12 to 16 fathoms.

The Bank on the East Side of these Rabs is a long flat of 7 fathoms, apparently formed against them by the accumulation of sand washed through the gully of the Stone Banks by the strong ebb tides. Of its extent east I am not certain, but it goes very near the Stone Banks. It is deep on the northern and southern sides, West Cappel S. E. ½ S. Middleburg being then nearly on with the western part of the black land east of it, or about as wide east as the windmill is west of West Cappel, carries you on the bank.

The Oester, being the outer bank before Flushing, stretching E. N. E. and W. S. W. nearly, from Wascall's Rough Ground above described, on the east to (or very near to) the Ratel, of which I suspect it to be a continuation. It lies about two miles outside the White Bank, has 8 or 10 fathoms on it, is about one mile across, and shoalens gradually to on each side.

The Schonevelt is the deep water including the 10 fathoms ridge lying between the Duerloo channel, Raen, and Small Banks to the southward, and the White Bank on the north, being about 6 miles over.

In the *Schonevelt* the soundings are very regular; from the banks on the south side you deepen gradually to 16 and 18 fathoms, shoalening again regularly to the ten fathom ridge, in 8 or 10 fathoms, from which you deepen again to 19 and 17 fathoms, when you are close to the White Bank.

The Fair-way in coming in from Sea for the Duerloo Channel lies between the shoal on the White Bank and Wascall's Rough Ground, with West Cappel bearing S. E. by E. Middleburg steeples being midway between West Cappel church and the sand-hills. In this track, after crossing the Oester in 8 or 9 fathoms, you have deep water, and not less than 12 fathoms, till you reach the 10 fathom ridge in the Schoneveldt, within which, in the deep Gully, we used to anchor in a convenient berth for watching the road and for getting under way, or for communicating with the other cruizers; having 14 fathoms with East Cappel just open to the northward of Domburg, Middleburg steeples in the hollow of the two first white sand hills, west of West Cappel, and Bruges steeples, two thirds, or not quite so much, from Liswegan to Heyst, West Cappel bearing E. S. E. and Liswegan S. S. W.

The Hekelag, the deep between the White Bank and Oester Bank, is so called in the Dutch charts; from the white Bank you regularly deepen to 18 or 20 fathoms, and shoalen again as gradually to the Oester.

Hard or Hart Sand within which is the common deep water channel along shore, and close in with the main, in the direction of which it runs from near Sluys to Ostend, where it gets off to the distance of about 3½ miles, and forms the Outer Stroom. On this bank are about 10 feet at low tides. It shoalens gradually to, and you may stand to what water you please on it, by the lead. Off Wenduyn (between Ostend and Blankenburg) we tacked on it at high water nearly in 4½ fathoms.

In

In working up from Ostend, in strong easterly winds, we could, by night, stand in with great security, by the lead, to this bank, and off to the Dyke.

Witter Bank, being a continuation from the Rypt Hart Bank. It lies about 5½ miles N. N. W. from Ostend: about three cables' length within the Witter, was our anchoring berth off Ostend, in fine strong clay, 7 fathoms, the body of Ostend S. by E. Middlekirk S. S. W. ½ W. the Hole in the Wall just shut in with Nieuport S. W. ½ W. and Blankenburg E. by S. There are from 3 to 3½ fathoms at low water on the bank.

Tubs End of the Dyck, shoaling gradually to from the south and eastward, with 12 or 13 fathoms. A good caution to avoid the Hard Bank that lies on the outside of it.

Hard or Hinder Bank. Outside the eastern end of Dyck, having about 14 feet at low tides, from which you cannot see the land, unless in clear weather, from aloft. It shoalens gradually to, and may be coasted round by the lead in 8 or 9 fathoms. I have crossed in the night at high water, and found 4½ and 5 fathoms.

Ellebooog. Dry at low water. This sand lies in the entrance of Flushing, and divides the Duerloo channel from the Wieling. In reconnoitering the port with our boat, having first brought Flushing pier-head E. ½ S. the sixty-four nearly on with it, the gallows or signal on Dishoek N. E. by N. we steered down north about 2 miles, in 12 fathoms, high water, shoalening gradually to 4 fathoms on the Elleboog, when Middleburg steeple was on with a remarkable small hut, which stands alone on the low sandy ground, between the gallows and Flushing (and which is, I believe, called the *Nolle House*), and the church of Flushing a short handspike's length open to the northward of the prison, the gallows then bearing N. E. by E. ½ E.; having shoalened further to 3 feet, we dropped into the Duerloo channel, and afterwards crossed the Elleboog again nearly abreast of Zoutland, or higher, and found 7 or 8 fathoms in the Outer Wieling; but the wind's coming foul prevented my sounding this channel, as was my intention.

The English Pol lies off Sluys, dividing the Wieling into two channels, the Outer and Inner. The latter is that most used by the smugglers, and has the deepest water, but is narrow and very close to the shore.

The Outer Wieling channel is very little known: it lies out of gunshot of the shore, and is, I understand, narrow between the Pols. I had not an opportunity of sounding it myself, and could, therefore, take no marks. The Conflict gun-vessel, however, ran in several times, and always reported finding very good water. I have considered it as affording (if known) above the Pols, between them and the Elleboog, an anchorage well sheltered from the sea, and not inferior to that in Flushing road itself.

The bottom is here, as the whole of Blankenburg flat, mud rather soft.

THE TIDES. The fair stream of the tides among the banks is E. N. E. and W. S. W. The tide which sets to the eastward being called the flood, and that to the westward, the ebb. It flows by the ground and in the harbour at 1¼ full and change, and 5¼ by the stream; so that the last four hours of what is called flood by the stream, runs whilst the water is actually falling.

At and about Ostend, the tide is about an hour earlier; and we observed, that with lifting tides, the flood generally ran longer than the computed time; and, with falling tides, a shorter time.

The Stream of Ebb from E. N. E. we have generally observed to run its course very truly until an hour before low water by the stream; when the harbour flood running strongly, the stream draws in from the N. E. until it changes to the flood.

The flood by the stream runs for the first two hours very truly from W. S. W. until it is high water in the harbour; when, with the first of the harbour ebb, it draws round, and sets out about an hour from the S. W. and still draws gradually round to S. S. W. and South, whence it has a strong drain (nearly a knot) until three quarters of an hour after the ebb should have made in the stream, to which the ship swings gradually, the current of the tide never being at a stand.

The spring tides run one and three quarters or two knots, and neap tides one or one and a quarter knot. The drain from the southward

ward is felt outside the banks, and is of great service when obliged to carry sail to work off.

GENERAL REMARKS. In cruising with the wind or stream, or nearly so, my rule was, to stand by night no nearer the Droogen than 8 fathoms; in standing off to cross the ridge, and a deeper outside it, to 17 or 18 fathoms; by which time we were close to the White Bank, and tacked in again. But, in doing this, much caution was necessary, for fear of being drifted by the flood tide as far to the eastward as the Stone Bank At half flood, however, we could make free with most of the banks in fine weather. And we observed one material difference between the Stone and White Banks, viz. the former was steep on both sides, the latter to the southward only. In approaching the Stone Bank from the southward, you have several casts of 9 fathoms. In approaching the White Bank you are immediately on it from 17 fathoms. In standing in from the Oester the White Bank shoalens gradually, and the three Stone Banks are steep. With the wind off the land, we generally hung on the edge of the Racn, under an easy sail, so as just to stem the tide, edging off occasionally if we shoalened our water, and working in against the outset when it made; but, in light weather, when we could not depend on the barge, we hung her in the same manner on the Ten-fathom Ridge: but, if the weather looked suspicious, we generally ran in time outside the White Bank, keeping between it and the Oester for the night; and pushing in again with the break of day, or sooner, according to the tide. If, however, there was the appearance of the wind shifting and blowing, we generally ran outside the Oester, to allow room for beating between the tail of the Dyck and Hard Bank, and the Outer Stone Bank.

When the weather was very bad, and the wind so much in as to confine the enemy, we of course stretched off 10 or 12 leagues for an offing, acting from circumstances.

Had I, however, been caught by a gale at N. N. W. or North, upon the bank, and blowing too hard to carry sail and beat to advantage, my mind was made up for anchoring in the Stone Deep, where three banks on the outside afford, in my opinion, a shelter from the sea fully equal to those of the Downs in an easterly wind; and as, with these winds, the tide would be right across, the ship could never strain the cables unless at slack tide. The berth I intended to take was well up to Domburg Flat, in the deepest water between it and the Stone Bank.

With timely attention to the cables, I should think this a very fair roadstead with any wind. That from W. S. W. is the worst, being right astream, and bringing a short chopping sea from between the banks; but even if you then part, there is a good channel for retreat between the Stone Bank and the Banjart, and room to stretch off.

Should you part here with a west wind, it must be whilst the flood tide runs by the stream, the first part of which makes high water, and the latter half ebb only; consequently there would be tolerably good water on the Stone Bank.

On the north shore of Walcheren, from the Sconce Point at the entrance of Cam-Veere to West Cappel, are three signal stations (beside the signal-post at West Cappel): the first on Sconce Point; the second about S. from the buoy of the Risgens on the Banjart, at which we discovered two guns; and the third on a remarkable high white sand-hill, by Domburg, at which we discovered a gun and a howitzer, the latter on a field carriage.

Every part of the north shore affords a good beach, but commanded by the sand hills, excepting about West Cappel, where the beach is flat, with many flake jetties (or digger works) to shelter boats.

Along the tops of the sand-hills W. of Domburg, we observed a chain of sentinels, and we learnt that there was a small camp behind them. On the first low ground west of the sand-hills was a *Barbet* battery of five guns, apparently facing the W. N. W. to command the beach of West Cappel, although it stood at some distance back from it. It is of green turf, difficult to be seen from the water. We first observed the sentinel, whose arms glittered in the sun. On the low point to the west of West Cappel windmill is a battery of four guns, apparently heavy, facing the entrance between West Cappel and the

Rassens, which they effectually command, but the Duerloo is beyond their reach. When the French frigate lay above Flushing, she used to shut in with the pier-head when it bore S. E. by S. and this appears about the direction of the west side of the island.

DUERLOO CHANNEL. *When coming in from Sea for Flushing or Middleburg*, through the *Duerloo Channel*, which lies between the Drooge Raen to the southward, and the Rassens to the northward, so soon as you have made the island Walcheren, bring West Cappel-steeple a sail's breadth open to the northward of the high sand-hills, bearing E. S. E. ½ S. then, by steering in, with the church in that direction, you will see the three outer buoys of the Duerloo Channel*, which lie without the banks athwart the channel, and bear E. N. E. and W. S. W. from each other. The westernmost is red, the middle one is black, with No. 7 on its end, and the easternmost one is white. The course in, as far as the third black buoy, marked No. 5, is nearly S. S. E. in 5 and 4½ fathoms at low water; from the buoy No. 5 to that marked 4, about S. E. by S. in 4½ fathoms; and, from No. 4 to No. 1, about S. E. in 5 and 6 fathoms at low water. Here observe, that, in steering from buoy to buoy, regard must be had to the tide, which sets athwart the channel. The buoys, exclusive of the red and white outer ones, are all black; they are 7 in number, and numbered, from the outer black buoy, 7, 6, 5, 4, 3, 2, 1; they lie in mid-channel, so that you may run from one buoy to another, and pass them on either side. The soundings along the Rassens, on the North side of the channel, are hard sand; and along the Raen, on the South side of the channel, they are softer; the sands on both sides are steep.

The leading mark through the Channel is, the white wall kept between Flushing-church and the Stadthouse. With a contrary wind, stand towards the Raen until Flushing-steeple comes on with the white wall. One of the bastions of the town is painted white, as a mark.

* This is to be understood in time of peace; as, since the commencement of the present war, these buoys have been taken up.

The black buoy, No. 7, lies or lay exactly in the middle of the outer entrance of the Duerloo-channel, in 4½ fathoms at low water. The marks for it are, West-Cappel-steeple E. S. E. ½ S. and the steeple of Heyst, in Flanders, about a ship's length open to the eastward of that of Bruges.

About one mile S. S. E. from the buoy, No. 7, lies the buoy, No. 6, in 4 fathoms at low water, with Domburg-steeple open to the northward of the Hegt; the white buoy, N. N. E. and the red buoy, W. N. W.

About a mile S. S. E. from the buoy, No. 6, lies the buoy, No. 5, in 3½ fathoms at low water. The marks are, Middleburg-steeple, on with the watch-house of Zoutland, Flushing-steeple on with about one-third of the mill, and Domburg-steeple about half a cable's length open to the northward of the beacon on Koe-down.

One mile and a half S. E. by S. from the buoy, No. 5, lies the buoy, No. 4, in 3½ fathoms at low water. The marks for it are, East-Cappel-steeple about a capstan-bar's length open to the northward of West-Cappel-steeple, Flushing-steeple about half-way between the end of the white wall and the wind-mill, and the false-mill a little way open to the northward of the Stadthouse. Off this buoy lies the point that runs out from the Rassens.

About a mile and a half S. E. from the buoy, No. 4, lies the buoy, No. 3, in 4 fathoms at low water. The marks for this buoy are, the steeple of Domburg between the steeple of West-Cappel and the mill, West-Cappel on with the wood, St. Anne's, in Flanders, a little open of Cassandria, Flushing-steeple on with about one-third of the mill, and West-Cappel just open of the Downs.

One mile and a half S. E. from the buoy, No. 3, lies the buoy, No. 2, in 5 fathoms at low water. The marks for it are, West-Cappel-mill on with the outer part of the first sand-hill; West-Cappel-steeple, N. E. by E. ½ E. on with the second sand-hill; Middleburg-steeple a cable's length open to the northward of the beacon; and Flushing-steeple above one third of the distance between the mill and the white wall.

About a mile and three quarters S. E. from the buoy, No. 2, lies the

the buoy, No. 1, in 6 fathoms at low water. The marks for it are, the steeple of Zoutland on with the path-way by Zoutland, bearing N. E. ½ E.; the arm of the mill on with the north side of Flushing-steeple: the steeple of Middleburg a long cable's length to the southward of the beacon; the beacon E. and West-Cappel-steeple N. N. E. This buoy lies off the south point of Zoutland-Flat, which by some is called the Geer, it is the last or innermost of the 7 buoys; they are all black, and lie, as before-mentioned, in the middle of the Duerloo-channel.

Thus knowing the bearings of the buoys, you will be able to discover the direction and strength of the tides, and be enabled to keep in mid-channel, from buoy to buoy, with the wind free. When approaching the Duerloo, with a large ship, do not pass the outer buoy, No. 7, until about half-flood; then you may expect to find, in the narrow and shoal parts of the channel, between the Raen and the Rassens, no less than 5 fathoms water.

When coming from the Southward for Duerloo-Channel, in clear weather, you may run along the Droog Raen in 6, 7, 8, and 9, fathoms: keeping the steeple of Bruges about half a cable's length open to the eastward of Liswegan-church; this mark will run you within sight of the red buoy, which lies off the west end of the Droog Raen, in 5 fathoms: part of the sand dries very nearly at low water. This buoy lies on the south side of the entrance of the Duerloo-channel; the marks for it are, West-Cappel E. S. E. and Bruges-steeple S. by W. ½ W. on with Liswegan-steeple, which is the largest steeple between Blackenburgh and Sluys. The course from this buoy to the second black buoy, No. 6, is E. S. E. The white buoy bears E. N. E. from the red buoy; it lies on the north side of the channel, in 6 fathoms at low water. The marks for this buoy are, East-Cappel a sail's breadth open to the southward of Domburg-steeple, bearing E. by S. and Middleburg-steeple open to the northward of all the sand-hills southward of West Cappel. The course from this buoy to the second black buoy, No. 6, is S. S. W.

When you have gone through the Duerloo-Channel, and passed the buoy, marked No. 1, you are within the Geer, or Zoutland-Flat, and should keep along and near the shore, which is bold, to avoid the Elboog, (almost dry at low water) which begins off the Gallows, and stretches almost as far as Flushing. From the buoy, No. 1, to Flushing, are 6, 7, 8, 9, 10, 11, 12, and 13, fathoms water. From the buoy, No. 1, is a good turning-channel; hence the water gradually shoalens on both sides.

Between Flushing and the Ramekens there is a bank, which stretches off from the island, and forms a sort of bar, having in some parts but 2 and 3 fathoms, at low ebbs. The passage up lies between Walcheren and the tail of the Calot*, a large bank to the eastward. It is, in some parts, but little more than a quarter of a mile wide, and extends from off Flushing E. S. E. 2¼ miles and E. by N. one mile and a quarter to the castle or Ramekens Fort. The banks frequently shift, but the channel is commonly buoyed; and the buoy which is laid on the tail of the Calot, lying S. S. W. of Flushing, is sometimes called the Dog's-head. You may anchor a little below the castle, or abreast of Middelburg-harbour, in 7, 6, or 5, fathoms, at low water.

The BOTKIL-CHANNEL. To sail for FLUSHING, through the Botkil-channel, you may steer with West-Cappel-steeple between S. E. by E. and S. E. according to the wind and tide; when you make the island plain, keep a large beacon (the southernmost that stands within West-Cappel) open and shut with the high sand-hill, steering S. E. between the Rassens and the Calloo-sands, until you get close in with the shore: in the outer part of the channel are 13 or 14 feet at low water. Then steer along within a cable's length of the shore, as it is steep, and the north side of the Rassens is flat: in the inner part of the channel are 5 and 6 fathoms at low water. Continue to steer close along the shore, to avoid the sand called the Geer, which is about a mile and a half long, and almost dry at low water. It lies within half a mile from shore, beginning a little before you come to Zoutland-beacon, and extends S. E. by E. a mile and half; the thwart-

* This channel and all the others of the Western Scheld, are most clearly shewn in the new Survey of the River published by P. Steel.

mark for it is, a small square steeple, with a turret on it, on with a waggon-way which goes up from the water-side. Be careful to keep close along the shore, until you come to this place; then steer S. E. in 6, 7, and 8, fathoms, until you get within a mile of Flushing: thence to Flushing you will have 9, 10, 11, 22, and 13, fathoms at low water.

EAST-GAT, or FISHER'S ENTRANCE. If coming from the northward for Flushing, through the Oost or East-gat, you must bring the steeple of West Cappel, as soon as you can see it, to bear S. by E. then, by steering for the steeple in this direction, you will see West-Cappel-beacon in one with the steeple, before you get the length of the Stone-bank. Should the steeple be open of the beacon * when first seen, they must be brought on with each other as soon as possible. With these marks on, you will go over the middle of the Stone-bank, in 3½ or 4 fathoms at low water: with the steeple open of the beacon, either way, you will have less water. Being over this bank, you will immediately deepen your water to 12 and 14 fathoms; and, by continuing to steer in with the aforesaid marks on, you will pass through the *East-gat*, between the Calloo and Querens sands, in 3½ and 4 fathoms at low water. When you are close in with the shore, you must steer along it to Flushing, agreeably to the former directions.

The tides here set as follow: the first of the flood sets to the southward, and the middle and after parts right inwards, through the East-gat; the first of the ebb sets very strongly northward, and the middle and after parts set right out through the east entrance. When the flood begins to run at sea, it is the first of the ebb in the East-gat; and, when the ebb begins to run at sea, it is then the first of the flood in the east entrance. The tides flow here, on the new and full days of the moon, at 12 o'clock.—At the outer buoys of the Duerloo-channel, the first of the flood sets strongly to the southward, the middle S. E. and the latter sets right in, through the channel; the ebb sets in a contrary direction.

* The beacon was down in 1803. See the preceding description by Captain Bligh.

To SAIL to CAMPVEER. When coming from sea for Campveer, so soon as you see Middleburg-steeple, which is tall and round, bring it about midway between those of Domburg and East Cappel which will lead you in to the southward of the Pole of the Banjart. A black and white buoy heretofore mentioned, was formerly laid on the Pole of the Banjart, called by the Dutch the Risgens of the Banjart. The black, on the head of the buoy, is in the form of a sand-glass; the rest of the head is white; the white parts on the bilge are in the form of diamonds. It lay or lies in 3½ fathoms, at low water, about four miles from the land of Walcheren, with Middleburg-steeple between those of East Cappel and Domburg, one-fourth of the distance between the two steeples to the westward of East-Cappel-steeple, and three-fourths to the eastward of that of Domburg. It must be left about a mile on the larboard side. Farther eastward is another buoy, marked in the same manner as the outward buoy; in 3 fathoms at low water, and must be left at a considerable distance on the larboard side. After passing the aforesaid buoys, continue to run in towards the shore, with the steeple of Middleburg mid-way between those of East Cappel and Domburg, in from 10 to 9, 8, 7, and 6, fathoms; then steer about E. by S. along shore, in 5, 6, or 7, fathoms, which will bring you to the buoy on the west side of the Lochill, or Banyard. When turning in between the Risgens of the Banjart and the Querens, you may stand to the southward till Middleburg-steeple comes on with Domburg-steeple, and to the northward till Middleburg-steeple comes on with that of East Cappel; you may stand to the Banjart to 10 or 9 fathoms, and towards the Querens to 8 or 7 fathoms; and, when to the eastward of the Querens, you may stand to the shore in 7, 6, or 5, fathoms.

The buoy on the west end of the Banjart is black; it lies in 3 fathoms at low water, appears like a fisherman's dan, and must be left on the larboard side. Two other black buoys are on this sand, to be left also on the larboard side; the Banjart is steep-to on both sides. The tide of flood sets strongly into the Room-pot, of which you must beware. A buoy, which appears like a hogshead, lies on a shoal which runs off from the island, and must be left on the starboard side.

side. When you have passed this buoy, edge in towards the shore, to avoid a small knowl, called the Roompel, which lies about two cables'-lengths from it. The long mark for the Veer-gat is, the old church of Campveer, which has a flat tower, just open of Sconce-point; the thwart-mark is, Middleburg steeple on with Sconce-point. The three buoys in the Veer-gate lie in the middle of the channel, but the best passage is between them and the island; between the first and second buoys are 2 or 2½ fathoms; between the second and third buoys there are 4, 5, and 6, fathoms; and, between the third buoy and the heads, 6, 7, and 8, fathoms, at low water.

The Leading-Mark, between the Unrest and Scotchman, is, the Prisoner's Steeple, or the mill, on with the tower on the Pier-head.—The long mark for the north end of the Scotchman is, East-Cappel-steeple on with the third jetty from Sconce-point; and the thwart-mark, Middleburg steeple on with a farm-house below the town.

There is a black buoy at each end of this sand, to be left on the starboard side: having passed the second buoy, you may steer for *Campveer*, and anchor off the town, in 8, 6, or 5, fathoms water. The leading-marks, after passing the two black buoys on the bar, are, the two steeples of the fortification on with each other; or keep the southernmost one, which has a round top, a little open to the eastward of the other, which has a square one; either of these marks will lead you clear of the south-east end of the Scotchman, and up to Campveer. To direct ships up to Sconce-point in the night, a light is placed below the point, with a blind so fixed before it, as to prevent your seeing it when in the proper channel. With a turning-wind, observe that, as soon as the light appears, when standing either way, you must tack. At the upper buoy, the channel is very narrow, and has only 12 feet on it at low water.

If you intend to go from sea through the Room-pot, for Zuderickzee, or through land to *Rotterdam*, you must pass the buoy on the Risgens of the Banjart, and then steer about E. for the buoy on the Pole of the Unrest, leaving all the black buoys of the Lochill at a distance on the starboard side: the buoy on the Unrest is white, lies opposite to the inner buoy of the Lochill, and must be left on the starboard side. Two more white buoys are on the Unrest: and, farther in, are three beacons: all are to be left on the starboard side: between them and the buoys on the Roche-bank lies the passage to Zuderickzee.

BROUWERS-HAVEN, in the Island of SCHOWEN. The island of Schowen lies to the N. E. of Walcheren-island; it has many sand-hills on it; some are long and white, and are called the Woolpacks; others appear in hummocks. On this island there are two light-houses, one on the easternmost part of the high sand-hill, and the other nearer the shore; they bear from each other S. S. E. and N. N. W. Zuderickzee-church, on this island, appears, at a distance, in shape a little like St. Paul's, in London.

About N. W. by N. from Schowen, and athwart of Brouwers-Haven-gat, are two sand-banks; on the outermost, called the *Bree*, or *Broad-bank*, are, on its shoalest part, 5 fathoms at low water; and on the other, called the *Middle-bank*, 6 fathoms on its shoalest part. Between the Broad-bank and Middle-kank are 15 fathoms; and, between the latter and the gat, are 12, 10, 8, 6, and 4, fathoms; the outer bank lies about 17 miles from Schowen-island, and the other 11 or 12 miles from it.

There are two passages or entrances to Brouwershaven, which are formed by three banks, called the Newsand, the Hide, and the Oosten or East-bank. The southern one, called the *New Deep*, lies between the Newsand and Hide, and the northern one, or Keel, between the Hide and East-bank. In the former, the least depth is 2½ and 3 fathoms; in the latter 3½ and 4 fathoms. The mark to run by into the New Deep is, the high lights on the west end of Schowen, just open to the southward of the low light, bearing, nearly, S. E. by S. Thence coasting by the lead, along shore, until Remisse or Remist-steeple, on the N. W. part of Schowen, bears S. E.

The mark for the *Keel*, which is the best and most direct passage, is, Remist-steeple, nearly S. E. on with the easternmost of the high sand-hills; run in with this mark until the steeple of Outdorp, which is a white spire, on Goree-island, comes on with the steeple of Goree-church.

church. The last mark will lead you in until near the second buoy; or, should there be no buoys, until Bommene comes a little open to the northward of Oxtail, or Ostenfleers, (a point of Schowen, which lies a little to the westward of Brouwers-haven;) this mark will lead all the way to Brouwers-haven.—This channel is wide, deep, and convenient for large ships. Should you have occasion to turn to windward in it, you may stand a considerable way on each side of the outermost and second buoys: but, southward of them, is the deepest and best channel. The third buoy, which has a tail on it, lies on the point of a sand which runs off from the East-bank; you must therefore go to the southward of it. The Schowen-shore is, all along, very steep: in the shoalest part, which is in the gat between the west end of the East-bank and the Hide-sand, are 3½ fathoms at low water; in the other parts there are 4, 5, 6, 7, 8, and 10, fathoms.

GOREE-GAT. Goree-island lies to the eastward of Schowen, and appears at a distance in hummocks; the land on the west end is highest, and appears white. On this island you will see, when approaching it from the sea, a large square steeple, and a large beacon, built with brick, which appears like a spire; as you proceed along shore towards Goree-gat, you will see a square steeple to the eastward of the beacon, called Outdorp, and also a mill standing by Goree-church, which serve as a mark to lead you to Helvoetsluys.

In sailing for the gat, you must bring Goree-Church-steeple on with the beacon, and bearing about S. E. In the night a light is kept in the church. The deepest water is close to the East-bank, with Goree-steeple on with a farm-house, which stands to the southward of the beacon. The bar stretches across from the west end of the Hinder to the East-bank; 14 or 15 feet are on it at low water. The water rises, in common spring-tides, only 7 or 8 feet. Gales of wind from the N. W. quarter increase the tides. When Zuderick-Zee-church comes on with the westernmost part of Goree-island, bearing S. by W. you are on the outer part of the Hinder: and, when Renist spire-steeple comes on with the same part of Goree-island, bearing S. W. by W. you are over, or within the tail of the Hinder, or bar. In turning over the bar, you may stand to the northward, till Outdorp-church just touches the beacon: and to the southward, until Goree-steeple appears about half a cable's length open to the southward of the beacon, or until Goree-steeple comes on with the farm-house to the southwatd of the beacon. On the Hinder-side the water shoalens gradually, but the East-bank is steep; and, near the island, the soundings are not so gradual. When within the bar, you may steer along the shore, E. by S. in 5, 6, and 7, fathoms. Before you get the length of Goree-heads, is a sand which runs off from shore, called Slim-hook: be careful to give this sand a berth in rounding the north point of the island. Between this point and Goree-heads, you may anchor in 7 fathoms.

From Goree-heads to Helvoetsluys the course is about S. E.; observe, to keep the mill about a sail's breadth open to the northward of Goree-steeple: between, are 4, 5, 6, 7, 6, and 5, fathoms water. You may anchor, either below the heads or abreast of them, in 5 or 6 fathoms. The passage between the heads lies in about N. N. E.—The flood runs very strongly past the heads to the eastward, and the ebb to the westward. The mark to lead you through *Quax-deep*, which lies between the north end of the Hinder and the flat which runs off from the west end of Voorn-island, is, the trees which stand to the northward of Helvoet-heads just open to the northward of Quax farm-house.

The Tide flows at Goree-gat, on the new and full days of the moon, at half past 1 o'clock; and the stream continues to run, in the offing, until half past 4 o'clock. Soon after the flood has begun to run without Goree-gat, it begins to run into the same.

ISLAND of VOORN. Eastward of Goree-island is the island of Voorn; it appears from the sea in hummocks. On the east part of this island stands the Breil or Brill-church, with a large square steeple; and, about 4 or 5 miles to the eastward of the Brill, stands Gravesant-church, which has a very tall spire-steeple, and stands at a little distance from shore. Between these churches lies the entrance of the Maes.

The Marks for the outer Buoy of the Maes are, Goree-steeple, S. S. W. ½ W.; the Brill-steeple, S. E. by S.; Gravesant-steeple, E. by N.

To

To steer for the buoy from the southward, bring the west end of Schowen W. S. W. ¼ S.; then steer E. N. E. ¾ N. in 5 and 4 fathoms: the buoy lies in 3 fathoms at low water. Here it will be requisite to take a pilot.

Twenty-two leagues and a half N. E. ¼ N. from the Maes is the *Texel-island*: the land, all the way between, is low and level; and the coast is so clear, that you may run along it nearly all the way in 5 or 4 fathoms' water.

A little to the northward of Gravesant, on the north side of the Maes-mouth, is a square steeple, with a small turret on it. By the shore, abreast of this steeple, is a white sand-hill; and, 3 leagues northward of this sand-hill, is *Scheveling*, a small fishing-town, having one church with a small spire-steeple. The land appears in hummocks. Scheveling, from sea, may be known by several spire-steeples together, which are at the Hague: one of the largest is square, with a spire on it. Two leagues northward of Scheveling is the town of *Katwyk*; it stands close to the shore, and has a large church with a small spire-steeple. Southward of this church stands a beacon, which appears at sea like a steeple. *Rynburgh* and *Valckenburgh* have spire-steeples. The land near to the shore is full of sand-hills; which at a distance, appear in hummocks. Three miles northward of Katwyk is *Nordwyk*, which has a square steeple with a small spire on it: near this church is a fire-beacon, or light. The hummocks on the land here appear somewhat higher than those to the southward. To the northward of this Nordwyk, which is called Nordwyk-by-the-sea, is Nordwyk-in-land; the latter has a church with a square steeple, and a little beacon on it, and also a small tower on the middle of the church. Eight miles northward of Nordwyk *is Standfort*, with a tall spire-steeple: when abreast of it, you will see a large house with a barn close to it; and, southward of it, a little hummock appears like the top of a beacon. Here is also a lighthouse. The land here, as in other parts of the coast, appears in hummocks.—Three leagues to the northward of Standfort is *Wyk-op-Zee*; which has a church with a square steeple, and a lighthouse: there is a sand-hill close by the shore, higher than any of the land thereabouts. When the other steeple and this sand-hill are on a line with each other, the former seems to stand on the latter like a lighthouse. The land here appears double, with white sand-hills, and is somewhat higher than the land to the southward. This land is distinguishable, when coming in from sea, by Haerlem-church, which stands at some distance in-land, with a spire-steeple in the middle of it; and also by Beverwyck, a little to the northward of Haerlem, with a high spire-steeple.

Seven miles to the northward of Wyk-op-Zee is Egmont-op-Zee, which has a beacon appearing like a bluff square steeple, and two beacons, or lights, close by it. Here the land is low, with here and there a hummock. This part of the coast is distinguished by three spire-steeples, standing in Egmont-in-land, one of which is larger than either of the other two. About 5 miles or 2 leagues to the northward of Egmont-op-Zee is *Camperdown* (hereafter described), which at a distance appears in hummocks. Three miles to the northward of Camperdown is Petten, a small fishing-town, appearing in hummocks, with several houses and mills upon them: it has one church with a spire-steeple, which appears like a barn: when abreast of the town, the steeple seems to stand in the middle of the church. Close to the town is a sand-hill, upon which you will see, when abreast of it, a large building like a lighthouse. Off Petten is a knowl, called the Polder, a shoal which lies near the shore, and has 2 fathoms on it at low water. Three leagues and a half to the northward of Petten is Kykdown, which is a high white sand-hill, with a red building and a lighthouse upon it. In approaching Kykdown, on which is a fort, you will descry two beacons, which serve as a mark leading to the outer buoy of the Texel, called the buoy of the Land-deep.—The land between Petween Petten and Kykdown is full of sand-hills, which appear at a distance in hummocks. A little to the northward of Kykdown is the Texel, the land of which is low, and appears at a distance in hummocks. On this island are four churches; three have steeples, the other is without, and is covered with blue slates.

TEXEL. Ships from England, bound to Amsterdam, or any port within the Zuiderzee, should endeavour to make *Camperdown*, which lies about 6 leagues to the southward of Kykdown, at the entrance into the Texel. Camperdown is a large sand-down, in latitude 52° 42′; to the southward of which, about 5 miles, are two lights before-mentioned, and the large beacon, which appears in the day like a square tower, or steeple. You may see the coast of Holland, when in 12 fathoms water, athwart of Egmont, Camperdown, or Petten; and may run or stand into 6, 5, or 4½, fathoms along the shore.

Be careful that you do not mistake Camperdown for Kykdown; as, between Camperdown and Petten, or the Downs of Callants-Ogh, the land is so low as to appear like the entrance into a spacious harbour.

The southern entrance of the Texel, is 41 leagues E. N. E. ¼ N. corrected, or nearly East, by compass, from Orfordness.

After you have made Camperdown in 9 or 8 fathoms, steer N. E. by E. or N. E. along shore towards Petten; to the southward of which, the land is level with the water, with several houses and windmills upon it.

Be careful to avoid the Polder; and, after you are past Patten, run along shore N. E. by N. or N. N. E. nearly 3 leagues, when you will see two small beacons standing upon the sand-downs to the southward of Kykdown; when these beacons bear S. E. by E. ½ E. you will be abreast the first black buoy that lies upon the south end of the Haaks. Then the outermost beacon above Kykdown will just appear above the north declivity of the said down, bearing N. E. ½ E.

In the night, keeping the light upon Kykdown N. E. will run you in mid-channel; or keep the lead in 4½ or 4 fathoms water, till you are entered between the buoys and the main.

The Haaks or banks which form the boundary of the channels of the Texel are extensive and very dangerous, being steep-to. In rounding them, vessels should never approach nearer than in 12 fathoms, or than just within sight of the land of the Texel.

There are now only two passages into the Texel; one to the southward, and one to the northward. Of these the former, called the Schulp Gat, is that generally used. There was, however, formerly a much better channel than either of these, named the *Land-Deep*, but this has unfortunately been completely blown up and destroyed, by repeated and heavy gales; although, in the year 1799, the British fleet passed through it to the Texel-road and Vlieter.

The Schulp Gat, or South Channel, is narrow, but is regularly buoyed on either side, with white buoys on the land or starboard side, with black buoys on the other, which form a sufficient guide for sailing through it. They are occasionally shifted, according to the shifting of the sands. The least depth is about 18 feet at low water. With a weather-going tide, there is a dreadful sea upon the Haaks in a gale.

In running into the Road, you will see on the north side a black buoy upon the Laan, a sand which stretches off shore. The mark for it is, the uppermost beacon, near the Helder, on with the middle house of three, which stand upon the plain, bearing south.

Common tides in the Texel rise but 3 feet; spring tides about 6 or 7 feet.

The common anchorage is to the eastward of Schan's Fort, on the island, where there is a good riding, with the land of the Texel trending from N. to N. E. in 7, 8, and 9. fathoms.

With the wind strong to the W. or W. N. W. there is always a heavy and broken sea in the Texel; and, as the ground is exceedingly bad to hold an anchor, it is better to come to in deep water, before you get upon the bank, in 10 or 11 fathoms; as here the ground is better, and you have to drag up the bank. But if you come-to on the height of the ground, which is loose, you will drive off again into deep water, and on-shore upon the sand, before it is possible to bring up, even with four anchors ahead, the ground being nothing but soft mud.

Large ships cannot leave the Texel by this channel, unless the wind blow from between the N. and E. by S.

SPANIARD's GAT, *the northern Entrance of the Texel*. Small vessels from the northward commonly go in by this channel, between Keyser's Flat on one side, and the Horst on the other. In the passage there

there were formerly 6, 5, 4, and 3, fathoms; but it has lately grown up very considerably, and strangers should not venture without a pilot. The course in is nearly S. W. ½ W. to the distance of nearly 2 leagues from the entrance, thence rounding to the eastward, as before described, to the road.

DIRECTIONS for the different Entrances into the FLIE-GAT, between FLIE-LAND and SCHELLING-ISLAND, viz. the HOLLEPORT, the RUSSIAN-GAT, and STORTEMELK-GAT.

THE HOLLEPORT. The outermost black buoy lies a little distance from the west end of the sand, upon the north side of the channel. The long mark is, Brandaris (which is a high tower upon the Schelling between the two beacons, but nearest to the southernmost, or small one); and the thwart-mark is, the mill, upon the Flie, mid-way between the two beacons.

All the black buoys at the entrance must be left on the larboard, and the white buoys on the starboard, side.

The second black buoy and the first white buoy lie with the Flieland mill and the lower beacon in one. Just below the black buoy, and a little into the channel, lies a small knowl, called the Bol, which has a beacon upon it: this must be left to the northward.—The course from the first to the second black buoy is E. S. E. nearly one mile.

The third black and second white buoys lie with the beacons upon the Flie in one.

The fourth black and third white buoys have the upper beacon mid-way between the mill and lower beacon. The course up, from the second black to the fourth black buoy, in a fair-way, is East one mile and a half.

The fifth black and fourth white buoys lie with the lighthouse and lower beacon in one.

The fifth white buoy is the buoy of Karnemelks-hoek. It lies with the easternmost beacon upon the Schelling on with Brandaris.

The course from the fourth black buoy to Karnemelks-hoek, is S. S. E. nearly one mile.

The course from Karnemelks-hoek into the road is nearly S. S. W. altogether 4 miles.

The bar, or shoalest place, is between the second black and first white buoy, where you will have 3 fathoms water; but be careful to give the second black buoy a good berth, if the beacon upon the Bol should be gone.

Soon after you have past these two buoys, you will have 3½ and then 4 fathoms water, till you come between the fourth black and third white buoys, when you will fall into 6 and 7 fathoms water, and then 9 and 13 fathoms abreast of Karnemelks-hoek; which water you will carry nearly into the road, when you anchor in 6, 5, or 4 fathoms, the light bearing N. N. W. abreast the red buoy.

THE RUSSIAN-GAT. The outermost buoy of this gat lies in 8 fathoms water; the thwart-mark is, Brandaris a handspike's length to the southward of the northernmost beacon upon the Schelling; and the long mark is, the upper beacon upon the Flie between the mill and lower beacon.

This buoy and the other must be left to the eastward; they lie upon the north side.

Upon the west side are two beacons, which lie upon the north grounds of the Holleport. The outermost has, for a thwart-mark, Brandaris between the two beacons midway; and the long mark is, the upper beacon upon the Flie just open to the eastward of the lower beacon. This beacon lies in 20 feet water. The course from the outermost buoy till you enter the Holleport, between the fourth and fifth black buoys, is S. W. one mile and a half. At the entrance are 17 feet; after which you have 3, and then 4, till you come in 6 and 7, fathoms, in the Holleport.

STORTEMELK-GAT. Coming from sea, keep the small beacon (that stands near the shore, and about two miles and a half to the westward of the lower beacon upon the Flie) between the Lighthouse-down and the White-down, which lies to the westward of it, till you come close under the land, where you will find the first swinging-

swinging-beacon, which must be left to the northward. The small beacon bears S. W. from this swinging-beacon, being then on with the west end of the White-down. After you are over the bar, you must steer along shore, leaving the two swinging beacons and four black buoys on the larboard, and the two white buoys on the starboard, side. The course up, from the entrance of this gat to the first white buoy, is nearly East 4 miles; and then S. E. by E. half a mile, between the second white, and fourth black, buoy, into the Flie-stream; from which the course into the road is S. S. W.

Upon the shoal part of the entrance, which lies just to the westward of the first swinging beacon, are 15 feet water; then 3, and, abreast of the second beacon, 5, fathoms; athwart the first black buoy is 6 fathoms; and the same depth till you come between the fourth black and second white buoys, where are only 13 feet, but soon after 9 or 10 fathoms.

Between the two white buoys lies the entrance into the MONNEKE-SLOTE; to go into which, so soon as you are past the first white buoy, run close alongside the east end of the Flie-island, between it and the *Riggle-sand*, upon the north end of which lies the second white buoy. After you are past the end of the island, haul close round the point West and W. by S. till you come before the town.

Almost abreast of this channel, but rather above it, upon the east wall, lie three black buoys, just to the southward of Schelling-channel. The northernmost is called the *Riggles-buoy*; the middle one, the *Kaper's-buoy*; and the southern one, *Caap* and *Mull-buoy*; this lies with the beacon and mill upon the Flie in one.

N. B. Be careful to avoid the Yzer (or Iron) Gat, which runs in between the Holleport and Stortemelk-gat, as there is not any passage through. In the entrance of this gat is placed a swinging-beacon with a cross upon it.

TEXEL to the EMS, WEESER, ELBE, &c. If ships from the westward for the Ems pass the Texel at the distance of 16 or 17 miles, they will have from 13 to 17 fathoms water, with fine white sand and black specks, or rather sandy ground in general. If bound for Heiligeland, steer directly E. ¼ N. or E. ½ N. with an open wind from W. S. W. W. or W. N. W. until you increase your depth 20 or 22 fathoms, with blue clay ground, in that part called Heiligeland Deep. Twenty-five or 26 fathoms will then be to the northward, and only 14 or 15 fathoms, white sandy ground, to the southward. Stand no nearer to the south shore than 11 or 12 fathoms: should the wind blow from the southward, you may safely run into 13 fathoms. The coasts are low, but in clear weather may be seen from 12 fathoms water.

It will be particularly necessary, with the wind large, to keep in 15 or 16 fathoms until you have passed to the northward of Borkum-reef, which may be known by the peculiar soundings which lie off it; namely, small red stones, and shells of a darkish red or yellowish colour, extending 9 leagues to the northward and N. N. E. of Borkum, and at the distance of 19 leagues from Heiligeland. As there are no other soundings of a similar kind on any other part of the coast, they cannot be mistaken; and they therefore afford a sure guide when bound either to the Elbe or the Ems. There is about a fathom and a half less upon them than on either side.

DIRECTIONS for the WESTERN and EASTERN EMS, and the HOMME-GAT, being the Channels up to DELFZEIL and EMDEN.

GENERAL DIRECTIONS for the WESTERN EMS.

UPON Rottum are two beacons and one house; bring these into the S. S. E. and the southernmost or large beacon will be midway between the house to the westward and the small beacon to the eastward.

Upon Borkum are two beacons, a lighthouse (or beacon), and a large high steeple; bring the little or southernmost beacon in one with the steeple, they will then bear S. E. by E. ¼ E. Upon this mark

mark lies the outermost black buoy, in 6 fathoms water. When upward bound, this buoy must be left on the starboard-side, as must all the black buoys in this and the other channel; and the white buoys on the larboard-side.

From the outward black buoy, steer S. E. by E. ¼ E. or keep the southernmost beacon on Borkum and the steeple on with each other, which will lead to a white buoy, upon Geldraak's Plaat, on the larboard-side. Against this buoy is the shoalest place in the Ems, which has not less than 3½ and 3¼ fathoms at low water. Keeping on the same course, the beacon and steeple in one, you will go on safely, minding not to get to the southward of Hubert's Plaat, upon which is a black buoy, to be left on the starboard side.

Hubert's Plaat is a shifting sand; to the southward of it is more water than in the fair-way of the Ems, but no passage through; for which reason, keep nearest to the north-eastward, or Borkum-reef.

When abreast of the white buoy on Geldraak's Plaat, the beacons on Rottum will appear on with each other. By these marks and bearings, you may sail with safety into the West Ems to 5, 6, or 7, fathoms; then sail a little more southerly until the small beacon upon Borkum comes open to the northward of the steeple, by which you will avoid approaching too near Borkum and the reef; for, here it is steep-to, and vessels must not get into less than 10 fathoms water.

From the bight of Borkum steer south, till you see the white buoy upon the Nieuvesteert on the larboard side: you must be careful not to get to the eastward of it, as the tide of flood sets strong upon the sand; and must not go farther to the eastward than by the following marks, viz. keep the great beacon and lighthouse just open to the westward of the steeple upon Borkum: but, if the weather be thick or hazy, and you cannot see these marks, you may by the lead keep the south side on board in 6 or 7 fathoms.

Upon the south-east end of the Nieuvesteert lies another white buoy; after passing it, you may sail along the east side, on 6, 5, or 4, fathoms to the Emshorn, upon which lies a black buoy. Be very careful of this sand, as it is steep-to, and 8 fathoms are close to it to the eastward: go no nearer than 5 fathoms. Here the Eastern and Western Ems join, and make this place very dangerous; so that, if a ship get on shore here, it is most likely she will be lost. As the E. and W. Ems join at the Emshorn, and make but one channel to Emden, it will be described hereafter.

The Western Ems is seldom used except by small vessels.

Particular Remarks on the Entrance of the Western Ems.

VESSELS from the westward must not go nearer the Schill-grounds than 6 or 7 fathoms. These banks lie to the westward of the Western Ems channel. Thus they will avoid getting to the southward of the Outer Buoy of the West Ems.

If by thick weather or otherwise you have overshot the West Ems, sail E. N. E. and you will find a hole of 13 or 14 fathoms; then shoalen, and go over Borkum-reef, in 9 or 10 fathoms, until the great beacon and light appear a handspike's length to the eastward of the steeple; there you will find the first black buoy in 7 or 8 fathoms.

Those bound hence for the Homme-gat must keep the lead to the northward of Juist-reef in 8, 7, or 6, fathoms, according to the wind and weather, till they bring the steeple on Borkum S. W. by S. being then on the west side of the round rugged down; then you are before the Homme-gat, and by the red buoy which lies in 6 fathoms water.

DIRECTIONS for the EASTERN EMS.

BRING the great beacon, upon Borkum, a handspike's length to the eastward of the steeple; keep them thus until in 8 or 7 fathoms water, where you will find the outer black buoy upon Borkum-reef: the steeple and beacon bearing S. S. E. from you. Then sail in S. E. by E. and you will find two black buoys on the starboard side, and one white buoy on the larboard side, which is the outermost buoy upon Juist-reef; the lighthouse being then one-third of the apparent distance between the great beacon and steeple bearing S. ¼ E. Here you will be in 4 fathoms water. When farther in, steer S. E. ¼ E. (as the first of the flood sets off from the reef of Borkum), and keep

keep this course until the two beacons, upon the east land of Borkum, are abreast of the fifth black and third white buoy; then sail a point more to the southward, to the king's buoy, which is the tenth black buoy, where is a road for great ships, in 10 or 11 fathoms. From the king's buoy, you may sail S. by E. to the kaap (or beacon buoy): here is shoaler water, and the entrance into the Wester-balg. The best road is in 6, 7, or 8, fathoms.

Above the seventh black buoy, the tide of flood sets strongly upon the Ransel, as high as the king's buoy; and the tide of ebb upon the sixth black buoy, which lies upon the Brewer's Plaat.

From the Caap-buoy, through the Wester-balg, the course is S. W. by S. to the Emshorn.—A very good mark to run by is, the large spire-steeple of Holwryde, upon the Groningen-shore, by a wood called the Wood of Watrum*:—bring the steeple on the west side of the wood just touching. This mark will lead through the Wester-balg to the Emshorn; in going through, you will find a black and some brush-beacons, on the Ransel, on the starboard side, and two white buoys on the larboard side, which lie near the Schuite-sand. Here the east side is flat, and you may keep by it in 4, 3, or 2, fathoms.

DIRECTIONS for the HOMME-GAT.

BRING the beacons on the east end of Borkum on with each other, bearing S by W. ½ W.; and the steeple upon Borkum on with the west side of a round rugged down (called by the islanders Kat-Duyn, which is remarkable, and readily known), the steeple bearing S. W. by S. These are the marks for the outer buoy, which is red, and lies in 6 fathoms water: keep this course, the two beacons in one, allowing for the wind and tide. The flood setting over this gat to the south-eastward, sailing thus you will not find less than 15 feet at low water: this depth continues but to a small distance; and thence there are 5, 6, or 7, fathoms throughout into the East Ems.

When sailing into this gat, you will find, upon the larboard side, a white buoy, with a flag; and, upon the starboard side, a swinging beacon, with an osier basket for its head. From this beacon you may steer south, and open the beacon to the southward; but approach no nearer to the Mermert-sand on the east side, which is steep-to, than 10 or 9 fathoms. Here you will have entered into the East-Ems-channel, and the south course (before-described) will carry you up to the king's buoy.

Particular Remarks on entering the Homme-Gat.

VESSELS from the eastward must not approach Juist into less than 10 fathoms; in that depth they may, with safety, sail to the outer buoy of the Homme-gat.

Those who pass this gat, and are bound into the East-Ems, must sail along Juist-reef, in 5, 6, or 7, fathoms, till the steeple comes into the S. by W.; then they may sail over the reef, in 3 or 3½ fathoms, uneven ground; when they fall off into 5, 6, or 7, fathoms, they may shape a course up the Eastern Ems, as before directed.

The foregoing directions have described the three Gats, or entrances of the Ems, up to the Emshorn, where they all join.—The following are

DIRECTIONS from the EMSHORN, to the Road before EMDEN.

HAVING passed the Emshorn, come into no less than 9 fathoms water upon the west side, nor into less than 6 or 5 to the eastward.—When you open the windmill to the southward of Delfzeil, keeping it open will lead you clear of Hound-sand, or the Paap, upon which, on the larboard side, is a white buoy: having past it, you may keep the lead upon the Groningen-shore, in 5 fathoms water, until you open the haven of Delfziel: then you may keep over toward the east shore, in 6, 7, or 5, fathoms: in mid-channel are 8, 9, and 10, fathoms, soft sticking ground: then keep over E. S. E. to the point out he East

* In winter, when the buoys are taken up, navigators should avail themselves of this mark.

East Friosland side, called Betwer-Knok, upon which is a single house. From the point a break-water-jetty runs out with a swinging beacon, altogether about three cables' length from shore. Steering along the East Friesland-side, in 4 or 5 fathoms water, will bring you up to the road before Emden.

Any ship may sail, at high water, up to the city, where ships and vessels, drawing 12 feet water, may conveniently lie along near the houses and buildings.

DIRECTIONS for sailing towards HEILIGELAND from the Westward.

AFTER passing the Texel, it will be necessary, with the wind large, to keep in 15 or 16 fathoms until you have passed Borkum reef, which stretches out to the N. W. and is known by the small red stones, &c. which have already been mentioned, and which will appear on your lead. With an E. ½ N. course, you will hence sail in between Heiligeland and the Elbe; but, should you pass the Texel with northerly winds, or in rainy weather, being bound for the Elbe, you are naturally fearful of the south shore; in such case, keep farther off. Should you guess yourself to be within 7 or 8 leagues of Heiligeland, in 17 or 18 fathoms water, and have soft muddy ground, such as is found in the fair-way of the island, you must not steer for it, because you may be deceived in your reckoning; for, 6 or 7 leagues to the northward of the island, there are the same soundings as along the south shore, and also soft ground in a parallel with it. Therefore you must be very sure that you have your soundings from the south shore, or a good observation from the island, before you can bear away. It has happened to many, after passing the Texel with northerly winds, who judged themselves abreast of the Reef of Borkum, in 18 or 19 fathoms water, and steered S. S. E. to gain the south shore, until they had 14 fathoms, coarse sand, and small red stones, like the soundings of the reef, that they found themselves to be several leagues to the northward of the island.

A very considerable allowance should be made for the operation of the tide between the Texel and Heiligeland, which frequently sets a ship several leagues to the eastward of the reckoning.

HEILIGELAND, called also Helegoland, or Holy-island, is a flat island, and may be seen at 5 or 6 leagues distance in clear weather, on which none but pilots and fishermen live.

It lies in latitude 54° 11′ N. long. 7° 49′ E. and on it is a good lighthouse, 240 feet high, kept burning the whole year. On the S. E. side, not far from the island, lies a rock, called the Steen, on which is a buoy: the marks for this rock are, a small wooden beacon, standing on the south end of the island, and the lighthouse near it; also two wooden beacons on the Sand Downs, which lie about one mile to the eastward of the island, in a line. The buoy on this rock is sometimes driven away by stormy weather, therefore the marks are the surest. There is also a broken point on the south end of the island, called the Monk. When you bring the Monk clear of the island, then you may steer your course for the Elbe, as hereafter directed.

Heiligeland bearing East, 8 miles distant.

A. The Monk-Rock.

The Sandy Isle, or Sand-downs consist of some small hills. Between these downs and the island you may ride, in case of distress, if the ship cannot go into the rivers on account of the ice. On the east side of the downs there is good riding with W. and W. S. W. winds, in 7, 8, or 10, fathoms.

Heiligeland and the Sandy Downs are both surrounded by dangerous rocky shelves, which run off N. N. W. in narrow ridges at each end of these islands. That from the north end of Heiligeland is about one mile in length; that from Sandy-downs, or Sandy-island, about 4 miles,

4 miles, and has on it 2½ and 3 fathoms water. Near them, on each side, are 10 and 12 fathoms. The leading-mark from the northward for Heiligeland-road, which is on the east side of the island, is a beacon on the shelf just open of the cliff, bearing S. by E. Keep this mark on until you are half a mile from the north end of the island. Then steer S. E. ¼ of a mile for the anchorage. But observe to allow for the tide. From Heiligeland the *outer buoy* at the entrance of the Elbe bears nearly S. E. by S. 19 miles.

Wrangeroog is a low island, the easternmost island westward of the Weser, with the tower of a church on it. In winter, there is a lighthouse kept there. Round this island is a sandy shore. You may pass by this island in 10 or 11 fathoms.

Between Heiligeland and Wrangeroog, when the weather is so thick that neither signal nor land is to be seen, steer no nearer than in 13 fathoms, clay ground. With a flood-tide, and fair weather, you may anchor; but at ebb you must keep under sail. Allowance must be made for the current, as the flood will drive you to the southward, and the ebb the contrary.

WESER. When *bound from Heiligeland to the Weser*, with northerly winds, you must steer to the southward until you get sight of Wrangeroog; then bring the lighthouse a handspike's length to the eastward of the tower of Wrangeroog; or bring Wrangeroog to bear S. W. from you, but no farther to the westward; then you will run close by the outermost white buoy on the Weser. From this buoy to the fourth black buoy, callad the Cross-buoy, the course is S. E.; then steer as hereafter mentioned.

In sailing from the Westward for the Weser, in a fair wind, keep in 11 or 12 fathoms along shore until you see Wrangeroog-tower: keep in that depth of water, and it will bring you to the first black buoy, which you must leave on your starboard side. You must do so with all the other black buoys; but be sure to take your soundings from the south shore; because, N. W. from the first buoy in the entrance, is a flat, on which are no more than 9, 10, and 11, fathoms. The west end of this flat bears N. N. W. from the tower of Wrangeroog. When you are in the Weser, or before it, you will have soft ground, which is a sure mark that you are there. Keep in 11 fathoms water, and it will bring you in sight of the Key-buoy, which lies on the south side, with the tower of Wrangeroog, bearing W. S. W. ½ S. It lies in 10¼ fathoms water, with the first black buoy, No. 47, and has a gilt key on it.

The second black buoy, marked A. has a small spar with a gilt pear on it.

The third black buoy is marked B.

The fourth black buoy is marked C, and has a gilt cross on it, at which the tower of Wrangeroog will bear from you nearly West. The course from the first to the fourth black buoy is S. E. ½ E. The first of the flood runs strongly to the southward into the Jade, and the ebb contrary, to the northward.

The fifth black buoy is marked D, and the sixth E.

The seventh black buoy is called the Mellum, and marked F; it has a small spar with a flag on it, at which Wrangeroog will bear from you W. by N. The course from the fourth buoy to the seventh is S. E. When you pass the seventh buoy, keep a high wooden beacon on Smits-Steert S. by W. from you; and you will be in the fair-way.

The eighth black buoy is marked G; the ninth H; and the tenth I. The eleventh is marked K, and lies a little below the beacon in Smits-Steert. From the seventh buoy to the eighth, the course is S. by E. From the eighth to the beacon on Smits-Steert the course is S. S. E.

The twelfth black buoy is marked L, lies with the beacon on Smits-Steert nearly N. W. From this buoy to the thirteenth, marked M, called Hallers-buoy, and the fourteenth, marked N, which lies before the high-way, the course is S. E. ½ S.

The fifteenth black buoy is marked O, and is called the Boght buoy. The sixteenth is marked P, and has a spar with a flag; with the church of Langwardden S. W. by S. From the buoy which lies before the high-way, marked N, to that marked P, the course is nearly S. by E.

The seventeenth black buoy is marked Q, the eighteenth R, and the nineteenth S. The twentieth is marked T. Having passed this buoy, you sail then close along shore to Blexum. At Blexum you will get a river-pilot to carry you to Bremen, a distance of 11 leagues.

The

The white buoys are all numbered as follow:

No. 1, the outermost in the Weser, bears N. E. by E. ½ E. from Wrangeroog.

No. 2, the second lies abreast of the sixth black buoy.

N. 3 and 4 lie before Tegelers-Plaat; on each is a spar with a flag. No. 5, abreast of the eleventh black buoy, has also a flag.

No. 6, 7, and 8, lie above the Middle-Plaat; on each of these is a spar with a flag.

No. 9, 10, and 11, are simply numbered, and lie in the channel near the shore.

N. B. On all the black buoys, the letters are marked with white paint; and, on all the white buoys, with black numbers, and very plainly. You may run close to any of them to see their marks or numbers, as all ships do that come to this port. From the Key-buoy to the beacon in Smits-Steert, the distance is about 4 leagues; from Smits-Steert to Blexum about 6 leagues. According to the Admiralty orders, the pilots must go as far out to sea as possible.

THE RIVER ELBE. The north side of the entrance of the river Elbe is formed by the Vogel-sand, a bank 16 miles in length, which has on its eastern parts less than 3 fathoms water, but increasing to 6 fathoms in the middle, and thence to the westward, gradually declining to 12 fathoms. Within the western part of this sand, in latitude 54° 0′ lies the outer or red buoy of the Elbe, in 11 fathoms, at the distance of 20 miles S. E. by S. ¼ S. from the island of Heiligeland.

The south side of the channel is formed by a great flat called the Scaarhorn, to which vessels should not approach nearer than in 7 or 8 fathoms, as it is steep-to and nearly dry. Upon this sand is a remarkable wooden beacon, and a little island called the New-werk, upon which are a square tower and two beacons; also a lighthouse, which is lighted every night throughout the year.

Without the Schaarhorn, to the W. N. W. is a bank called the Trindle, which lies about two miles to the westward of the red buoy. Upon this bank there are only 2 and 2½ fathoms. It is so steep-to that vessels should not approach it nearer than in 13 fathoms.

At the outer or red buoy of the Elbe, on the outside, when stormy weather and ice does not prevent it, the Hamburgher-Admiralty pilot-galliot lies at anchor; out of which all ships that come from sea must take pilots. In case these do not steer the right course, they fire a gun and shew a flag. This galliot is chiefly known by a broad vane at the mast-head. In clear weather, you may see her between Heiligeland and the Elbe.

The channel of the river is regularly buoyed. On the north side all the buoys are white, and on the south side all black, the whole river up, which may be seen one from another. In the winter there is an ice buoy laid by each of the other buoys in bad weather. When the pilot-galliot can lie no longer by the red buoy, then it lies just within the channel, or to the E. of Voogelsand.

The great beacon on New-Werk, is not far from the lighthouse.—With this beacon and the lighthouse in one you are abreast of the first white buoy.

The tower on New-Werk, with the small beacon on Scaarhorn, the red buoy and the lighthouse of Heiligeland, nearly in a line, bear about S. E. by S. and N. W. by N. from each other.

At Curhaven there is, in case of need, a harbour for ships to winter in, when the ice will not permit them to go higher; ships coming from the Straits must be first cleared here, and such as have lost their anchors or cables, or are in any distress, by firing a gun, or hoisting their colors in a waft, will be immediately supplied, by order of the Admiralty, with what they stand in need of. The pilot-galliot sails from this port, when not prevented by the ice. When this cannot go out, a small fishing-boat is kept to meet the ships coming into the Elbe. The best harbour to save ships from the ice is *Gluckstadt*.

When you are near to Heiligeland, and bound for the Elbe, with a fair wind, you keep the island at least 2 miles to the northward; then steer E. by S. or E. S. E. until you open the Monk from the island, or until it bear N. W. ½ N.; then, with the flood, you may steer S. E. by S.; and, with an ebb, S. E. by E. to allow for the setting of the tides, particularly spring-tides. With the first of the flood, you may steer S. E. by S. and S. S. E. and, with an ebb, E. S. E. When you have sailed about 3 leagues from the island, you will have 15 fathoms; when

when 6 leagues, you will have 11 or 12 fathoms, on the tail of the Voogelsand, and will have soft yellow ground, with small shells; the red buoy then bearing S. E. In clear weather, you will see New-Werk, Scaarhorn-beacon, and all the marks. If you see the pilot-galliot, steer to her, as you come over the Voogelsand: and you will deepen your water to 12 or 13 fathoms, soft ground, and be in the fair-way.—When you come to the galliot, you must bring-to, till they put a pilot on board; but, should the galliot be gone, bring the Schaarhorn-beacon in a line with the tower of New-Werk; and steering with them thus, in 11 fathoms, will lead to the red buoy.

With a southerly wind, you need not go to the island for its mark, but give it a berth 4 miles to the northward; then, with a flood, steer S. E. by S. and S. S. E. with a scant wind; and, with an ebb, S. E. ½ E. You must keep your lead carefully going, and make allowances when your ship goes fast or slow, because the first of the flood sets N. E. over the Scaarhorn, and near high water it sets S. W. Always be careful to allow for tides and winds. The Scaarhorn is steep, from 10 to 9 and 7 fathoms, and then dry.

When you are over the Voogelsand, keep in 12 or 13 fathoms water, soft ground, which is the fair-way, as above.—Come no nearer the Scaarhorn than 10 fathoms, where there is hard ground; as there is also on the Voogelsand, opposite the red buoy, in 9 fathoms; and all along the Voogelsand, in 8, 7, 6, and 5, fathoms.

When you judge yourself to be in the midway between Wrangeroog and Heiligeland, if bound to the Elbe, with the flood, you must steer E. by S. and with an ebb E.; but, if you come along the south shore in 12 or 13 fathoms, and are to the eastward of the Weser, then steer with a flood E. N. E. and, with an ebb, E. Opposite the Weser you will have 17 or 18 fathoms water, in some places.—When in 15 fathoms water, the buoy will bear East, or nearly so. Your course with a flood is then E. by N. and, with an ebb, E. by S. into the Elbe; keep your lead going in 11 or 12 fathoms.

Should it be dark, thick, or rainy, Weather, keep along the south shore, in 11 or 12 fathoms water, till you judge yourself to be within the red buoy; *then steer up to the southward till you have 9 or 10 fathoms*; bear off again till you have 12 or 13 fathoms, in the fair-way; then anchor till the weather clears up.—It is not prudent to go far into the Elbe without seeing the buoys or marks.

If bound to the Elbe with Northerly winds, bring the Monk to bear N. W. ½ N.; then with a flood sail S. E. and S. E. by S. and, with an ebb, E. S. E. or S. E. by E.—With 10 or 11 fathoms you will be on the outer end of the Voogelsand; and may still keep on your course; but no farther to the eastward than to have the tower and the great beacon on New-Werk in a line.

DIRECTIONS up the RIVER ELBE. Be cautious to avoid the Trindle, before mentioned, having only 2 fathoms on it at low water; and, when in sight of the red buoy, marked A, the Scaarhorn-beacon and New-Werk-tower being in a line, steer to the eastward; bring New-Werk-light to bear S. E. by S. a little easterly of the red buoy; and the course from the red to the Ketel-buoy will be E. S. E. to the southward in 12 or 13 fathoms, and to the northward in from 9 to 10 fathoms water.

The Ketel-buoy, marked B, in 9½ fathoms, lies so that you may see the western house in the middle between the lighthouse and the barn, Scaarhorn-beacon bearing S. by E. and New-Werk-light S. E. by S. The course from the Ketel-buoy to the Schaar-buoy, marked C, is S. E. ½ E.; to the southward is 9 and 10 fathoms, in the middle 5 and 6, and to the northward 6 and 7 fathoms water.

The Schaar-buoy lies in 6 fathoms, New-Werk-light bearing S. E. ½ S. and New-Werk-tower being seen to the eastward of the great beacon.

From the Scaarhorn-buoy steer S. E. by S. for the black buoy marked C C, and thence to the buoy marked C D, called Hundebalje; at the black buoy the western house will appear eastward of the tower; and at Hundebalje you will see the little house a ship's length to the westword of the great beacon.

The course from the black buoy, below the Hundebalje, to the black lee-buoy, marked D, is S. E. ½ S. from it you may see the middle house almost separate, to the eastward of the barn.

From the black buoy steer S. E. ¼ E. for the Flugel-buoy, marked with the number 1.

There

There are, on the larboard side, 6 white buoys lying on the Voogelsand, marked as follow:

A. The first, or outer buoy, lies in 7 fathoms; the New-Werk-light appears on with the great beacon; so that the light which bears S. E. ½ S. is hidden by the beacon.

B. At this second buoy, the western house is seen a little to the westward of New-Werk-tower.

BC. Is the third buoy, from whence the little house appears about a ship's length to the westward of the great beacon.

CC. The fourth buoy, from which the little house to the eastward appears separated from the lighthouse.

C. The fifth buoy; the mark is the middle house to the eastward of the barn.

CD. The sixth, called the *Ice-buoy*; from it the middle of the house appears a ship's length distance to the westward of the tower.

Between the two Ice-buoys, the depth of water on the south side is from 4 to 6 fathoms, in the middle from 7 to 9 fathoms, and on the north side from 5 to 7 fathoms.

From the first white buoy on the Voogelsand to the white Ice-buoy, the course is S. E. by S.; and, from the Ice-buoy to the first buoy in the sea-channel, S. E.

In the channel, south eastward of the above, are 7 black and 6 white buoys; all are numbered, the black buoys having the following marks: from

No. 1. The eastern house appears to the eastward of the barn.

No. 2. The little house to the eastward of the middle house.

No. 3. The little house between the west point of the ditch and the eastern house.

No. 4. Klapmuz-beacon appears to the westward of the tower.

No. 5. The little house between Klapmuz-beacon and the tower.

No. 6. Klapmuz-beacon a handspike's length to the eastward of the great house.

No. 7. Klapmuz-beacon to the westward of the western house, and the Governor's house at Ritzbuttle in a direct line with the mill at Dose.

The 6 white buoys are also numbered, and their marks are as follow: from

No. 1. The eastern house appears to the eastward of the tower.

No. 2. The little house appears to the eastward of the middle house.

No. 3. The little house to the westward of the west point of the ditch.

No. 4. Klapmuz-beacon to the eastward of the barn.

No. 5. The little house between Klapmuz-beacon and the tower, and the Governor's house at Ritzbuttle to the westward of the mill at Dose.

No. 6. Klapmuz-beacon to the west of the eastern house, and Cuxhaven-beacon in a direct line with Tamenburg.

The course through the channel, from No. 1 to No. 7, is S. E. by E. ½ E.; and, S. E. ½ E. In the middle of the fair-way, there are 6, 7, and 8, fathoms.

HEILIGELAND to the EYDER and SKAW-POINT. From Heiligeland, the Entrance of the Eyder is E. S. E. 26 miles.

This river is regularly buoyed in the same manner as the Elbe, and the channel above is marked out by beacons on the edges of the sands. The latter, however, so frequently shift, that it is scarcely prudent to venture without a pilot.

The high spire of St. Peter's, on the north side, bearing E. N. E. is the first mark for the entrance. Having this on, proceed to bring in a line two beacons, which stand near the coast, upon the same side, and which lead to the first black buoy, lying on the starboard side. From this buoy, in clear weather, Heiligeland may be seen, bearing very nearly W. N. W.

The buoys, &c. are so placed as very clearly to mark out the channel: the black buoys on the starboard, and the white ones on the larboard side. Nearly at the height of the fifth black buoy a flat extends across the channel, having upon it a little cask-buoy with a flag, lying in 2 fathoms at low water, and which is to be left on the starboard hand. Above this the reaches become circuitous; and great caution is required in sailing up or down, especially as most of the beacons on the sands stand dry at low water.

There is a canal from the Eyder, through which vessels of 100 or 120 tons may pass into the Baltic, being raised or let down by means of six sluices. The breadth of the cut is 100 feet at top, and 54 at the bottom; the sluices are 27 feet broad, and 100 feet long, and the lowest depth of water is 10 feet. The length of this navigation, including the Eyder, from Tonningen to the eastern entrance, is about 76 English statute, or nearly 66 nautic, miles.

For the safety of vessels which are bound for the harbours or rivers in the neighbourhood of Heiligeland, and which may be carried, by accident or otherwise, to the northward of that island, a beacon has been erected on the sand-bank which lies one mile to the South of Amron, and to the west of the Isle of Pillworm, and which, in ordinary floods, rises 5 feet above the surface of the water. The height of this beacon is 60 feet. It may be seen from the distance of 12 miles, appearing at first like a sloop with a topsail set. From the light on Heiligeland the beacon bears (by a compass deviating 21 degrees westerly) N. E. about one third E. distant 25 miles.

The advantages to be derived from this beacon are as follow: 1. It serves to point out the sand-banks in that part. As soon as it can be distinctly seen from the deck, the vessel must not approach nearer; for, then the soundings will be from 6 to 5 fathoms, and the distance 8 miles. 2. The beacon serves also as an excellent mark for enabling vessels to regulate their course. When it is seen at the distance of about 8 miles, and bearing nearly east by compass, it gives the following magnetic courses and distances; regard being always had to the state and direction of the tide.

To the island of Heiligeland	S. W.	18 miles
Outermost red buoy of the Elbe . . .	S. ½ W.	30
Outermost black buoy of the Eyder . .	S. S. E.	20
Outermost red buoy of the Hever . .	S. E. by S.	12
Outermost black buoy of the Schmal Deep	S. E. ½ E.	4½
Lister deep	N. E. ½ E.	18

3. The beacon further serves as a principal mark for directing the navigation to these deeps and rivers.

To make the Schmal Deep. The beacon must be brought to bear N. E. ¼ E. from the vessel; and this course must be kept till within 4 miles of the beacon, where the Pillworm old Tower, bearing E. by S. the outermost black buoy of the Schmal Deep, will be found in 4½ fathoms. In clear weather the beacon may be brought within an eighth of the compass to the east of the outermost corner of Amron, and the Pillworm old Tower between North and South Oog, (or Oye,) but nearer to the first in the proportion of one to two.

To make the Hever. Let the beacon be brought 8 miles to the east; then let the above-mentioned course S. E. by S. be kept till North Holt, (or Head,) that is, the N. W. of the land of Eydersted, is seen E. S. E. or till the church and steeple of Wester-Hever come clear of the sand-downs. Then the beacon, which can be distinctly seen, bearing North, by compass, the outermost red buoy of the Hever will be discovered.

To make the Eyder. Let the beacon be brought 8 miles to the east, and let the course be S. S. E. till the beacon disappears to the north. The sand-down of Eydersted will then be discovered, and the course must be continued so long to the southward, in from 4 to 3½ fathoms, till the two beacons on Sud Hoft, or at St. Peter, appear in a straight line E. N. E. when the outermost buoy will be seen.

Lister Deep. In the same manner the beacon is of advantage for making the Lister Deep: for, as soon as it disappears to the south, the Island of Sylt is discovered; and, when the middle of this island, called Rotheliff, appears in the east, the course may be directed northward, very near the coast, till the northern point of it is reached; then, hauling to the east and south-east, good anchorage may be found behind the Liest.

The town of Varde or Warda, to the S. E. of the HORN POINT, has a good harbour, upon the bar of which are not less than 18 feet at high water. Two buoys serve as a guide to the entrance; the first is black, close to which vessels pass, leaving it on the starboard-side; and the second is white, which is to be left on the larboard. The entrance may be known by a small white steeple on the North side. But here, as well as in all the other passages on this coast, a pilot will be necessary to those unacquainted.

From

From *Heiligeland* the *Horn Point* bears N. E. by N. ½ N. 80 miles; along the coast between these places are the several small islands before-mentioned, which are surrounded by banks stretching out to a great distance to sea, but they are out of the way of ships bound to the northward.

Vessels bound from Heiligeland to Bovenbergen, or the Skaw, must shape such a course as will carry them clear of the extensive grounds to the S. W. and W. of the Horn Point. These grounds, commonly called the Horn Reefs, are exceedingly dangerous, being, in some parts, nearly dry at low water, even at the distance of 12 or 15 miles from the Point, from which their utmost extent is about eight leagues.

From *Heiligeland* to *Bovenbergen* the course is first, in order to avoid the Horn Reefs, N. ½ E. 30 leagues; and then N. E. 20 leagues.

From Bovenbergen to the Holmen, or Holms, it is N. E. ½ E. about 11 leagues; but from the Holms to Robsnout, and thence to the Skaw, it is rendered circuitous, by the shoals, &c. represented on the chart*.

When steering, give the Holms a berth of at least five miles, to avoid the dangerous rocky shoals which lie to the northward of the Point.

The easternmost part of the bank, called Jutland Reef, runs up along shore, and stretches above five leagues, off Bovenbergen to the Skaw Reef. It is steep-to, having, close to it, from 60 to 80 fathoms water, muddy ground; and, upon it, from 40 to 18 fathoms, with coarse sand and gravel. It extends about 12 leagues northward from Bovenbergen, and to about four leagues from the Skaw.

In dark weather, regard must be had to the current, which, in strong southerly winds, sets from the southward towards Norway, and sometimes will make a difference of 20 miles in 24 hours. Having crossed the bank, and come into the latitude of 57° 30′ you fall into 65 or 70 fathoms; the course to the Skaw is then E. by S. 32 leagues.

* The new chart of the North Sea, constructed from the surveys of Admiral Knight, Mr. Downie, &c. These shoals are most erroneously laid down in the preceding charts.

With the Holms S. ½ E. 10 miles distant, you will have 20 fathoms water, clay ground. The land will then appear like three hills or islands, the other land being too low to be seen. Upon the S. W. part stands a church, by which it may be distinguished.

Robsnout is a round bluff land, high enough to be seen at the distance of 6 or 7 leagues, in clear weather. On the top is a church with a spire steeple. The land on both sides is low; and to the eastward it falls into a bay, extending 5 leagues N. E. by E. to Hartshalls, where it appears like a saddle. The only remarkable object between these places, is a church with a square white steeple, the land being low and sandy.

Hartshalls is a long smooth hill, rather low in the middle, but appears steep on the eastern end. Directly off Robsnout, at the distance of 3 miles, is a rock; and, athwart of Hartshalls, about a mile from shore, is a rocky reef. There are also several other shoals having from four to thirteen fathoms on them, some of which are nearly seven miles from shore.

The course from Hartshalls to the Skaw is about E. ¾ N. eight leagues; the coast is low. In this course is a bank, parallel to the shore, extending E. and W. 13 miles, and is from two to four miles broad.—Its west end lies about 7 miles from Hartshalls, and has 10 fathoms on it: the east end has six fathoms on it, and is about six miles N. by W. ½ W. from the Skaw; on the middle are 10 fathoms; on the outer edge 21 and 25 fathoms; and, in the channel, between the bank and land, are from 17 to 12 fathoms.

The Skaw Point is very low, and has a light-house on it, on which a light is kept all the year. From off the Point, a rocky reef extends 2½ miles; its north-east extremity lies with the church and light-house on with each other, bearing W. by S. The north side of this reef is steep; approach no nearer to it than 10 fathoms water. To anchor under the Skaw on the south side, bring the light-house N. by W. in eight or nine fathoms' water; and, with the wind westerly, you will ride safely.

Appearance

Appearance of the Land from Robsnout to the Skaw, with the Light-house bearing S. E. by S.

GENERAL DIRECTIONS for sailing over the NORTH SEA from the THAMES to the KATTEGAT; including particular Observations on the COAST of NORWAY.

THE NORTH SEA, or GERMAN OCEAN; or, with more propriety, the BRITISH OCEAN, comprehended between Denmark, Germany, the Netherlands, and France, on the one side, and the Britannic Islands on the other; contains in its extent, as appears by the Chart, many Banks. Of these, the principal are, the Well Bank, the Dogger Bank, the Great Fisher's, or Long Bank, with several smaller Banks, as the Little Fisher's, the White Bank, &c.

The principal banks or elevations are not abrupt or steep-to about their extremities; but they rise in general with a regular gradual acclivity or shoaling, so that that their *exact* extent cannot be defined with precision. For this reason, the figures of them represented on different charts, are very different from each other: and, in some charts, the water appears as of less depth about, or near the banks, than on the banks themselves; a certain proof that the banks had been arbitrarily drawn, and that the figure so represented is not to be depended on.

It appears, that, in all seas, the part which is least affected by the cause of tides, is, from its quiescent state, most subject to the influence of such winds as tend to produce currents. As in other seas, so in this, and we find the prevailing currents in the broader part of it to the northward of the Texel. They here, as elsewhere, vary with the wind, but they tend more to the North-eastward than to any other direction.

Those, therefore, who sail from the westward in order to make any part of the coast between the Texel and the Skaw, should look out for land in time; for it is very common in making it to find the distance from twenty to thirty miles less than when sailing the contrary way in making the British coast. This particularly happens with south-westerly winds, which cause a constant current to the eastward and N. E. that generally sets across the Jutland Reef, and the South side of the Sleeve towards the Skaw Point; or, varying its direction with the wind, sets towards the coast of Norway to the westward.

It

It is, therefore, particularly necessary to be cautious that the northerly current does not send the ship a-head of her reckoning to the northward of the Jutts Reef, especially with South and S. S. E. winds.

The current along shore, above Bovenbergen, which we have before noticed, sets with westerly winds two miles an hour, and with strong S. S. W. gales more than three miles.

A very deceiving current likewise sets between the Naze of Norway and the Orkney islands; the knowledge of which is to the mariner the more important, some of these islands being, as before observed, very low, generally obscured from view by fog and mist in summer, and annoyed by the most powerful gales in winter.

This current takes its course with the wind, particularly when it blows from the southward or northward; but, generally, it runs strongest to the northward. As the wind continues the current increases; and it sometimes runs upwards of two knots in the middle, between the Naze and Orkney, after a long continued south-westerly wind. Easterly or westerly winds, blowing athwart this current, sometimes render it almost insensible in the offing; and, within three or four leagues of the islands, the tides take that regular course which they keep between Orkney and Shetland.

Anders Hoes, an intelligent and experienced Danish pilot, who published a chart with some judicious observations on this navigation in the year 1769, has observed, "that in sailing from the Naze to Fair island the distance has sometimes appeared from 5 to 10 leagues shorter than the distance expressed on the chart;" which he ascribes to currents setting to the north and to the west, chiefly when the wind blows from the south or from the east.

No better direction can be given for the Navigation over this Sea, than, the Soundings expressed on the new chart*, as they may be relied on with confidence. This is to be particularly understood when the reckoning is suspected to be deranged by such winds as produce the currents we have described, and for the operation of which due allowances must be accordingly made.

* The new Chart of the North Sea, from the observations of Adm. Knight, &c.; Published by P. Steel.

DIRECTIONS from HOSLEY BAY, to the NAZE of NORWAY, and the SKAW POINT.

IF bound from Hosley Bay to Norway, or the Kattegat, haul round Orfordness, attending to the foregoing coasting-directions, so as to clear the Onion and Aldborough knapes; then steer away E. N. E. 15 leagues, which will carry you into deep water, to 26, 27, or 28, fathoms, and a good berth without the south-eastern part of Smith's knowl. *After you are in this part of the Deep-water-channel, which* will be about a league to the northward of the parallel of Yarmouth, you may steer N. E. ½ N. 16 leagues, passing the tail of the Swart or Black Bank, (mentioned hereafter,) to the Well Bank. After you are to the northward of latitude 53° 8′, you shoal in your depth from 20 to 19, and 17 fathoms, dark coloured sand; and upon the southern side of the Well Bank you will have 17, 18, or 19, olive coloured sand.

From the last-mentioned spot, latitude 53° 27′ by steering a north course *made good*, that is, N. N. E a little easterly, by compass, in a distance of 17 leagues, you will pass over the Well Bank and the Great Silver Pits to the S. E. part of the Dogger Bank, in lat. 54° 18′, and long. 2° 55′ E. In this course, for the first 5 leagues, you will be on the body of the Well Bank in 17, 18, and 17, then, (with the wind favorable and reckoning true,) you will fall into deeper water between the two parts of that bank, from 24 to 27 fathoms; again you will be on the northern arm of the Well Bank, 17 to 19 fathoms, coarse mixt sand and shells, with some stones. Lastly, in the Silver Pits you will have soft and oazy ground, changing towards the Dogger Bank to sandy ground.

Having struck soundings upon the Dogger Bank, you will find the soundings variable and irregular, as 13, 15, 12, 17, 16, and 14 fathoms, mostly fine sand.

The course across the Dogger Bank to the south-eastern part of the Great Fisher's or Long Bank, will now be N. E. ½ N. 27 leagues, and in the whole distance you will generally have fine sand.

It will now be time to alter your course, and shape it for the Naze

of Norway, or the Skaw, accordingly as you have the wind, either to the southward or the westward. If in the latter board, steer N. E. by E. about 18 leagues; which course will carry you over the Juttish Reef; and hence an East, or E. by S. course, will be a good course up the Skaw. When, after quitting the north part of the Dogger Bank, you have made from 15 to 20 leagues towards the Jutland Reef, it is very necessary to sound frequently, and with all the exactness possible, in order to be sure of the last-mentioned bank; without this precaution, you might pass over the latter without perceiving it; and, as the currents run in general, towards the north, especially when the wind blows from the S. W. S. or S. S. E. you might run on the fishing-bank, which is between the Jutland Reef and the Lister Land, and might still suppose yourself on the former. Thus, in foggy weather, or at night, you would risk the danger of being soon carried upon the coast of Norway.

Between the Dogger Bank and the Jutland Reef, in the ordinary passage, there are from 33 to 36 fathoms, the bottom of soft slime; but more to the East there is less water, and the bottom is sandy.—The soundings on some part of the Little Fisher's Bank appear like oatmeal; but in several places, especially on the northern side, they are of sand intermixed with small stones.

OBSERVATIONS on the LIGHTS of SKUDDESNŒS and the HVIDDING ISLES, at the Entrance of the LEITH of BERGEN.

IN order to render Mariners who frequent the port of Bergen more confident of their situation when on that coast, particularly when sailing by the point or naze, called Skuddesnœs, a lantern light is erected on that point, which was first lighted on the 1st of January, 1790, and continues to burn under the same regulations as the rest of the lights, viz. during the summer, from Easter to Michaelmas, when it is lighted at one hour after sun-set; and during winter, from Michaelmas till Easter, it is lighted at half an hour after sun-set; and continues to burn till day-light. The lantern, which is about 300 feet above the level of the sea, is hoisted on a mast or pole, close to which is a shed, painted white, and which is therefore the more conspicuous.

It is generally known that there has long been a coal-light on the Isles of Hvidding, and a lantern light close to Hoyvarden, the latter serving to assist those who have entered Karm-sound in chusing a good berth to anchor in. Mariners who wish to enter Kram-sound, may, with due attention, distinguish the light of Skuddesnœs, and that of the Isles of Hvidding. The latter, which is suspended between two poles, gives a blaze light, but the lantern-light on Skuddesnœs gives a clear and steady light; and besides, this light cannot be seen by those coming from the westward, unless so much to the southward, that the cliff of Gioetongen does not interrupt the view of it; or that you have it due N. E. by E. and in this point of the compass the navigation is clear from the Isles of Hvidding; if such therefore, as having gained sight of one light, and are in doubt which it is, will steer a little easterly, that doubt will be removed; as, if it be Skuddesnœs-light that appears, the blaze of Hvidding Isles will shortly be seen, unless in a fog, hazy weather, or a snow storm. If, by steering eastward, another light soon appears, it must be that on the Hvidding Isles; and a course may thence be set, by soundings, in order to take a view of the other, since, if the light on Skuddesnœs be hidden by the high land, a light appears more to the eastward than due N. E. by E. it must be that on the Hvidding isles. Having ascertained this, a vessel may keep under Skuddesnœs with safety, and seamen may know, to a certainty, by the light, where the bight is, and accordingly run in under the land, and so into Karm-sound. When approaching the Smorstakken they may expect to see all the three lights; and again, if the light of Skuddesnœs is hidden by the high land, then the two others, particularly that close to Hoyvarden, will prove sufficient to direct to a good anchorage in the harbour.

To persons unacquainted, who do not chuse to run into Karm-sound without a pilot, or from other obstacles, the lights of Hvidding and Skuddesnœs are useful, particularly to those who may be obliged to cruise here during the night; but in that case it is absolutely necessary to be particularly attentive that the current, (which

is frequently very strong here, does not drive the vessel on either side.

DIRECTIONS for the South Coast of NORWAY, and ENTRANCE of the KATTEGAT.

THE S. coast of Norway is very high, and its harbours are innumerable: their access is rendered extremely difficult by a multitude of small islands and sunken rocks off the whole of the coast. But the pilots here are some of the best in the world, and they come out in all weathers.

The Naze is the southernmost cape of Norway, and lies 28 leagues N. N. W. from the Holms, the nearest part of Jutland: between is the Skager-rock. The Naze is a reddish bluff head-land; the two lighthouses on it are lighted all the year. Over it, a little inland, is the high land of Spangereid, generally capped in the spring with snow, and which, in clear weather, may be seen 12 leagues off.

Several miles westward from the Naze lies a cluster of rocks, called the *Bishop and his Clerks*.

From the Naze to Flekkeroe, an island at the entrance of Christiansand, the courses are S. E. ½ E. 14 miles, and east, 21 miles. Flekkeroe-harbour is spacious and good; a large fleet may ride securely in it near the castle, a round tower on the rock. This harbour has been frequently made use of by large convoys from the Baltic. It has two entrances, one at each end of the island, which is one of the longest and most regular on this coast; they are called the East and West Gats. When a remarkable hill, called the Boat-bottom-upwards, bears N. N. W. you are abreast of this harbour.

Between Flekkeroe and the Naze are several harbours, the principal of which is that of Moloe, about 5 leagues from the Naze.

Mardoe is a port 11 leagues E. N. E. ½ E. from Flekkeroe. Between are several excellent harbours: the principal are, Repervig, Wolfsound, Hollsound, Hammersound, and Heaness.

Mardoe may be known by two remarkable marks. The first is three high mountains over it, at a distance, called the Drommels; they may be seen, in clear weather, 12 leagues off the shore; to the eastward of them is another high mountain, called the Bonnnels.—The second mark is, a white church with a black roof and spire, which stands on Tromoe or Trom island; when this church bears N. N. W. it will be in a line with a hollow between the two easternmost Drommels. The passage round Trom-island leads into Mardoe, which is an excellent harbour. Higher up is Arendal, or *Arundhal*, a port where most of the norse-cutts are built.

Between Mardoe and Fœrder-island are several good harbours; namely, Lodgoe, Oster-Risoer, Krageroe, Langesound, Porseground, Laurvig, and Sand-Fiord. Krageroe and Porseground are loading-ports.

From Mardoe to Fœrder-island the course is E. by N. and distance 21 leagues. Allow for the current, which mostly runs to the westward, and in general according to the strength of the wind.

Fœrder-island lies near the range of islands on the coast; it is remarkably high and conical; a lighthouse is on it, on which a good fire is kept all the year. You may pass on both sides of Fœrder; but on the east side is the best passage into the great Sound of Christiana, into which falls the Drams-Fiord on the west shore.

When at Fœrder-island, you must take a pilot, if you want one, for Christiana or any of the adjacent ports.

The bearing and distance from the NAZE to the SKAW is S. E. by E. ½ E. 37 leagues: the course is S. S. E. having in the fair-way from 58 to 90 fathoms, till you come to the bank; then, 40. Farther to the eastward are from 160 to 90 fathoms, soft bottom.

With a fair Wind, the Course from the Coast of Norway to the Kattegat, and up the Sleeve, is E. by S. ½ S.; with the wind southerly, a S. E. by E. course is the best; but, with the wind northerly, be sure to keep in a good offing till the Kattegat be open. In coming from the Skaw, steering W. by S. will carry you close to the Jutland-coast. In the night keep your lead going, and edge away into deeper water.

Observations concerning the Rates of Pilotage of Ships into and out of the Ports and Harbours in Norway, from the King of Denmark's Laws for Pilots throughout his Kingdom of Norway.

FRIGATES, brigs, snows, bilanders, schooners, catts, &c. and all sharp-built vessels whatever, shall pay for pilotage into or out of harbour, when the distance does not exceed one Norske mile from the outer rock, the following sums sterling:

Ships' draught.	Sum. L.	s.	d.	*Ships' draught*	Sum. L.	s.	d.
4, 5, or 6 feet —	0	4	8	13 feet — — —	0	14	0
7 feet — — —	0	6	0	14 — — — —	0	15	4
8 — — — —	0	7	4	15 — — — —	0	17	0
9 — — — —	0	8	8	16 — — — —	0	19	0
10 — — — —	0	10	0	17 — — — —	1	1	4
11 — — — —	0	11	4	18 — — — —	1	4	0
12 — — — —	0	12	8				

But, if a ship draw more than 18 feet water, then, for every foot above, you must pay one rix-dollar, or 4 shillings English; but, if from the outer rocks it is more than one Norske mile, you are to pay *extra* pilotage, as follows:

Table of Inland Pilotage of One Norske Mile within the Rocks.

Ships' draught.	per mile. s.	d.	*Ships' draught.*	per mile. s.	d.
4, 5, or 6, feet — —	1	6	13 feet — — — —	2	8
7 feet — — — — —	1	8	14 — — — — —	2	10
8 — — — — — —	1	10	15 — — — — —	3	0
9 — — — — — —	2	0	16 — — — — —	3	2
10 — — — — — —	2	2	17 — — — — —	3	4
11 — — — — — —	2	4	18 — — — — —	3	6
12 — — — — — —	2	6	19 and above — —	4	0

But, if the distance exceeds 4 miles Norske, then to pay, for every mile above the 4 to 8 miles Norske, one-third less; and, when the distance exceeds 8 miles, then, for every mile above the 8 miles, one-fourth less than in this table of rates; the first or sea mile to pay according to the rates of pilotage in the first table.

Flat-bottomed vessels, of whatever denomination, that carry lee-boards, and are *four times* as long from stem to stern as they are broad in the mid-ships, from the outer part of the gunwale on one side to the outer part of the gunwale on the other side; also all clinker-built one-mast galliots and galliseas, whose breadth as above are more than one-third of the length from stem to stern; shall, in the summer-season, pay half as much more, when the distance does not exceed one Norske mile, than a ship of deep draught of water.

N. B. The foregoing rates of inland-pilotage are for the summer half-year; in the winter half-year, all ships pay one-fourth more pilotage in and out. The winter half-year begins on the first of October, and ends on the last day of March.

If it should happen that, after you are piloted out of any harbour, and the wind shifts, so that you are obliged to go back again, the pilot, if on board, is to conduct you into any port he can fetch, within his district, free of all charges; but, if he have left the ship, and not out of sight, he is entitled to half pilotage; and, in either case, he is entitled to half pilotage out again: but, if he has quitted the ship, and out of sight, then, if he come on board again, he is entitled to whole pilotage as above. Pilots, when they remain on board, are to be dieted with the ship's company; and, in case a pilot be carried to sea by storm or accident, he is to be paid three marks Norway currency, that is, three shillings sterling, per day. When a pilot carries a ship into harbour, he is not to leave her till her sails are furled and the ship properly moored; nor quit her, outward-bound, till she is without all danger of rocks, &c. Pilot-boats may be known by the middle cloth of the mainsail being painted red from head to foot; and, when they do not use a sail, they have a white flag upon the top of a staff. It is not permitted to any other boats whatever

whatever to carry such sail, or signal, under the forfeiture of 4 rix-dollars and loss of the sail.

N. B. A rix-dollar is 4 shillings sterling; and a Norske pilot's mile is equal to 4 miles English, or 1 Dutch.

DIRECTIONS for the KATTEGAT.

THE SKAW has already been described as a low sandy land; the light upon it is on a high square tower, 67 feet high, painted white, and kept burning all the year. It can be seen when 4 leagues distant. Two or three houses are close to the lighthouse, and a sandy hill at some distance to the southward of it. When this hill and the lighthouse are in one, they bear S. by E. ½ E.; and, when the lighthouse is between the sandy hill and the houses, it bears S. About 2½ miles westward of the lighthouse is Skaw-church, with a square steeple; about one-third of the distance from the church to the lighthouse is a windmill; and, between the windmill and the lighthouse, a long village stretches nearly from one to the other, in the middle of which is a small space of ground without houses.

A Reef stretches from the Skaw about 3 miles N. E. by E. Coming from the westward, and sailing along shore near the reef, keep the lead going, that you may borrow to it in 7 or 8 fathoms with the wind off shore. When from the southward, and bound round the Skaw to the westward, you must steer no nearer to the reef than from 12 to 14 fathoms, and in dark weather than 18 or 20, the south side being steep. With the following marks, coming from the westward, you are clear of the reef on both sides: when the old church and the lighthouse are in one, bearing W. by S. you are on the north side of it; and, coming from the southward, when the old church is brought to the south end of the village, you are on the south side of the reef: with the steeple and lighthouse in one, bearing W. S. W. ½ W. you are abreast of the reef; and, when the steeple is bearing S. W. by W. you are without to the northward of it: when the lighthouse is west from you, you are within and to the southward of the reef. You may anchor on both sides of the reef in 8 or 9 fathoms, coarse sandy ground; but in these depths you are near the shore, and of course not safe if caught with the wind on shore. Merchant-ships in general, with a southerly and S. E. wind, when the current sets down the Kattegat, keep plying off and on to the westward of the Skaw till the wind shifts. With the lighthouse bearing South 5 or 6 miles distant, there are 49 fathoms water, with muddy ground.

When the Skaw bears W. by S. 4 or 5 miles, the courses thence to the Koll-point, on the Swedish coast, are S. S. E. ¾ E. 10 leagues, then S. ½ E. 18 leagues, and South 7 leagues.

From the Skaw to the Paternosters on the Coast of Sweden, the distance and course are 28 miles due E. To the S. E. of these islands lies that of *Marstrand*. On the great tower of Marstrand-castle is a lighthouse with six reverberators, 276 feet above the level of the sea, which, by turning round every 5 minutes, give alternately six strong and three faint lights, and burn every night from the first of August to the first of May of the ensuing year, as do all the other lights on the Swedish coast in the Kattegat.

In entering Marstrand, if you bring the castle or light E run boldly in, leaving on your larboard side a sunken rock, called Kakelbaden, which has 13 or 14 feet water upon it, and lies from the lantern of the castle W. by S. ½ S. nearly 3 miles. You may go in at either end of the island, but the N. is the clearest.

When sailing from the Skaw to Marstrand, keep the castle by day, and the lights by night, E. ½ N. But, if you have a sight of the Paternosters, a long range of island-rocks lying N. E. and S. W. to the northward of the entrance into Marstrand, whose outer end lies 1 miles W. ½ N. from Marstrand-castle, you may pass them pretty close, as they are steep to. When near those rocks, if there be little wind, or a calm, and the current sets you toward them, come to an anchor in 30 fathoms; for, it runs here sometimes at the rate of two miles an hour to the north-eastward, and directly among the rocks. In coming down, you will descry a round hill, called Little Bretto; bring it to the southward of the castle, and you run clear of the Paternosters. Keep the Paternosters on the larboard side, and steer E. ½ N. for the castle, until you come near the island on which it stands,

stands, to which you may keep close, and leave on the starboard side: keep your sails set till you haul to the southward; the entrance being very narrow, much depends on steering well. Should a vessel follow you, shoot your ship as far southward as you dare, to give that vessel room; for, the turn round the point being sudden, and the harbour very confined, it would be difficult, should many ships be following each other, to avoid damage. As you haul up to the southward, you open the town and quay, and must drop your anchor as near the houses or ships there as you can; for, to the eastward, the water is shoal. Be careful, if your ship take much cable in bringing up, that she shall not swing upon the ground; as the water, which rises considerably with strong westerly winds, falls quickly when they come eastward, and the weather fine, it may be troublesome and expensive to get afloat again. Having brought up, heave the ship round with her stern to the quay, and moor with a hawser to the shore. Rings are fixed on shore, near the houses, for this purpose, and you will be directed by the harbour-master.

In running over from the Skaw to this Place, you will have from 30 to 45 fathoms, clayey ground; the nearer the Swedish shore the deeper water; for, abreast of the Paternosters, 5 miles from them, you will 50, 60, and 70, fathoms.

If, at any time, in little wind, you should be set near the Paternosters, you must come to an anchor in 30 fathoms water, as the current runs here sometimes at the rate of two knots and upwards to the north-eastward, and directly amongst them. From the Paternosters to Winga-island the distance is 16 miles, nearly S.

SKAW to GOTTENBURG. If bound from the Skaw to Gottenburg, your course is E. S. E. by E. 10½ leagues to Winga-island, on the Swedish coast. To the south side of this island you may stand with great safety, it being steep, giving the west point a small berth.

If bound from the Skaw to Elsenure, with the wind northerly, or inclinable to the eastward, it is best to make Winga, and then shape your course up the Kattegat.

The Isle of Winga is at the entrance of the channel leading to Gottenburg, the port of the Swedish East-India Company. This island lies 16 miles nearly south from the outermost Paternoster; like many other islands on this coast, it can scarcely be distinguished from the main land when seen from the offing. Winga is low, and visible only 4 or 5 leagues off. Upon it is a square red pyramid, or beacon, with a ball at top. Near the pyramid are huts for pilots, who are generally ready at sea, even in the worst weather. A flag at the fore-topmast-head is a signal for them when running in for Winga. If this be not exhibited, they will not come off*.

When coming from the Northward to Gottenburg, you may pass near to the southward of Winga-beacon; when it bears N. go no nearer than two miles and a half; then steer E. S. E. or S. E. according to your distance from the beacon. All the small islands and rocks which are seen to the eastward of Winga-island, must be left on your larboard side, until you make Buskar-island, if you are a stranger.—Buskar-island is distinguished by a beacon, and appears like a boat with its bottom upward; it is also to be left on the larboard side, and you may pass as near it as you please.

By those well acquainted, these islands are sometimes left on the starboard side, to enter by the channel northward of Winga-beacon.

After you have passed Buskar, steer E. N. E. about a mile, or a mile and a half, for the west point of Caltero-island, called Gantby-point, which must be left on the starboard side; the depths are 13, 25, 20, 17, 11, 8, and 7, fathoms. About a mile E. N. E. from that point lies a rock, which has sometimes a floating beacon upon it, and is to be left on your starboard side.

When between Buskar-island and Gantby-point, you may get a pilot, should the weather not prevent it; continue your course as before for Gantby-point, till you see a small island, called Buttoe, which has a pole on it, and lies off the point, apparently very close to it:

* For a correct plan of the passages into the harbour of Gottenburg, with views and ample directions, as well for this as for all the other harbours in the Kattegat, see M. de Lovenom's New Pilot for that sea, published by P. Steel, London, 1801.

but

but you may pass it on either side, the opening between the island and point being half a mile wide, with 7 fathoms water; both sides are steep: the best channel is to the northward of the island.

Having passed Buttoe-island, bring it on with the south part of Buskar-island; steering with it so will lead you in, until you see the castle of New Elfsborg, 2 or 3 miles below which you may anchor in from 6 to 4 fathoms, clear and good holding-ground; the nearer to the castle the less water. In anchoring here observe not to come very near the south side. In the west part of the road are 9 fathoms water, and in the east but 7.

In the track from Buttoe-island to New Elfsborg-castle, you will have 20, 17, and 16, fathoms water; then 15 for 2 miles; then 14, 10, 8, 7, 6, 5, and 4, to the castle.

The rocks run out abreast of the castle, and narrow the passage. A brush is fixed upon them. You may ride, so soon as you have given the rocks a proper berth, in 5 fathoms, and have much room: or may go higher up, and anchor in 3¼ fathoms. If you intend to sail up to Gottenburg, pass close to the Galley-haven.

When coming from the southward to the entrance of Gottenburg, bring Winga-beacon north, and keep no nearer the south shore, after passing Gantby-point, than one mile and a half.

About one mile and a half E. from Gantby-point lies the *Gafwas-hars*, small islots and rocks, which must be left on the larboard side; then steer N. E. by E. 2 miles, into Flemish-road, where you may lie in 8 or 9 fathoms, soft ground, and good room. In Flemish-road a large fleet may lie under convoy.

When past Galtero-point, you will see a parcel of scattered islots; steer E. N. E. ¼ E. about half a mile from the south end of them, to avoid the sunken rocks which stretch off from the south side. When at the south end, run in between it and the south side, as there is 1½ cable's length room; then the castle will bear N. E. by N. and you enter into a wider part, where is good riding, excepting near the south side, in 9 fathoms water.

There is, as before observed, good room and riding above the castle, in 5 fathoms; but, before you come the length of the castle, mind where the rocks run out to narrow the passage, close to the water's edge is the brush before-mentioned upon a sunken rock of 6 feet water; there is a good channel on each side of that brush.

SKAW to the TRINDEL-ROCK, &c. The Trindel, or Trindelen, a small but very dangerous rock, lies S. E. by S. ½ S. near 9 leagues from the Skaw; S. W. by W. ½ W. 6 leagues from Winga-beacon; and N. E. by E. 2 leagues from the easternmost point of Lessoe-island. In sailing from the Skaw allow for the current, which generally runs very strongly to the N. E. In the fair-way are from 18 to 24 fathoms, with some small bits of shells.

Close to the Trindel are only 4 feet water: 15 fathoms are on the east side, 8 on the south, and 7 on the west and north sides. When on this rock, the land of Lessoe, on which stand the ruins of Halschurch, appears bold, bearing by compass S. W. ¼ W.; and Winga-beacon, part of which in clear weather appears above the water, E. N. E. ½ E. The sea breaks upon the Trindel, when the wind blows fresh from the northward and westward.

To pass between the Trindelen and Winga-beacon, when the Skaw is 1½ or 1½ league to the westward, you must run 8 or 9 leagues S. E. ½ S.; or, if you have passed the Skaw within 4 leagues, run 7 or 8 leagues S. E. by S. ½ S.; then you will be 2½ or 3 leagues eastward of the Trindel; the depth and quality of the ground may direct you between that rock and the beacon. Toward the Trindel is sand or gravel, with at most 25 fathoms water, sometimes less, and but 8 or 10 within three quarters of a mile of the rock: in mid-channel are 35 fathoms, sandy ground; and, near Winga-island, 35, 40, and 45, oazy bottom. When in less than 17 fathoms in this course, you must steer more toward the Swedish coast. In the day-time, keep that coast in sight, especially when the Winga-beacon is between E. by S. and N. E. by E.

About half a mile N. ¼ E. from the Trindelen is a small sandy bank, with 6 and 7 fathoms water, and 10 between it and the rock.

The largest Ships of War may always ride in a line between the Skaw and Trindelen. If, with northerly winds, they choose to go westward of Lessoe, they may always get pilots at the Grensholms, a cluster

cluster of small islands on the east coast of Jutland, the largest of which is inhabited by pilots and fishermen. At the Græsholms, the Skaw is distant 4½ leagues N. N. E. and the top of its lighthouse is just seen.

Læssoe is a low island, but is seen 5 leagues distant; when the weather is clear, and it serves to lead clear of Trindelen, Læssoe and Winga-beacon can be seen from mid-channel. The former extends E. and W. 9 miles, is about 4 in breadth, and surrounded by reefs stretching from the middle of the island about 4 leagues to the southward. Near 4 miles from its west end, a reef stretches N. N. E. and E. within three quarters of a mile from the Trindelen, with 7 fathoms between it and the rock. On this reef are 4 and 5 fathoms' water, except at about 3 or 4 miles in its direction from the west end of the island, where there are 4 small low islots, having shoal water round them.

From the SKAW to NIDINGEN and WARBERG. Nidingen-island, on the Swedish coast, lies about 16 leagues S. E. ¼ S. from the Skaw; the course from Winga-beacon is S. ¼ E. 7½ leagues.—The Tislarne-rocks lie in the same direction, 3 leagues from the beacon, and must be carefully avoided. On the S. W. end of Nidingen are two swape fire-lights; a beacon, resembling that of Winga, is erected in the middle of the island; off the same end a ridge of foul ground stretches a mile out. Nidingen-island, the coast, and the neighbouring islots, can be seen in clear weather from 5 to 8 leagues off.

Nidingen is about two miles and a half south-westward from Malo-island, between which and the main is a good harbour called Malo-sound; a good anchorage is near the east end of the island in 12 fathoms, and in 6, 5, and 4, at the bottom of it, near the main land.

Six miles to the S. W. of Nidingen lies a sand-bank named the Fladen; it is about 4 miles long, 3 broad, and the least water upon it is 6 fathoms.

Warberg, on the coast of Sweden, is 14 miles to the S. E. of the Fladen, and 5 leagues nearly S. S. E. from Nidingen.—The entrance of Warberg is about 4 miles from Klabock-outer-rocks, which lie S. E. by S. 3½ leagues from Nidingen. In going up to Warberg the castle must be brought E. by N. before you come near the land; then steer E. N. E. until the town-church comes on with the fortification. Keeping this mark on will run you within the harbour's mouth, between rocks that lie on each side about the height of a boat above the water. Then run up abreast of the castle, and anchor in about 17 feet water; farther in, the water shoalens gradually.

A S. S. W. wind blows right into the harbour; but the bar, on the shallowest part of which is 4 fathoms water, prevents the sea from driving in. There is no danger in the passage into the harbour, but a small sunken rock, about a hawser's length from the rock on which the castle stands, which must be left on the starboard side; the sea generally breaks upon it, and there is good water to the northward.

The passage into the harbour is between the castle and Scrivener's Rock, to the westward of it, where the pilots reside. If a flag be hoisted on this rock, you can have a pilot; but, if it blows too hard for a boat to come out, a pilot either from a rock or a boat, will waft you in by a small flag upon a boat-hook staff, to which you must attend carefully. Ships of 14 or 15 feet water may ride with safety in the harbour; those drawing 18 feet and upwards, must anchor without the harbour, between the castle and the Scrivener's Rock.

Coming from the southward to Worberg, the way is clear, and you may run along shore into the harbour.

The Beacons along the Swedish Coast are so placed, as that, by leaving either of them on the larboard side, you will find a harbour.

The KNOBEN. S. S. W. 10½ leagues from Nidingen, S. ¾ E. 15 leagues from the Trindelen, and E. ½ N. about 6 miles from a lighthouse on the island of Anholt, lies the outer point of a reef, stretching from Anholt, called the Knoben: in steering to it from the Trindelen, the soundings are irregular, from 45 and 35 to 15 fathoms, and some banks of 10 and 12 fathoms. There will be generally 30 fathoms

fathoms to the eastward of you; and, toward the west, between the islands of Læsoe and Anholt, only from 21 to 9 and 8 fathoms: go no farther westward than 22 or 23 fathoms.

Twelve miles N. E. ½ N. from the Knoben is a small bank of 19 feet water, which lies nearly upon the middle of the broad part of the bank called the Little Middle Ground. The latter is about 7 miles in breadth, with 12, 10, 8, and 6, fathoms water upon it.

ANHOLT-ISLAND is low, but in fine weather it may be seen 5 leagues off; it extends E. S. E. and W. N. W. 5 miles; the east end is a long point, on which is a lighthouse, 112 feet high, which at night is seen 4 or 5 leagues off. A very dangerous reef or spit extends 5 miles from the east end of the island. The outermost point of this reef is the Knoben, lying E. ½ N. above 6 miles from the lighthouse. There are 25 and 23 fathoms water, soft ground, within a quarter of a mile of it; then 20; the next cast you are aground.—To avoid it, you must be guided by the lighthouse. In blowing weather the sea breaks over the Knoben, which appears above water.

It having been found that the light upon Anholt frequently deceived mariners by its height in point of distance, a lantern is now placed at about half the height above-mentioned, on the east side of the lighthouse, facing the flat and point of the Knoben, which may also be seen from a southern and northern direction; but, to vessels sailing from the westward, it will not be visible, being obscured by the lighthouse. This lantern was first lighted Jan. 1, 1800, and is continued in addition to the usual fire.

In sailing round the Knoben, you will have 20 fathoms, soft light-coloured mud, 1½ mile from it; and 18 and 24 fathoms, 3 miles off.

About 11 miles S. by E. from the Knoben, lies a small bank, with 5½ fathoms, shells and small stones.

The Lyse-Ground is a bank of only 3 feet water, which bears from Anholt-lighthouse S. ½ E. about 8 leagues. Hæssel-Oe, or the little island Hæssel, lies 5 miles S. W. from this bank, and the channel between has from 6 to 13 fathoms water.

Upon SAILING DOWN the KATTEGAT from the SKAW, with the wind West, W. S. W. or S. W. being off the Skaw, haul away to the eastward of the Trindelen, to which approach no nearer than 20 fathoms: if in less, steer off towards the Swedish shore, which keep in sight, especially when Winga-beacon appears between E. by S. and N. E. by E. The course from the Trindelen to the Knoben is S. ¾ E. 16 leagues; and thence to the Koll-point, at the entrance of the Sound, S. by E. ½ E. 11 leagues.

When Anholt light bears W. ½ S. you will be abreast of the reef, and, when you bring it W. by N. or W. N. W. you are to the southward of it. In standing up, between Læssoe and Anholt, haul no farther to the westward than 20 or 19 fathoms; for 16 and 17 and less are to the westward of Anholt-reef, the outer part of which lies N. by W. ½ W. 11½ leagues from the Koll.

After you have passed Anholt-reef, do not haul up too far to windward, lest a current should set into the Belt, by which means you get upon the Lyse-ground, which lies W. N. W. ½ W. 6½ leagues from the Koll, and from Anholt light S. ½ E. 8 leagues.

WHEN 2½ leagues westward of Nidingen, you may sail in a direct course to the Sound, by steering S. ¼ E 21 leagues, which will carry you a little to the westward of Koll-point; but, if you wish in the night to see Anholt-light, first steer S. ½ W. 23 miles, and then S. ¾ E. 36 miles.

From Koll-point to the easternmost point of Zealand, in the Sound, on which Cronenburg-castle stands, the courses are from S. to S. ½ E. and S. S. E. 17 miles.

THE KOLL. The Koll-point on the Swedish coast is about 16 leagues S. by W. from Warberg, and S. ¼ W. 21 leagues from Nidingen island. It appears, in clear weather, at the distance of 8 or 9 leagues, in three high broken hummocks, or like three islands.—Upon the north-west point is a lighthouse, the only building there, which is lighted from the first of August to the first of the ensuing May. The Koll is steep-to, having 14 or 15 fathoms close to the land. Between it and the coast of Zealand are 13 and 14 fathoms, regular soundings.

The high Land of Torekø, about 9 miles north-eastward of the Koll, is

is sometimes, by strangers, mistaken for the Koll, and is therefore called the False Koll; it is level, unbroken, and appears at about the same time as the Koll. The land between the two points is low, and forms the great bight of Engelholm, which by those unacquainted may be taken for the Sound. In steering from Anholt to Koll-point, with strong westerly winds, the currents often deceive the most experienced mariners: should a ship get too far to leeward, she must run the risk of riding in the bight of Engelholm, or Skalder Viig.

When sailing from Anholt, if the westerly wind blows so that you cannot weather the Koll, or get to windward by plying, you may find a good shelter under Wadero-island, or Holland's Wadcroe, which lies 2½ miles off the False Koll. It is a low island, about 2 miles long from N. to W. to S. by E. and above 1 mile broad. When coming into the road from the southward, run in till you see the town of Toreko, which stands on low ground, and has a white church; bring that town N. E. by N. and proceed thus until a bare rock comes in view, on which is a beacon, in the form of a gibbet with one arm. Give that rock a berth of a cable's length on the larboard side; then steer in N. by W. and N. N. W. toward another bare rock, distinguished by a beacon like the former. These rocks bear from each other N. ½ W. and S. ½ E. 1 mile. About midway between them is the best anchorage, with the northernmost rock N. by W. ½ W. and the other about S. in 6 and 7 fathoms water, fine sand, ¼ of a mile from the island, and about 2 miles from Toreko-town, then bearing nearly E. S. E. and with a sandy beach before it. If coming into Wadero from the northward, give the north point of the island a berth of about ¼ of a mile, and steer from S. E. to S. S. E. till the northernmost beacon bears S. ¼ E.; then leave it on the starboard hand, and bring up in the same depth as before. Observe that, off the north point of the island, a reef stretches about half a mile, on which is only 5 feet water.

From the anchorage of Wadero to Koll-point the course is S. W. by W. and the distance above 9 miles.

CURRENTS. The currents in the Kattegat are various in their direction; but a general current from the passages in the Sound and Belts tends into the bight of the Skaw; repelled thence by the coast, it sets with great velocity in an eastern direction towards Marstrand, sometimes at the rate of 2 knots an hour. But observe that, going up the Kattegat with scant westerly winds, the general current, instead of tending towards the Skaw, generally inclines to the opposite shore. The swell of the sea and currents here, however, often deceive the most experienced mariners.

DIRECTIONS for the SOUND.

FROM Koll-point to the easternmost point of Zealand, on which Cronenburg-castle stands, the courses, as already said, are from S. to S. S. E.; and the distance, in a right line, 17 miles.

With the Koll-light E. about 2 miles distant, you will have 16 fathoms' water.

Having passed the Koll, with the wind to the eastward, be careful of the *Swine-bodens*, which are shoals and sunken rocks that lie S. S. E. and N. N. W. near 6 miles along the Swedish shore, and stretching 1½ mile distant from it; the body of them lies W. ½ N. from a spire-steeple, named Westbye-church (and, by some English mariners, Swynne); but, if you keep the spire and some small part of the body of the steeple above the land within it, you will go without them in 10 or 11 fathoms; nearer to them than that depth you must not come.

The Koll bearing N. leads into mid-channel, where the greatest depth is from 13 to 14 fathoms. With the wind at W. you may haul over to the coast of Zealand, which is bold, and proceed along it in 7, 8, 9, or 10, fathoms, having 16, 17, and 18, as you come near it.

There are two Lighthouses upon a Headland, called Nakke-Hoved, a little eastward of Gilberg-head, the north point of Zealand. They are coal-lights, and that to the N. W. is the highest. When you have gotten the length of the Koll-light, steer in the channel until you bring the two lights on Nakke-hoved in a line bearing E. S. E. ¼ E.; but, observe not to come more to the westward than to have the Koll-

light

light bearing N. N. E. when you will not have a less depth than 5 fathoms.

Should you not happen to see the Koll-light, you must, by sounding, seek to get the lights of Nakke-hoved in a line; and, in such direction, approach no nearer to the coast than 9 fathoms.

Should, however, the wind be easterly, care must be taken not to bring the lights exactly in a line, but to leave an opening to the eastward, to avoid coming too near the coast of Zealand.

After having brought the lights in one, steer with them in a line, until you get a third light, which is the lantern, with lamps and reflectors, in the N. E. steeple of the castle of Cronborg, bearing nearly S. by E. ¼ E. when you will have soundings of 14 fathoms. Hence you will change your course, and steer S. S. E. ½ E. until the lamp-light at Cronborg bears S. ¼ W. and the two lights on Nakke-hoved N. W. by W. ½ W.

Now steer S. by E ¼ E. until the lamp-light at Cronborg bears W. ¼ N. then steer S. by W. ¾ W. for the Disken-road, or S. W. ½ W. for that of Elsenure.

It may also be observed, generally, that, by keeping these light-houses open, or, by taking care not to shut Gilberg-head within the Cliff-land to the northward of the Hammer-mill, until you can see Huen-island clear of Cronenburg-castle, you will run clear of the Lap-sand, which is the E. S. E. end of the sand running along the north coast of Jutland, and stretching above one mile to sea between the mill and the castle, with only 2 fathoms water on it. When the westernmost windmill is on with the King's Palace, you are abreast of that part of the sand which has the least water, and extends farthest from shore. Then edge farther from shore; and, if another mark should be requisite, keep the great spire of the castle to the eastward of the small one, in from 8 to 7 fathoms along the land.

The Lap-sand begins just above the Hammer-mills, and runs up nearly to the castle; it has gradual soundings, except abreast the shoalest part, which lies the farthest out.

With a scant wind, if the current be setting to the northward, you may come to an anchor under the Lap-sand, abreast of a small thatched building, in 7, 8, or 10, fathoms water: this house or barn stands among some trees by the sea-side, and to the northward of the Hammer-mill. If the wind be free, you may coast it along the edge of the sand, and proceed to Cronenburg castle. Should you have occasion to stand over to the Swedish coast, from the shoalest part of the Lap-sand, and the westernmost windmill on with the King's Palace, you will have 12, 14, 16, 18, and 19, fathoms; so soon as you come into 18 or 19 fathoms, you must tack, for then you will be near the Hittarp-reef, which extends near a mile from the Swedish shore. Here the channel is the narrowest, being less than 1½ mile in breadth between the sand and the reef.

So soon as you are past Cronenburg-castle, give a small berth to the point on which it stands, and to which large ships may approach very near; haul in S. W. or S. W. ½ W. for the road in Elsenure, where you may anchor in 10 or 9 fathoms.

Between Elsenure and the Swedish Coast is the north end of the *Disken*, or Middle-ground; it thence extends S. ½ E. 2 miles, and is ¾ of a mile across at the broadest part. Ships may anchor on this bank in 4 or 5 fathoms water, but the ground, being hard sand, is not good for holding. Between the bank and the Zealand shore are 10 and 11 fathoms water, good clay ground; and, between it and the Swedish shore, 12, 14, and 16, fathoms.

Through the Sound the current generally sets northward into the Kattegat, at the rate of 1½ or 2 knots an hour, in fine weather; and in the narrowest part at the rate of about 3 knots. But, in strong northerly and westerly winds, it sometimes changes its course; when they blow hard in the North Seas at N. W. the current runs in an opposite direction, and the water rises.

From Elsenure this current inclines to the Swedish coast, as before observed, be the winds as they may; but, if westerly, with greater force.

ORDINANCE

Respecting the Ceremony of Lowering in the Sound.

N. B. When the blue flag is hoisted at the guardship's fore-topmast-head, ships are free from lowering.

I. ALL ships sailing through the Sound, whether they come from the N. or S. must salute Cronenburg-castle, by lowering their sails as soon as the northernmost church in Elsenure begins to be concealed behind the castle. The lowering must not commence before the church goes in behind the castle, and must continue till the church opens itself without the castle again, or for the full space of five minutes. Every person neglecting this duty, must expect to be compelled, by cannon-shot, to the same, and to be fined for contumacy.

Remarks on the above Article.—When a ship lowers her sails on her first entrance into the marks, and keeps them lowered five minutes, though not come out of the marks, it is thought sufficient.

II. The sails to be lowered are as follow: ships, carrying top-gallant sails, standing or flying, must lower the top-gallant sails entirely down on the cap; ships, having only one top-gallant sail, and, at the same time, the fore-top sail, they must be lowered half-mast down; ships, having no top-gallant sails, must lower both the top-sails on half-mast; all other ships, be they galliots, smacks, ketches, brigantines, or of what denomination soever, carrying only flying top-sails, must lower the top-sails entirely down; but those having no standing or flying top-sails, or which have all their reefs in their top-sails, are exempt from lowering.

III. When ships cruise through the Sound with a contrary wind, or when (with a scant wind or small breeze) the current is so strong against them that it would set them astern, if they lowered their sails, then it shall be made known to them, by hoisting the colours at the castle, that no salute is required, and that they make the best of their way without striking their sails.

Remarks on the above Article.—The colours are not hoisted at the castle (that ships may be free from lowering) but when the blue flag is hoisted at the guardship's fore-topmast-head, as before observed, except when the guardship is not there.

IV. When any vessel has been fired at, then the master or mate, with two of the ship's crew, must go on shore, and make declaration, on oath, before the court of inquest, why they have not lowered in the time, or in the manner prescribed. If it is deposed that the lowering was performed in due time and manner, then the master will be free from paying for the shot fired at him; on the contrary, he must then pay, for each shot fired at him from the castle, 5 rix-dollars, 20 stivers current; and one ducat for each shot from the guardship's boat, when in pursuit of the ship. If the master of a vessel should sail away without acquitting himself, when it is proved who the master or ship was, the fine will be demanded of the person who clears him at the custom-house.

No ship, except Swedish, is allowed to pass the Sound without clearing at Elsenure. If the master of any ship be detected in such an attempt, he is fined according to the size of the ship and the value of the cargo. But, in stormy weather, when a ship cannot come to an anchor in Elsenure-road without much danger, or if the ship be leaky, or going to repair, or to deliver, in such cases going to Copenhagen is not considered as a fraud. At the same time it must be particularly observed, that the documents must be sent down to Elsenure the soonest possible, in order to clear the ship at the custom-house.

When ships come into Elsenure-road, or lie wind-bound near the Lap, and hoist their colours, the watermen come on board, with their boats, to inquire if the master will be carried on shore to clear, &c.; the payment for which is what may be agreed upon. The watermen here are also pilots, and go with ships either through the Grounds or to the Koll, as required. They have no tax, but are paid by agreement. If inclined to take a Dragoe-pilot, for the Grounds or Koll, the signal for them is a flag at the fore-top-mast-head.

Ship-masters, when they first go on shore, must report their ships at the custom-house, give in such documents as concern their cargoes, and inform the officers what person they mean to clear with; and

and they will receive of the person who clears them, or acts as their broker, a portage or premium of 4 per cent. specie on the duties of their cargoes, which his Danish Majesty allows them for making a true entry.

The GROUNDS. The Grounds are sand-banks lying before Copenhagen, and southward of its road, between which are the usual channels for ships going to, or coming from, the Baltic; the western and eastern banks are those which shelve off from the isles of Amag and Saltholm; between the north ends of these is a bank 3 miles long, called the Middle-ground, on the north extremity of which are 3 fathoms, in the middle 2½, and thence to the south end from 12 to 10 feet water. The channel on the west side of this bank is called the *King's Channel; and that on the east side, the Eastern Gat*, or Outer Deep. Gasper-channel is that between Amag and Saltholm. The course through the three channels is indicated by buoys judiciously disposed, which are commonly taken away at the beginning of November, and replaced about the latter end of March.

From Elsenure-road to the first buoy of the Grounds, which is the north buoy of the Middle-ground, the course is S. by W. 6 leagues. In this course you will pass to the westward of the small island called Huen, and have clear ground and good riding all the way in 6, 7, 8, and 9, fathoms. After the steeples of Copenhagen are plainly seen, *proceed until the great northernmost crane is on with the southernmost* steeple, which is of a spiral form, and has a statue on its top. You will then see the first buoy, and may take either the King's Channel, or the Eastern Gat, according to the wind.

The best leading mark to find the first or north buoy is, if the weather be clear, a large house, *which stands towards the east end of* Huen-island, and a white part of the cliff, bearing about N. E by E. ¼ E. Another good mark is a gentleman's house in a wood below Copenhagen; in the wood is an avenue cut for a prospect; when it appears open, keep it so, bearing N. W. and it will bring you directly to the buoy.

To go through the Eastern Gat, you must borrow towards the Middle-Ground, because the rocky side of Saltholm-ground is so steep, that, opposite to the Middle-ground, between the first buoy and the second, or middle, buoy, you may be aground in 13 feet water, when 7 fathoms are under the stern of the ship. To the southward, Saltholm-ground is not quite so steep.

The second, or middle, buoy, in the Eastern Gat, lies one mile and a quarter S. by W. ½ W. from the first. The channel here is only three quarters of a mile wide, between the buoy and the Glorieux-bank, a steep rocky bank of 7 feet water, near Saltholm West-ground.

The third, or south, buoy, *called the Gasper-buoy, lies on the south* end of the Middle-ground, above one mile and a half S. W. by S. from the second buoy; the mark for it is, the two steeples of Copenhagen *in one*.

Two beacons bearing S. by W. ½ W. which stand on the cliff, to the northward of Dragoe-pier, between Dragoe, or Draker, *town*, and a single house, would carry you through the Eastern Gat; but, with this mark on, you will be in 13 feet water, near the steep part of the Saltholm-ground; keep, therefore, nearer to the Middle-ground, between the first and second buoys. In turning through the Eastern Gat, you may stand each way till one of the beacons just touches the houses; but bring neither of them on with the houses on either side, especially when steering to the eastward, between the north and middle buoys. Ships drawing less than 14 feet water may stand across the Middle-ground to the northward of the middle buoy.

The King's Channel is not so convenient as the Eastern Gat, although its width and depth are nearly the same. A floating beacon lies on the western side, at its north end; and about half way down on the same side is a white buoy, the mark for which is the Provesteen, or magazine in the water, on with a church standing about 8 miles northward of Copenhagen.

The Gasper-channel lies N. and S. and is much broader than the other channels. In the narrowest part, on its west side, is a buoy, *about a mile and one third S. by E. from the south buoy of the* Middle-ground, and two miles nearly S. E. by S. from the white buoy of the King's Channel. The mark for it is, the church of

Taarnbye, in the isle of Amag, on with the south end of a lime-kiln. Half a mile southward of this buoy, a dangerous spit runs off from Amag-ground, with only 13 feet water on it. It lies with the south end of the upper wood on with the north end of the lower wood, in the isle of Amag, and the northernmost beacon in one with the north end of the single house to the northward of Dragoe-town. This spit must be avoided with the same caution by ships coming from the southward, as it lies nearly as far to the eastward as the last-mentioned buoy.

To the northward of this spit, the channel widens towards Dragoe; abreast of this town it again narrows a little, by the Saltholm-ground's stretching westward 2 miles from the south point of the island.—The passage between Saltholm-spit and Dragoe is the shoalest in the Grounds, having but little more than 4 fathoms; and, after a long continuance of southerly winds, often less. The shoals in general are rocky, and the water so clear, in fine weather, that the bottom may be seen in 5 fathoms.

The current, either from the northward or southward, generally takes nearly a strait course through the Grounds.

Dragoe-town is about 7 miles south of the spit of Amag-ground; at that distance from Dragoe, in the same direction, lies North Dragoe-buoy, a white buoy on the westernmost part of Dragoe-reef; its mark is the lime-kiln open of Dragoe-Jetty-head, or of a church with a square steeple. This buoy bears S. by W. ½ W. 6 miles from the buoy to the northward of the spit. In coming from the southward, as a leading-mark for the North Dragoe-buoy, and to carry you clear through the Grounds, you may observe two trees standing to the northward of Dragoe, and they appear right in the middle of the gap or opening in the town when a ship is in the fair-way; you may stand on each way until the trees touch each other; but never bring them on with the houses.

About 5 miles from the North Dragoe-buoy, the southernmost buoy of Dragoe-reef lies with the highest steeple in Copenhagen a sail's breadth open to the eastward of Dragoe-wood, bearing N. by W. ¾ W.

In Kjoge-bay, between Dragoe and Steffens-head (or Steeden-point), you may ride safely with westerly and northerly winds, in 6 and 7 fathoms, clear ground, Dragoe-wood bearing N. W.

As soon as you have passed Dragoe, you will perceive two trees, on Steffens-head, bearing nearly S. W. ½ W. about 5½ leagues distant; thence the course towards Falsterborn-reef is S. S. W. and S. S. W. ½ W. 5 or 6 leagues. When the wind blows strongly from the northwestward, steer S. S. W. ½ W.; as then a ice-current sets strongly in the direction of the wind, as it does also in all parts of the Baltic; then keep half a point to windward of your course, by the chart, with the wind quartering.

Be careful, in the above course, to keep at a considerable distance from the Swedish coast, as it is bordered all the way to Falsterborn by steep ledges of rocks. The Brake, or Broad Ground, a dangerous shoal, lies three miles and a half S. S. E. ¼ E. from North Dragoe-buoy: the highest steeple of Copenhagen on with Dragoe-town, leads directly on it; by keeping the same steeple open to the westward of Dragoe-wood, you will run clear of it. A little to the northward of this shoal, and S. E. 2½ miles from the same white buoy on Dragoe-reef, lies a small rocky stone bank, of 2 fathoms, called the Lille or Little Ground. The mark for this bank is, the steeples at Copenhagen and Dragoe-town nearly on, bearing about N. N. W. In coming down in the night, with Falsterborn-light bearing S. by E. you are in a fair-way for the North Dragoe-buoy.

Falsterborn-Point, is the south-easternmost point of the Sound. A conspicuous lighthouse is upon it. From this point two reefs stretch off more than a league, in the form of a crescent; when the lighthouse appears on with the church, bearing E. N. E. northerly, you are abreast of the northernmost reef, towards which, as there are gradual soundings, a ship may safely stand in 6 fathoms water. The southernmost reef is very dangerous and steep; within a cable's length of it, are 7 fathoms; you are abreast of this reef when Old and New Falsterborn towns bear N. N. E. a little easterly, and on with each other.

In sailing round Falsterborn-Reefs, keep well towards Steffens-land, or

or Steeden-point, which is very bold; the course round is S. S. W. South, S. S. E. and S. E.; keeping along-side the reef in 6 fathoms, until you are at the pitch of it; that is, when the church bears N. E. ½ N. When the church bears N. N. E. you are in the Baltic. In the middle, between Steffens-head and Falsterborn, are 10, 11, and 12, fathoms water.

In going down from the Sound by night, if Speyl-cliff on the east side of Moen-island, bears S. S. W. steering down N. by E. will carry you in a fair-way clear of Falsterborn-cliff.

With easterly or S. E. winds, bring the church E. S. E. and then you may anchor under Falsterborn in 5 or 6 fathoms, clear ground.

DIRECTIONS for the BALTIC SEA.

1. *DIRECTIONS for sailing from KIOGE BAY through the GREAT BELT. (Written for the use of the British Fleet, and communicated by* Mr. Geo. Morrison, *Master of his Majesty's ship* Edgar; *with additions by* Mr. T. Stokes, *Master of the* Zealous.)

FROM Kioge-bay, the course to Steffens-head, or Steeden-point, is S. ½ E. to S. by E. You may round it at the distance of half a mile, in 7 or 8 fathoms. From Steffens-head to Moen-island the course is S. ½ W. and S. by W. distance about 7 leagues. Of this island the eastern point is bold; but, from the southern point, a small shoal of rocks stretches out to the distance of half a mile.

Approach no nearer to Steffens-head and to Moen-island than in nine fathoms. The course hence is S. S. W. but a S. W. by S. course will take you into mid-channel between Dars-head and the Trindel.

The soundings off Dars-head are regular; and vessels may stand into any depth according to their draught. The *Trindel* or *Trindelen* is a rocky shoal, which extends off the south point of the Isle of Falster to the distance of six miles. The best way to avoid it is to steer S. W. by S. until you bring Dars-head E. by S. by which you will round it in 7 or 8 fathoms.

The south point of Falster is called *Giedser Odde*, or Gedesby-point; and a little way to the N. E. of this point there are two churches. With the southern one a little open to the westward of the northern, you will be on the point of the shoal.

It is, however, to be observed that, in the year 1802, a lighthouse was, by order of his Danish Majesty, erected upon this point, at about half a mile from the extreme point of land; and, although the light is entirely produced by a coal-fire, yet care has been taken to surround it with a lantern, or glass case, according to the latest invention, of fourteen feet diameter; so that, be the weather whatever it may, a constant flame may arise therefrom, and the light be augmented thereby; because all that part of the case which is towards the land, and which cannot be seen at sea, is lined with a plating of polished block tin.

In order that the dangerous flat, the *Trindelen*, which is situated by the compass at about three miles S. E. ¼ S. without the *Giedser Odde*, may the more readily be observed by navigators during the day, a pillar, with a barrel on the top of it, painted black, has been erected on a rising ground near the sea, and placed, with regard to the Trindelen, in the same point of view as the lighthouse, which is painted white: so that, when under sail, the black barrel is seen in the same point of view as the white lighthouse (which may very easily be distinguished from the Trindelen in gloomy weather, and even at the distance of two miles without that flat, according to the greater or less elevation of the vessel at sea), and the vessel is in a right line with the Trindelen. In such case, a vessel must keep at the distance of four miles from the coast, in order to avoid the said flat, it being impossible to take soundings. When the course is from west to east, and the barrel is seen insulated and free on the western side of the lighthouse, the vessel is quite clear of the flat; and *vice versa*, when sailing from the east, and the barrel is seen insulated and free on the eastern side of the lighthouse.

As to ships not being of great burthen, there is a passage between the Trindelen and the shore; but this passage must be extremely well known, or a pilot should be taken, who will come out from Giedser Odde upon signal being made.

The light is kept burning in summer, or from Easter day to Michaelmas day, from an hour after sun-set to sun-rise; and, during the rest of the year, from half an hour after sun-set to run-rise.

Your course, in proceeding for the Belt, between the islands of Laaland and Femeren, is N. W. and N. W. by N. A long flat stretches from Laaland, but the island of Femeren is bold-to, except on the S. E. end, from which a shoal extends for two or three miles. The Amazon frigate anchored off this island in 15 fathoms, fine muddy bottom, with Femeren church west, 5 miles distant.

With Femeren W. N. W. 12 miles, the coast appears low, and has a barren appearance. Some houses and two spires are to be seen. The English fleet in turning to windward between Femeren and Laaland, stood to the Femeren shore to 1½ mile, and to Laaland to 3½ miles; 13 fathoms on each side; and, in mid-channel, from 17 to 14 fathoms, soft clay.

Before passing through, the fleet anchored in 14 fathoms, soft ground, with the S. E. part of Femeren S. W. by S. 6 miles distant. The current running to the N. W. one mile an hour.

In rounding the *Westerness* of the Isle of Laaland, give it a good berth, as the shoal extends much farther off than as laid down in some of the charts, and shoalens suddenly from 7 to 5 fathoms. If you bring Femeren church to bear S. by E. it will lead in mid-channel between Westerness and the south point of Langeland.

In standing to the Westward, the S. W. point of Langeland should not be brought to the northward of N. by W. with the wind at N. W. This precaution is very necessary, and ought to be particularly attended to; as, when the current is setting from the Baltic through the Belt, it will, in this place, set very strongly to the W. N. W. for the Little Belt: therefore, should the wind come round to the eastward, while you are to the westward of Langeland-point, you would not be able to weather that point, and would, consequently, lose your passage through the Great Belt: and, all this time, the current would be setting strongly to the northward between Langeland and Laaland. The fleet anchored in 15 fathoms, with the S. W. point of Langeland S. W. by W. ½ W. Magleby church W. S. W. a mile and a half off shore. The bottom is uneven, but the ground good. The current was here found setting to the northward, one mile an hour.

Magleby Church is a mile and a quarter from the S. W. end of the island. It has a spire steeple; and, bearing N. W. is open between two clumps of trees, and has a pretty appearance.

The Course along the S. E. Side of Langeland is N. N. E. ½ E. Keeping at the distance of a mile and a half from shore, the soundings will be very irregular; from 10, 15, and 7, fathoms: but the shore is bold until Steens church, which may be easily known by having a mill on each side of it, bore N. W.

Hence stand over towards the island called Omoe, until Sproe-island be brought to bear north. This will lead clear of the shoal which stretches off the north end of Langeland, and also of another shoal called the Wresen, that lies about 3 miles northerly from Langeland shoal, having a small low flat isle on the centre of it.

To sail in mid-channel between Nyborg and Sproe, the latter must be kept bearing North or N. by W. until Nyborg church bears N. W. by W. (This church has a high spire steeple.) Then steer for it, keeping it in that direction, taking care to allow for the current, which here sets very strongly.

A ship will have plenty of room, taking care not to bring Sproe to the eastward of north. It ought, however, to be observed, that there is a small knowl (*not laid down in the charts*) of four fathoms and a half, lying with the island of Sproe N. by W. and the N. E. point of Langeland W. by N. The water deepens to the northward to 7 and 10 fathoms.

The steeple of Nyborg open to the eastward of Knud's-head will lead between Wresen and the shoal which lies off Sproe-island, through the narrowest part of the Belt, which is between 2 and 3 miles wide. The soundings towards the Wresen are regular.

The shoal from the west end of Sproe-island extends to nearly two miles. Incline, when in this part, over towards the town of Nyborg till the hills on Sproe-island are brought in one, when you will be clear of the shoal, and may shape your course for the isle called Romsoe.

There

There is a knowl, having no more than 21 feet water on it, extending from the S. W. side of Sproe-island, which lies with the telegraph on the island nearly on with the middle of the peak, and the body of the island bearing N. E. ½ N. also the south part of a wood on the island of Fyen just touching the north part of Knud's-head, at W. ½ N. *The wood is the first to the northward of Knud's-head.*

The soundings between the islands of Romsoe and Sproe are very regular, and there is good anchorage all the way.

On the Lyse-ground, soundings were taken to 4 fathoms. The least depth on the bank is 3 fathoms. A large ship may stand towards it to 8 fathoms; but it will then become necessary to tack. The marks for the north part, which is the shoalest, are, Saltbek church on with Aseso-point, and Refness-point bearing N. by E. ¼ E.

A shoal lies off Aseso-point, nearly two miles. With Callunborg steeples open you will be above it to the northward. A shoal likewise stretches off Refness to about two miles, and should not be approached nearer than in 10 fathoms; as, within that depth, it shoalens suddenly.

Between Aseso-point and Refness is Callunborg-bay, wherein a fleet may ride in safety with any winds.

The dangerous shoal, called the *Bolsakken*, is composed of stones and shingles. It is nearly two miles round, with only fifteen feet water on the shoalest part. It lies W. by N. 5 or 6 miles from Refness-point, and shoalens gradually on the eastern side from 12 to 6 fathoms. The thwart-mark for it is, the second rise of the hill in Refness, just touching the table land near the point. Keeping Kolbye church on the island of Samsoe open to the southward of a large wood will lead to the southward of it; and, keeping the same church open to the northward of the wood, will lead clear to the northward.

After passing Refness, steer N. E. towards the island of Seyer, to avoid the Hatter Reef, a dangerous shoal of rocks and sand, nearly 12 miles in circumference, and having in some places only 4 feet water. On its southern part is said to be a rock which sometimes shews itself above water, and appearing like a boat bottom upwards; but there is no island as represented in some charts. The sea, of course, breaks on it, particularly with a northerly or N. E. wind. Approach no nearer to the reef than in 7 or 8 fathoms.

From Seyer island extend two reefs. Each is composed of large stones and sand, with irregular soundings on both sides, from 7 to 4 fathoms. On either side there are strong riplings. The church in the island just clear of three small hummocks, bearing S. S. E. and the bluff point of the island S. E. ½ E. will lead clear of the south part. The church open to the northward of a very remarkable black hummock will lead clear of the north spit, and in 8 fathoms water; distance from the shore about two miles.

After passing Seyer island, steer out N. N. E. until Hielm island bears N. N. W. This will lead you clear of a middle ground which lies between the islands of Warroe and Seyer, and the Hatter reef. This shoal has no more than 24 feet water on it. When the island of Hielm bears N. N. W. haul more up for it, taking care not to go nearer than 8 or 9 fathoms, and passing the island at 3 or 4 miles off. Continue your course to the N. by E. and N. N. E. until Hielm bears W. S. W. Then steer E. N. E which will take you between Hasten's Ground and the coast of Jutland, observing not to bring Hielm to the westward of W. S. W. This precaution is necessary, as the currents are frequently very rapid here.

When the town of Graaæ, on the coast of Jutland, bears N. W. you will be to the northward of Hasten's Ground, and may shape your course down the Kattegat.

IT therefore appears that, the following points, &c. are those which ought to be particularly remarked in passing from the Baltic to the Kattegat, through the Great Belt.

1st. *Dars Head*, bearing S. E. in 5 or 6 fathoms, to be left on the larboard hand.

2d. *The Trindelen;* the point of Gedesby bearing N. W. by N. in 6 or 7 fathoms; to be left on the starboard side.

3d. *Westerness;* with the church bearing N. E. in 6 or 7 fathoms, to be left on the starboard side.

4th. *Off*

4th. *Off the North end of Langeland*, with the point bearing S. W. by W. in 6 or 7 fathoms, to be left on the larboard side.

5th *Off the Spro shoal*, in 6 fathoms, with the body of the island N. E. ½ N. to be left on the starboard side.

6th. *On the North end of the Lyse Ground*, in 6 fathoms. Refness N. by E. ½ E. to be left on the starboard side.

7th. *On the Bolsakken*, in 6 fathoms. Refness W. by N. to be left on the larboard side.

8th. *Refness*, in 8 fathoms, left on the starboard side.

9th. *Hatter's Reef*, in 7 fathoms, the north end of Seyers island east; left on the larboard side.

10th. *Seyer's reef*, in 8 fathoms. The point bearing S. S. E. left on the starboard side.

11th. *The Middle Ground;* Seyers island at S. E. by S. left on the larboard side.

12th. *On Zealand's Reef*, in 9 fathoms, with Seyers island S. S. W. ¼ W. to be left on the starboard side.

13th. *On Hasten's Ground*, in 9 fathoms, the island of Hielm bearing west; to be left on the starboard side.

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2. FASTERBORN to BORNHOLM, &c. From Falsterborn-reef to Gooseberry-reef, a rocky shoal lying 3 miles off the point eastward of Tralleborg, and a-breast of the high round hill on the Swedish main, the course in a fair-way is E. S. E. ¼ E. 7 leagues; thence to Sandhammer-point E. by S. 9½ leagues; to the north end of Bornholm E. ½ S. 6½ leagues; the whole distance being about 23 leagues. From abreast of Falsterborn to the S. W. end of Bornholm, the course is E. S. E. ¼ E. the distance being very nearly the same.

When coming from Falsterborn towards the round hill, do not approach the coast nearer than 12 fathoms, to avoid the shoal of Tralleborg-point; from the round hill to Sandhammer, the shore is pretty clear, and in the fair-way are 18 fathoms, white and grey sand.

BORNHOLM, belonging to Denmark, is a high island, 6 leagues long, and about 4 broad; it rises up from each shore, and a white church, which appears to be near the middle of the island, may be seen, in clear weather, 8 leagues off.

Appearance of Bornholm, when the White Church in the middle of the Island bears E. by S. 6 Leagues distant.

The north end of this island is bold, and so steep, that a first-rate ship may go within a cable's length of it. On this end is a beacon; and, above it, on the rising land, the ruins of a castle.

Appearance of the North End of Bornholm when it bears E. 3 leagues distant.

Under the north end you may anchor, half a mile from shore, in 14 fathoms water, with the white church bearing W. by S. and the northern extremity of the island N. W.

Two or three miles from it, on the west side, is Mollevig, a tolerable good anchorage, in 16 and 17 fathoms water, coarse sand.

There is a watch-light on the northern coast of Bornholm upon the mountain called Steileberg, which is situated, by the compass, about a mile from the northernmost bay of Bornholm. In con-equence of the height of this mountain, the lighthouse is 272 feet above the level of the water. Although it is lighted by means of a coal fire, it is surrounded

rounded by a glass case, or lantern, of 14 feet diameter, constructed upon a new principle; so that, in all weathers, the flame will rise without interruption, and the light will be augmented by it; because, that part of the case or lantern which is on the land side, and every part whence the light cannot be seen at sea, is a wall, the interior of which is covered with plates of polished block-tin.

This lighthouse was lighted up, for the first time, on the 21st of June, 1802, and continues according to the terms of the ordinance of the 21st of March, 1705, and of the proclamation of the 1st of February, 1799; so that in summer, that is, from Easter-Day to Michaelmas-Day, it is kept burning from an hour after sun-set till sun-rise, and, in winter, that is, from Michaelmas-Day to Easter-Day, from half-an-hour after sun-set till sun-rise.

With westerly and N. W. winds, the best anchorage is on the east side of the island, a-breast of Nexoe, a town on a low ground.

Bornholm has no harbour excepting that of Rönne, on the S. W. side, which is only fit for vessels of 6 or 7 feet draught of water. At the southern part there is indeed a harbour at Arnager which will admit of pretty large ships, but it is open to several winds, and the bottom is not safe, nor can any kind of supply be obtained here; it is only in case of distress that ships ought to anchor about the southern part of this island, the bottom being foul and unsafe; large ships, in general, ought to avoid a passage here on account of the many dangerous grounds. If under the necessity of seeking a temporary shelter with contrary winds under the coast of Bornholm, there are several places where you may anchor at: thus, for instance, with Easterly winds you may anchor at the western side at a distance of one or two miles from the shore: with the wind between South and West you may stand in and drop your anchor abreast of Sandvig, or rather of Allinge; but, if the wind should happen to shift to the N. W. or N. you ought directly to proceed to Frenne road or even to Nexöe. At the latter place, which has a blue spire steeple, the best anchorage is found when you bring the flag-staff at the harbour to bear with Bodels church in 8 or 9 fathoms of water. On the northern side from Allinge down to Svaucke the bottom is not safe; and, besides, you must lie so close to the shore that it would be difficult to clear it, in case the wind should suddenly shift.

The S. E. end of Bornholm, called Duc-Odde, lies nearly 5 leagues from the S. W. end; a reef stretches from it about a mile; close to this reef are 7 and 8 fathoms. Five miles S. S. W. from the S. W. point, lies a shoal of only 10 feet water; and, in the middle of the sea, between Bornholm and the isle of Rugen, on the south side of the Baltic, lies another of only 13 or 14 feet.

From the southernmost point of Bornholm to Colberg, in Prussian Pomerania, the course is S. ¼ E. 17 or 18 leagues.

EARTHOLMS. About 5 leagues E. by S. from the north end of Bornholm, are the small islands and rocks called Eartholms.—Christian's Oe, the principal of them, is on the east side, and is less than a mile long, and half a mile broad: it has a round castle, garrisoned by a few soldiers, to defend the harbour, which lies between it and the westernmost isles, and is used by Danish ships of war.

It is of the utmost importance that mariners in the Baltic, should be well acquainted with the harbour at the island of Christian's Oe, as it affords a safe shelter with contrary winds; and ships in distress may here find the assistance required. In case of being under the necessity of remaining here, for the winter, they may also be supplied with the most necessary provisions, besides refreshments from the island of Bornholm. On applying to the Commandant of the castle, every kind of assistance, in his power, will be afforded.

When you intend to enter into this harbour, you ought timely to hoist your colours from the fore-top, on which a flag will be directly hoisted from the fort, unless more than thirty or forty ships are there already, which are all the harbour can admit; in case of admittance, the pilot will come out timely to conduct the vessel in. If, however, the weather should prove so hard that the pilot cannot get out, the following directions ought to be observed. With the wind between N. and E. S. E. you ought to stand in at the southern passage; and, in case you come to the eastward of the island, you must run close round the southern point of Christian's Oe, and just as you open the mouth of the harbour

harbour haul up to the wind, when the pilot will directly attend you. If the wind proves so northerly, that you cannot at once make the harbour, the pilot will furnish you with a cable, one end of which must be quickly seized, the other being fastened a-shore; the sails must be directly shortened, and the ship towed farther in.

If you come to the westward of the island, you ought to go close round the shoal Snarken, on which a sea-mark is placed. At the island of Christian's Oe, two beacons, consisting of white tuns, each erected on a pole, are placed; when you bring these two in one direction, you will go clear of the shoal Snarken; and, having passed this, you haul up at once into the harbour. As yet, ships of only 12 or 13 feet draught of water can enter into the harbour from this side; the northern entrance, on the contrary, will admit of large ships and even of frigates of war; this entrance is preferable when it blows a storm from S. E. or S.

If you approach the east side of the island, you keep close to the point called Gyldenloveshoved; and, when you have passed this, the pilot will attend you. The anchor must be dropt on the larboard side the moment you make the harbour. At the distance of about one-fifth part of a cable's length to the north of the island lies a shoal called Kullen, on which a sea-mark is placed, you may pass between this and the island. With a west or southerly gale you ought to sail through Taarn-Renden; and, when you are abreast of the shoal called Jomfrue-Ringen, drop your anchor on the larboard side and pay away your cable until you are abreast of Spro-Ringen. When the ship is brought up, and afterwards towed in, the pilot will attend with cables.

With the wind between W. and N. you ought to go to the eastward of the isles Tat and Græsholmen, and drop your anchor on the starboard, as you are just in the mouth of the harbour; when the pilot will attend with a cable to moor the ship on shore.

It is necessary, in a hard northerly gale, to stand for the southern entrance; and, with a southern gale, to stand in for the northern passage; that you may have it in your power to stop the rate of your ship, in order not to damage yourself or the other ships that may happen to be in the harbour.

As the greater number of vessels bound through the Baltic pass the island of Christian's Oe, they formerly ran great risk of being lost on this island, or on the isles and shoals surrounding it; but in order to prevent this, and further to guide the mariner, a new light was constructed in the year 1805, on the tower of Christian's Oe, consisting of nine large reverberating and reflecting lamps, which revolve in three minutes, during which time nine strong glances appear in every direction, when an interval of 20 seconds between each of these will follow; if the distance however be not too great, you will continually perceive a kind of light from the lamps; the height of this light above the surface of the water is 92 Danish feet. This particular construction has been adopted in order to distinguish this light from that on the northern point of Bornholm, which is still preserved, and burns with a steady uninterrupted fire.

Appearance of the Eartholms, bearing W. ¼ N. 8 miles distant.

OELAND. From Eartholms to a reef which stretches about 3 miles S. W. ½ W. off from the south end of Oeland, is E. N. E. ⅓ N. about 22 leagues; and, from the north end of Bornholm to that reef, the direct course is N. E. ¼ N. 25 leagues. But, when a ship is 2 or 3 miles off the north end of Bornholm, the course in a fair-way should first be E. by N. 14 or 15 leagues; then E. N. E. 11 or 12 leagues, until a-breast of Oeland; and thus it would avoid sailing near the Ut-Klippers, or outer rocks, which lie off the S. E. point of the coast of Sweden.

Oeland is a long island, lying parallel to the eastern coast of Sweden; the channel between is 3 or 4 leagues broad at each end, and about 2 near the middle. The island is 23 leagues long, and from 1 to

to 3 leagues broad. On the pitch of the southern point, which is very low, is erected a lighthouse, on a high white tower, which may be seen 6 leagues off; it lies in lat. 56° 3′; a clump of trees will appear a mile or two to the northward of it. Close to the reef, which runs off from the southern point, are 5 fathoms water.

STOCKHOLM. Ships bound to Stockholm, having made the lighthouse on the south end of Oeland, may sail up on either side of that island; but observe, that the channel between it and the main is very narrow in one of the passages, and has many dangers. It is safest to sail along the eastern side of the island, keeping more than 3 leagues distant, to avoid foul grounds which border the coast. The course from the south reef of Oeland to Engerne-head, on the northernmost part of the island, is N. N. E. ½ E. 25 leagues. Five or 6 miles N. by E. off this point, is a small shoal of only 12 feet water.

From Engerne-head to Land's Ort, is about N. or N. ½ E. 28 leagues: Land's Ort is a small island with a white lighthouse upon it, where vessels bound up to Stockholm take a pilot, as none venture without; and, as the passage is very deep, has no anchoring-ground, and is full of dangers. Leave Land's Ort close on the larboard side, there being many shoals on the starboard; the passage is between the island and these shoals. The signal for a pilot, who is always ready to come off from the lighthouse, is firing a gun, or hoisting a flag at the fore-top-mast-head.

Fifteen or 16 leagues north-eastward of Land's Ort is another channel to Stockholm, called Sandhamn, which has two lighthouses, to be left on the starboard side in going in; this passage is not so frequently used as the former, especially by English ships.

GOTTLAND. From off the south reef of Oeland to Hoborg, the S. W. point of the isle of Gottland, in lat. 56° 55′, the course, in a fair-way, is E. N. E. ¼ E. 25 leagues. Hoborg is rendered remarkable by *a round hillock. The breadth of the S. W. end of Gottland is* about 2 leagues, lying E. by N. ½ N.; then, turning off 4 or 5 points towards the N. it extends nearly N. E. and S. W. about 23 leagues, including the island of Faro at the north end of it, from which it is separated by a channel 1½ mile broad.

With the S. W. end of Gottland from N. by W. to N. N. E. from 3 miles to 7 leagues off, is a bank, on which are from 10 to 17 fathoms, stony bottom.

Twelve leagues and a half from the S. W. extremity of Gottland, is a low island called Ostergarnsholm, to which, in a fair berth, the course is N. E. ½ E. or N. E. by E. From Ostergarns to a-breast of the north end of Faro-island, the course is N. E. by N. about 10 leagues.

Six leagues from Faro lies a small island called Gootska-Sando: under this island is good anchorage with any wind, except on the S. W. side, off which runs a small ridge. From the north end of Faro to Land's Ort, the course is nearly N. W. 23 leagues.

DAGER-ORT. Dager-Ort, or the west end of Dago-island, at the entrance of the Gulf of Finland, bears from Ostergarns N. E. by E. ½ E.: the distance is 43 or 44 leagues. The courses are N. E. 35 or 36 leagues, and then E. N. E. 10 leagues, which will carry you near the point.

The respective bearings of the S. W. end of Gottland and of Dager-Ort, from land to land, are N. E. by E. and S. W. by W. about 56 leagues; but, from the S. W. end of Gottland, 3 leagues off the shore, the fair course is N. E. ½ E. the same distance.

If from Ostergarns you steer N. E. it will carry you 5 or 6 leagues to the northward of Dager-Ort; the meridian distance about 88 miles, and difference of latitude 96 miles. If the wind be scant to the northward, keep Gottland on-board, as Oesel is a dangerous island, and its broken grounds lie 3 or 4 leagues off shore. The current here, for the most part, sets on Oesel-island.

BORNHOLM to DANTZICK. From the road of Nexöe, in Bornholm, to Reserhooft, or Rose-head, on the west side of the Gulf of Dantzick, the course is E. by S. ¾ S. 41 leagues. About a league *from the head runs out a narrow neck of low sandy land, that extends* to the point of Hella, or the Heel, on which is a small town and a lighthouse: close to the lighthouse, in 30 and 35 fathoms water, you may see the steeples of Dantzick. The course from Rose-head to the Heel, is E. S. E. about 19 miles; and, from thence to Dantzick-road, is

is W. S. W. ¾ W. 12 miles. The water shoalens gradually all the way into the bight, from 30 to 5 fathoms. The best anchorage in Dantzick-road is, when the light-tower bears S. or S. by W. in 5 or 4 fathoms. Here are two lights; one a light-tower, and near it another, in a lantern hanging from a pole.—These lights, and that at the Heel, burn only in the latter part of the year and in the spring.

Dantzick-road lies in the westernmost bight of the Gulf of Dantzick. The outer road and bar of Pillau, which is the port of Konigsberg, are situated on the east side of this gulf, 15 leagues E. ½ N. (true bearing) from the former; there are deep soundings and clear ground all the way.

PILLAU. From Rose-head to Pillau-bar, the course is nearly E. by compass, and the distance about 18 leagues. Having coasted it along the low neck of land already described, cross the gulf: the same kind of land appears to the southward until you are within 4 or 5 leagues of Pillau, when it rises a little. Pillau, when seen at a distance, appears bluff, and a little higher than the rest. The most remarkable object here, is the lighthouse, which stands to the northward of the town.

Previous to the 1st of May, 1804, the Psandbude, near Pillau, in which the old Pillau light had hitherto been burning, and which served navigators to ascertain the land, was pulled down, and the hill upon which this building stood, cut down and levelled to a certain height. But, in order to indemnity mariners for the loss of this land-mark, a substantial lighthouse has since been built on a high hill situated N. N. W. ½ N. distant about a mile and a half from the Psandbude.

Ships coming from sea, which draw too much water, and therefore cannot run in the channel of Pillau, must, in order to come to an anchor in the proper road, off the entrance, bring the city and harbour of Pillau, south-east; and, the castle Lochstaedt, on the north side of the wood, for the most part close to the same, E. N. E. In 10 or 11 fathoms water, at this distance, and, in stormy weather, at a greater distance from the shore.

Vessels will also meet the pilots at sea, with a boat like a Liverpool pilot-boat, either lying at anchor in the road, or under sail, with a red flag flying at the mast-head.

The outer buoy must be left on the starboard side. On the bar are 11 feet water. There are two beacons with triangular caps, which, in one, bear S. E. ½ E. A low steeple serves as a leading-mark in going in: for, being in one with the two beacons, it directs you between two black buoys, which have no poles on them; the other black buoys must be left on the starboard, and the white buoys on the larboard, side, all the way in.

The outer road lies about a mile without the bar, and with the two beacons in one, in 9 and 10 fathoms water. The inner road is near 4 miles E. S. E. from the outer one, and has an anchorage in 5 fathoms, sandy ground; hence you may proceed E. N. E. ½ N. 6 leagues, through the northernmost part of the inland bay called the Frische-Haff, to Konigsberg, the capital of Prussia, which is a large trading city, standing on, and about four miles from, the mouth of, the river Pregel.

It is also to be observed, that there is a beacon on the shore at Pillau, which indicates, by means of a flag drawn up perpendicularly, that vessels are in the right channel. The direction of the flag will otherwise point out the course they ought to steer.

MEMEL, which is the next Prussian port, lies 27 leagues north-eastward of Pillau. From Pillau-road to Memel, the course is due N. 7 leagues, in order to give a good berth to the Bruster-Ort, the east point of the Gulf of Dantzick, which has two lantern-lights upon it, and off which the rocky reef stretches to the northward above one league to sea, having 11 fathoms water close to it. The course, from abreast of Bruster-Ort to Memel-bar, is N. E. ½ E. 20 leagues. The coast is woody all the way from Bruster-Ort to Memel-bar; but, when close in, the shore appears sandy: over it you can see into Memel-haven.

The distance from Bornholm to Memel is about 70 leagues, and the best course, if the wind be westerly, is E. by S. one half of the way, and E. the other; but, with a northerly wind, it must be so shaped

as

as to fall to the northward of the Dutch Cap, a remarkable tuft of trees on a sandy hill northward of Memel-harbour, with a fine beach of white sand all the way to the southward of them.—There is one steeple at Memel, with several windmills, by which it may be distinguished from Windau. In the road, which is 4 or 5 miles westward of the town, are 6 and 7 fathoms, sandy ground; over the bar are 15 feet water.

There is a lighthouse on the N. E. or Courland side of the entrance to Memel-harbour: it stands on a round eminence, planted with shrubs, which is 30 feet high, and 500 paces from the sea. The lighthouse is 75 feet in height, and its end fronts the N. W. The apparatus consists of 5 large and 4 smaller concave mirrors, with large candles, and a double patent lamp; and the light may be seen from all points between S. and N. E. 13 miles off. When 4 miles distant, it appears like a coal-fire; at 3 miles, like the rising full-moon; but, when 2 miles distant, the separate light of each reflector may be clearly distinguished. At the latter distance, with the light S. E. is good anchorage in 10 fathoms.

If the wind be southerly, and blow strong, when you leave Bornholm, an E. S. E. course will hardly carry you far enough to the southward of Memel; with the wind southward, you will find, when drawing near the shore, a very strong current setting to the northward, which makes it adviseable to keep the ship southerly.

LIBAU, in Courland, lies above 16 leagues to the northward of Memel-bar, and Windau lies 20 leagues to the northward of Libau.

BORNHOLM to WINDAU and RIGA. From the north end of Bornholm to Windau is E. ½ S. 64 leagues. In clear weather, you will see the land westward of that town in 24 fathoms water, which gradually shoalens in sandy soundings to the shore.

Windau is very remarkable in having a spire-church with a great body, that appears white; a mill is to the westward of it, and several houses.

From WINDAU to LYSER-ORT, or the west point of Courland, the course is N. E. 4 or 5 leagues. This is a low sandy point, athwart of which, a reef stretches off N. by W. about 3 or 4 miles, having 9 feet water on the extreme end, and 5 fathoms close to it. There is also a shoal in the offing, with Lyser-Ort, nearly S. S. E. and Windau, S. S. W. Some ships, drawing 17 or 18 feet water, have been aground on it.

GULF of RIGA. From Lyser-Ort to Domes-Ness-reef, off the N. E. point of Courland, at the entrance of the Gulf of Riga, your course is nearly E. 11 leagues. In the fair-way are several broken grounds of 4, 4½, 5, and 6, fathoms. Two good lights are kept on Domes-ness, in the latter part of the year; but going round the point, you must take great care, and give the shore a good berth, as a reef stretches from it 4 miles to sea. When the two lighthouses are in one, you will be athwart of the pitch of the reef, close to which are 14 fathoms water.

A lighthouse is also kept on the opposite side of the entrance to the gulf, which stands on Suarfver-Ort, the southernmost end of the island of Little Oesel, about 19 miles N. W. from Domes-ness.—With that light N. N. W. you may haul in for the island, and anchor, if necessary, in 15, 13, 10, and 7, fathoms water. With it W. N. W. in 8 fathoms, is soft ground.

Another lighthouse is on the north end of Runo, a small island in the middle of the gulf of Riga, surrounded by a bank, on which are only from 2 to 4 fathoms water. Off each end is a rock; that on the N. has 4 feet, and that on the S. 6 or 7 feet, water upon it. Ships, in the spring, sometimes run to the eastward of Runo, to avoid the ice, and from thence up to Pernau, in the N. E. part of the gulf, which, in mid-channel, is clear of danger. The island of Runo is about 3 miles long, 1½ broad, and its lighthouse lies 7 leagues East from Domes-ness.

RIGA. From Domes-ness to Riga-road the course is S. S. E. ½ E. 21 leagues, and clear ground all the way. Should the wind be to the westward, keep the west shore on board, that you may lay by, or come to anchor to heave your ballast. If the wind is to the northward, steer S. S. E. ½ E. and S. by E. ½ S. till you get into 13 fathoms; in the night, or in thick weather, let go your anchor. The steeples

steeples of Riga may be seen in clear weather long before the land; a ship of war always lies there, and if you heave any ballast in her sight, you will be fined.

DIRECTIONS for the GULF of FINLAND.

DAGER-ORT is the westernmost point of Dago-island, and the south-westernmost point of the entrance of the Gulf of Finland. A conspicuous lighthouse is erected 5 miles eastward of this point, in lat. 58° 56′. This, and the other lighthouses in the Gulf, is generally lighted from the 12th day of August to the month of May.

Appearance of Dager-Ort, the Lighthouse bearing S. S. E. 5 Leagues distant.

When the light-tower on Dager-Ort bears S. S. E. 4 leagues, steer E. N. E. 9 leagues, and then E. by N. 21 leagues, which will bring you to the north end of the isle of Nargen, and clear of the following shoals, dangers, and places, which will be left on the starboard side. The situation of the dangers under water is generally indicated by red or white flags, which are fixed in the month of May, and continue until the winter. In sailing up the Gulf, keep the white flags on the starboard, and the red flags on the larboard, side.

The Ground of Dager-Ort, or Nickman's Ground, has only 11 feet water on the shoalest part of it: on the north side of it stands a white flag in 6 fathoms water. From this flag the light tower of Dager-Ort bears nearly S. S. W. the westernmost point S. W. ¼ W. 10 miles distant, and Swyburg-ness E. ½ S. 3½ leagues.

Appolon, or the New Ground, which has 16 feet water on its shoalest part: on the north part of this shoal is a white flag in 5 fathoms water. The bearings from the flag are, the flag on Nickman's Ground, W. S. W. ½ W. 20 miles; Sibberness, the northernmost point of Dago-island, S. W. by W. 4 leagues; and a lighthouse on Oldensholm-island E. 5½ leagues distant.

The Island of Otkinsholm, or Odensholm, is a small narrow island about one mile and a half long, and 2 leagues from the nearest shore. On its N. W. part is the lighthouse.

On the shoalest part of the ground, which lies between Otkinsholm-island and the west point of the main land, are only 2 feet; the bearings from it are, the westernmost point of the main land S. by E. distance 3 miles, and the south end of Otkinsholm-island N. W. by N. above 3 miles.

The New Grounds, an extensive shoal, having on its north side a white flag, in 4 fathoms water, bears E. by N. ¼ N. 2 leagues from Odensholm-light; S. by W. ½ W. from the south end of that island; and N. W. ¾ N. 4 leagues from the north point of West or Great Rogue-island. On the shoalest part are only from 4 to 7 feet water: and, on the western edge, about one mile and a half S. W. by W. from the flag, are not above 3 feet.

Between the New Grounds and the north point of Great Rogue-island, are the Grass-grounds, which lie about a league to the west of that point, having from 12 to 14 feet water, and two spots above water in the middle of them.

Nineteen miles E. ¾ N. from the flag of the New Grounds is a white flag on the *Rogerwick-ground*, a very narrow shoal, 2 miles S. by W. ½ W. from a lighthouse on the main land at Paker-Ort, called also Great Rogue-Point. This flag bears N. E. ½ E. 4 miles from the north point of East or Little Rogue; E. N. E. six miles and a half from the north end of Great Rogue; and W. S. W. ¼ S. about 6 leagues from the S. W. end of Nargen: it lies in 18 feet, the least water on the shoal; southward of it, and N. E. by N. of the lighthouse, is another flag on a spit of sand stretching off from Paker-Ort.

The

The North Point of Little-Rogue-island bears, from that of the Great Rogue, E. ¼ S. distance about 3 miles; and Paker-Ort bears, from the north point of the Little Rogue, E. by N. ¼ N. distance 3 miles.

Between the north end of East Rogue and the point called Paker-Ort, which lie from each other W. ¾ S. and E. ¾ N. 3 miles, is the entrance of Baltish-haven, or ROGERWICK-BAY. The ground on both sides of the bay is foul; and the water close to both shores so deep, that you must be sure, when you are turning to windward, to come no nearer to the shore, on either side, than a quarter of a mile. This bay is so capacious, that it will contain 500 sail of ships; the ground all over, to within a quarter of a mile of the shore, is so soft, that your anchors will be quite covered in one day's time; and no wind whatever can make it a bad road; for, although the wind at N. by W. and N. N. W. blows right in, it never brings any sea into it. The land, all round the bay, is covered with trees: you may anchor in this bay in from 20 to 3 fathoms water.

The course into the harbour is S. by E. ¾ E. keeping in mid-channel, or rather nearer to the Little Rogue. The water shoalens gradually, as you advance, from 20 to 3 fathoms; you may anchor in from 20 to 3 fathoms; but the best anchoring is in 11 fathoms, about two-thirds from the main, towards Little Rogue.

About a quarter of a mile above the mole of Rogerwick, and a cable's length from shore, is a sunken rock of only 11 feet water.—Its situation is indicated by a floating beacon.

From the flag on Rogerwick-ground to the north end of Nargen, the course is nearly N. E. 19 miles.

NARGEN. Nargen-island is about 4 miles long and 2 broad, encompassed by a reef of rocks extending from the north end, above a mile to sea, and near the same distance off the south end, where a red flag is placed in 5 fathoms water. The bearings from this flag are, the old church-steeple of Revel S. E. the high land of Surep (or Surep-head, on which stands a lighthouse) W. S. W. the north end of Nargen N. ¾ W. and the S. W. end of the same island N. W. ½ W. distant 2 miles.

To anchor under Nargen, bring the south part of the island to bear W. S. W. and the north part N. W. by N.; you will then have 12 or 13 fathoms water, and good clay ground. You may anchor any where at the south end, in what water you please. About the middle of the east side of the island there are 3 or 4 small houses, and a large one; by bringing the large house to bear W. you may anchor, about a mile from the shore, in 12 or 13 fathoms water, and have clear ground. From the west side of this island there runs a reef almost a mile into the sea. You may ride any where off the south end in what water you please.

REVEL-BAY. Revel is a large town in the bottom of the bay to which its name is given. The entrance of the harbour is 3 miles N. W. by W. ½ W. from the south end of Nargen: in proceeding for it, you must steer so as to give the south end of Nargen a good berth; the soundings are regular, but you must come no nearer the island than 7 fathoms.

You may go on either side of the red flag which lies off the south end of Nargen; and steer, after passing the south point of the island, E. N. E. (about 3 miles) until you open Revel-steeples to the eastward of the Carle-islands, taking care to go to the northward of a white flag which stands on the Carles-reef. You may then steer S. S. E. ½ E. or directly for Revel-mole, and anchor in the bay where you please. If you hoist your colours before you pass the south end of Nargen, you will get a pilot from that island.

On the middle ground of the Carles there is a white flag in 6 fathoms; on the shoalest part of this ground are 12 feet water. The bearings from the flag are, the N. W. point of the Wolf N. E. distance four miles and a half; the highest steeple of Revel S. by E. ½ E.; the high land of Surep W. by S.; the S. W. part of Nargen W. N. W. distance 4 miles; Bridget's Cloisters S. E. ½ E. and the north part of Nargen N. N. W. ¼ W.

A shoal called Lotti-ground lies between Nargen and the Wolf-island, on which is a red flag in 4½ fathoms; and, about half a mile E. by N. from that, is another in 3 fathoms. The bearings from the first are, the N. W. part of the Wolf E. ½ S. two miles and a half;

Ola-church

Ola-church (the highest in Revel) S. S. E.; the north part of Nargen N. W. ½ W. 5 miles; and the flag on the S. E. reef of Nargen S. W. by W. ¼ W. 4 miles. N. W. by N. 2 miles and a quarter from the Lotti-flag, stands a white one, in 5 fathoms water: on the shoalest part of this ground there are only 4 feet: the bearings from this flag are, the north end of Nargen N. W. by W. ¾ W. two miles and a half, and the N. W. part of the Wolf E. S. E. ½ S. about four miles and a half.

When the north end of Nargen bears S. 2 leagues distant, the course is E. N. E. 4 leagues: steering thus, you will avoid the shoals called the New-stone of Nargen and the Revel-stone. The New-stone lies to the N. E. of Nargen, and has two flags, in 5 fathoms water; the flag on the north part of the shoal is white, and that on the south part red; on the shoalest part of this ground are 18 feet water. The bearings from the white flag are, the north end of Nargen S. W. ½ W. 5 miles; the flag on Revel-stone E. N. E. ½ E. 5 miles and a half, and a lighthouse on the Isle of Kokskar E. ¾ S. five leagues.

Revel-stone lies to the N. E. of the New-stone, and has also two flags, one mile and a half from each other; that on the north side is white, and that on the south side is red. The bearings from the white flag are, the old church-steeple of Revel just on with, or open a handspike's length of, Wolf's Island, bearing S. ¾ W. or S. ½ W. the N. W. end of Nargen S. W. by W. 10 miles: the lighthouse upon Kokskar E. S. E. ½ E. 9 miles. As the Revel-stone is very dangerous, to keep clear of it in going upwards, be careful not to bring the old church-steeple of Revel on with Wolf's Island, until Kokskar light-house bears S. E. by E. ½ E.

Kokskar is a small island or rock, on which is a remarkable light-house; a reef surrounds the island, and stretches about half a mile off the N. W. point, and near three quarters of a mile off the S. E. side, where there is a red flag.

Between New-stone and the Isle of Kokskar is a shoal called the *Devil's eye*, on which are a red and a white flag, in 4½ and 5 fathoms. The bearings from the white or northernmost flag are, the lighthouse on Kokskar E. ¾ S. 4 miles; the flag on the reef which stretches off the N. W. point of Wrangel-island S. E. by S. 3 miles; the old church-steeple of Revel S. S. W.; the N. W. point of Wolf's Island S. W. 7 miles and a half; the north point of Nargen W. by S. 12 miles and a quarter; and the white flag on Ragnild's Ground S. by W. ¼ W. 9 miles.

About two miles to the southward of the Devil's eye, and between Kokskar and Wolf-island, lies the *New Ground*, which has 2 flags on it in 5 fathoms water: the flag on the north end is white, and that on the south end is red. On the shoalest part of this ground are 20 feet water. This shoal bears from the flag on Great Wrangel's Reef W. by N. ½ N. 2 miles; from the old church-steeple of Revel N. N. E. ½ E. from the north-end of Nargen-island E. ½ N. 12 miles; and from Kokskar E. N. E. ½ E. about 5 miles.

After having steered as above, E. N. E. 4 leagues, steer E. 13 leagues, to avoid the Cable-ground, and E. by N. 10 leagues, to the north end of the isle of Hoogland.

The Cable-ground is a rocky shoal, about 7 miles in circumference, on the north side of the Gulf; part of the rocks are even with the surface of the water, and above 4 leagues from shore, bearing about 8½ leagues N. E. by E. from Kokskar.

The Cable-ground has a red flag in 5 fathoms water; the bearings from it are, the north point of Hoogland-island E. 13½ leagues; the south end of Hoogland E. ½ S. 15 leagues; the island Pelting-scar N. E. ½ N. 5 leagues: and a small rock above water N. by E. 4 miles.

The Cable-ground is very dangerous; you should, therefore, before abreast of it, if the weather be clear, have the south shore of the Gulf bold in sight, whilst the north shore is imperceptible.

In sailing on the last-mentioned courses up the Gulf, you leave on your starboard side the island called Stoneskar, which is about three quarters of a mile in length, and lies S. W. by W. 25 miles from the north part of Hoogland. This island has a few huts upon it: it is bold

bold and steep-to within half a mile of the north end; but, off the south end, a reef of only 8 or 9 feet water stretches off 2 miles to the southward.

A small island, called Rothskar, lies N. E. ½ E. 14 miles from Stoneskar; on this island are also some huts, and it is surrounded by a reef about half a mile broad; close to which, on the west side, are 4 fathoms water. The bearings from hence are, the north end of Hoogland N. E. by E. ¼ N. about 12 miles, and the south end of that island E. N. E. 11 miles.

HOOGLAND, or Hogland, is 6 miles long from N. N. W. ½ W. to S. S. E. ½ E. and about one mile broad. On its north point are two lighthouses; that called the high light stands on the northernmost hill, and the low light is on the point, about 30 yards from the water. Both ends of this island are so bold and steep-to, that the largest ships may pass them within a quarter of a mile from shore.—The channel round the south end is as safe as that at the north, and both are 3 or 4 miles wide. The north channel is mostly used on account of the lights.

To anchor at Hogland, if you bring the south part of the island to bear S. the sandy beach southward of the town to bear W. and the north end of the island N. W. ½ W. you will have from 20 to 30 fathoms water, and be about a mile from shore.

A ground, which has 8 feet water on its shoalest part, lies from the north end of Hoogland, W. N. W. northerly, distance 8 miles; and from the south end of Hogland N. W. ¼ W. distance 13 miles. About half a mile to the northward of this shoal there is another, with 20 feet water on its shoalest part.

A ground, in 4½ fathoms water, lies from the north end of Hogland W. ½ S. distance 5 miles; and, from the south end of that island N. W. ¾ W. distance 8 miles and a half. On the shoalest part of this ground there are 19 feet water.

Northward of the North Channel of Hogland is a shoal called the New Ground of Hogland: it extends about three miles N. N. E. and S. S. W. and is above one mile and a half wide at the broadest part. On the middle are but 2 feet water; on the N. E. end, near which are four small rocks above water, are 3 feet; and on the S. S. W. part are 7 feet water, stony bottom. A red flag on this shoal bears from the north end of Hogland N. N. W. ½ W. 5 miles. The N. E. end of the ground bears from the north end of Hogland about N. by W. 6 miles and a quarter; from the little islands called Lupps and Respo S. W. by W. 2 miles; and from the outermost beacon of Aspo W. S. W. ¾ W. 9 miles and a half. To avoid this shoal, be cautious, when turning to windward, not to stand too far north from Hogland. About two miles N. N. W. from the north end of Hogland, another red flag is placed on a ground of 23 feet water.

ASPO, a small island, lies N. E. 13 miles from the north part of Hogland, and has a tolerable harbour for merchant-ships. This harbour is known by two white tower-beacons; the southernmost, which is the lowest, stands upon Leskar, a small rock at the entrance of the harbour, and is to be left on the starboard side in going in: it bears from the highest or north beacon, which stands on Aspo-island, S. S. E. ½ E. about one mile and a half; and, from the north end of Hogland, about N. E. 12 miles.

There is no danger in the way between Hogland and Aspo-harbour; but, if you mean to go into it, by the easternmost beacon, you must be sure not to come very near to the shore, until the beacon bears N. E. or N. E by N.; this precaution is necessary, to avoid the foul ground which lies off the south side of the island; then steer directly for the beacon, bearing as aforesaid, until you are near it; and, after leaving it about a ship's length on your starboard side, you must go to the westward of the easternmost beacon. Should the wind be westerly, you must be sure not to come any nearer to any of the rocks which appear above water than a large ship's length: the best way is to go in the mid-channel, between the rocks and the beacon; the former lie right opposite to the latter; and, when you haul to the N. N. W. be sure to keep at the distance of a large ship's length from the rocks. You must also give all the islands a small berth, and anchor to the north-eastward of them. All the way from the easternmost beacon to the island where the westernmost beacon stands, you

may

may anchor in about 15 fathoms water; the ground is clear and good. The easternmost beacon bears from the north end of Hogland, N. E. distance 3 or 4 leagues. Close by the easternmost beacon, and in the entrance, lies a sunken rock, on which there are only 11 feet water: by not going within a ship's length of the beacon you will avoid it.

HOGLAND to CRONSTADT, or ST. PETERSBURG.—When the north end of Hogland bears S. one mile distant, the course, to avoid a rocky island called the Sommers, is E. by S. 7 leagues; then E. 6 or 7 leagues, to avoid a reef which surrounds the island of Seaskar; from Seaskar reef the course and distance are E. S. E. ½ E. 12 or 13 leagues to the Tolbeacon island; and, when the Tolbeacon bears N. 1¼ mile distant, the course to Cronstadt-mole is E. S. E. and E. by S. about 3 miles. From Cronstadt to St. Petersburgh, the course is E. by S. ¼ S. about 10 miles.

The Island of Sommers, which lies E. by N. ½ N. 7 leagues nearly from the north end of Hogland, is bold, except at the east end, off which runs a rocky reef for above 1 mile.

The Stone-Ground, a shoal, the least water on the north edge of which is 20 feet, lies 5 miles to the northward of the islands of Peni and Lavensari, in the middle of the Gulf, both of which are covered with trees. Two white flags, to be left on the starboard side in going up, stand on the north side of this ground, in 4½ or 5 fathoms water. The bearings from the flags are, the highest part of Hogland W. ½ S.; Sommers-islands N. W. ½ W. 7 or 8 miles; the north part of Lavenskar S. by W. ½ W. 6 miles; Peni-island about S. E. by S. 7 miles; and Nerwa-island N. E. by N. ½ N. 7 miles.—Nerwa is a small round island, which lies 3 leagues E. N. E. from Sommers; it is bold and clear all round.

About one mile S. from the westernmost of the flags on the Stone-ground, the least water is 18 feet; 2 miles E. by S. from thence, and S. S. E. from the easternmost flag, are only 17 feet; between, the different shallows of the Stone-ground are from 6 to 10 fathoms water.

The Island of Seaskar lies above 13 leagues E. from the north end of Hogland: from the easternmost flag of the Stone-ground, to abreast of Seaskar, is nearly E. about 5 leagues. Seaskar is low, two miles in length, and covered with trees; from its north end, on which is a lighthouse, a reef runs off N. W. 4 miles, having from 11 to 9 feet water upon it, with a white flag on the north-westernmost part in 4 fathoms. The bearings from the flag are, Seaskar-lighthouse S. E. by E. or S. E. 4 miles; the east point of Peni-island W. S. W. 6 miles; a small island 1½ mile from the west part of Seaskar, S. by E. 3½ miles, then in one with a conspicuous round hummock on the Russian shore, called the high land of Koporia.

To anchor on the east side of Seaskar, bring the lighthouse W. by N. or N. N. W. and the south part of the island S. W. ½ S.; you will then have 8 or 9 fathoms water, good ground. If steering in from the northward, you must not approach the reef nearer than 7 fathoms, until the lighthouse bears S. W. by S. and then, no nearer to the island than 4 or 3 fathoms. With the lighthouse W. N. W. or W. N. W. ½ W. and the south part of Seaskar S. W. by S. you will be about a mile from shore, and may anchor in 8 or 9 fathoms: with nearly the same bearings you may ride farther out, to nearly 2 miles from the east shore, in 16 and 17 fathoms, the anchorage for ships of war.

Should it be necessary to anchor to the southward of Seaskar, go no nearer to the reef on the east side than in 5 fathoms, nor farther off to the southward than 8; because, from 9 fathoms, you may get quickly into 2¼, and from thence will see rocks above water. By observing these directions, you will ride to the southward of the island, in 5, 6, or 7, fathoms, and have good ground.

Between the islands of *Lavenskar, Peni, and Seaskar*, and the south shore of the Gulf, the south channel, which is not 5 leagues wide, is made still narrower, and very dangerous, by reefs and numerous dangers.

Two long and dangerous spits run off from the land of Kurgada; one to the westward, about 10 miles, terminates at the *Witground*, a cluster of large rocks, lying 10 or 11 miles nearly S. from Lavenskar. Six miles N. W. from them, and near mid-channel, lies the *Nanus*, a shoal

a shoal of only 9 feet water. The other spit stretches about N. ½ E. 8 miles: its N. end has 10 feet water on it, and lies S. by E. 15 miles from the S. E. end of Great Tutters-island, (hereafter described,) and 4 miles E. S. E. from the south end of Lavensaar-reef.

About 4 miles S. E. ¼ S. from the S. E. point of *Lavensari-island*, there is a small rock above water, called Chaloda. Four miles S. W. by W. from this rock, there is a shoal with only 3 feet water on it; and, 3 miles S. by W. from the latter, there is another small shoal with 5 feet water on it. S. W. ½ W. from this shoal, lie the Witskars, on the tail of Rusko-haven-reef; and about 2 miles W. S. W. lies the end of Kurgala-reef, having 10 feet on it.

A ledge lies 4 or 5 miles to the southward of Seaskar; its north end, called the *West Ground*, is very shallow; a mile to the northward of it are only 3 fathoms water. Two miles E. of that end, and 6 miles S. by E. ½ E. from the south point of Seaskar, is a shoal of 2 feet, called the Middle-Ground.

The Diamond-Stone, which is a little above 5 leagues E. S. E. ¼ S. from the flag of Seaskar, consists of 3 small shoals, forming a triangle, and indicated by 3 flags. The north shoal has 20 feet water, and near it is a white flag in 4½ fathoms, which, in going upwards, must be left on the starboard side: it bears about E. 4 leagues from Seaskar lighthouse. On the western shoal are 17 feet water; to the S. S. W. of it is a red flag, in 4 or 5 fathoms, the bearings from which are, Seaskar-lighthouse W. by N. 11 miles, and a head-land called Stirsudden, on the north coast, N. E. by N. above 16 miles.

The southern shoal, or Diamond-stone, has only 4 feet water on the shoalest part. On its south side there is a red flag in 4½ fathoms; the bearings from which are, Seaskar-lighthouse W. by N. 12½ miles; the high land of Koporia S. by E.; Dolgoi-noss in Ingermania, S. S. E. 6 miles; and Stirsudden, N. N. E. 16 miles.

When steering from Seaskar towards Cronstadt, you will soon perceive the Gulf to become narrower; and, 4 leagues distant, you may see Stirsudden on the N. and Dolgoi-noss, or Dolgenoss, on the south side. The shores on both sides are free from danger, excepting that a small short reef runs off the shore at about 7 miles S. W. from Tol-beacon, on which, is a lighthouse. When in sight of that light, bring it to bear between E. by S. ½ S. and E. till you are within 2 or 3 miles of it: then steer a little to the southward to give the lighthouse a berth of a mile and a half, exactly in mid-channel between Tol-beacon and London-Chest. *The London-Chest* is a shoal which runs 2½ miles off from the south shore, and there are but 3 or 4 feet water on it, but near it are 4½ fathoms. The south shore all the way from Dolgoi-noss to the London-Chest is so safe, that you may shoal into 12 and 11 fathoms. On the London-Chest is a white flag in 4½ fathoms; its bearing from Tol-beacon is S. by W. ½ W. 3 miles. The mark for it is, a round hill on the Finland-shore, two sails' breadth open to the eastward of Tol-beacon.

About 1½ mile from Tol-beacon, is a small rocky shoal of only 10 or 11 feet water; near its east side is, in 4½ fathoms, a red flag, which is, as are all the rest of that colour, to be left on the larboard side. The bearings of this flag are, from Tol-beacon S. E. by E. ½ E.; from Crostadt-castle, W. N. W.; and, from the flag on London-Chest, about N. E. Two miles to the eastward there is another flag, which marks the edge of the shoal-ground on the south side of the island.

When in a fair-way, *Cronstadt* bears E. by S. ½ S.; run up in that direction till you bring the highest crane on Cronstadt-mole on with a magazine in the middle of Cronslott, or the fort erected in the water opposite the entrance of the Merchant's Mole. Continue to steer E. by S. ½ S. till you are nearly a-breast of St. John's Battery, which is built in the water, about a mile below Cronstadt: edge to the northward till you open the upper or easternmost crane on the north side, or clear of Cronslott, and then keep in mid-channel between Cronslott, the distance being 130 fathoms.

Three cables' length below St. John's Battery is a red flag in 4½ fathoms, on a shoal which lies off from the battery. Upon the shoal are from 13 to to 15 feet water; the shoalest part N. N. W. ½ W. from the flag. At the corner of Cronstadt-castle is a white flag in 4 fathoms; within it there are 3 fathoms water and a hard rocky bottom.

GENERAL OBSERVATIONS in SAILING up the GULF.

THE current, which always inclines with the wind, must be allowed for; and, when it blows strongly upon the beam, or when a ship is close hauled, it is necessary to allow half a point for lee-way.

DIRECTIONS for Sailing up the South Side of the GULF, from KOKSKAR to KASPERWICK, NARVA, &c.

IF bound from Kokskar to Kasperwick, with the wind westerly, run along off the south shore of the Gulf until abreast of Eckholm, a small island to the north-west of Kasperwick-bay. This island lies 23 miles E. ½ S. from Kokskar; it is sandy and white, high at both ends, low in the middle, and remarkable by a few withered trees on its outer end: it is rather steep-to, and surrounded by rocks, several of which, on the west side, appear above water.

Kasperwick is a good harbour, and may be known by the east point of its entrance, which is a bold bluff land, covered with trees; a shoal runs three quarters of a mile off from that point, and the whole of the east side of the harbour is bordered with another about 1½ cable's length broad. Great stones lie off each point at a little distance from the land.

Being abreast of Eckholm, keep close to the island, and steer S. E. by E. 3 miles, till you open the bay; you may then run in steering S. by E. and minding to give the points a good berth; keep in mid-channel, shoaling from 16 to 11 fathoms, till athwart of a small village and church, where you may anchor in from 11 to 7 fathoms water, clear and good holding ground; the nearer the west shore the better is the ground; for, ships lying in mid-channel, chafe their cables very much. You may likewise run higher up into the bay, and ride in 5 fathoms.

When the wind is N. N. E. a short sea tumbles in, that makes the ships pitch, but they ride unrestrained on their cables, owing to a great current which sets outward, and they open the wind two points on each bow.

The Chalk or Kalk Ground, a small but dangerous shoal, lies between Kasperwick-bay and Rothskar; it has only 5 feet water on its shoalest part, and lies N. E. by E. 8 miles from the east bluff point of Kasperwick; nearly E. 10 miles from the east side of Eckholm; and N. W. by W. 10 miles from Rothskar.

The Roads of Narva lie E. ½ S. 20 leagues from the Chalk-Ground, and 2 or 3 miles without the entrance of the river Narova, on which, 3 leagues inland, the town is situated. The best place for ships to ride in is in 7, 8, or 10, fathoms, 2 or 2 miles and a half from the shore. In steering the above course, you will meet with a small island called Gofti or Hogden, from the south end of which a rocky reef stretches off about two miles S. by E. ½ E. with only 12 feet of water close to it. Gofti lies E. ½ S. from the Chalk-grounds 4 leagues, and S. S. E. 11 miles from the S. of Stoneskar.

The Islands called the Great and Little Tutters lie to the eastward of Stoneskar; Little Tutters is 16 miles N. ¼ E. from it, and about 12 miles S. S. W. from the S. end of Hogland. Seven or eight miles to the northward of Little Tutters, and 5 miles E. ½ S. from Rothskar, lie the two little islands and foul ground of Wiringen, or Wergen. Between the latter and great Tutters is another danger, called Wigala, consisting of two small rocks, and a spit of sand, 2 or 3 miles in length.

Great Tutters is about 2½ miles in length, and the same in breadth; this island has a rocky reef, which extends from its south side 2½ miles to sea: it lies E. by N. ½ N. 9 miles from Little Tutters, S. E. by S. 10 miles from the south end of Hogland, and N. W. by W. about 11 leagues from the road of Narva. In the latter bearing, about 3 leagues from the south-west point of the island, is a shallow shoal, called the New Ground, with only 5 feet water upon it. The bearings from this shoal are, the south-east end of the Little Tutters N. W. by W. ¼ W. distance 13 miles; the south-east point of the Great Tutters N. by W. ¼ W. distance 8 miles; the northernmost Witska E. ¼ N. distance 11 miles; and the entrance of Narva S. E. ½ E. distance 9 leagues.

DIRECTIONS

DIRECTIONS for WYBURG.

HOGLAND to WYBURG. Ships bound for Wyburg should go to the northward of Sommers-island: this island bears from the north end of Hogland E. by N. ¼ N. distant 7 leagues. From Sommers-island to Vidskar, a cluster of rocks and small islands, your course is N. E. ¾ E. about 5 leagues. About S. ½ W. ¼ of a mile from the westernmost Vidskar, there lies a rocky shoal, called Canyma, on which there are only 9 feet water; and, one mile S. E. of the Canyma, is a rock of only 2 feet water. To avoid the Canyma, bring not the westernmost island to the northward of N. E. until you are within half a mile of its S. E. end; you may then steer E. and E. by N. along the islands, at the distance of one-third of a mile; and, in thus passing through, you will have 15 and 12 fathoms water; and, when the easternmost island bears N. W. you may steer N. E. ½ E. 6 or 7 miles for the island Fispare. Between Vidskar-islands and Fispare-island, you will have 22, 20, 19, 16, and 14, fathoms water. To the eastward of this island there are two shoals, with two beacons on their north ends. The beacon on the westernmost shoal lies about 1¼ mile E. ¾ S. from the south end of the island; on this shoal there are only 5 feet water. In passing through, between the islands and the beacons, you will have 8, 10, 13, and 18, fathoms water. When the easternmost beacon bears S. by E. distance about half a mile, you will see two other beacons, the nearest of which will bear about E. by N. ½ N. distant 2½ miles. Steer for this beacon in 13, 10, 9, 14, 12, 15, and 11, fathoms; the latter depth you will have a-breast of the beacon: it stands in 6 fathoms water. In proceeding for this beacon, you pass between the tail of a reef which runs off from Kaynimi-point and a shoal which lies about one mile E. S. E. ½ S. from it: the former bears W. distance 1¾ mile from the beacon, and the ground near it is so flat, that, a quarter of a mile without, or to the southward of it, you will have only 4 fathoms water: the northernmost end of the latter lies one mile W. S. W. from the beacon; there are 3½ fathoms water on it, and close to it there are 14 fathoms. About a mile N. E. ½ E. from this beacon, there stands another in 4 fathoms water: they stand on the reef, which runs off nearly a mile from Kraserort-point, and therefore must be left on your larboard side. As there are 5, 4, 7, and 8, fathoms within the line of the beacons, you may steer from the one beacon to the other in 11, 7, 6; and 11, fathoms; you will have the latter depth close to the easternmost beacon. The channel between these beacons and Calpar-ground, is not above ¾ of a mile wide. This ground extends 2½ miles N. W. and S. E. and that end which is next to the beacons is about 1¼ mile broad. The N. W. point of it bears E. S. E. southerly, about a mile from the westernmost beacon, and has only 6 feet water on it: the N. E. point of this shoal lies 1½ mile E. northerly, from the easternmost beacon, and has 5 fathoms water on it. On the shoalest part of this ground there are only 2 feet water. From the easternmost beacon you steer N. E. by E. 7 miles to the northernmost of those islands which lie off Kiper-Ort; in proceeding upon this course, you will have 11, 12, 13, 14, 15, and 14, fathoms water. The first island is small, and lies about 1½ mile N. N. W. from the point. About a mile E. S. E. from the second small island, there stands a beacon on the N. E. point of a shoal, on which there are only 10 feet water. Off the third small island you may anchor in 8 fathoms; and also off the beacon, in 13 fathoms. From this beacon the south point of Teper-island lies N. by E. ¼ E. distance one mile. In passing through between the islands and shoal of Kiper-Ort, and the south point of Teper-island, you will have 13, 12, 10, 15, and 12, fathoms water.

MIDDLE CHANNEL to WYBURG. There is another channel, through which ships may proceed to Wyburg. They may steer E. by N. from the north end of Hogland, until they are abreast of Sommers-island, as before directed; when you are about a mile to the northward of this island, steer E. by N. ¼ N. for the north-west point of Torsar-island, until you are within 2 miles of it; the distance is about 8 leagues. In steering this course, you will pass about 2½ miles to the northward of the island Nerpa, and you will not have less than 13 or 10 fathoms all the way: the latter depth will be upon some of those small shoals over which you may probably pass.—When the north-west point of Torsar-island bears E. by N. ½ N. from

from you, distance 2 miles, you will be a mile N. W. from the north end of a rocky shoal, which lies 1½ mile S. W. from the north-west point of Torsar-island; and you will be about ¾ of a mile N. N. E. from a small spot, on which there are 3 fathoms water: this shoal lies 2½ miles S. W. by W. ¼ W. from the aforesaid point. From your before-mentioned situation, you will see a small island, called Ronde, bearing about N. ½ E. distance 5 miles: you must then steer N. ½ E. for that island: in your way you will have 16, 13, 17, 20, 19, 15, and 13, fathoms water; in this track there is one small spot on which there are only 6 fathoms. You will pass about ¾ of a mile to the westward of a small spot, on which there are 3 fathoms water; and about 1½ mile to the eastward of another which has only 4 feet on its shoalest part; the former lies about W. 1¼ mile from the north-west point of Torsar-island; and the latter lies 3½ miles W. N. W. from the said point. You will also pass about half a mile to the eastward of a small spot, on which there are 3 fathoms, and above half a mile to the westward of the north end of a rocky shoal, on which there are also 3 fathoms water: the former lies S. S. W. ¾ W. above 1¼ mile from the south-east point of the island Ronder then steered for; and the latter lies 1 mile S. E. by S. southerly from the said point: this shoal extends 1½ mile N. by W. ¾ W. and S. by E. ¾ E. and about a quarter of a mile broad. On this shoal there are from 6 to 3 fathoms; the shoalest part is on its north end: off the south end there are 6 fathoms; close to it, along the west side, there are 8, 17, 18, and 15, fathoms; and, off the north end, there are 6 fathoms. In the fair-way, between the north end of this shoal and the island Ronde, you will have 9 and 10 fathoms. When you are E. about half a mile from Ronde-island, steer N. N. E. towards Kiper-Ort-point; the distance is about 2 leagues. In this track you will have 11, 16, 15, 16, 14, 15, 16, 12, and 14, fathoms water. You will pass about a mile to the westward of a small island, called Poyankipi, and about ¾ of a mile to the eastward of Kitusatu-shoal, on the shoalest part of which there is only 1 foot water. The former lies 2½ miles S. by E. from Kiper-Ort-point; the easternmost part of the latter lies 1¼ mile W. N. W. northerly from the former, and from Kiper-Ort S. W. ½ S. 2 miles. Near to the west side of Poyankipi-island there are 5 fathoms; near to the easternmost part of Kitusatu-shoal there are 8 fathoms; and, in the mid-channel, between them, 12 and 15 fathoms. When you are within a mile of Kiper-Ort, steer N. by W. about 2 miles, or until you are abreast of the north-westernmost of the small islands which lie to the northward of Kiper-Ort. You will have 13, 10, 12, 8, 12, and 14, fathoms; and you will pass nearly half a mile to the westward of a small rocky shoal which lies about a mile N. N. W. ½ W. from Kiper-Ort, and S. ¼ W. about a quarter of a mile from the aforesaid small island. When you are about half a mile W. from this island, you will then be in the former track, and may proceed as before directed.

CHANNEL to WYBURG through BIORKO-SOUND. In sailing from Petersburg for Biorko-sound, make Biorko-island, to which give a berth of 4 or 5 miles till you open the sound. In the entrance of Biorko-sound there lies a shoal, on which there are only 4 feet water; it is small, and has a white flag on it, and lies S. E. half a mile from the S. E. point of Biorko-island. The white flag at the entrance cannot be seen before you are within, being hid by the land. The east end of Biorko lies N. W. by W. ½ W. 10 miles from Stirsudden, and N. E. by N. ½ N. 20 miles from Seaskar-lighthouse. About 5 miles S. ½ W. from the white flag, there is a red flag, near the Grecoba-rock, on which there are only 18 feet water. In opening the Sound you will see a little island, which, if kept open of Biorko-island, will run you in a fair berth, and in mid-channel. The course through is N. W. by N. till you come to a church and village on your starboard side, where you can have a pilot; here you may anchor in 7 fathoms, soft sticking ground. With the east end of Biorko at W. by S. the little island is at N. W. and the church N. N. W. ½ W.; here are from 13 to 12 fathoms in mid-channel; in working, you shoalen on both sides into 11, 10, 9, and 7, fathoms.

In strong westerly gales, when you cannot keep to windward, you may safely run into Biorko-sound, and ride securely in any wind; and, if the wind be southward, there is room to work out with safety

safety, the sound being 2 miles broad, and very few boards will carry you clear of the flag near the east point.

The small island, about a mile and a half N. E. by E. from the flag at the entrance, is called Zerpolo. From mid-way between them, steer about 5 miles N. W. for Virtanemi-point; in your way you will have 9, 12, 16, 17, 14, 15, 17, and 13, fathoms. When you are off the N. E. part of the island Rapipa, steer in the mid-channel between it and the main towards the small island Mandarlo; in this part of the channel you will have 12, 9, and 10, fathoms. Off Virtanemi point there stands a beacon; and, about a mile and a half N. N. W. ½. W. from it, there is another in 5 fathoms water. After having passed in the mid-channel between the first beacon and the small island, steer towards the second beacon, keeping it open on your starboard-bow; between the beacons you will have 14, 10, and 7, fathoms, and off the second beacon you will have 12 or 15 fathoms. From this beacon, steer N. ½ W. about 2 miles, and pass between the island Pizpolade and the main, giving the main about 2-thirds of the channel; you will have, from abreast of the beacon, 12, 7, 12, 11, 15, 14, 12, and 14, fathoms. When Mannola-point bears E. S. E. distance about half a mile, you must steer N. W. by N. 5 miles; on this course you will have 15, 14, 15, 17, 12, 14, 16, 17, 16, and 17, fathoms water. You will pass along the east side of the island Biscupsand, at the distance of half a mile, and about three quarters of a mile from a rocky shoal which runs off from the main about three quarters of a mile; close to the island there are 10 and 7 fathoms; and close to the shore there are 8 fathoms.

When the north point of Biscupsand-island bears S. by W. distance one mile, the north end of the rocky shoal called Gerelote, will bear N. E. by E. ¼ E. distance nearly one mile: this end of the shoal lies almost a mile from the nearest part of the shore. You may then steer about N. by W. between the little island Poyankipi and Ketusatu-shoal, for the north-westernmost of the islands which lie to the northward of Kiper-Ort; your distance to a-breast of that island will be about 5½ miles; and your depths of water will be 17, 15, 13, 13, 14, 13, 11, 10, 8, 12, and 14, fathoms. In this track you will pass about three-quarters of a mile to the westward of Poyankipi-island, and about the same distance to the eastward of Ketusatu-shoal; and, when you are about half a mile W. from the westernmost of the aforesaid islands, you will be in the first or northernmost track, and may proceed as before directed. There is a passage between Kiper-Ort and the island which lies to the northward of it, but it is very narrow, and therefore not to be attempted without a pilot.

REGULATIONS and INSTRUCTIONS for all Masters of Merchant-Ships and other Persons sailing and coming into any Ports or Harbours belonging to the EMPIRE of RUSSIA. As published in Russia, by Authority.

I. ALL foreign merchant-ships, though never so well armed, passing by a Russian cruizer or castle, must strike their top-sails; and, if any should refuse to do it, then they are to fire a gun at him, for which shot such masters shall be obliged to pay a ducat; and, if he should still offer to resist, then they shall fire at him again; and, for the second shot, he shall be obliged to pay three times the value of the first.

II. All foreign ships, coming from sea, must steer up directly to our cruizers, and stop in order to receive from them these instructions, and must not offer to pass by them, upon any pretence whatsoever: if any should offer to pass by, our cruizers are to fire at them; and, for every shot, they will be obliged to pay a ducat. They must also receive on board a pilot from the cruizers; and, if any offer to sail without a pilot, they shall be compelled to pay 15 dollars. If any person should sail without a pilot, and chance to run upon any of his Majesty's ships, and damage the same, he will be obliged to make all the losses good, to the full value, unless it happen in time of storm, and not through the master's negligence; in such case, he shall be free from all penalty.

III. As soon as the master comes to anchor, or fastens his ship at the appointed place, he is immediately to deliver (if he has one) a list of the names of all his ship's crew and passengers, as also an account

of the cargo, to the officers who shall come and require the same of him, without any concealment, upon penalty of a forfeit, according to the sea-laws of Russia.

IV. No foreign vessels shall lie upon their own anchors in the road of Cronstadt, but must be made fast to the anchors of one fluke, which are laid for that purpose from St. John's Battery for half a verst distance above the Man-of-War's-Haven.

N. B. To act according to the above article when the anchors are laid.

V. The masters of merchant-ships, before they come with their ships into the haven, must unload their powder and other combustible things at the place appointed for the same, when they can take it on board again when ready to depart.

VI. The vessels, which are loaded with unslacked lime, must keep themselves at a great distance from other ships; neither must they offer to approach, or come near, or fasten to, any of the ships, but must be unloaded in a safe and secure place, upon penalty of confiscation of the ship and goods, and corporal punishment of the master, according to the crime.

VII. Foreign ships must not lie between Cronslot and the Man-of-War's Haven, without very great necessity; and if, by a calm, or contrary winds, they should be obliged to come to an anchor, they must stay no longer than they can, either by warping or sails, bring the ships a quarter of a mile or farther past the Man-of-War's Haven, to the eastward or westward of Cronslot, as they shall find most convenient; but never to lie near the Man-of-War's Haven.

VIII. Foreigners must not offer to come near or enter our forts, store-houses, or the Man-of-War's Haven, upon any pretence whatsoever, even of repairing their ships; but, if any one shall have occasion for any thing, then such must apply to the commander-in-chief, or to the captain of the port, who is to supply all foreigners with what they shall have occasion for, according to their desire, without any hinderance, they paying money for the same.

IX. Foreigners are forbidden (on this side the Birch-islands to Cronstadt and St. Petersburg, as also in the river) to throw out their ballast, except in places appointed for the same, which shall be shewn them by the captain of the port. And masters are obliged to order their men to have always in readiness two tubs or baskets on board, wherein they must put all dirt and sweepings from the deck, between decks, and in the hold, in order to be carried ashore, and emptied in the places appointed for the same; and, if any shall be found to act contrary to this, such masters shall be obliged to pay, for every shovel-full thrown out, 100 dollars for the first time; and, for the second time, the ship will be confiscated; the same is to be understood of all havens, rivers, roads, and all the ports, belonging to the empire of Russia.

X. If any foreign master with his anchors should happen to draw out any anchors or cables that have been lost by Russians or foreigners, he must immediately acquaint the captain of the port of the same, for which he shall have the third part of the value thereof: and, if it prove of no use, it will be restored to him that found it; but, if any should conceal the same, and afterwards be discovered, then he will not only be obliged to restore the same, but likewise to pay double what it cost when new.

XI. All masters and other commanders of vessels, upon arrival in the port, are obliged to go to the captain of the port, to get vessels for the unloading of their ballast; and, for as many lasts of ballast as shall be unloaded out of the vessels, to pay half a dollar, or sixty-two and a half copecks Russian money, for each last; that is to say, to pay for no more lasts than are really found at unloading of the vessels, and at the appointed places.

XII. Masters of ships must unload their ballast into the vessels appointed for that purpose with their own men: and must let down a sail-cloth into the vessel wherein they unload the same, that none of it may drop into the water, upon penalty of paying 21 dollars. When unloaded, the said vessels, with the ballast, must be carried to the appointed places by their own men, where it and the vessels are to be received by the custom-house servants, and by them to be unloaded: and neither the masters of ships, nor their men, are to be obliged to unload the ballast out of these vessels.

XIII. It

XIII. It is forbidden for masters of all sorts of vessels to unload ballast, without notice being first given to the captain of the port, upon penalty of 10 dollars; but masters must first acquaint the captain of the port, whose duty it is to shew the place where the ballast must be unloaded; and they must likewise be informed, by the said captain, from what place they are to take their ballast when wanted.

XIV. It is also forbidden to unload the ballast at night, under the penalty of 100 dollars.

XV. If the merchant-men should have occasion for vessels to unload their ballast, they must demand them from the captain of the port, who has orders to let them be hired to the merchants for half a dollar per last; and, if any other particular persons are willing to undertake such a work with their own vessels, they are likewise to receive for their labour half a dollar per last.

XVI. All masters of merchant-vessels lying at an anchor in the ports and roads where there are none of the one-fluked anchors, must have at their anchors buoys and buoy-tops: and all masters not regarding this article, must pay twenty dollars.

XVII. Ships drawing above 8 feet of water, English measure, must not come up to St. Petersburg, but lie at anchor in the Merchant's Haven by Cronstadt, to unload so much of their cargo till they be lightened to 8 feet water, as above.

XVIII. When masters of ships are loading and unloading their cargo, at that time nobody must smoke tobacco, either above or below the decks, nor in the hold; no pitch or tar must be boiled in the cook-room; and in the evening, betwixt 8 and 9 o'clock, the fire must be extinguished. If the captain desires in the night-time to have a candle or lamp lighted in his cabin, he is to have it on a flat candlestick filled up with water, that no bad accident may happen therefrom; as for pitch or tar, it must be boiled ashore in a boat, or float.

XIX. All commanders of foreign vessels coming into this port, having passengers on board, must give notice of the same to the Admiralty-college; and in other ports they are to acquaint him who is appointed by the said college. And, if any passengers have a desire to be carried by them from Russia, they are not to be received on board, for passage, without first acquainting the College of Admiralty, upon the penalty of 50 dollars; and if any should knowingly offer to carry away any malefactor, he is liable to suffer the same punishment as such malefactor did deserve, and the ship shall be confiscated; as also if any should offer to carry away any prisoner of war, his ship likewise will be confiscated.

XX. Masters are obliged to give strict charge to their men, that every thing appertaining to them may be duly performed in their absence from their ships; because, by that they cannot excuse themselves, in case their men should do any thing contrary to these regulations, and must be answerable for all, as being commanders of the ships.

XXI. When foreign sailors do any thing contrary to these regulations, without the knowledge of the said masters, and the said masters, by these regulations, being obliged to pay the penalty for the same, acquittances will be given them for money received for an offence committed by their men, and not by the said masters, by which receipt they may be enabled to recover the same with satisfaction in their own country.

DIRECTIONS to SHIPS RETURNING through the BALTIC from the Eastward.

IN returning through the Baltic towards Gottland, should the weather be thick, you must be very careful in approaching that island, as it is dangerous. The best course from Dager-Ort is about S. W. ½ S. (or S. W. by S. with the wind southerly) until clear of the south-west end of Gottland. Then you may steer W. S. W. or W. by S. ½ S. for Bornholm. The meridian distance from Dager-Ort to Bornholm is about 217 miles, and the difference of latitude 218 miles.

As the currents will render the course in so great a distance uncertain, it will not be prudent to attempt steering directly from Dager-Ort through the passage between Bornholm and Sandhammer.

This passage is, however, said to be more safe, with a large ship, than that round the south end of Bornholm, in which are several dangers; and, in the night, the lights of Christian's Oe and the north side of Bornholm may be seen.

When approaching Bornholm, keep your lead going; and, when sailing round its south-east end, give it a good berth, in order to avoid a reef which runs from off it; and be careful to avoid the dangers to the southward heretofore described. In this passage are, besides, several banks of 5, 6, or 7, fathoms, and a large one in the middle of only 4 fathoms, on the north-west side of which is the rock of 14 feet water.

When drawing near the Swedish coast, make not too bold with Falsterborn, especially in thick weather, when it will be even difficult to distinguish Speyl-cliff on Moen-island from Steeden-head.

DIRECTIONS (for Sailing) from the RIVER THAMES to the WHITE SEA.

GENERAL DIRECTIONS from the King's CHANNEL to ARCHANGEL and ONEGA.*

SAILING out of the King's Channel, take your departure from the Gunfleet agreeably to the directions heretofore given, until you deepen your water to 16 fathoms, or until you clear the Shipwash. Your course from 16 fathoms without the Shipwash to go clear of Smith's Knowl, will be found as above. Then, steer for the north-east of Shetland or Unst island, into latitude 60° 45′ and longitude 43′ W. The variation from your departure to latitude 63° is from 25° to 28°. The course from Shetland to the North Cape is winding, so that it is left to your own judgment; only observing, on your passage to the North Cape, that you will meet with a difference in your variation as follows:—From the latitude of 63° to that of 67°, 3 points is the greatest. From the latitude of 67° 50′ to 69° is a fast reduction of the variation to that of $1\frac{1}{2}$ point; from 69° to 70° it is 1 point: 70° to 71° 10′ is $\frac{3}{4}$ of a point, which is the exact latitude of the North Cape, whose longitude is 25° 50′ E. From the North Cape steer E. by S. $\frac{1}{4}$ S. 11 leagues, which will give the North Kine a good berth. As it is generally foggy weather, when you take your departure from the North Kine, steer S. E. by E. as nearly as possible, only observing to make 284 miles easting, which will carry you right in with Cape Sweetnose, in latitude 67° 58′. Mind to keep your lead going when you have nearly run your easting down, and you will then have soundings from 45 to 30 fathoms, broken stony ground; and then Cape Sweetnose will bear from you S. W. or W. S. W. in a fair-way, distance 3 or 4 leagues; and, if clear weather, you will see the land; then steer away S. E. 11 or 12 leagues, which will carry you the length of Lambascho islands, and a fair berth without them, keeping 2 or 3 leagues from the land. From Lambascho isles, steer first S. S. E. 6 leagues, then S. by E. 6 leagues will carry you to Cape Orlegenose—*N. B.* If thick weather when you come the length of Cape Sweetnose,

* These directions are adapted to the new charts of this navigation, published by D. Steel.

borrow

borrow on Knock-John into 10 fathoms, and off to 15 fathoms, all the way up to Orlogenose, and likewise in coming in down the White Sea, as you are often obliged on account of the heavy fogs. Your deepest water, when entered between the main land and Knock-John, is 30, 25, and 20, fathoms, abreast of Orlogenose; your course thence is S. and S. by W. until you are past the three islands; then the opening of the river Ponoi appears, which is very remarkable: then steering S. W. about 12 leagues gives you sight of Cross island, which you will know by its having many wooden crosses on it: then steer away S. W. by S. and S. S. W. 20 leagues, which will run you to Catsnose or Blue-point, The reason of steering two courses from Catsnose to Blue-point is, to keep out of very strong currents, that would soon set you in the Maschens gulf, a place of great danger.

Your Course from Catsnose or Blue-point to the Bar of Archangel is S. S. E. and S. E. by S. distance 10 or 11 leagues. When steering S. E. by S. towards the bar, you will see the island of Modusko on your larboard bow, and the pilot-house right ahead of you on a low sandy point. The first or outer-buoy of Archangel-road is black: it lies with the tower on the island of Modusko bearing S. E. by S. The second buoy is white, and the third is red: these are all to be left on the starboard side as you enter. In the spring season it is seldom without men of war and a guardship. There are three places to be searched and cleared at. If you heave ballast, you must do it before you come into the roads.

From Cross-island to Cape Donega are many riplings, not dangerous, having 17, 18, and 20 fathoms water on them; and, from Cape Donega to Monastry island, near Onega, are many riplings from 5 to 16 fathoms on them.

PARTICULAR DIRECTIONS for sailing from the NORTH CAPE into the WHITE SEA.

FROM the North Cape for North Kine, or North Point, as before observed, steer E. by S. ½ S. about 11 leagues. Tanney-bay lies 9 leagues S. E. by E. ½ E. from North Kine; the land between is high, steep, and craggy. Tanney-bay is the mouth of a great deep river; it lies S. and S. W. From the point on the east side of the bay to Wardhouse island, the courses are S. E. by E. 8 leagues, and S. E. ½ S. 10 leagues. Between is high plain land: nearer to Wardhouse than to Tanney-bay is a high hummock upon the high land, which appears like a castle or country-house, and distinguishes this part of the coast. A road is on the south side of Wardhouse; but, between the island and the main, is better anchorage.

The North End of Fisher's Island lies 11 leagues S. E. by S. from Wardhouse. On the east side of this end of the island is a haven, in which you may anchor. Between this island and Wardhouse is a great bay, in which there are several sounds and rivers; the most considerable of them is Pitzing, a great river commodious for large ships.—About 12 leagues S. E. by S. from the north end of Fisher's island, is its south end, at which are three havens, one on each side. The south haven is the best of the three, as in it you lie land-locked, and the bottom, all over, is a clear sandy ground.

About 9 leagues S. by E. ¾ E. from the south end of Fisher's island, is the entrance of the *River Kola;* and 10 leagues S. E. ¾ E. from Fisher's island, is the island *Kilduin.* This island is 6 miles long, and 3 miles broad: it lies nearly parallel to the land E. S. E. and W. N. W. The channel between the island and shore is in some places a mile and a half wide. In a bay on the south side of the island is good riding in from 10 to 14 fathoms water: the anchorage is on the east side of the bay, abreast of the huts.

Five leagues S. E. ½ E. from Kilduin island is the east point of *Tyribiry river.* This point runs out so far as to form a little bay, in which you may ride sheltered from N. W. winds. In any part of Tyribiry river great ships may anchor in good sandy ground.

Cape Sweetnose lies 37 leagues S. E. from Tyribiry: between are several good roads, the principal of which is Rinde. Before this haven, which consits of two bays, lie four little islands. The best channel to go in at is between the southernmost island and the point of the main land; it is sufficiently wide and deep. When running in here, keep nearest to the main, in order to avoid a sunken rock lying near the island. When within the islands, you may anchor where

where you please, as there is plenty of room and clear ground. This haven is about 4½ leagues north-westward of the northernmost of the seven islands.

Sweetnose is a narrow low flat. With N. E. and easterly winds, you may anchor in the bay, within the point, in clean ground. From Sweetnose to Lambascho-point is S. E. 12 leagues; from Lambascho to Back-point is S. S. E. ¾ E. 4 leagues; and, from Back-point to Cape Orlogenose, the course is S. by E. ¾ E. and the distance 8 leagues. If the weather be thick when you are at Lambascho, edge towards Knock-John into 10 fathoms water, then from it into 15 fathoms, and so on all the way up to Orlogenose. The deepest water between Lambascho and abreast of Cape Orlogenose is from 30 to 20 fathoms.

Knock-John is a long narrow bank; its north end lies off Cape Sweetnose; thence it extends S. E. and S. S. E. about 16 leagues. This part of the bank lies nearly parallel to the shore, 8 to 6 leagues from it, and has on it, reckoning from the south end, 37, 20, 16, 12, 8, 6, and 5, fathoms water; hence it is very shoal, rocky, and dangerous. The north end of the dangerous part lies 8 leagues E. by S. from Back-point, and about 9 leagues N. E. by N. from Cape Orlogenose: it thence extends (nearly parallel to the shore, and 7 leagues from it) S. ½ E. about 4½ leagues. This end of the shoal and rocky part lies from Cape Orlogenose N. E. by E. 6½ leagues. From the south end of the shoal part, the bank extends S. W. by S. 4 leagues, and then S. ½ E. 4 leagues. This end of the bank lies about 4½ leagues E. from the point on the north side of the mouth of Ponoi-river, and has 6½ fathoms on it at low water: in the channel between are 25 fathoms. Off Cape Orlogenose are 7 fathoms on the shoalest part of the bank; and in the channel between, which is about 3 leagues wide, are 24 fathoms water. From that part of the bank opposite to Cape Orlogenose, the water deepens from 7 to 15 fathoms, and thence shoalens to 6½ fathoms on the S. end.

From Cape Orlogenose to Ponoi river is S. ½ E. 5 leagues; between are three islands. From Ponoi river to Cross-island the course is S. S. W. ½ W. 10 leagues.

CROSS-ISLAND to ARCHANGEL-BAR. Catsnose, or Blue-point, bears S. by W. ½ W. 20 leagues from Cross island: in shaping a course towards it, great care must be taken to allow for the operation of the tide, especially in the spring, when the melting of the snow occasions great freshes of those rivers which run into the White Sea, and greatly increases the velocity of the ebb-tides in passing through its mouth. Steer therefore S. W. by S. 5 or 6 leagues, and then S. S. W. With a turning wind you may stand towards the shore, eastward of Blue-point, into 13 fathoms; and, towards the Lapland-shore, into 13 or 14 fathoms water.

You may stand towards the shore, between the bar of Archangel and Catsnose, and also 7 leagues eastwards of Catsnose, into 10 fathoms water.

CROSS ISLAND to ONEGA. From Cross-island to Cape Donega, or Point Solótits, your course is S. W. 40 leagues, and from Catsnose South 73° W. You must give a good berth to the island called Rovestra, that lies off the cape. This island bears S. W. and is 38 leagues from Cross-island. In order to allow for the operation of the strong ebb-tides, it is best to steer S. W. 6 leagues, and then S. W. by W. 32 leagues. The land of Rovestra is rather high, and has a tower on it. This island is about 4 miles N. N. W. from Cape Donega; W. ¾ N. 22 leagues from Archangel bar; and W. S. W. ¼ W. 21 leagues from Catsnose. As the N. E. side of the island is foul and rocky, do not approach it nearer than 2 miles, and until the west end of the island bears S.; you may then come within a mile of it. The pilots for Onega reside on this island. Cape Donega, at a distance, appears high: it has a white sandy shore, and the land is covered with tall trees.

Six leagues S. S. W. ½ W. from Rovestra is *Point Orlostna-Wolock*. From this point, an island called Anger island, lies N. W. by W. about 4½ leagues; the ground between is foul and rocky, with many overfalls, on which are from 3½ to 5 fathoms water. From 5 to 6 fathoms you will instantly have 20 fathoms; and then 12, 8, 5, and 4, fathoms. The course toward Onega is between Rovestra and Anger islands, steering S. by W. and S. S. W. for the Point of Orlostna-Wolock.

Four

Four leagues and a half S. ¼ E. from Orlostna-Wolock, is Kisnimskoy; between are several small overfalls. About 6 miles W. S. W. from Orlostna-Wolock point, and 3 miles from the nearest shore, is a shoal of only 3½ fathoms.

Lamas Church is 7½ leagues S. E. ½ S. from Kisnimskoy. About W. S. W. ½ W. from Lamas church, and 8 miles from the nearest shore, is a shoal of only 10 feet water; the proper channel is between this shoal and the main. Lamas church may be known by the white sand-hills which are near it. All the way along this coast, be sure to keep within the Ostrava islands; and avoid standing too far into any of the deep bays on the main, because the water in many places is shoal, and the setting of the tides uncertain: in general, the flood sets along the land to the south-eastward, and the ebb the contrary.

Having passed the Overfalls, you will have regular soundings, and may anchor to the main by keeping your lead in 10, 9, 8, 7, 6, &c. fathoms of water; but be sure to keep your lead to the main, standing off to give the islands of Ostrava a good berth, as it flows for 2 or 3 miles here at 6 hours and 6¾ hours, full and change; and the tide of flood sets S. E. and ebbs N. W.; in some places off Lamas S. E. by S. and N. W. by N.; the best way is to run in between Purgema-point and the island of Pocklannock.—Your course from Orlostna-Wolock to Kisnimskoy is S. S. W. and S. by W. 4 leagues.

When Kisnimskoy Point bears N. ½ W. 3 or 4 miles off, you are upon a shoal in 6 or 7 fathoms water; and, when it bears N. W. by N. you are in 3 fathoms water. The shoal stretches from the point 5 or 6 miles to the S. S. E. From this to Eames-point, your course is S. E. and S. E. by S. 7 leagues, and Monastry island bearing from Lamas-point S. E. 12 or 13 leagues: observe to keep within the islands Ostrova.

The Island of Porlotta lies about 6 leagues S. E. ½ S. from Lamas church; you may pass it on either side. From the island of Porlotta to Monastry island, in the road of Onega, the course and distance are S. E. ½ E. 7 leagues.

So soon as Monastry island is seen, keep the east side of it open to the eastward of Shagland island. After you have passed Shagland, leaving it on the starboard side, continue to steer south-eastward until you have brought to bear W. N. W. and the N. W. end of Monastry-island to bear S. S. W.; you will then be about a mile and a half from shore, and may anchor in 18 feet at low water. A high bluff point of land will appear on the main, with white hills; the westernmost part of this point on with the N. W. part of Monastry-island, bearing about S. S. W. ½ W. is the mark for the best anchoring-ground: the bottom is soft mud.

TIDES in the WHITE SEA.

THE flood to the eastward of the North Cape sets from N. W. and N. N. W. and along the coast to Cape Orlogenose. At Tanney bay it flows, on the change and full days of the moon, at three o'clock; at Wardhouse it flows at 4; at the island of Kilduin it flows at half past seven o'clock, and the water rises about 12 feet; at Seven Islands it flows at nine; at Sweetnose it flows at twelve o'clock, and the water rises from 12 to 17 feet; at the Three-islands it flows at a quarter past two o'clock, and the water rises from 16 to 18 feet; at Cross island it flows, on the change and full days of the moon, at a quarter past four o'clock; at Catsnose it flows at half an hour past five: between these places, the flood sets about S. W. by W. At the bar of Archangel it flows at half past six; at Cape Donega at six o'clock; and at Monastry island at half past seven. Between Cape Donega and Monastry island the flood sets S. E. by S. nearly along the land, at the rate of two knots in spring tides, and the water rises about 6 feet.

DIRECTIONS for SHIPS RETURNING from the NORTHWARD, towards, and up, the RIVER THAMES.

OBSERVATIONS on a CURRENT between NORWAY and the ORKNEYS.

A VERY deceiving current sets between the Naze of Norway and the Orkney islands; the knowledge of which is to the mariner the more important, these islands being, as before observed, very low, generally obscured from view by fog and mist in summer, and annoyed by the most powerful gales of wind in winter.

This current takes its course with the wind, particularly when it blows from the southward or northward; but, generally, it runs strongest to the northward. As the wind continues, the current increases; and it sometimes runs upwards of two knots in the middle, between the Naze and Orkney, after a long continued south-westerly wind. Easterly or westerly winds blowing athwart this current, sometimes render it almost insensible in the offing; and, within 3 or 4 leagues of the islands, the tides take that regular course which they keep between Orkney and Shetland.

DIRECTIONS from the NAZE of NORWAY to the THAMES and BRITISH CHANNEL.

BEING off the Naze with a fair wind, and bound to London or the British Channel, if in the winter, steer W. S. W. 72 or 73 leagues, when you will come into shoal water upon the Dogger Bank, in 16, 17, or 18 fathoms water; then you may be certain that you are on a meridian to the westward of the Texel; and a course S. W. by S. by the compass, will carry you over the body of the Dogger Bank; crossing which, you will have 16, 15, 13, 11, and then again 14 to 20 fathoms. After you have run this course for 20 leagues, you will fall into deep water in the Great Silver Pits, where you will have from 30 to near 40 fathoms.

Having run 4 or 5 leagues from the southern side of the Dogger Bank, it will be time to sound for the Well Bank, upon the north side of which you will probably have in some parts from 24 to 26 fathoms, and in some parts coarse sand or stones. In the middle of this bank are 17 and 18 fathoms, but the soundings are very irregular and variable. The S. W. side is the shoalest, having 10, 11, 12, and 13 fathoms. Some of the soundings are grey sand, coarse reddish sand, &c. and, on the south side, in 18 fathoms, is olive-coloured sand. The bank is 11 leagues over.

After you come to the south side of the Well Bank, which lies in latitude 53° 29′, you may proceed in a S. S. W. course, toward the Swart Bank and Brown Bank.

From the Well Bank toward the Black Bank to the S. S. E. S. E. and S. there are 18 to 20, and thence to 16 fathoms, on different bottoms.—On the Black Bank the bottom is of blackish sand.—

Between

Between the Well Bank and the Brown Bank, in the extent of about a mile, is a spot, having 9 or 10 fathoms, on a bottom as black as coal.

If as you go from the Well Bank to the southward, you find brown clear sand, and inequality in the soundings, it is a sign that you are too much to the west, and in great danger of the banks and shallows.

But, if too far to the eastward, and upon the Brown Bank, you will have fine brown or dark coloured sand; after which, if the wind is northerly, you must haul to the westward for Lowestoffe, or between that and Orfordness; when, after you fall off the Brown Bank, you will have 24 or 25 fathoms in the Deep Water Channel.

LEMON and OWER. In coming off the Well Bank, should you get to the westward in 12 or 13 fathoms, and deepen your water gradually to 15, 16, 17, 18, and 19, fathoms, you are near the Lemon and Ower; but without them; but, if you deepen your water suddenly, in 17, 19, and 23, fathoms, you are in the stream of those sands, and must steer out S. E. or S. E. by E. to go clear of them. After you are clear of these sands in regular soundings, 20 or 22 fathoms, steer S. by W. 9 leagues, to clear Smith's knowl. There are, as before observed, 27 fathoms dark soundings near the outer side of this knowl; within, and between it and Lowestoffe, you will have 20 to 18, 14, and 10, fathoms in shore, to the southward of Lowestoffness.

Should you be to the eastward, or on the Brown Bank with an easterly wind, keep you course S. S. W. till you fall into 24 or 25 fathoms, about 9 or 10 leagues S. E. or S. E. by S. from the shoal part of Smith's knowl, or till Orfordness bears W. by S. 20 leagues; then, in steering for Orfordness, you will have 25 or 26 fathoms; in the Deep Water Channel, the farther to the southward the deeper the water: coarse ground, with stones, mixed with scollop shells, are the soundings you will have above the Garbard. The west side of this deep water is about 7 leagues from, and parallel with, the coast of Suffolk, in every part between Lowestoffe and Aldborough; from it you will have gradual soundings to the shore, 24, 20, 18, 16, 12, 10, 9, and 8, fathoms.

If you are bound to the English Channel from the before-mentioned part of the Brown Bank, steer S. W. about 35 leagues, and it will bring you into a fair berth between the Flemish Banks and the Goodwin Sands; but, if you intend for the Downs, then 35 leagues S. W. ¾ W. will be in a fair-way between the Kentish Knock and Galloper, and thence S. W. ½ W. 7 leagues to the North-Foreland; and S. W. 8 leagues to the Gull-stream.

Ships for the Thames had best, in winter, make Flamborough-Head, which bears from the Naze of Norway W. S. W. a little westerly, 112 leagues. After you have run this course forty-five leagues, you will have 26 to 29 fathoms, fine yellow sand, upon the body of the Long Bank, and may then proceed according to circumstances.

FROM the North Ronaldsha, Buchan-ness bears by compass S. by W. ½ W. 39 leagues; and, from Suenburgh-head, or Sumbro'-head, (Shetland) S. W. by S. 47 leagues: from Buchan-ness to abreast of Foul-ness the course is S. ¼ W. near 100 leagues; but allowance must be made for the operation of the tides. The bearing by compass and distance from the Naze of Norway to Orfordness is S. W. ¾ W. 133 leagues.

Should you happen to be off Hasborough, so that you cannot get through the Cockle-gat before dark, you may safely run through the Gat-way, by bringing Hasborough lights in one, then bearing N. W. ¼ W.; steer thence south-easterly, so as to keep the lights on with each other, which will lead you a mile and a half to the N. E. of the *floating-light*. As the north end of the Newarp, in 4 fathoms water, bears S by W. from the light-vessel, be careful, in rounding her to the southward, not to bring her to the eastward of North until you have passed the light to the distance of 4 miles; you may then steer S. S. W. which course will carry you without the Holm-sand.

If

If a half flood is in your favour, with a brisk breeze, when you pass the floating-light, you may thence steer S. S. W.; for, the flood-tide, by setting S. S. E. will keep you clear of the Newarp. Should you have an ebb tide, when passing the light-vessel, be sure not to hard up too soon; for, the ebb, by setting N. N. W. will sheer you towards the sand, and may, without a fresh breeze, compel you to anchor.

If off Hasborough with the wind from east-north-eastward, instead of proceeding through the Gat-way with the lights in one, endeavour to keep more to windward; and, as the south end of Hasborough-sand bears E. by S. ½ S. from Hasborough-Great-light, you may, so soon as this light bears W. N. W. steer with it in that direction, by which you will with more certainty pass to windward of the light-vessel. Should the wind blow so hard from the eastward as to render weathering the light-vessel impracticable, and keeping clear of the shore until the morning unlikely, anchor off Hasborough, with the light bearing about W. by S. in 10 or 12 fathoms water, about three miles from the shore, or nearly mid-way between it and Hasborough-sand. Here you will ride much better than you would do off Winterton, being less exposed to the sea which sets in through the Gat-way.

For directions for sailing into the Gat-way from sea, and thence to Yarmouth, see the former part of this work.

In sailing from Yarmouth-Road to the southward, through St. Nicholas's Gat, or the passage of the Stanford, observe the foregoing directions for going in. In sailing from Yarmouth-road, through St. Nicholas's Gat, you will leave on the starboard side the three buoys which lie nearly in a line with the second mill, from the southward on Yarmouth-Downs, and Yarmouth church in one; and, on the larboard side, you leave the white buoy of St. Nicholas, the red buoy on the Cross-sand, and a new buoy, painted red and white in quarters, which lies E. ½ S. from the latter, at the distance of three quarters of a mile*.

In sailing through this Gat, observe the following directions: when coming from the northward, with a fair wind, run so far out as to bring the crane upon the jetty between the second and third southernmost mills, bearing N. N. W. Run with those marks on till you bring Gorleston-New-steeple on with the old jetty, which lies to the northward of Yarmouth-piers, bearing W. N. W. You are then in a fair berth between the north end of *Corton-sand* and the white buoy on *St. Nicholas's Bank*. Then, with a flood tide, a south-east course is good; but, with an ebb, steer farther to the southward; and, when you have the long marks on, as given in the bearings of the buoy, you are nearly clear, as you will soon drop into deep water. *The leading mark out is*, either the white southernmost mill and Yarmouth chapel in one, or Gorleston old steeple on with the southernmost part of the opening of the town of Gorleston. *The turning mark into or out of the gat is*, the beacon on the Denes, with Gorleston old church, and the houses next northward of it. The flood sets out of, and the ebb into, the gat.

After you have brought Lowestoffe church W. you may bring the old steeple of Gorleston on with the south end of the houses; but, in standing towards St. Nicholas's Bank, be careful not to bring the steeple open to the northward of them, especially in working in with an ebb tide.

After you are through the Gat, and fall into 16, 18, or, perhaps, 20, fathoms water, you may shape your course to the southward, till you are clear of the buoy on the Holm-head; then haul into 11, 10, or 9, fathoms, and run up according to the following directions:

In running up between Lowestoffe and Orford-ness, approach no nearer to the shore than 8 or 9 fathoms; for, in-shore, lies East-ness-sand, and the Barnard, Sizwell-bank and Thorp-ness shoal, and the Onion, under Orford-ness.

The course and distance from the buoy on the Holm-head, in the Sandford, to the south end of the Barnard-sand, are S. S. W. ½ W. about five miles.

The Marks to go clear of the Barnard are, Lowestoffe-church open of Paketield-cliff, till Southwold-church comes open of Easton-houses. (These are two houses which stand to the northward of Southwold, upon

* A description of this buoy will be found on the last page.

upon the edge of the cliff.) Or bring Cothive-church, (which is in ruins,) on with the white house that stands upon East-ness; then you may haul in for Sole-bay. Go no nearer the Barnard than 9 fathoms water.

The Marks to run clear of Sizwell-bank are, Blythborough-lodge, (which is a large farm-house in a straggling grove of trees,) open with Dunwich-church, till Orford-church and castle come open of the south end of Aldborough; you are then clear of Thorp-ness. Go no nearer to this bank than in 8 fathoms.

To keep clear of the Onion, keep Dunwich-cliff well open of Thorp-ness; with Baudsey-cliff open of Orford-beach, you will be clear of it, and may haul in for Hosley-bay.

But, if it be night, and the wind to the northward with a flood-tide, being in 9 fathoms water, and the lights bearing S. W. by W. or W. S. W. haul in, but with caution; lest the tide, which sets strongly off the ness to the southward, put you without the stream of the buoy of the Whiting.

The course and distance from abreast of the Barnard to Orford-ness are S. W. ¼ S. about 19 miles.

ORFORD-NESS. In working up from Lowestoffe to Orford-ness, stand off to 12 or 14 fathoms, but no farther; and, toward the shore, to 9 or 8: the shoalings are very regular. But if, in working or running, you have Orford-ness-lights to the westward of W. S. W. you are in danger of Aldborough-knapes, upon which there are not above 10 or 12 feet at low water, and between which and the main there are from 12 to 14 fathoms. With Orfordness-lights to the southward of S. W. you will be too near Thorp-ness.

Orford-ness-lights in one, as before-mentioned, bearing S. W. by W. ¼ W. is the mark for sailing in mid-channel, within Aldborough-knapes. *See page* 120.

For COMING IN from SEA for ORFORD-NESS. Should you be coming in from sea for Orford-ness, in the night, and bound to the westward, with the wind scant to the southward, you may, after you are to the westward of the Gabbard, bring the low light N. by W. which will lead you clear of the north end of the Shipwash. If the wind be northward, the light must not be brought farther westward than W. by N. until you are within Aldborough-knapes. Iken-church on with the lime-kilns, bearing N. W. by W. or Orford-church and castle in one, will carry you on the middle of the knapes. When coming from sea, Orford church and castle kept open a large sail's breadth of each other, either way, will carry you clear of them.

Or if, when coming from Sea in the Night, you should make Orford-Ness-high-light N. by W. ½ W. you may, without any danger, if to the northward and a scant wind, bring it to bear W.; and, if to the southward, to bear N. W. by N. The north end of the Shipwash lies with Orford-high-light N. ¼ W. Orford-town N. N. W. ½ N. and Baudsey-church W. N. W.

HOSLEY-BAY. But, running up along-shore, as before directed, being past Orford-ness, the course into Hosley-bay is W. by S. and W. S. W.: if the wind be scant northerly, you must haul a point more westerly; and, if you have to work into the bay, go no nearer to the beach than in 9 fathoms, till you are nearly up to the buoy of the Whiting; for, from the ness upwards, about ¼ of a mile, is shoal water; and, near two cables' length from the shore, hard rocky ground. This place is grown up, and must be avoided; 6 fathoms are close to it. Here you may have 5 fathoms at one cast, and the next be aground. Go no nearer than 9 or 10 fathoms. Just above this is a strong contra-tide, which runs down with as great velocity as the tide of flood runs into the bay; by which several ships have been lost, having gotten their bow into the eddy, and by that means missed stays and run on shore before the wind, not having time to wear; the beach being very steep from the ness quite up to Orford-haven, ships luff off, and in that manner are commonly lost.

For a description of the Whiting, and other dangers, see the directions heretofore given, on page 118, &c.

In working up Hosley-bay, stand to the beach into 6 or 5 fathoms, and off to 7 or 8, but no farther, especially near the Hook, which, as

as before observed, is steep-to, having 8 fathoms close on board the sand; and, if you keep the great light E. N. E. you will run in a fair berth within the Whiting into Hosley-Bay.

To anchor in Hosley-bay, run about a mile and a half above the house on the beach; thence up to Orford-haven is good anchorage in 7 fathoms water; but, if you are high up, do not go too far in, as the ground is very loose inward, being only small stones, with soft mud. In 7 or 7½ fathoms is good clay ground, and there you need not fear that your anchors should start.

If in want of fresh water, see page 115.

The reason for being so explicit regarding Hosley-bay is, that ships sometimes, coming in from sea with strong gales at N. E. (when it has not been possible to float a boat to the northward of Orford-ness,) have gone to sea again, not being acquainted with the place, when they have had a good road under the lee. A boat can always float from Orford-beach with the wind at N. E. or N. E. by N.; and the ship, getting a pilot on-board, may run up the river; when (as several instances have occurred in the winter season) ships that have gone to sea again have, by the shifting of the wind and blowing hard, been forced to some port in Norway.

In proceeding for the Swin, having cleared the Whiting, steer about S. S. W. or according to the tide, for the red buoy on the Rough. Between Hosley-bay and this buoy are 6, 7, 8, 9, and 5, fathoms at low water: the latter depth is close to the buoy. The floating light of the Sunk bears, from the buoy on the Rough, S. S. W. 8¾ miles. Between are 5, 6, 8, 10, 8, and 5, fathoms at low water. With a contrary wind, stand no nearer to Baudsey-sand than till the tree to the northward of Orford-church, comes near the west side of that church; nor to the Cork-ledge or Cork-sand than till Harwich-steeple comes on with the brewhouse, which stands a little to the northward of Landguard-fort. In the night, stand no nearer than 5 fathoms. The channel between the Cork-ledge and Baudsey-sand is about 5 miles wide, and has from 3 to 9 fathoms in it at low water. About half a mile S. E. from this end of the Cork-sand there are 8 fathoms in what is called the Cork-hole.—*For a description of the dangers, see the foregoing directions.*

With a scant off-shore Wind, it is better to go without the Whiting than into Hosley-bay; for, if obliged to put about, you will hardly stem the tide, especially with light winds; so that ships, in such a case, would very probably be without the buoy of the Rough by the time they could have entered into a fair-way in Hosley-bay. You must observe that, at Orford-ness, the tide sets strongly off towards the back of the Whiting, and over the S. W. end of the same shoal towards Baudsey-cliff.

In turning out of the Sledway, you may stand towards the west end of the Shipwash into 7 or 8 fathoms; and, to the westward, to 5 or 6 fathoms, until Alderton and Baudsey churches nearly touch each other.

In running out of the Sled to the westward, you will have very uncertain soundings until you fall off the flats to the West Rocks, where you will have 7, 8, or 9, fathoms, soft ground; whereas most part of the Sled, unless you are well over to the eastward in deep water, is hard and rugged ground. You may know when you are without the rocks by having the tower upon the Naze W. N. W. or the westernmost tree upon the Naze open with the tower. Thence to the black buoy of the Gunfleet the course is S. W. by W. The tide of flood sets W. S. W. or W. by S. and the ebb the contrary. You may anchor in the Sled under the Cork in 6 or 7 fathoms; it is a good road for S. W. and W. S. W. winds; and, under Baudsey-sand, there is good holding-ground, in 8 or 9 fathoms, for an easterly wind.

The Gunfleet-sand has been heretofore described. (See page 110.) It is 12 miles long, and half a mile broad. The beacon stands about 4½ miles from the buoy, and the edge of the sand between rounds to the southward. The channel between the Gunfleet and the Sunk is about 4 miles wide. In the middle of this channel, there are 12 and 14 fathoms, and close to the Sunk are 9 and 8 fathoms at low water.

About 4 miles and a half South of the black buoy on the Gunfleet is the lower part of the Sunk, of which the greater part is dry at half-tide.

half-tide. Off this end of the Sunk is the light vessel, of which a description is given in the former part of this work. This sand extends thence W. by S. ½ S. 6½ miles. The marks for the lower end are, the Naze-tower touching on the northernmost trees near Walton-hall, bearing N. N. W. the Gunfleet beacon W. by N. ¾ N. and the buoy of the Gunfleet north, 4½ miles distant.

From the upper or western end of the Sunk, to the buoy on the heaps is a regular flat, having from 9 to 8, 7, 6, and 5, fathoms.

About 5 miles S. W. by S. from the Gunfleet-beacon, and one mile and a half S. E. by E. ¼ S. from the buoy on the Heaps, lies the east end of the East Barrow. This sand extends nearly W. ¾ S. and E. ¾ N. 6 miles, and is three quarters of a mile broad.

The Buoy of the Gunfleet lies with Walton-hall, a white square house on the Naze, on with the tower, bearing N. W. by N. and the other marks described on page 111. In coming out of the Sled, and having 9 or 10 fathoms water, you are in the stream of the buoy; the course from the buoy to the beacon on the Hook of the Sand is W. S. W. distance 4¾ miles. The course from the Hook to the buoy of the Spitway is W. S. W. ½ W. with flood, or W. ¼ S. with an ebb, tide.

The SWIN. Turning up the Swin towards the Whitaker: in standing out of the Sled, you will have from 10 to 12 or 13 fathoms water. In working up, stand no nearer the Gunfleet than 10 fathoms till you are above the Hook; but, after you get above the beacon, you may stand to 7 fathoms, and you will have 7 or 6 fathoms upon the middle ground. In the channel, towards the Gunfleet, you will have 9 or 10 fathoms; and, on the side toward the Barrows, 10, 9, and 8, fathoms, in mid-channel.

In working up in the Night, when near the Spitway, come to an anchor, which you may in 6 or 7 fathoms, very good clay ground. In working up and standing to the southward, tack in 9 or 10 fathoms water, which will prevent your getting at the back of the Heaps and Middle. After you get up to the chequered black and white buoy of the Heaps, 8 or 9 fathoms are near enough.—Towards the lower end of the Middle you will have 6 or 7 fathoms; but, as you go up towards the buoy, it deepens to 8 and 9 fathoms, steep-to.

The Heaps and the Middle Sand, which are now so joined to the west end as to make one sand, lie nearly W. ¼ S. and E. ¼ N. in length 5 miles. On the east end of this sand is a chequered black and white buoy above-mentioned; and on the west end is the black buoy called the buoy of the Middle. As there are 5 fathoms close to the Heaps or Middle-sand, you should not go nearer to any part of it than 7 fathoms.

The marks for the buoy on the Heaps are, Great-Holland-church bearing N. the tower on the Naze N. N. E. ½ E. and the Whitaker-beacon W. ½ N. The buoy on the Middle bears from the Whitaker-beacon S. by E. ¼ E. distance about a mile and a half. The passage here is not more than a mile and a quarter wide, and has from 5 to 8 fathoms in it at low water.

After you come up within about a mile of the *Whitaker-beacon*, stand not into less than 6 or 6½ fathoms towards the Buxey, or spit of the Whitaker, as the tide runs very strongly into the Whitaker-swatch.

In the Swin, between the buoy on the Middle and the Shoe or Horns' beacon, is a small middle-ground: its north end lies about a quarter of a mile W. S. W. from the buoy on the Middle, and it thence extends S. W. 2 miles, and is nearly half a mile in breadth. On the northernmost part are 5 fathoms, and on the southernmost 6 fathoms, at low water. In the channel on the west side of this ground are 8 and 7 fathoms. About 2¼ miles S. S. W. ¼ W. from the buoy on the Middle, and 3 miles E. ½ N. from the Shoe-beacon, is a small knowl of only 9 feet at low water, which is described on page 110.

The course and distance from off the Whitaker-beacon to within a mile of the Shoe-beacon is S. W. by S. about 5 miles. The channel between the Shoe-beacon and the Mouse is about a mile wide, with 10, 12, and 10, fathoms, at low water. Between the Shoe-beacon and the Mouse there is good anchoring. The Mouse-sand is so steep that you will have 9 fathoms close to it at low water.

The Marks for the Knoll near the West Barrows, upon which are

not above 9 feet at low water, are, the Shoe-beacon W. by S. ½ S. distant about 3 miles, being then on with the garrison of Sheerness, and the Whitaker N. by E. 3½ miles, being then open to the westward of St. Osyth's trees; or the buoy of the Middle just open of the beacon. From half a mile above the buoy of the Middle, till you come within a mile and a half of the Shoe-beacon, is extraordinary good riding in 6 or 7 fathoms water.

The Buoy on the Mouse lies at the west end of the sand, and must be left on the larboard side. The east end of this sand joins to the west end of the West Barrow, as described on page 110. The buoy of the Mouse bears from the Shoe-beacon S. W. by W. 2¾ miles; the Blacktail-beacon bears from the buoy of the Mouse, W. by N. ½ N. distant 3¼ miles; *(see page 14,)* and, from the Shoe-beacon W. ¾ S. 5 miles. Having rounded the point of the Maplin, on which the Shoe-beacon stands, the course to the Nore-light will be W. ¾ S. and distance 10 miles, making proper allowance for wind and tide. In the fair-way are 10, 11, 10, 12, and 9, fathoms, at low water.

The Shoe-beacon stands well up upon the sand; and, about a cable's length without it, in 5 fathoms water, is laid a buoy painted black and white, with the words 'Shoe-beacon' painted upon the head.—The Reculvers bear from this buoy south, westerly.

The Shoe is steep-to, having 10 fathoms close to the sand. In working up through the Shoe-hole, be careful to put about on the first shoal-cast on either side, as both are steep-to.—Mid-channel you will have 12 and 10 fathoms water.

From the Shoe to the Blacktail observe that, the flood sets upon the North-sand, and the ebb off.

In working up from the Buoy of the Mouse to the Nore, when standing to the northward, put about the first shoal-cast of the lead, as the sand, up towards the Blacktail and Shoebury-ness, is steep-to, and the tide sets strongly over the sand. After you get to the lower end of the Warp, stand to the North-sand into 11 or 10 fathoms, and to the southward into 11 or 12, till you come up as high as the Nore light-vessel, or to the black buoy off Shoebury-ness.

DIRECTIONS for the RIVER THAMES, from the NORE to LONDON.

For more minute Directions for the River, Marks for its Dangers and Anchorages, Description of Buoys, &c. see Page 1.

THE passage from the Nore to Holy-haven may be either to the northward or to the southward of the sand called the Middle, described on page 6. The most usual track being that in which there is most water, is that on the north side, upon a course N. W. by W. and W. N. W. about 5 miles from Shoebury buoy, and thence along the Chapman nearly W. N. W. ¼ N. 4½ miles to athwart of Holy-haven. To sail directly from the Nore to Holy-haven, you may sail to the southward of the Middle, nearly N. W. by W. 10½ miles, which will lead in the best water.

The channel to the northward of the Middle is steep, but that to the southward gradually flat from side to side, 5, 4, and 3, fathoms, and above the Middle-sand is deeper water, as 6, 7, 8, 9, and 10, fathoms.

From off Shoebury-Ness-Buoy, the Course to Leigh-Road is about W. N. W. ½ N. 4½ miles. The Middle-ground begins above the Ness-buoy, and thence it extends about 4½ miles. The depth of water on its eastern end is from 3 to 2½ fathoms: its western part is nearly dry at low water. As the north shore is very steep, when standing over the Middle to the northward, with a contrary wind, tack so soon as the water deepens. The south shore is flat.

In working up above Leigh-Road, stand to the south shore into 6 or 5 fathoms, and to the northward to 9 or 10: the nearer the Chapman, which is steep-to, the deeper the water; but, before you are out of the tide (which you may know by the ripling it makes at the edge), you must put about. The thwart-mark for the Chapman is, Hadleigh-castle on with the middle of a square field, or upon a white house upon the hill above it; and the long mark is, Fobben church on with the lower marsh-house upon Canvey-island.

Holy-Haven

Holy-haven open carries you clear of the Scars; they begin at the Scar-houses, and run up to the haven, and are, as well as the Chapman, steep-to, having 10 fathoms close to them.

Opposite to the Scars lies the body of the *Blythe-sand;* abreast of Holy-haven it extends almost two-thirds of the river over from the south shore, and is dry at low water. In this part of the channel are 9 and 10 fathoms water. The courses from Holy-haven to the lower part of the Hope are, W. by N. W. and W. by S. The north shore, from Holy-haven to Shell-haven, is steep; but the edge of Blythe-sand, from a little above Holy-haven to a little below the Lower Hope-point, is so flat that you may, with a turning-wind, stand towards it into 5 or 4 fathoms water.

The HOPE. The courses through the Hope are, S. W. by S. and S. S. W. ½ W. until you open Gravesend-reach. In turning through this reach, make Short-boards, because Mucking-flat runs off a considerable way from the west shore in the bight; and, near the Upper Hope-point, lies the shelf called the Ovens, extending nearly one-third part over from the shore, and dry at low water. As the flood-tide is slack on the east side of the Hope; and close to the shore is no tide at all, be careful not to stand far over to the eastward; for, the ship's head getting into less tide than the stern may occasion her missing stays, and driving on shore.

GRAVESEND-REACH lies nearly E. S. E. and W. N. W. In this reach is deep water and hard ground: the tide is rapid; therefore, if there be many ships, and you intend to anchor, give your ship a good scope of cable, before you check her, lest your anchor come home, and by that means you get thwart-hawse. There is a shelf off the north shore in this reach, on which are 12 or 13 feet. The mark for this shelf is, East Tilbury-church on with the Coal-house; another shelf lies off the round tree at the New tavern, and runs down some way upon the south shore; the mark for it is, Gravesend-church on with the Blockhouse-jetty. There is another shelf abreast the second Barways, below the Upper Point, close in. *(For a description of the buoys in this reach, see page 5.)*

From Northfleet-hope the Course through Gray's Reach is N. and N. by W. As a flat runs off from the west shore, both below and off the point, of only 10 feet at low water, be careful to avoid coming too near the point, especially when the water is low. Opposite to this point, called Broad-ness, lies Black-shelf, which begins off the house above Gray's, and extends up nearly as high as the creek below St. Clement's church; it is steep, and dry at low water: the tide, both flood and ebb, sets strong upon it, and therefore coming very near it must be attended with danger. The mark to go clear of this shelf is, West Tilbury church on with a small red tiled house, which stands near the causeway at Gray's. When in mid-channel, between Broad-ness and Black-shelf, which is but narrow, keep as much as possible in the true tide, until you have passed the small creek below St. Clement's church; you are then above the shelf, and may steer off the west shore, until you get near to the point at the lower end of Long-reach.

St. CLEMENT's, or Fidler's Reach. This reach lies from W. to S. W. by S. On the east side of it is a shelf, which extends from Broad-ness about half way up the reach, and has only 7 feet on it at low water; the mark to go clear of it is, the town of Gray's open of Broad-ness. The course up this reach is S. W. by S. The tide in it runs very narrow, therefore you must not stand far over to the eastward: there is an eddy on the east side during the tide of flood. As a shoal-ridge runs off from the point at the lower end of Long-reach, be careful, in passing, to give it a good berth.

LONG-REACH. The course through Long-reach to Purfleet is nearly N. W. about 3 miles. You may anchor in any part of this reach, in 5, 6, or 7, fathoms water. Just above Dartford-creek, at the upper end of this reach, is a shoal called Dartford-sand: to go clear of it, keep Dartford-creek open until you bring Erith church open of the point. On the opposite side, below Purfleet-creek, and abreast of the Magazines, is a small shelf of 6 or 7 feet at low water.

In sailing from Purfleet, through Rands-Reach to Erith, steer over for the point on the opposite shore, taking care to give it a fair berth: afterwards, keep near this shore, until the uppermost chalk-wharf at

Purfleet is on with the point above Dartford-creek; keep them so until you have passed the sand in mid-channel, called the Rands. In the passage to the northward is a depth of 9 and 10 feet at low water.

If proceeding from Long-Reach, with a ship drawing 16 or 18 feet water, stay there until near two hours flood, or till the water shall have flowed up to the foot of the wharfs at Purfleet.

From Cold Harbour-point, opposite Erith, is a shelf which extends nearly a third over the river; a flat also extends off from the shore of Erith.

Erith-Reach lies N. by E. and S. by W. In this reach are the two shelves above-mentioned, one running from off the point opposite to Erith, and the other (lying off Juliantree-ness) is called Juliantree-sand, which stretches near half over, and has a wreck upon it, nearly at that distance from the point. *(See page 4.)*

To avoid these shelves, steer far enough into Erith-hole to get Rainham church just open to the westward of the Ferry-house, keeping these marks on till you get Barking church within a sail's breadth of the point below the Breach-house; then you may go for Halfway-reach, being clear of Juliantree-sand. At four hours flood, ships of 10 or 12 feet may go between the ness and the sand, giving the point a small berth, as it spits off, and is dry some way at low water. *In Erith-hole* is good anchorage in 4 or 5 fathoms, the church bearing W. S. W.; but, after you get above this hole, it is proper to moor your ship, if she draw above 12 or 13 feet water. The course through this reach is N. by E. and North.

Having passed Gillingham-Point or Juliantree-Ness into Halfway reach, the course up to the Halfway-house, or the Leather-Bottle-point, is nearly N. W. Below the point a shelf stretches from the south shore, which extends upwards above the point. Throughout this reach is good anchorage; but the best is towards the north shore, with Gillingham-point on with the point opposite to Erith, called Cold Harbour-point, in 18 or 19 feet at low water. There is another good berth just above the Powder-house. Thwart of the breach is a shelf, one third of the river over; to avoid which, keep to the southward.

BARKING-REACH. Barking-reach lies nearly E. and W.; in the middle of it lies a very bad shelf; to avoid it, observe the following directions. Coming out of Halfway-reach, you must give Leather-Bottle-point, the point on the south shore, a good berth, as it is flat a considerable distance off; after you are past it, haul in for the south shore until you get the Devil's house at Gallions, on, or rather shut, with Margaret's-ness, or Tripcock-point, which is the point opposite to Barking-creek. Steer with this mark on until Barking church-steeple is open to the westward of the Powder-house flag-staff; you will then be above Barking-shelf, and may steer more over to the northward. The lower end of the shelf lies with the Powder-house, upon the south shore, on with a single tree on Leeson-heath; and, when you get Barking-church on with the Powder-house, you are above the shelf. But, if you cannot sail within it, be sure to put about in time, as the tide sets directly upon it.—There is also a good channel to the northward of it: the mark to run through is, the southernmost tree at the Devil's House on with Margaret-ness: giving the point below Barking-creek a berth, there is good anchorage off Tripcock-trees for ships of 12 or 13 feet water; but, from Barking-creek, two or three cables' length upwards, is very shoal one third of the river over.

GALLIONS lie nearly N. E. and S. W. There is a shelf on the east side, which lies nearly half the river over; but, if you bring Woolwich-church a sail's breadth on the point, it will carry you clear of it. The best water to anchor in here is with the Sluice open, and a berth below it, in 17 or 16 feet at low water. The point above the Devil's House is flat, therefore you must give it a good berth before you haul in to Woolwich-reach. Opposite the point and above the shelf on the east shore, is good riding for ships of 12 or 14 feet water.

WOOLWICH-REACH. Woolwich-reach lies E. S. E. and W. N. W. There is a shelf on the north side, beginning with the Broad street

street open, which runs up as high as Ham-creek; and another, at three quarters of the reach up, lying with Charlton church on with the uppermost sand-wharf. There is also a shelf on the south side, just above the King's moorings. But this reach is very shoal, after you have passed the moorings, till you get into Bugsby's Hole. The best anchoring is with the Broad street open in 18 feet at low water; and there are several good berths, upwards and downwards, as low as the point, in 14 or 16 feet at low water; or you may stop a tide alongside the ships in ordinary.

BUGSBY'S REACH lies N. by W. and S. by E. On the north side lies a shelf almost half over the river, which begins just below Bow-creek, and runs down almost as low as the point. You may anchor in Bugsby's Hole in 13 or 14 feet at low water, and off the Orchard-house in 12 or 14 feet.

BLACKWALL-REACH lies N. by E. and S. by W. There is a large and dangerous rock, lying just below Blackwall old dock-gates, of which you must be very careful, as the tide sets strongly upon it, especially the ebb. There is a shelf on the east side opposite the Folly-house: to go clear of it, keep Millington's, formerly Lady Crowley's, Clockhouse on with the point. You may anchor on the west side, and moor at any of the posts, in 12, 13, or 14, feet water; and, to the eastward, in 16 or 18 feet water.

GREENWICH-REACH lies in a semicircle from the W. by S. to the N. N. W. in which are two shelves. In going up, keep Blackwall-reach open till the clock on the storehouse in the King's yard at Deptford be open with the Isle of Dogs. The uppermost shelf lies just below Deptford-creek, and stretches nearly one third of the river over. You may anchor at the Isle of Dogs from below the house and upwards, in several berths, in 15, 16, or 17, feet at low water.

LIMEHOUSE-REACH lies N. N. E. and S. S. W. Be careful of the shelf which runs off from the second southernmost mill and stone-wharf, the passage between which and the ships lying at the Red-house is sometimes extremely narrow, being scarcely a ship's length. Limehouse-rock lies at the upper part of the reach on the east side; and at a small distance from the shore opposite is a mud-bank, which runs off Cuckold's-point nearly half-way over the river; the mark to avoid it is, Deptford old steeple on with the point at the stone-wharf upon the Isle of Dogs. The tide sets strongly into Limehouse-hole. From the moorings upwards to a berth above Greenland-dock, you may anchor and moor with a kedge in 12 and 11 feet at low water.

The POOL. In the Pool are two shelves;—the one off Pitcher's Point, most part of which has been removed by the ballast-lighters of the corporation of the Trinity-house; and the other off Fountain-stairs: keep over to the northward to avoid them, (See page 1.).

A TIDE-TABLE FOR THE NORTH SEA,

ON THE DAYS OF THE MOON'S FULL AND CHANGE.

Places Names.	Vertical Rise. Spr. Feet.	Vertical Rise. Nps. Feet.	Time of High Water H.	Time of High Water M.
AT THE NORE	14	9	12	30
Five-Fathom Channel	15	9½	12	0
Margate-Roads	17	11	11	45
In the Swin and King's Channel	17	11	12	0
At the Longsand-Head	15	10	11	30
Harwich-Harbour	14	9	11	30
Hosley-Bay	11	7	11	0
Aldborough Bay	10	6½	10	40
Lowestoffe-Roads	7½	5	9	10
Yarmouth-Roads	8	5	8	45
Without Yarmouth-Sands, and in Hasboro'-Gat			10	30
Hasborough, by the shore	10	6½	6	0
Foulness or Cromer, on shore	16	10	6	0
Blakeney-Harbour	20	13	6	0
Wells-Road	20	1[illegible]	4	45
Lynn-Well	20	13	6	45
Within the Inner-Dowsing, upon the Lincolnshire Coast	18	10	5	30
At the Dudgeon-Shoal			7	30
At the Spurn-Point	20	11	5	15
At Hull	20	11	6	0
Bridlington or Burlington-Bay	13	8	4	30
Scarborough	13	8	4	15
Whitby	15	10	3	40
Bar of the Tees	16	10	3	30
Hartlepool	18	10	3	30
Sunderland	14	9	3	0
Tinmouth-Bar	13	8	2	50
Blythe	12	7	2	45
Coquet-Island	15	9½	2	45
Holy-Island-Harbour	18	11	2	40

Places Names.	Vertical Rise. Spr. Feet.	Vertical Rise. Nps. Feet.	Time of High Water H.	Time of High Water M.
Berwick and Eyemouth	16	10	2	15
Dunbar	15	9	1	30
In the Frith of Forth, Leith, and the other Pier-Havens	14	9	2	20
Fifeness, by the shore			1	30
St. Andrew's	15	9	2	0
Dundee	16	10	2	15
Tay-Bar	16	10	1	45
Montrose and Stone-Haven	13	8	1	30
Aberdeen	14	9	12	45
Newburgh	13	8	12	30
Buchanness			12	0
Frasersburg, Banff, and along shore to Cowsy-Pnt.	15	9½	11	45
Fort George, (entrance to Inverness)	15	9½	12	0
Cromarty	14	9	11	45
Frith of Tain	12	7	11	0
Sinclair's Bay	9	5	9	0
Duncansby-Head and North shore of Caithness	9	4	8	30
Pentland-Frith, (in the middle)	8	3½	11	30
Orkney Islands, generally, (West side)	8	3½	10	0
Fair-Island	4	2	10	0
Shetland—Hangcliff	7	3½	9	30
——— Bressa-Sound or Lerwick	9	5	9	45
——— Balta	6	15	3	0
CALAIS	18	15	11	30
Gravelines	18	15	11	30
Dunkirk	18	15	11	30
Nieuport	18	15	11	30
Ostend	17	14	12	30
Over and without the Flemish Banks	16	12	3	0

Places Names.	Vertical Rise. Spr. Feet.	Vertical Rise. Nps. Feet.	Time of High Water H.	Time of High Water M.
Drooge Raen, off the Western Scheld	18	12	12	45
Flushing or Vlissengen	16	11	1	0
West Cappel, (East Gat)	18	12	12	15
Terveer or Campveer	16	11	1	30
Brouwershaven	16	11	3	30
Goree Gatway	12	8	1	30
Briel, or the Brill	20	14	1	45
Rotterdam	7	4½	3	40
Entrance of the river Maes			3	0
Egmont op Zee	12	8	4	30
Entrance of the Texel	16	11	6	30
Texel-Road	7	3½	7	30
Pampus, or Bar of Amsterdam	7½	3½	3	0

Places Names.	Vertical Rise. Spr. Feet.	Vertical Rise. Nps. Feet.	Time of High Water H.	Time of High Water M.
Vlie-Stream, (entrance)	15	10	8	45
Mouth of the Western Ems	15	10	9	45
——— Eastern Ems	14	9	10	30
Delfziel			12	0
Emden			12	15
At the Key, or First Buoy of the Weser	12	7	12	0
Wranger-oog	12	8	11	50
At Heiligeland, or Holigiland	9	5	11	0
At the Red Buoy of the Elbe	12	7	12	0
Entrance of the river Eyder	11	6	12	0
Sylt Island	6	3½	12	15
Horn Point	5	3	12	15
Numet-Land and Bovenbergen	5	3	1	30

The stream of Tide upon the coast of Suffolk continues to run in the offing one hour longer than on shore; that upon the coasts of Norfolk, Lincolnshire, and Yorkshire, from one and a half to two hours; and that off the coast of Scotland, in general, about three hours, after the tide flows on shore. It is to be observed, generally, that the length of time between the changes of the tide on the shore and the stream in the offing, is in proportion to the strength of the current and the distance from the land; that is, the stronger the current, and the greater the distance that current is from the land, the longer it will run after the change on the shore.

Gales of wind off the coast of Scotland, from the W. S. W. to N. W. raise the flood higher on the shore, and cause the stream to run, perhaps, half an hour longer than ordinary in the offing. Easterly and S. E. winds have the contrary effect, and operate in a similar manner upon the eastern coasts.

Off the coasts of Flanders and Holland, the tide runs to the North-eastward three hours after high water on the shore, and they set as described in the sailing directions.

The flowing and ebbing of the tide in the BALTIC are so inconsiderable as not to require notice.

A TABLE of the LATITUDES, and LONGITUDES from *Greenwich*, of Places in the NORTH SEAS, BALTIC, GULF of FINLAND, &c.

N. E. COAST OF GREAT BRITAIN.	Lat. d. m.	Long. d. m.
SHEERNESS	51 27	0 45 E.
North Foreland	51 23	1 26 E.
Long-sand-head	51 48	1 39 E.
Naze	51 52	1 17 E.
Orford-ness	52 5	1 34 E.
Lowestoffe-lights	52 30	1 47 E.
Yarmouth *(church)*	52 36½	1 44 E.
Winterton-ness	52 44	1 41 E.
Cromer-lighthouse	52 55	1 20 E.
Lemon&Ower, N.E. p.	53 14	1 57 E.
Dudgeon-light	53 17	1 2 E.
Spurn-lights	53 37	0 11 E.
Flamborough-head	54 8½	0 2 W.
Whitby	54 28½	0 35 W.
Mouth of the Tees	54 38	1 3 W.
Tinmouth castle	55 3	1 2 W.
Staples'-light	55 39	1 43 W.
Berwick	55 47	2 6 W.
St. Abb's-head	55 55	2 11 W.
Dunbar	56 1	2 34 W.
The Bass	56 5	2 42 W.
Edinburg	55 58	3 13 W.
Isle-of-May-light	56 11½	2 37 W.
St. Andrew's	56 21	2 50 W.
Tay-bar	56 27	2 43 W.
Aberdeen	57 9	2 9 W.
Buchan-ness	57 30	1 47 W.
Kinnaird's-head-light	57 42	2 1 W.
Cromarty	57 43	4 1 W.

	Lat. d. m.	Long. d. m.
Noss-head	58 29	3 9 W.
Duncansby-head	58 40	3 8 W.
Pentland-skerries	58 43	3 2 W.
Copinsha	58 56	2 46 W.
Kirkwall	58 59	2 58 W.
North-Ronaldsha light	59 25	2 36 W.
Fair Island	59 28	1 26 W.
Sumbro'-head, the S. Pt. of Shetland	59 48	0 59 W.
Valley Isl. on the W. side of Shetland	60 8	1 17 W.
Foul Island	60 2	1 50 W.
Lerwick	60 8	0 53 W.
Out-skerries	60 27	0 22 W.
Unst Island, N. pt.	60 45	0 43 W.
FLANDERS, &c. to the KATTEGAT.		
Dunkirk	51 2	2 22 E.
Nieuport	51 8	2 44 E.
Ostend	51 17	2 56 E.
Goree Island	51 46	3 50 E.
Rotterdam	51 54	4 28 E.
Amsterdam	52 22	4 50 E.
Texel, S. pt.	53 0	4 40 E.
Heiligeland	54 11	7 49 E.
Bovenbergen	56 35	8 3 E.
Skaw-light	57 43	10 35 E.

KATTEGAT and SOUND.	Lat. d. m.	Long. d. m.
Marstrand	57 54	11 36 E.
Gottenburg	57 42	11 56 E.
Lessou, E. end	57 19	11 11 E.
Anholt-light	56 44	11 39 E.
Koll-point	56 18	12 27 E.
Cronborg castle	56 2½	12 37 E.
Copenha. Observatory	55 41	12 35 E.
Falsterborn-light	55 21	12 45 E.
BALTIC and GULF of FINLAND.		
N. end of Rugen Isl.	54 40½	13 25 E.
N. W. pt. of Bornholm	55 18	14 45 E.
S. E. pt. of ditto	54 57	15 9 E.
Dantzick	54 22	18 35 E.
S. end of Oeland	56 12	16 19 E.
N. end of ditto	57 22	17 3 E.
S. W. end of Gottland	56 58	19 10 E.
Faro, at N.E.end of do.	57 55	19 23 E.
Stockholm	59 21	17 58 E.
Pillau	54 34	19 49 E.
Memel	55 42	21 1 E.
Domesness-light	57 46	22 24 E.
Rign	56 56	23 52 E.
Dager-ort	58 56	21 55 E.
Nargen Isl. N. end	59 36	24 32 E.
Revel	59 26	24 46 E.
Hogland, N. end	60 4	26 55 E.
Narva	59 23	28 17 E.
Wyburg	60 39	28 42 E.

	Lat. d. m.	Long. d. m.
Petersburg	59 56	30 15 E.
NORTHERN NAVIGATION.		
Naze of Norway, *(lights)*	57 59	7 8 E.
Hvidding's Oe, or Whiting's Eye, at the entrance of Stavanger	59 5	5 25 E.
Bergen	60 24	5 20 E.
Drontheim	63 26	10 22 E.
Monk-rock & Whirlpool at S. end of Faro	61 22	6 19 W.
Skygwoe, in Faro	61 48	6 34 W.
Straumness, Iceland	65 40	24 29 W.
Cape Farewell, Greenld	59 38	42 42 W.
The middle of the Stadt-land, northernmost boundary of the Narrow Seas, as settled by treaties, in which forgn. ships acknowlege the superiority of the British flag	62 9	5 7 E.
The North Cape	71 10	25 50 E.
Ponoi river	67 6½	36 18 E.
Archangel	64 34	38 59 E.
Onega	63 57	37 10 E.

PART III.

THE MAGNETIC BEARINGS OR COURSES, AND THE DISTANCES IN NAUTIC MILES, FROM PLACE TO PLACE, ON THE DIFFERENT COASTS OF EUROPE, &c.

This Table of Bearings, or Courses, and Distances, is entirely new; having been wholly composed, in the Year 1806, from the most authentic and recent Surveys and Observations. It will, therefore, be found to correspond with all the new and valuable Charts of the Channel, France, Spain, &c. lately published by P. Steel, London; with the Spanish Surveys of Tofino; the French of Bretonniere and Mechain; the late Dunish Surveys; those of Sweden, &c. &c.

SECTION I.---The BRITISH CHANNEL, BAY of BISCAY, SPAIN, PORTUGAL, and MEDITERRANEAN SEA.

RIVER THAMES, DOWNS, AND BRITISH CHANNEL.

1. FIVE FATHOM CHANNEL AND NARROWS.

	Compass Bearing.	Sea Miles.
LONDON-Bridge to Nore-light vessel —	Various	41
Nore-light to Black-buoy of the Spile —	SE¼E	4¼
Nore-light to Five-fathom Channel, SE by E ½ E 3 ½	and South	1¼
Course through Five-fathom Channel — —	E¾S	4
Leading mark—Minster-church on the middle of Bradgate-bay.		
Five-fathom Channel to the Narrows, SE or	SEbS	5½
Course between the last and Spell — —	East	1
——— from the Woolpack, in mid-channel, SE or	SE½S	1
Leading-mark—St. Peter's church on the swamp in the E cl ff of Westgate-bay, &c.		
Course through the Gore —— ——	SE¼E	1
Leading-mark—St. Peter's church on the middle of Westgate-bay, &c.		
Gore to Margate-roads — — *Course*	EbS	5¼
Margate-roads to the Downs — *Courses*, SE½S 8, and	SW¾W	9
Leading-mark through Gull-stream—South-Foreland high lighthouse, SW¾W on the middle of Old-stairs-bay.		

2. NOB AND QUEEN'S CHANNELS.

	Compass Bearing.	Sea Miles.
Nore to a fairway between the Mouse and Oaze	E¼S	9½
East-buoy of the Oaze to Shivering-buoy, SEbyS or	SSE	1
Shivering-buoy to that of the Girdler, (acc. to tide, &c.) —— —— SbyW to	SSW	1
Course through Oaze Channel ——— E¾S or	EbS	7
Girdler-buoy to entrance of Queen's Channel —	SEbE½E	2¼
Course through Queen's Channel to E buoy of Tongue	EbS½S	7
East-buoy of Tongue to E.buoy of Margate-sands	SE	3½
East-buoy of Margate-sands to Gull-stream —	SbE	8½
(See mark for Gull-stream above.)		

BRITISH CHANNEL.

WESTERLY VARIATION 24½ TO 27 DEGREES.

	Compass Bearing.	Sea Miles.
North Foreland to the Galloper light-vessel —	ENE	31
——— ——— Calais — South nearly	¾East	30
——— ——— Dunkirk ——— —	SEbS	40
——— ——— Ostend ——— —	SEbE	56
——— ——— West Capple — —	ESE¼E	74
——— ——— Goree-gat, (entrance) —	E½S	95
——— ——— South entrance of the Texel —	EbN¼N	150

	Compass Bearing.	Sea Miles.
South Foreland to the Southsand-head	E¼N	4¼
—— Downs	NE	6
—— through the Gull-stream	NE¾E	14
(Leading-mark before given.)		
—— Dungeness	WSW¼W	20
—— Boulogne	S¼W	26
—— Calais	SE¾S	21
—— Dunkirk	SEbE	38
—— Nieuport	ESE	51
—— Ostend	ESE½E	59
—— West Capple	E½S	80
—— Goree-gatway	East	104
—— South entrance of the Texel	EbN¼N	159
—— Naze of Norway	NE¼E	456
South Foreland lights when in one bear	W¾N	
Dover to the South Foreland nearly	East	3
—— Calais	SE¼S	22½
—— Boulogne	S¼E	26
—— Dieppe	SWbS	72
—— Cape la Heve, near Havre	SW½W	107
Dungeness to Dover	ENE¼E	17
—— the South Foreland	ENE¾E	20
—— Calais	ESE¼E	34
—— Boulogne	SSE¾E	26½
—— Dieppe	SSW	60
—— Cape la Heve	SW¼W	92
—— Cape Barfleur	WSW¼W	113
—— the Caskets	W¼S	150
—— Beachy-head	W¼N	29
Beachy-head to the Elbow of the Owers	WNW½W	36
—— Caskets	W¼S	119
—— Start-point	WNW¾W	152
—— Cape la Hague	WbS	104
—— Cherbourg	WbS½S	97
—— Cape Barfleur	WSW	85
—— Cape la Heve	SWbS¼S	74

	Compass Bearing.	Sea Miles.
Beachy-head to Dieppe	S¼E	58
—— Dungeness	E¼S	29
Elbow of the Owers to Dunnose	WbN¼N	20½
—— St. Helen's-road—NW by W ¼ W 7, and	NW	9
Fairway-course into Spithead	NNW. nly.	5
Leading-mark—Kickergill tower on the barracks of Fort Monkton, &c.—See p. 28.		
St. Helen's to Havre	S½E	83
Dunnose to St. Catharine's-point	W½N	5
—— Ushant	WSW¼W	195
—— the Caskets	WSW½W	70
—— Cape la Hague	SWbW	59
—— Cherbourg	SW	60
—— Cape Barfleur	SSW¼W	54
—— Cape la Heve	S¾E	79
—— Dieppe	SE¼S	95
—— Boulogne	ESE	106
—— Bembridge-ledge	ENE	7
—— the Elbow of the Owers	EbS¼S	20½
—— Beachy-head	ESE½E	55
St. Aldan's-head to St. Catharine's-point	SEbE¾E	28
—— Weymouth-harbour	NWbW	15
—— the Bill of Portland	WNW¾W	16
Portland (Bill of) to Bridport-pier	NbW¾W	18
—— Exmouth-bar	NWbW	37
—— Berry-head	WNW½W	40
—— Start-point	W½N	40
—— Ushant	WSW	156
—— Guernsey, (West-point)	SW¾S	62
—— the Caskets	SSW¼W	46
—— Cape la Hague	S¾W	51
—— Cherbourg	S½E	59
—— Cape Barfleur	SbE½E	66
—— Cape la Heve	SSE¾E	114
—— St. Aldan's-head	EbS¼S	15

		Compass Bearing.	Sea Miles.
Portland (Bill of) to St. Catharine's-point		ESE	44
Portland-lights in one bear	NNW¼W		
Exmouth-bar to Portland		SEbE	37
——Berry-head		SWbS	12
Berry-head to Portland		EbS¾S	40
Start-point to the Praul		WNW¾W	4
——Ushant		SW¾W	116
——Morlaix, (entrance)		SWbS¼S	89
——St. Maloes, (entrance)		S¾E	109
——Guernsey, (West-point)		SbE⅓E	56
——the Caskets		SSE¾E	54
——Cape la Hague		SE½S	72
——Dartmouth-harbour		NE	7½
——Berry-head		NEbE	12
——Portland		E¼S	50
——St. Catharine's-point		ESE¾E	92
Rame-head to the Dodman		WbN	26
——Lizard		W¼S	44
——Ushant		SW½S	114
——Eddystone		SW¾S	8¼
——Bolthead		E¾S	17
Falmouth to the Eddystone		ESE	30
——Rame-head		E¾S	34
——Start-point		ESE	54
Lizard to Ushant		SSW	87
——the Isle de Bas		S¾E	84
——St. Maloes, (entrance)		SEbS¼S	142
——Guernsey, (West-end)		SE¼E	97
——Jersey		SE	121
——the Caskets		SEbE¼E	108
——Falmouth	EbyN½N 9 m. and	NNE	6
——the Eddystone lighthouse		E½S	39
——Rame-head		E½N	43
——Start-point		EbS	61
Land's-end to the Wolf-rock		SW¼W	8
——Seven-stones		WNW¼W	16½

		Compass Bearing.	Sea Miles.
Land's-end to the Lizard		SE½E	20
——Ushant		SbW	93
Wolf-rock to the Longships	NE northerly		7½
——Land's end		NE¾E	8
——Lizard		SEbE¾E	23
Scilly-lighthouse to the Land's-end		E¾S	26
——Longships	East, southerly		25
——Lizard		ESE¼E	44
——Ushant		S¾E	98
——the Isle de Bas		SSE¾E	112
——St. Maloes, (entrance)		SE⅓S	178
——Jersey, (SW point)		SE¼E	163
——Guernsey, (West-end)		SE¾E	142
——the Caskets		SEbE½E	150
Up Channel from a fair berth off Scilly to Dungeness,	E by S southerly		295

SOUTH SIDE OF THE CHANNEL.

WESTERLY VARIATION 23 TO 24½ DEGREES.

		Compass Bearing.	Sea Miles.
Ostend to Nieuport		WSW⅓W	30
Nieuport to Dunkirk		West	15
Dunkirk to Gravelines		WNW¾W	9
Gravelines to Calais		WNW¾W	10
Calais to Calais-cliff, or Cape Blancnez		W¼N	6
——Dover		NW¼N	23
——Cape Grisnez		W¼S	12
Blancnez to Cape Grisnez		W¾S	6
Cape Grisnez to St. John's-road		SbW½W	4
——East-end of the Ridge		NNW¾W	8½
——entrance of Boulogne		SSW	9
St. John's Road to Boulogne		SSW¼W	4
Boulogne to Dungeness		NNW¾W	26½
——Dover		N¾W	26
——South Foreland		N¼E	26
——the river of Etaples		SSW¼W	12
Etaples to the river Somme		SSW¼W	19

	Compass Bearing.	Sea Miles.
River Somme (S. entr.) to Treport	SW¾W	8
Treport to Dieppe	WbS	13
Dieppe to Cape Grisnez	NE¼N	62
—— Dover	NEbN	72
—— Beachy-head	N¾W	58
—— Brighthelmstone	NbW¼W	74
—— St. Helen's	NW¾N	96
—— Cape Lailly-lighthouse	WNW	4
Cape Lailly to St. Valery en Caux	WbN	10
St. Valery en Caux to Fecamp	W½N	14
Fecamp to Cape D'Antifer or de Caux	W⅘S	8
Cape de Caux to Cape la Heve	SW½W	12
—— Cape Barfleur	NWbW¾W	57
Cape la Heve to Havre	SbE¼E	2¼
—— Cape Barfleur	NW½W	51
—— Isles St. Marcou	WNW	54
Cape la Heve to Dover	NE¼E	107
—— Beachy head	NNE¼E	74
—— St. Helen's	N½W	83
Havre de Grace to Honfleur	SSE¼E	6
—— Touque river	SW¾S	7½
—— the river of Caen	WSW¾W	17
Cape Barfleur to the Isles of St. Marcou	S¾W	13
—— Cape la Heve	SE¾E	54
—— Dieppe	ESE½E	93
—— Cape Grisnez	E¾N	132
—— Dungeness	EbN¼N	113
—— Beachy-head	ENE	85
—— Bembridge-point	NEbN	59
—— Cape Levy	NWbW½W	8
Cape Levy to Cherbourg	W¾S	6
Point Hommet, the N. W. pt. of Cherbourg-road to Cape la Hague	NW	13
Cape la Hague to Alderney	WNW	8½
—— N. W. point of Jersey	SW¼W	30
—— the Bill of Portland	N¼E	51

	Compass Bearing.	Sea Miles.
Cape la Hague to the Start-point	NW½N	72
—— the Lizard	NWbW½W	126
—— Cape Carteret	SbW¼W	22
—— Cape Barfleur	NWbW¼W	27
Alderney to the Caskets	NWbW	7
—— Guernsey	WSW	13
Caskets to the Little Russel —— nearly	South.	12
Guernsey, (S. E. pt.) to the N. W. point of Jersey	SbE¼E	15
Cape Carteret to Port-Bail-road	SSE¼E	5
—— St. Germain sur Hy	SbE¼E	24
—— Granville	SbW	34
Granville to Isle de Chausey	NW	9
—— Mount St. Michel	S¾W	24
—— Cancalle point	WSW¾W	23
—— St. Malo	W¾S	20
—— Jersey, (St. Helier)	NbW¾W	29
Jersey, (S. W. pt.) to St. Malo	S¾W	32
Cancalle-point to E. point of St. Malo's-bay	WbN	6
St. Malo to Cape Frehel	NWbW	24
Cape Frehel to N. end of Isle de Brehat	NW½N	26
Isle de Brehat to the river of Treguier	WNW¾N	9
River of Treguier to the Isle of Tomé	WNW¾N	7½
Isle of Tomé to the Seven Isles	NbW¾W	3
Seven Isles to the Isles de Bas	W½N	23
Isle de Bas to Morlaix	South.	24
—— Goulven-bay	WbS	9
—— L'Aber Vrach, or Abreverak	W¾N	23
Abreverak-bay to the Four	WSW¾W	9
Ushant to the Four	EbS¾E	10½
—— the Caskets	EbN	125
—— Dunnose	EbN¼N	195
—— Portland	ENE	156
—— the Start-point	NE¾E	116
—— the Lizard	NNE	87
—— the Land's-end	NbE	98
—— Scilly-lighthouse, (St. Agnes)	N¼W	98

BAY OF BISCAY, &c.

WESTERLY VARIATION 24½ TO 21½ DEGREES.

	Compass Bearing.	Sea Miles.
Ushant (S. W. pt.) to the Pierre Verte, *(see p. 91)*—	SSE¼E	5¼
——Buffalo, or Magnificent Rock	SSE	10
——fairway of Dovarnenez-bay	SSE¼E	30
——Passage du Raz — —	S¾E	26
——Cape Finisterre — —	SW¾W	376
Course from the Jument-rock off the S. W. of Ushant to a-breast of the Black-rocks — —	SSE¼E	4
Southern Black-rocks to St. Matthew's — —	EbN½N	6
St. Matthew's to Brest-water — —	ENE	9
S. W. rocks off Ushant to the W. end of the Saintes'-bridge — — — —	SbW	21
Passage du Raz, or Raz de Fontenoy to Audierne-harbour — — —	SE¼S	9
Audierne or Hodierne to the Penmarks — —	S¾W	15
Penmarks to the Isles de Glenan — —	SE¾E	14
—— Concarneau — — —	E¾S	17
—— the Isle de Groais — S. E. 18m. and	ESE½S	20
—— the N. end of Belleisle — —	SE½S	52
—— the Isle of Houat — —	SE	61
—— the Isle of Hedie — —	SE	67
—— the Isle d'Yeu — —	SSE½E	103
—— the western part of les Banches Vertes	SbE½E	119
—— the N. end of the Isle of Rhé —	SSE½E	148
—— the S. W. part of Oleron Island —	SSE-eastly.	174
—— Point Coubre, N. side of Bourdeaux river	SSE	181
—— the Bassin de Arcachon — —	SbE	223
—— the entrance of Bayonne river —	S¾E	283
—— Cape Machichaco — —	S¾W	271
—— Cape Mayer — — —	SbW-wly.	265
—— Cape St. Andero, or de Lata —	SW¼W	261
—— Cape de Pinas — — —	SW½S	255
—— Ribadeo — — —	SW	287
—— Cape Ortegal — —	SWbW	283
—— Cape Prior — — —	SWbW¼W	302
—— Isle de Cisargas — —	SWbW½W	322
Penmarks to Cape Villano — — —	SWbW¾W	340
—— Cape Toriana — —	SWbW¾W	350
Concarneau to the Glenan Islands — —	SW¾W	9
—— Port Louis — —	SE¾S	24
Isles de Glenan to the Isle Groais — —	SE¼E	20
Isle de Groais to the N. end of Belleisle —	S½E	19
N. end of Belle-isle to the N. end of Houat-isle —	ESE½E	11
—— Hedie —	SEbE	16
S. W. part of Belleisle to the W. part of Isle d'Yeu	SSE	49
West part of the Isle d'Yeu to W. part of les Banches Vertes — — —	SWbS	27
——E. part of Roche Bonne	SSW	129
——the Bassin d'Arcachon	S¾W	132
East part of the Isle d'Yeu to St. Gilles- — —	SEbE¾E	14
—— the harbour of Olonne	SEbS	24
—— the N. W. end of the Isle de Rhé — — —	SSE	40
Bassin d'Arcachon to the Adour, or Bayonne river	SWbS	68
Bayonne river to Fontarabia or Cape Higuéra —	W¾S	14
Cape Higuera to Cape Machichaco — —	NWbW¾W	38
Cape Machichaco to Cape de Ajo — —	NWbW¼W	35
Cape de Ajo to Cape de Lata or St. Andero —	WNW¾W	8
Cape de Lata to Cape Pinas — —		93
Cape Pinas to Cape Ortegal — —	WNW¼N	90
Cape Ortegal to Cape Prior — —	WbS	22
Cape Prior to the Isle de Cisargas — —	W¾S	27
Isle de Cisargas to Cape Villano — —	WbS	20
Cape Villano to Cape Toriana — —	SWbW	9
Cape Toriana to Cape Finisterre — —	SSW	7½

From CAPE FINISTERRE, &c. towards the MEDITERRANEAN SEA.

WESTERLY VARIATION 21 DEGREES.

	Compass Bearing.	Sea Miles.
Cape Finisterre to the Isle Salure or Salvora —	S½E	31
——the Isle Ons or Bilidones —	S¾E	37
——the S. end of the Isles Cies or Bayona	South	48

	Compass Bearing.	Sea Miles.
Cape Finisterre to the Leichons, near P. Oporto	S¾W	108
——— Cape Mondego	SbW½W	166
——— the Borlings	SSW¼W	204
Borlings to Cape Rocca or the Rock of Lisbon	SSW	44
Cape Rocca to Cape Spichel	SbE	25
——— St. Vincent	SbW	105
Cape St. Vincent to Cape St. Mary	SEbE½E	58
——— Cadiz-lighthouse	SEbE	134
——— Cape Trafalgar	SE	153
——— Cape Spartel	SE¼S	168
Cape St. Mary to Cadiz-lighthouse	SE¾E	79
——— Cape Trafalgar	SE½S	101

STRAIT of GIBRALTAR, with the SPANISH and FRENCH COASTS of the MEDITERRANEAN.

WESTERLY VARIATION 20 DEGREES.

	Compass Bearing.	Sea Miles.
Cape Trafalgar to Cape Plata	SE	11
——— the Shoals off Paloma-point	SE½S	17
——— the W. rocks of Tarifa-island	SE	22
——— Cape Spartel	S½W	22
——— Tangier-bay, (W. pt.)	S¾E	24
Tarifa-island to Europa-point E. ½ S. 9 m. and	ENE	5½
Europa-point to Ceuta point	S¾W	12
——— Marbella	NEbE½E	33
——— Cape Moulinero	EbN½N	51
——— Velez Malaga	EbN¾N	68
——— Cape Sacratif	East	96
——— Point de Berge	E¼S	124
——— West part of the low island Alboran	EbS¼S	112
——— Cape de Gata, or de Gatte	E½S	155
——— Cape Tres Forcas or Three-points	SE½E	123
——— Cape Ferrat	ESE	240
Cape de Gatte to Carthagena	ENE	78
——— Cape de Palos or de Palle	ENE¼N	91
——— Cape de Tenez	ESE¼E	170
Cape de Palos to Grosa island	N¾E*	7
——— Cape St. Paul, or San Pola	NEbN	36
——— Alicante-roads — N. E. ¼ N. and	NbW	42
——— Monte Benidorme	NE¾E	60
——— Cape St. Martin	NE½E	81
——— the S. W. part of Fromentiere island	EbN	118
——— the S. E. part of Fromentiere	E¾N	125
——— Bedra-island on the W. part of Iviza	ENE¼E	117
——— Cabrera-island, off the S. part of Majorca	E¾N	192
Cape St. Martin to the S. W. end of Fromentiere	SEbE½E	61
——— Bedra-island	ESE½E	52
——— the entrance of Valencia	NbW	44
——— Cape Oropesa	NbE¼E	57
——— Peniscola	NNE¼E	95
——— the Columbrettes	NE½N	72
——— Cape Salou	NE½N	146
——— Mount Juoy, near Barcelona	NE½E	182
——— Cape Begu, above Palamos	NEbE	237
——— Isle of Dragoniere, (W. end of Majorca)	E¼N	112
Mount Juoy to Cape Bajoli, the N. W. point of Minorca	SSE	112
Cape Begu to Cape de Creux	NEbN	25
——— the Mouths of the Rhone	NEbE	105
——— Cape Couronne	NEbE½E	115
Cape de Creux to Cette, (lighthouse) N. E. by N.	northerly	67
Cape Couronne to Point Riche	SEbE	0⅓
——— the isle and tower of Planier	SSE¼E	11½
Point Riche to Cape Mejan	ESE¼E	7½
Cape Mejan to Marseilles	SE½E	6¼
——— the south part of the Isle Pomegue	SbE¼E	5
——— the N. end of the Isle Ratoneau	SE½S	5
——— Croisette or Tiboulen	SbE	8

* But allowance must be made for the Formigas, which stretch two or three miles to the eastward from the Cape.

	Compass Bearing.	Sea Miles.
Tiboulen to W. end of the Isle de Riou — —	SSE	3
Isle de Riou to Cape Sicie — — —	SE	22
Cape Sicie to the W. part of the Isle Porquerolle —	SEbE¾E	13
Isle Porquerolle (S. pt.) to the E. part of Isle du Levant — — — ESE 8 m. and	EbN½N	7½
Isle du Levant (E. end) to Cape Taillar — —	ENE½N	9½
FRENCH and ITALIAN COASTS of the MEDITERRANEAN.		
WESTERLY VARIATION 19 DEGREES.		
Cape Taillar to Cape Roux — —	NE¼E	21½
——— Ville Franche — —	NEbE	43
——— Cape del Melle — —	ENE¼E	81
——— Cape Corse, the N. end of Corsica —	ESE¼E	61
Cape del Melle to Cape Corse — —	SSE	77
——— the N. end of the island Gorgona —	SE¼E	83
——— the Malora tower of Leghorn —	SEbE	92
——— Porto Venere — —	EbS	71
——— Porto Fino — —	EbN	50
——— Genoa — —	ENE¼E.	46
——— Vado-bay — —	ENE¼N	23
Genoa to Cape Corse — — —	S¼W	85
——— Porto Fino — — —	SSE¼E	12
Porto Fino to Porto Venere — —	SE	26
——— the Malora tower of Leghorn nearly —	SSE	62
——— the N. end of the Island Gorgona —	SbE¾E	58
——— the W. end of Elba — —	S¾E	103
——— the Island Capraia — —	S¾E	83
——— Cape Corse — — —	SbW	79
Leghorn to the north end of Corsica — —	WSW	50

	Compass Bearing.	Sea Miles.
Leghorn to the west end of Elba — —	SSW¼W	40
N. E. point of Corsica to Monte Christi —	SSE¾E	54
——— the road of Bastia —	SbW¼W	20
——— the west end of Elba —	SE	35
West end of Elba to Cape Linaro, near Civita Vecchia	SE¼S	84
West end of Elba to the S. point of the Island Gorgona	N¾E	43
Cape Linaro to Mont Circello — —	SSE¾E	75
Mont Circello to Cape Cabonara, the S. E. point of Sardinia — — —	WSW¼W	201
——— the Island Maretimo, off the W. end of Sicily — — —	SSW¾W	190
——— Palermo in Sicily — —	SbW	184
——— the Isle of Ustica — nearly	SbW	146
——— the Island of Stromboli —	SbE¼E	183
——— the W. end of the Island Ischia —	SSE¾E	45
——— Gaieta — —	WSW¼W	22
Gaieta to the W. end of the Island Vandotena —	SW¼S	27
——— Island Ischia —	S¼E	30
West end of the Island Ischia to the N. W. end of Capri	SE	17
N. W. end of Capri island to the road of Naples, —	NNE¼E	16
——— Cape Bruno —	NEbE	15
S. W. end of Capri to Cape Carbonara —	W¼S	225
——— the Island Maretimo —	SW¼W	170
——— Cape St. Vito, Sicily —	SW¼S	137
——— Palermo in Sicily —	SSW¼W	146
——— the Island Stromboli —	S¾E	192
——— Cape Vecatino — —	SbE½E	145
——— the entrance of the Straits of Messina — — —	SbE	160

The BRISTOL, ST. GEORGE's, and NORTH, CHANNELS, from the ISLANDS of SCILLY upwards.

WESTERLY VARIATION FROM 27 TO 28 DEGREES.

	Compass Bearing.	Sea Miles.
SCILLY, northernmost point of, to the Seven Stones	E½S	7
——— Hartland-point	EbN¼N	92
——— Lundy-island	ENE	94
——— Milford-haven	NE½E	113
——— the Smalls lighthouse	NE¼N	110
——— Carnsore-point	NNE½E	132
——— Waterford - harbour (Hooklight)	NbE½E	126
——— Cork-harbour (ent.)	N¼W.	127
——— Kinsale Old Head	NbW¼W	126
——— Cape Clear	NNW½W	147
——— Mizen-head	NNW¾W	157
Cape Cornwall to Lundy-island	NEbE¼E	75
——— Milford-haven	NE¼N	98
——— the Smalls lighthouse	NNE¼E	100
——— Carnsore point	NbE¼E	126
——— Waterford-harbour (Hook point)	N½E	125
——— Cork-harbour (entrance)	NbW¾W	135
——— Kinsale Old-head	NNWwly.	136
——— Cape Clear	NWbN	162
——— Mizen-head	NW¾N	173
Lundy-island to St. Anne's lights, Milford-haven	N½W	36
——— Tenby	NNE	32
——— the Flat-holm	EbS	59
——— Morte-point	SEbE½E	20
——— Hartland-point	S¾E	14
Flat-holm to Kingroad	E½S	16
St. Anne's-point, or Milford-haven, to Waterford-harbour (Hook-point)	NW	70
——— Cork-harbour	WNW¼N	114
——— Kinsale Old-head	WNW	124
Smalls lighthouse to St. David's-head	EbN	17
——— Carnsore-point	NbW½W	35
Smalls lighthouse to the Hook-point of Waterford	NW	52
St. David's-head to Holy head	NE¼N	85
——— Bardsey-island	NE	48
——— Wicklow lights	N¾E	70
Holy-head to the Skerries light	NE¼E	6½
——— Dublin-bar	NWbW¼W	53
——— Wicklow lights	W¾N	51
——— Carnsore-point	WSW	89
——— Smalls light	SW	98
——— St. David's-head	SW½S	85
——— Bardsey-island	SWbS	33
Sherries light to Maughall-head (Isle of Man)	NE¼N	53
——— the Coal Rock	E¾S	1¾
Coal Rock to Elian or Linas-point	SEbE¼E	10
Linas-point to Great Orms-head	SE	17
Great Orms-head to the Calf of Man	NbW¼W	55
——— N. W. buoy of Hoyle Sands	E¾S	21½
Calf of Man to the Mull of Galloway	NNE	37
——— Copeland light	North	45
——— the North and South Rocks	NbW½W	29
——— Carlingford lighthouse	WNWnorly	45
——— Drogheda	W¾N	53
——— Howth head, or Dublin-bay,	WbS½S	57
——— through the Channel between the Smalls and Irish coast	SW¾S	—
——— the N. W. buoy of the Hoyle-sands	SSE¾E	67
——— the revolving light on the S. end of Walney-island	SEbE¼E	60
Maughall-head to the Table or Bar-land of Anglesea	SbW¼W	59
——— Great Ormshead	S¾W	60
——— N. W. buoy of Hoyle-sands	SbE	61
——— light of Walney-island	SE	45
——— St. Bee's-head	East	30
——— Point of Ayr	NbE¾E	8½
Point of Ayr to Workington (entrance)	E¾S	34
——— Whitehaven	EbS¾S	41

	Compass Bearing.	Sea Miles.
Point of Ayr to St. Bees'-head	EbS½S	29
Walney island lighthouse	SEbS	49
N. W. buoy of Hoyle-sands	S¾E	72
the road of Ramsey	SSW½W	6
Mull of Galloway to the Calf of Man	SSW	37
the Point of Ayr	SSE¾E	22
St. Bees'-head	SE¾E	46½
Whitehaven	SEbE	48
Workington	SEbE½E	49
Copeland light to the Maids or Maiden Rocks	North	17
the Mull of Cantire	N¼E	40
Plada-island and light	NE¾N	47
Elsa-rock, or Perch of Clyde	NE½N	26½
Port Patrick light	E½N	13
Mull of Galloway	SE¼E	19
Point of Ayr	SE½S	41
Calf of Man	South	45
Mull of Cantire to the N. E. point of Raughlin-island	NW½W	12½
the Maids, or Maiden rocks	SbW	21
Port Patrick	SbE	38
Sana-island	SE¾S	4
Sana-island to the isle and lighthouse of Plada	East	20
Elsa-rock, or Perch of Clyde	SEbE¾E	17
Ayr	EbS	35

THE COASTS OF IRELAND.

WESTERLY VARIATION 27 TO 28½ DEGREES.

	Compass Bearing.	Sea Miles.
DUBLIN BAR to the outside of the banks	SE	18
Along the outside of the banks to the Tuskar-rock	SW¾S	67
Tuskar-rock to the Black-rock and Barrels	West	10
Kunnybeg-rock off the Saltees	West	27
Kunnybeg-rock to Waterford-harbour (Hook-light)	NWbW	14
Hook-point of Waterford to Helwick-head, or Dungarvon-bay	WbN	20
Ballycotton-point	West	43
Ballycotton-point to Poor-head	WbN½N	6
Poor-head to Cork-harbour	NW½W	4
the Old-head of Kinsale	W½S	16
Old-head of Kinsale to Kinsale-harbour	NE¾N	4
to Cape Clear	WbN	41
Cape Clear to Mizen-head	NWbW	12
the N. point of the Scilly islands	SSE½E	147
Lundy-island	SEbE¾E	181
the Smalls lighthouse	ESE¾E	148
Mizen-head to the Grelagh-rocks	NW¾W	16
Bull-rock off Dursey-island	NW¾N	24
West entrance of Bear-haven nearly	North	13
Bull-rock off Dursey-island to the Skelligs or Skellock-rocks	NbW¾W	18
Skelligs to the Foze-rock, off the Blaskets	NbE¾E	15
The Blaskets (*Tiraght R.*) to Loop-head, N. side of the Shannon	ENE	35
the S. E. point of the Isles of Arran	NEbE	65
the Skirds, or Skird-rocks	NE½N	70
Slyne-head	NEbN	79
Loop-head lighthouse to the N. W. point of the Isles of Arran	NE½N	43
the Skirds	NNE½E	50
Slyne-head	NbE¾E	65
S. E. point of the Isles of Arran to Black-head	East	12
Black-head to Galway-harbour	E½N	10
Slyne-head to Ennis-shark	NbE½E	11
Ennis-shark to Achil-head	NEbN	22
the Black-rock	NNE	28
Black-rock to St. Kilda	NE	253
Barra-head (S. point of the Lewises)	ENE½N	187
Eagle-island	NE½E	15
Eagle-island to Urris-head	E½S	8
Urris-head to the Stags of Broadhaven	E½S	8
Tory-island	EbN¼N	85

	Compass Bearing.	Sea Miles.
Urris-head to Aitkin's-rock —— about—	NbE¾E	61
Stags of Broadhaven to Sligo Bay —— —	SEbE	41
——into the upper part of Donegal Bay —— —— —— —— ——	EbS½S	55
——to Tillen Head or Cape Telling	E¼S	38
—— North Arran Island —— —	EbN	54
—— Tory Island —— —	EbN½N	74
Tillen Head or Cape Telling to Sligo Bay —— —	SbW	22
—— North Arran Island —	NE½E	21
North Arran Island to Tory Island —— ——	ENE¼N	21
Tory Island to the entrance of Loch Swilly — —	SEbE¾E	21
—— Malin Head —— —— ——	EbS¾S	28
—— the Island Insterhol —— ——	EbS	36
Insterhol to the entrance of Loch Feoyl or Londonderry —— —— —— ——	SbE	17
——the Skerries —— —— ——	SEbS	25
——Bengore Head — — — — —	SE	80
——Raughlin Island —— —— —	SEbE	36
Entrance of Loch Feoyl to Raughlin Island — —	EbS	27
——the Skerries —— ——	ESE	12
Course between Raughlin Island and the main ——	SE½E	6
N. E. point of Raughlin to the Maiden rocks — —	SbE	28
Maiden rocks to Copeland light —— ——	South	19
Copeland light to Carrickfergus —— ——	NWbW	13
—— the North and South rocks S. S. W. ½ W. and —— —— —— —— ——	SbW½W	19
Carrickfergus to Belfast —— —— ——	SWbW	9
North and South rocks to Patrick rock off Strangford Loch —— —— —— —— ——	WSW¼W	7
Patrick rock to St. John's Point —— ——	W¼S	7½
St. John's Point to Loch Carlingford light — —	WSW¼W	18
Carlingford lighthouse to Drogheda bar —— ——	SW¼W	
—— the east side of Lambay island —— —— ——	SSW¼S	17½ 30
East side of Lambay island to Howth-head lighthouse on the N. side of Dublin bay —— ——	SW	7½

THE WESTERN COASTS AND ISLANDS OF SCOTLAND.

WESTERLY VARIATION 28 AND 29 DEGREES.

	Compass Bearing.	Sea Miles.
Mull of Cantire to the N. E. point of Raughlin island	NW½W	12½
—— h: Mull of Kinho (S. end of Ila)	NbW¼W	24
—— Oronsa or Point of Runs — —	NbW½W	36
—— entrance of the Sound of Ila ——	NbE	33
Courses through the Sound of Ila —— N. ½ E. to	NNE	7
Mull of Kinho or south end of Ila to the N. E. point of Raughlin island —— —— ——	SbW¼W	16½
—— to Insterhol ——	WbN	38
S. W. point of Ila (Runs) to the rocks Duhaertoch —	NbE½E	24
—— the rocks of Turry ——	N¾W	35
—— the Skerivore rocks ——	N½W	35½
—— Barra Head — nearly	N¼W	71
—— the S. point of Tiri —	N¼E	44
Barra Head to the rocks of Turry —— ——	South	36
——Skerivore —— ——	S¼E	35½
——Boynshly —— ——	SbE	33
—— to the south end of Tiri —— ——	SSE	30
—— the Carns or north end of Coll ——	SE¾E	40
Carns of Coll to Tobermory —— ——	SE	13
Barra Head to the western rocks of Hyskere — —	NNE½E	40
—— Mills's rocks or breakers* — ——	East	25
—— the eastern Hyskere —— —	EbS	32
—— the west end of Rum island ——	E¾S	41
—— the west end of Cona —— ——	E½S	37
—— Capnahow head (W. side of Sky) —	ENE	46
West end of Cona to Friskey island —— —	NWbW¼W	22
—— Loch Eynort in S. Uist ——	NW½N	23
—— Ushenish head — —	NNW¼W	23
—— Rona island —— ——	N¾W	30
—— Loch Namady —— —	North	36

* These rocks are dangerous, although omitted in several charts of the Lewises, and discovered so long since as 1731.

	Compass Bearing.	Sea Miles.
West end of Cona to Capnahow head	NbE½E	21
Ushenish Head (S. Uist) to Dunvegan Head	EbN¾N	20
——— Capnahow Head	E½S.	16
——— Loch Eynort, in Sky	SEbE½E	26
Dunvegan Head to Loch Namaddy	NW	12
——— the isle of Scalpa or Glash light-ho.	NE½N	20
——— the Shant islands	NEbE.	25
——— the W. end of Cona	SbW½W	29
Isle of Glash or Scalpa to the Shant islands	EbS	9
——— the Skerinoe rocks	SEbS	3½
——— Loch Gerloch	SE	29
——— Ru Rea or Rea head	SEbE½E	28
Shant islands to Bible head	NE	20
——— Cape Wrath	ENE¾E	63
——— Loch Hinshort	EbN¼N	54
——— Stower head	E½N	37½
——— More head	E¼S	34
——— Priest island	ESE¼S	31
——— Ru Rea or Rea head	SEbE	19
——— Dunvegan head	SWbW	26
Ru Rea or Rea head to Cape Wrath	NE¾E	55
Ru Rea or Rea-head to Stower head	NEbE	27
——— Teumpan head	NE	27
——— Tolsta head	N¾E	34
Teumpan head to Tolsta head	NNE¾E	6½
Tolsta head to the Butt of the Lewis	N. ½ E. and NbW	11
Butt of the Lewis to Gallen head	WbS	33
——— St. Kilda	W¾S	83
——— the Flannen islands	W¼N	43
——— Barra or Sulisker	NE¼N	36
——— Cape Wrath	EbS½S	41
——— Loch Hirshort	SEbE	38
——— Stower head	SEbS	34
Gallen head to the Flannen islands	NW¾W	13
Flannen islands to St. Kilda	W¼S	40
Cape Wrath to the Stack and Skerry	ENE	28
——— the Foul Skar, (a half-tide rock)	NbW½W	9
——— Barra or Sulisker	NNW	45
——— the Butt of the Lewis	WbN½N	41
——— Bible head	WbS	45
——— the Shant islands	WSW	63

SECTION III.—THE NORTH SEA, KATTEGAT, SOUND, BALTIC, GULF OF FINLAND, AND NORTHERN NAVIGATION TO THE WHITE SEA.

RIVER THAMES NORTHWARD ALONG THE NORTH-EAST COAST OF ENGLAND.

WESTERLY VARIATION 24½ to 25½ DEGREES.

	Compass Bearing.	Sea Miles.
London Bridge to the Nore-light	Various	41
Nore-light vessel, to a fairway between the Blacktail beacon and buoy of the Mouse	E¾N	8½
Blacktail-beacon to the buoy of the Mouse	EbS½S	3¾
——— Shoe-beacon	E¾N	3
——— Shoe-beacon, in a fair-way course, E. ½ N. to	EbN.	5½
Buoy of the Mouse to the Shoe-beacon	NEbE.	2¾
Shoe-beacon to a fairway between the buoy of the Middle and Whitaker-beacon	NE¼E.	5½
Whitaker-beacon to the black buoy of the Middle	SbE½E	1½
——— buoy of the Heaps	E½S	5½
Black-buoy of the middle to the Gunfleet-beacon, on a fairway course	EbN	10
Gunfleet-beacon to its black-buoy *course*	NEbE¼E	5
Black-buoy of the Gunfleet, to the S. E. part of the west rocks	NEbE	2¾
——— the red-buoy of the Rough	NE½E	5½
——— Hosley-bay—*Fair-way course*, first N. E. by E. ¼ E. 4 m. then N. E. 2½ m. and	NbE¼E	7
——— Long-sand head	SE¾S	7½
East part of the west rocks to the E. end of the Cork-sand	N½W	2
Sunk light-vessel to the Gunfleet beacon	WNW	5¼
——— Black-buoy on the Gunfleet	NbW	4
——— Buoy on the Rough	NNE	6¾
——— Buoy on W. end of Baudsey Sand	NNE¾E	12¼
——— Orfordness	NE¾N	20
——— the buoy on the S. end of the Shipwash	NE¾E	8½
——— the Longsand-head	E SE	4¼
Hosley-bay, to a fairway between the buoy of the Whiting and Orfordness	EbN. nly	
Leading-mark—Low-light open to the N. E. of the high-light		
Hosley-bay to Sea, from the whiting-buoy, S. E. by E. or	East	
Course in a fairway between Aldbro' Knapes and Shore	NEbE¼E.	
Leading-mark, Orford-lighthouses in one.		
Orfordness to Southwould—Courses, N. E. by E. ¾ E. 6 m. and	NNE	9
——— Eastness—Courses, N. E. by E. ¾ E. 6m. and	NNE¾E	12
——— Lowestoffe or Stanford passage, N.E. by E. ¾ E. 6½m. and	NEbN	17½
——— N. end of the Garbard	SE¾E	10½
——— S. end of Aldborough Knapes	E¾N	6½

	Compass Bearing	Sea Miles.
Orfordness to S. end of Sizewell Bank	NE¼E	6½
——— S. end of the Barnard	NE	18½
——— S. end of the Barnard to the Holm-head	NE½N	5
Holm-head into the Stanford-passage	N¼E	0¾
Leading-mark—Lowestoffe lights in one.		
Stanford passage to Yarmouth-town Jetty	NNE	7
Yarmouth Jetty to a fairway off the buoy of the Cockle	NEbN⅛E	4¾
Leading-marks—The southernmost mill on Yarmouth denes, (painted white) and Gorlestone old steeple in one. With the ebb, Yarmouth-church on with the North Battery (see page 122.)		
Buoy of the Cockle to the Fairway-buoy	N¼W	1
Fairway-buoy to Wintertonness	NNW	3¼
Wintertonness to Newarp floating-light	ESE	6½
——— Hasborough	NNW	7½
——— the buoy on the S. end of Hasborough sand	ENE½N	8½
——— Foulness or Cromer	NbW¼W	19
Newarp floating-light to Yarmouth steeple	SWbW	8¾
——— Winterton Church	WbN	6½
——— Hasborough lights	NW¼N	12
Hasborough Gatway—Course in from Sea	NW¼W	
Leading-mark—Hasborough-lights in one.		
Foulness to Blakeney Harbour—Fairway course	NNW½W	15
——— the Leman and Ower	EbN	27
——— the Dudgeon light-vessel	North	24
——— the N end of the Inner Dowsing	NNW¼W	36
——— the Spurn point and light, N. N. W. 2 m. and	NNW½W	39
——— Flamborough head	N¾W	87
Dudgeon light to N. end of the Inner Dowsing	NWbW	13½
——— Blakeney	SbW	18
——— the Spurn point and lights	NWbN	36
——— Flamborough head	NbW	64
Spurn point to N. end of the Inner Dowsing	SbE½E	20
——— Flamborough head from a proper offing	N¾E	35
Flamborough Head to Filey Brig	NNW	5½

	Compass Bearings.	Sea Miles.
Flamborough Head to Whitby	NbW½W	28
——— Tinmouth Castle	NbW¼W	81
——— Buchanness	N¾E	210
Filey Brig to Scarborough	NNW¼W	6
Scarborough to the S. cheek of Robin Hood's bay	N¾E	7½
——— Whitby	North	14
South cheek of Robin Hood's bay, to Whitby	N¾W	7
Whitby to Huntcliff—N. N. W. 7m. and	NWbW½W	6
——— Hartlepool—N. N. W. 7m. and	NW	17
——— Tinmouth	NbW¼W	43
Huntcliff to Hartlepool	NWbN	11
——— Suter Point	N¾W	27
Hartlepool to Sunderland lighthouse	N¾E	14
——— Suter Point	NbE	18
Suter Point to Tinmouth Castle	N¼W	6
Tinmouth to Blythe	North	7
——— Coquet Island—Courses, N. by W. ¼ W. 4 m. and	North	10
——— Aberdeen	NbE¼E	130
——— Buchanness	NbE¾E	149
Coquet Island to Alnmouth	NW	4
——— Sunderland Point	N¾W	15
——— the Staples' light-house	N¾E	19
——— Aberdeen	NbE¼E	110
——— Buchanness	NNE	128
From without the Staples to Emanuel Head	NW	7
——— to Berwick	NW¾N	16
——— to St. Abb's Head	NNW	22
——— to the May	NNW½N	44
——— to Fifeness	NbW⅝W	48
——— to Tay Bar	NbW	58
——— to the Bell Rock	N¾W	54
——— to the Redhead	North	69
——— to the Todhead	N¼E	82
——— to the Girdleness	NbE½E	95
——— to Buchanness	NNE	116
Berwick to St. Abb's Head	North	9

THE EAST AND NORTH COASTS OF SCOTLAND, ORKNEYS, AND SHETLAND*.

WESTERLY VARIATION 26 TO 28½ DEGREES.

	Compass Bearings.	Sea Miles.
St. Abb's Head to Dunbar	NW½N	14
—— to the South Carr	NW¾N	18
—— to the Bass	NWbN	20
—— to the May	NbW½W	22
—— to Fifeness	N¾W	26
—— to Tay Bar	N¼W	37
—— to the Bell Rock	NbE	32
—— to the Redhead	N¾E	44
—— to the Todhead	NNE	57
—— to Girdleness	NNE½E	63
—— to Buchanness	NEbN	96
Dunbar to the Bass	NNW	6
—— to the May	NbE½E	10
The Bass to Craig Leith	NWbW½W	2½
—— to Fidra	NWbW½W	4½
—— to Inchkieth	WNW and WbN	17½
—— to Weem's Castle	NW¼N	15
—— to the Ellyness	NbW¾W	9
—— to the May	NE½E	7
The May to Fidra	WbS¼S	9½
—— to Gullenness	WbS¼S	11
—— to Inchkieth	W¾N	22
—— to Kinghornness	W½N	23
—— to Weem's Castle	WNW	17½
—— to the Ellyness	WNW	8½
—— to Fifeness	NbE½E	5
—— to the North Carr	NNE¾E	6
—— to the Redhead	NNE¾E	25
—— to the Bell Rock	NE	15
The north end of Inchkieth to Leith Pier	SW	4
—— to Leith Roads	WSW	3¼
—— to Incheolm	WbN½N	6
The north end of Inchkieth to North Ferry Point	WbN	10
—— to Burnt Island	NW	4
—— to Kinghorn	N¼W	2½
The North Carr to Barbetness	NWbN	4
—— to Tay Bar	N¾E	9½
—— to Arbroath	NNE	16
—— to the Redhead	NNE¾E	19
—— to the Bell Rock	NEbE	9½
Barbetness to St Andrew's	NW½W	4
—— to Tay Bar	NbE¼E	7
—— to the Redhead	NE¾N	18
Tay Bar to Arbroath or Aberbrothic	NE¾E	7
—— to the Redhead	NEbE	11
—— to the Bell Rock	SEbE½E	9
The Redhead to Montroseness	NE	6
The Redhead to the Todhead	NE¾E	17
—— to the Bell Rock	S¾W	10½
Montroseness to the Todhead	NEbE	11
The Todhead to Stonehaven	NE&NNE	6
—— to the Girdleness	NE	17
—— to Buchanness	NE¾E	41
The Girdleness to Newburgh	NE¾N	11
—— to Buchanness	NE¾E	24
Newburgh to Buchanness	ENE&NE	13
Buchanness to Peterhead	NNE½E	2
—— to Ratrie Brigs	NNE	8
—— to Nosshead in Caithness	NNE and NbW½W	75
—— to Duncansby Head	NNE and NbW	84
—— to Pentland Skerries	NNE and N¾W	84
—— to Copensha	NNE&N	90

* All the Bearings and Distances of Places, between the Staples and Duncansby Head, are here given as ascertained by the excellent surveys of Mr. Murdo Downie, which are published by the Proprietor of this work.

MAGNETIC COURSES AND DISTANCES.—EAST OF SCOTLAND.

	Compass Bearings.	Sea Miles.
Buchanness to Fairisle	NNE¼E	120
—— to Sunbro Head in Shetland	NNE¾E	142
Rattrie Head to Kinnaird's Head	NbW½W and WNW	8
—— to the Ordhead of Caithness	NbW¾W and NW¾N	65
—— to Clythness	NbW½W and NNW	63
—— to Nosshead	NbW½W	67
—— to Duncansby Head	NbW	76
—— to Pentland Skerries	N¾W	76
—— to Copensha	N½E	80
—— to Fairisle	NNE¾E	112
—— to Sunbro Head in Shetland	NNE¾E	155
Kinnaird's Head to Troup Head	WNW	9
—— to Cullen	WNW¼N	27
—— to Cowsy Point	NWbW½W	41
—— to Burgh Head	NWbW½W	48
—— to Cromarty	NWbW½W and WbN¼N	63
—— to Tarbetness	NW¾W	58
—— to the Ordhead	NW¾N	58
—— to Clythness	NNW	55
—— to Nosshead	NbW¼W	61
—— to Duncansby Head	N¾W	69
—— to Pentland Skerries	N¼W	69
—— to Copensha	N½E	74
—— to Fairisle	NNE¼E	108
—— to Sunbro Head	NEbN	132
Troup Head to Cullen	NWbW½W	18
—— to Cowsy Point	NWbW¼W	32
—— to Burgh Head	NWbW½W and WbNN	39
—— to Cromarty	NWbW½W and WbN¼N	54
—— to Tarbetness	NW¾W	49
—— to the Ordhead	NWbN¼N	50
—— to Clythness	NbW¼W	49
—— to Nosshead	N½W	54
—— to Duncansby Head	North	63
—— to Pentland Skerries	N¼E	63
—— to Copensha	NbE	72

	Compass Bearings.	Sea Miles.
Troup Head to Fairisle	NEbN	109
—— to Sunbro Head	NE¾N	133
Cullen to Cowsey Point	NWbW½W	14
—— to Tarbetness	NW¼W	32
—— to the Ordhead	NNW½N	56
—— to Nosshead	NbE¼E	47
—— to Duncansby Head	NbE½E	57
Cowsy Point to Burgh Head	WbN½N	7
—— to Cromarty	WbN¼N	22
—— to Tarbetness	NW¾N	19
—— to the Ordhead	North	27
—— to Clythness	N¼E	35
Burgh Head to Cromarty	WNW	15
—— to the Three Kings	NWbW	12
—— to Tarbetness	NbW¼W	14
—— to the Ordhead	NbE½E	27
Cromarty to Fort George	WSW	6
—— to the Three Kings	E½N	3
—— to Tarbetness	NE¼E	12
—— to the Ordhead	NE¾E&NE	29
Tarbetness to the Ordhead	NE	17
—— to Clythness	NEbE¼E	31
The Ordhead to Clythness	ENE¼E	15
Clythness to Nosshead	NEbE and NE½N	11
Nosshead to Duncansby Head	NNE¼E	10½
—— to Pentland Skerries	NE¼N	12
—— to Copensha	NE¾E	25
—— to Fairisle	NEbE¼E	73
—— to Sunbro Head	NEbE¾E	99
Duncansby Head to Pentland Skerries	EbN	3
—— S. end of Swona Island	NbE	5
—— N. end of Stroma Island	NbW¼W	4
—— St. John's Head	NW¾W	5¼
—— to Copensha	ENE¼E	15
—— to Fairisle	ENE	61
—— to Sunbro Head	NEbE, E	85

ORKNEY ISLANDS.

	Compass Bearing.	Sea Miles.
Pentland Skerries to South Ronaldsha	NbW	2½
——— Stroma Island	NWbW¾W	5
From a fair berth between the Skerries and Duncansby-head, to one between Stroma and Swona	North	
From between Stroma and Swona to the West part of the Frith	NW	
North end of Stroma to Dinnet Head in Caithness	WNW¾W	9½
S. E. part of South Ronaldsha to Copinsha	E¾N	12
——— Grimness	NNE½E	4¾
Grimness to Copinsha	EbS½S	10
——— Roseness	NEbE½E	2½
Copinsha to Fair Island	EbN½N	51
——— Mould or Moul Head	N½E	4
——— Auskery Island	NE½E	9½
——— Lamb Head—(Stronsa)	NE½E	12
Lamb Head to Start Point lighthouse	NEbE½E	15½
Start to Tresness	NWbN	6½
Start to Bridesness, on North Ronaldsha	NNE¼E	6¼
——— Reef Dyke	NE	5½
Bridesness to Dennis-ness light	NE¾N	3
Dennis-ness to Fair Island	EbS½S	31½
——— Mould-head, on Papa Westra	NWbN	18
Mould-head to Noup-head, on Westra	West	7
Noup-head to Marwick-head, Pomona	SWbW½W	19
Marwick-head to Hoy--head,—S. W. by W. ½ W. 4m. and	SW¾S	9
Hoy-head to the Stack	NW¼W	26
——— Cape Wrath	W½N	45
——— Roray-point	SW	3
Roray-point to Turness	S¼W	5
——— Dinnet-head	SSW	14½
Turness to Dinnet Head	SSW¾W	10
Dinnet-head to Strathy-head	WNW¼W	16
——— Cape Wrath	WNW	42

SHETLAND.

	Compass Bearing.	Sea Miles.
Suenberg or Sunbro-head to Mousa Island	NE¾E	10
Mousa Island to Brassa-head	NE¾N	7
——— Hangcliff	NE¾E	10
Hangcliff to the Outer Skerries	NE	19
Skerries to Clibberstack-Isle, N. E. of Unst Island	N¾E	19½
Scantness (S. part of Shetland) to Gross-Island	NW¾N	1[illegible]
Gross Island to Fula or Foul Island	NWbN	25
——— Westness	N¼E	24
Westness to Voe Skerries	N½W	8
——— Papa Island	NbE¼E	5
Papa Island to Ossa-Skerry	NNE½E	8½
Ossa-Skerry to Usa Island	NEbE½E	8
Uya Island to Ramna Stacks	ENE	4½
Ramna Stacks to Blommel or Blumel Sound	E¼N	11

From the N. E. of GREAT BRITAIN to different Places on the opposite Coasts of the NORTH SEA.

WESTERLY VARIATION—COAST OF BRITAIN 24½ to 28 DEGREES; OPPOSITE COASTS 24 to 20 DEGREES.

	Compass Bearing.	Sea Miles.
Orfordness to Dunkirk	South	68
——— Nieuport	SbE	70
——— Ostend	SbE¾E	70
——— West Capple	SE½S	74
——— Goree Gatway	SE¾E	86
——— the Texel, (south entrance)	East	122
——— the Naze of Norway	NE¾E	401
Lowestoffe to Dunkirk	S¾W	88
——— Nieuport	South	86
——— Ostend	S¾E	84
——— West Capple	SSE	82
——— Goree Gatway	SE¼S	87
——— the S. entrance of the Texel	EbS	107
——— Heiligeland or Holigiland	East	240

MAGNETIC COURSES AND DISTANCES.—NORTH SEA:

	Compass Bearing.	Sea Miles.
Lowestoffe to the Naze of Norway	NEbE	376
—— Bovenbergen	ENE	334
—— Skudesnœs-light, Norway	NE¾N	417
Foulness or Cromer to Buchanness	N½E	295
—— —— Shetland (S. point)	NbE¾E	419
—— Naze of Norway	NEbE¼E	356
Entrance of the Humber to the Texel (S. entrance)	SE¼E	162
—— Heiligeland	EbS⅓S	272
—— Bovenbergen	E¾N	330
—— the Naze of Norway	ENE¼E	357
Flamborough Head to the S. entrance of the Texel	SE¼S	177
—— Heiligeland	ESE	275
—— Bovenbergen	E¼N	315
—— The Naze of Norway	ENE¼E	332
—— Skudesnœs light, Norway	NEbE	348
Tinmouth to the S. entrance of the Texel	SE¾S	243
—— Heiligeland	SEbE	333
—— Bovenbergen	E¾S	335
—— the Naze of Norway	E½N	332
Berwick to Heiligeland	SE¼E	352
—— Bovenbergen	ESE½E	344
—— Naze of Norway	E⅘S	325
—— Skudesnœs light, Norway	EbN½N	313
May Island, off Edinbro' Frith, to the Naze of Norway	E½S	333
—— Skudesnœs light	E¾N	320
—— Heiligeland	SE¼E	376
Buchanness to the entrance of the Texel	SbE¼E	349
—— Heiligeland	SSE¼E	380
—— Naze of Norway	ESE¼E	282
Pentland Frith to the Naze of Norway	SEbE	324
Fair-isle to the entrance of the Texel	S¼E	442
—— Heiligeland	SbE¼E	443
—— Naze of Norway	SE	282
—— Skudesnœs light, Norway	SEbE¼E	210
Hangcliff, Shetland, to the entrance of the Texel	S¼W	468

	Compass Bearing.	Sea Miles.
Hangcliff, Shetland, to Heiligeland	SbE	452
—— the Naze of Norway	SE¾S	272
—— Skudesnœs light, Norway	SE	191
From the TEXEL and HEILIGELAND to different Places in the NORTH SEA.		
From a fair offing off the Texel to Heiligeland	E¼N	126
—— Bovenbergen	NEbE	250
—— the Naze of Norway	NE	305
Heiligeland to the Naze of Norway	NbE¾E	230
—— first buoy of the Eyder	ESE	24
—— red buoy of the Elbe	SSE¾E	20
—— first buoy of the Weser	SbW½W	21
—— the River Humber	WbN½N	272
—— Flamborough-head	WNW	275
—— May Island, Frith of Forth	NW¼W	376
—— Pentland Frith	NNW½W	450
From JUTLAND, &c. to different Places in NORWAY, the KATTEGAT, SOUND, and GROUNDS.		
WESTERLY VARIATION 20 TO 17½ DEGREES.		
Bovenbergen to the Naze of Norway	North	92
—— Flekkeroe, or entr. of Christiansand	NNE	82
—— Mardow or entr. of Arendal	NE¼N	107
—— Skeen Fiord	NE	148
—— Fœder island	NE½E	160
Naze of Norway to Flekkeroe — SEbE½E and	East	33
—— the Skaw	SEbE½E	113
Flekkeroe to Fœder Island	ENE¼E	96
Skaw-reef to Fœder Island	NbE¾E	78
—— the Paternosters	E¾N	27
—— Marstrand castle	East	31
—— Wingoe beacon	SEbE¼E	34
—— the Niddingen Island and Lights	SE¼S	47
—— the Koll-point and Lights	SbE½E	103

	Compass Bearing.	Sea Miles.
Skaw-reef to the Trindelen	SSE½E	25
Trindelen to the Paternosters	NE6N	30
Marstrand castle	NE¼N	31
the Wingoe beacon	ENE½E	18
the Niddingen lights	SEbE	24
the Koll-point	SbE	7
the Knoben, or east point of Anholt-reef	S¾E	44
The Knoben, or east point of Anholt-reef to the Niddingen	NNE	32
the Koll-pt	SbE½E	33½
Paternosters to Marstrand	EbS	4
Wingoe beacon	South	16
Wingoe to the Niddingen lights	S½E	22
Niddingen to the Koll-point	S¾W	62
Koll-point to Cronborg castle nearly	South	17
Elsenure to Hveen or Ween island	South	7
the first buoy of the Grounds	S¾W	18½
Copenhagen road	SbW	18
the north end of Saltholm island	S¾W	22
Landscrona	SbE¾E	12½
East end of Hveen island to Malmo	SbE½E	21
First buoy of the Grounds to the second and third buoys	SbW¾W	3
Third buoy of the Grounds to Dragoe outer buoy	SbW½W	7½

Up the BALTIC, and from Place to Place to CRONSTADT.

WESTERLY VARIATION 17 TO 9 DEGREES.

	Compass Bearing.	Sea Miles.
Dragoe outer buoy to Falsterborn-reef	South	13
Moen island, (Speyl-cliff)	SSW	3¾
Steffen's head, or Steeden-point	SW	15
Falsterborn-reef to Moen island, (Speyl-cliff)	SW½S	21
N. point of Rugen island	SbE	45
Colberg	SE½S	122
the S. end of Bornholm	SEbE	68
the N. end of Bornholm ESE and	EbS½S	70
Bornholm, N. end, to the Bartholme	EbS¾S	16½
Bornholm, N. end, to Sandhammer-point	NWbW½W	25
the S. point of Oeland	NEbE½E	77
the S. point of Gottland	ENE	150
Windau	EbN¼N	255
Libau	E¾N	218
Memel	E¾S	212
Pillau	SEbE¾E	177
Reserhooft or Rose-head	SEbE½E	122
Bornholm, S. E. end, to the W. point of Rugen island	W¾S	55
Stettin-bar	SW¾S	69
Colberg	S¾E	52
Reserhooft or Rose-head	ESE¼E	107
Memel	E¾S	201
Libau	E¾N	216
Windau	EbN½N	256
the S. end of Gottland	NEbE	156
the S. point of Oeland	NE	85
Moen island to Rugen island (nearest points)	SE¾S	34
Rugen island, N. point, to Stettin-bar SE 12m. and	S½E	41
Colberg	SE¼E	80
Reserhooft or Rose head	EbS	161
Reserhooft or Rose-head to the Heel of Dantzic	SE½S	21
Heel of Dantzic to Dantzic-bar	SW¾W	12
Pillau	ESE	38
Memel	ENE	102
Libau	NE¼E	137
Windau	N¼N	193
Gottland, S. end	NbE	158
Pillau road to Memel, Courses NbE¾E 20 m. and	NE½E	64
Memel to Libau Courses N¼E 40 m. and	NE	12½
Libau to Windau Courses N½E 25 m. and	NE¾E	56½
Windau to Domesness Courses NbE½E 16 m. and	E¾S	30
the Oesel light NbE¾E 16 m. and	NEbE½E	20
Domesness to Riga bar	S½E½E	6
Runo island	EbS	19
the Oesel light	NW¾W	18

MAGNETIC COURSES AND DISTANCES.—WHITE SEA.

	Compass Bearing.	Sea Miles.
Runo island to Riga-bar — — —	SbE	48
Windau to Filsand island, off the W. part of Oesel —	NNE	58
Filsand island, or the W. part of Oesel, to Dager-Ort	NNE½E	33
Windau to the S end of Gottland — —	West	104
—— Oeland — —	W½S	179
S. end of Oeland, along shore, to the N. end —	NE¼N	72
N. end of Oeland to Landsort, or entrance of Leith of Stockholm — — —	NNE¾E	85
—— the S. end of Gottland —	SEbS	43
S. end of Oeland to the S. end of Gottland —	EbN¼N	62
S. end of Gottland to Ostergarnsholm — —	NE½E	36
Ostergarnsholm to the N. end of Gottland or Faro —	NEbN	34
—— Windau — —	EbS½S	77
—— Domesness — —	E½S	112
—— Dager-ort — —	NEbE¼E	129
Dager-ort to Sybro or Simpereness — —	EbN	20
Sybro-ness to Odensholm light — —	EbN	27
Dago island to Nargen island, in a fair-way —	EbN	78
Nargen island to Kokskar, in a fair-way — —	East	15
—— the N. end of Hogland, island —	EbN	77
North end of Hogland to the Stone Ground —	E½S	27
Stone Ground to Seaskar-reef — —	ESE	12
Seaskar reef to the Tolbeacon — —	EbS	39
Tolbeacon to Cronstadt, or the port of Petersburg —	SEbE	6½

ENGLAND to the WHITE SEA.	Compass Bearing.	Sea Miles.
WESTERLY VARIATION from England to latitude 63°, 25 to 28 degrees; latitude 63° to that of 67°, three points the greatest; latitude 67° 30′ to 69° decreases to one point and a half; 69° to 70° one point; 70° to the North Cape three quarters of a point; thence into the White Sea to about 4 degrees.		
As the Sailing Directions given in the body of the work will be found sufficiently explanatory of the general Courses to the North Cape, no addition becomes requisite here. For the completion of this part we require only the particular Courses and Distances to the eastward of the North Cape, which are as follow:		
From the North Cape to a berth off the North Kyne	EbS¼S	33
North Kyne to a fair way off Cape Sweetnose —	SEbE	284
From a good berth off Cape Sweetnose to Lambascho islands — — — —	SE	35
Lambascho isles to Cape Orlogenose SSE 8 m. and	SE	18
From abreast of Orlogenose to the entrance of the river Ponoi — — — —	S&SbW	15
Thence to within sight of Cross island — —	SW	36
From a berth off Cross island to Catnose or Blue point SWbS and	SSW	20
Catnose, or Blue point, to the bar of Archangel SSE &	SEbS	32
Cross island to Cape Donega — —	SW	120

A NEW TABLE

Of the DISTANCES by Water, in Nautic, or Geographic, Miles, from LONDON to the Principal Ports, &c. of GREAT BRITAIN, IRELAND, the Continents of EUROPE and AMERICA, the WEST INDIES, &c., &c.

GREAT BRITAIN.	Dist.
SOUTHWARD.	
MARGATE	64
Dover	91
Shoreham	160
Portsmouth	192
Poole	229
Weymouth	245
Topsham	289
Dartmouth	294
Plymouth	314
Falmouth	346
Lizard Point	350
Penzance	367
Bristol	530
Milford Haven	477
Liverpool	648
Whitehaven	659
Glasgow, by way of the Channel	757
——— by canal from Leith	459
NORTHWARD.	
Harwich	88
Ipswich	96
Yarmouth	122
Lynn	198
Hull	232
Scarborough	255
Whitby	269
Stockton	301
Newcastle	318
Berwick	366
Leith	415
Aberdeen	438
IRELAND.	
Dublin	589
Waterford (Town)	515
Cork (Town)	528
Kinsale	516
Limerick	694
Galway	709
Londonderry	748
Belfast	672
Newry	622
FRANCE.	
Brest	423
Morlaix	353
St. Maloes	341
Jersey—*(St. Helier.)*	316
Guernsey	278
Cherbourg	234
Havre-de-Grace	213
Dieppe	163
Boulogne	115
Calais	98
FLANDERS, &c. to the WHITE SEA.	
Dunkirk	107
Nieuport	118
Ostend	123
Flushing	147
Antwerp	166
Rotterdam	198
Amsterdam	292
Hamburg	421
Bergen (Norway)	619
Christiansand	523
Drontheim	912
Archangel	2032
KATTEGAT, BALTIC, &c.	
Christiana	619
Gottenburg	599
Elsinore	685
Copenhagen	706
Stettin—(Town)	863
Colberg	856
Dantzic	969
Pillau	983
Memel	1028
Riga	1180
Stockholm	1109
Revel	1216
Narva	1319
Wyburg	1316
St. Petersburg	1378
SOUTH of EUROPE, AFRICA, ASIA.	
Ferrol	786
Lisbon	1098
Cadiz	1322
Gibraltar	1379
Carthagena	1618
Naples	2372
Constantinople	3244
Madeira—(Funchal)	1556
Azores—(St. Michael)	1620
Cape de Verde Islands—(St. Jago)	2663
Cape of Good Hope	6640
Bombay—(by inner passage)	11210
Madras	11585
Calcutta	12160
Prince of Wales's Island	11916
Canton	13400
Port Jackson, New South Wales	13570
AMERICA.	
Newfoundland—(St. John's)	2235
Halifax	2680
Boston	3154
New-York	3375
Baltimore	3694
Charleston	3905
New Providence—(Town)	4166
Havanna—(through the old channel)	4515
Jamaica—(Port Royal)	4760
Barbadoes	3855
Surinam River—(entrance)	4220
Rio de Janeiro	5315
Cape Horn	7665

GENERAL RULES for finding the GOLDEN NUMBER, LEAP-YEAR, the EPACT, and MOON'S AGE; also, the MOON'S SOUTHING and the TIME of HIGH WATER on every Day in the Year.

GOLDEN NUMBER.

THE CYCLE OF THE MOON, or LUNAR CYCLE, is the period of 19 years in which the new and full moons return to the same day of the Julian year, although nearly an hour and a half sooner. Any particular year of this Cycle is expressed by a number which, from its great use in the calendar, is called the GOLDEN NUMBER, and which is found by the following

RULE.

Add 1 to the given year, and divide the sum by 19; the remainder will be the Golden Number: but, if nothing remain, the Cycle is out; that is, 19 is the Golden Number.

EXAMPLE.—Required the Golden Number for 1810?

By adding 1 to the given year, you have 1811; this, divided by 19, gives 95 for the quotient, and the remaining 6 is the Golden Number for 1810.

BISSEXTILE, or LEAP-YEAR.

BISSEXTILE, or LEAP-YEAR, is a year consisting of 366 days, and happening every fourth year, by the addition of a day in the month of February, which in that year consists of 29 days. This is done to recover the six hours, which the sun nearly takes up in his course more than the 365 days commonly allowed for it in other years.

But it is to be observed that, in four years, the Bissextile adds 44 minutes more than the sun spends in returning to the same point of the ecliptic. Therefore, in 133 years, these supernumerary minutes form a day; and, in consequence, in the course of 400 years, three Bissextiles are retrenched; so that every centesimal year, which would otherwise be a leap-year, is a common year; unless the number of centuries can be divided by 4 without a remainder. So 1600 and 2000 are Bissextile; but 1700, 1800, and 1900, are common years.

RULE.

Divide the number of the year by 4; then, if 0 remain, it is Leap-year; but, if 1, 2, or 3, remain, it is so many after Leap-year.

EXAMPLE.—What is the year 1810?

1810 divided by 4, leaves a remainder of 2. This shows that the year is the second after Leap year.

THE EPACT.

THE EPACT is the excess of the solar year above the lunar year, or of the solar-month above the lunar synodic month, which consists of 29 days, 12 hours, 44 minutes, &c. The difference between the solar and lunar year is, therefore, 11 days nearly.

THE RULE for finding the EPACT FOR YEARS, until the year 1900, is as follows:

Divide the given year by 19, the remainder multiply by 11, and the product will be the Epact, if it does not exceed 29; but, if it does, subtract 30 from it, and the remainder will be the Epact.

Or, add 11 to the Epact for the preceding year, and subtract 30 whenever you can.

EXAMPLE.—What is the Epact for 1810?

```
19)1810(95
   171
   ---
    100
     95
    ---
      5  Remainder.
Multiply by 11
    ---
     55
Subtract  -  30
    ---
     25  Answer, or Epact for 1810?
    ---
```

The annexed Table contains the EPACTS corresponding to the GOLDEN NUMBERS till the year 1900; so that the Golden Number being known, the Epact may be found by inspection.

Golden Numb.	Epacts	Golden Numb.	Epacts	Golden Numb.	Epacts
1	0	8	17	15	4
2	11	9	28	16	15
3	22	10	9	17	26
4	3	11	20	18	7
5	14	12	1	19	18
6	25	13	12	1	0
7	6	14	23		

MOON's AGE.

RULE *for finding the Moon's Age on any given Day.*

To the Epact for the year, add the Epact or Number for the Month and the day of the month. The sum, if it do not exceed 30 is the moon's age; but, if it do, subtract 30 from it, and the remainder is her age.

The Epacts, or Number for each Month, are as follow:

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
In common Yrs.	0	2	0	2	2	4	4	6	7	8	10	10
In Leap-Years	0	2	1	3	3	5	5	7	8	9	10	1.

EXAMPLE.—Required the Moon's Age on the 14th of August, 1810?

```
To the Epact - - - - - - - 25
Add the number for the month  6
And day of the month - - - 14
                            ---
                            45 Sum.
Subtracting  -              30
                            ---
Leaves - - -                15 Answer, or Moon's Age.
                            ---
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MOON'S SOUTHING.

RULE for finding the Moon's Southing, or time when on the meridian.

Multiply the moon's age by 8, and cut off one figure to the right hand; the left hand figure or figures will be hours, and the right hand figure so many six minutes.

Note.—Should the time thus found be less than 12 hours, it is the time of southing after mid day; but, if greater, then 12 hours subtracted from it, leaves the southing after mid-night, that is, on the following morning.

EXAMPLE.—At what Time will the Moon be on the Meridian upon the 21st of August, 1810?

The moon's age, as found by the preceding rule, is 22 days.

Multiplied by	8
Is - - -	17.6
Deducting -	12.0
Gives - -	5.6

The moon, therefore, souths or passes the meridian at nearly 5 hours 36 minutes in the following morning.

TO FIND THE TIME OF HIGH WATER.

By HIGH WATER is meant that state of the tides when they have flowed to their greatest height, or have ceased to flow or rise. The times of high water of every day of the moon's age, are usually computed from that which is observed on the days of full and change, as given in the tide-tables in this work. And hence the time of flowing on any particular day may be nearly ascertained by the following

RULE.

To the time of the moon's southing on the given day, add the time of high water on the full and change; the sum is the hour past noon when it is high water. Should this sum exceed 12 hours, subtract 12 hours 24 minutes from it, and the remainder shows the time of high water in the morning; but if it exceed 24, subtract 24 hours, 48 minutes, from it, and the remainder shews the time of high water in the afternoon.

EXAMPLE.—At what time will it be high water at the North Foreland on the 21st of July, 1810?

Moon's southing by preceding rule - - - - -	4h.	0m.
High water at the North Foreland, full and change	11	15
Sum -	15	15
Deducting, as per rule - - -	12	24
Gives the time in the morning -	2	51

The foregoing is the rule generally used for finding the time of high water; although in some cases, its results vary considerably from the truth. For the more precise rules, the reader is referred to the "Improved Practical Navigator," by Mr. N. Bowditch; London, 1806; in which will be found all the tables requisite both for this and the other purposes of navigation, more correct than in any work of a similar nature heretofore published.

To FIND the LATITUDE of a SHIP at SEA, or of a PLACE on SHORE, from the OBSERVED ALTITUDE of the SUN, when on the Meridian.

RULE.—To the observed altitude of the Sun's lower limb add the difference between 16′, the *Sun's semi-diameter*, and the Dip of the Horizon, answering to the height of the observer's eye, taken from Table I. Their sum will be the apparent altitude of the Sun's centre; or, if the altitude of the Sun's upper limb be taken, the sum of the Sun's semi-diameter and dip must be subtracted from the observed altitude, to obtain the apparent altitude of his centre.

From the apparent altitude of the Sun's centre, subtract the *Refraction* answering to that altitude, taken from Table II. the remainder will be the Sun's altitude*. Now subtract the Sun's true altitude from 90° and the remainder will be the true zenith distance, which is north if the zenith be to the north of the Sun, or south if it be the contrary.

Next, take the Sun's declination from Table III. and note whether it be north

* When great accuracy is required, the Sun's parallax answering to his altitude must be added; but it is so trifling as to be seldom used in finding the latitude.

or south. If the ship or place be many degrees to the east or west of Greenwich, this declination should be reduced to the meridian of the given place by means of Table IV. as hereafter explained. Then, if the zenith distance and declination be both north or both south, add them together; but, if one be north and the other south, subtract the less from the greater, and the sum or difference will be the latitude of the same name as the greater.

EXAMPLE.—At sea, July the 1st, 1806, (near the meridian of Greenwich) the meridional altitude of the Sun's lower limb was observed to be 54° 20′, the zenith being north of the Sun, and the eye of the observer 18 feet above the level of the sea: required the ship's true latitude?

Observed altitude of Sun's lower limb		54°	20′
Sun's semi-diameter	16′ } *Diff.*		
Dip for 18 feet *(nearly)*	4 }		12
Sun's apparent altitude		54	32
Refraction (Table II.) for 54°			1
Sun's true altitude,		54	31
		90	
Sun's true zenith distance,		35	29 N.
Sun's declination,		23	10 N.
Latitude in		58	39 N.

TABLE I.

DEPRESSION OR DIP OF THE HORIZON OF THE SEA.

Height of the Eye.	Dip of the Horizon.	Height of the Eye.	Dip of the Horizon.
Feet.	M. S.	Feet.	M. S.
1	0.58	20	4.17
2	1.21	21	4.23
3	1.40	22	4.30
4	1.56	23	4.36
5	2. 9	24	4.42
6	2.21	26	4.52
7	2.33	28	5. 5
8	2.44	30	5.15
9	2.53	35	5.39
0	3. 2	40	6. 4
11	3.10	45	6.27
12	3.19	50	6.46
13	3.27	60	7.25
14	3.36	70	8. 1
15	3.42	80	8.34
16	3.50	90	9. 6
17	3.57	100	9.35
18	4. 4		
19	4.11		

TABLE II. REFRACTION IN ALTITUDE.

App. Alt.	Ref.	App. Alt.	Ref.	App. Alt.	Ref.	App. Alt.	Ref.	App. Alt.	Ref.	App. Alt.	Ref.
DM	M.S.	D.M.	M.S.	D.	M.S.	DM	M.S.	D.M.	M.S.	D.	M.S.
0. 0	33. 0	6.30	7.52	30	1.38	2.30	16.23	12.20	4.16	60	0.33
0. 5	32.11	6.40	7.41	31	1.35	2.35	16. 4	12.40	4. 9	61	0.32
0.10	31.22	6.50	7.31	32	1.31	2.40	15.45	13. 0	4. 3	62	0.30
0.15	30.36	7. 0	7.21	33	1.28	2.45	15.27	13.20	3.57	63	0.29
0.20	29.50	7.10	7.12	34	1.24	2.50	15. 9	13.40	3.51	64	0.28
0.25	29. 6	7.20	7. 3	35	1.21	2.55	14.52	14. 0	3.46	65	0.27
0.30	28.23	7.30	6.54	36	1.18	3. 0	14.35	14.20	3.40	66	0.25
0.35	27.41	7.40	6.46	37	1.16	3. 5	14.19	14.40	3.35	67	0.24
0.40	27. 0	7.50	6.38	38	1.13	3.10	14. 3	15. 0	3.30	68	0.23
0.45	26.26	8. 0	6.30	39	1.10	3.15	13.48	15.30	3.23	69	0.22
0.50	25.42	8.10	6.22	40	1. 8	3.20	13.33	16. 0	3.17	70	0.21
0.55	25. 5	8.20	6.15	41	1. 5	3.25	13.19	16.30	3.11	71	0.20
1. 0	24.29	8.30	6. 8	42	1. 3	3.30	13. 5	17. 0	3. 5	72	0.19
1. 5	23.54	8.40	6. 1	43	1. 1	3.40	12.39	17.30	2.59	73	0.17
1.10	23.20	8.50	5.55	44	0.59	3.50	12.14	18. 0	2.54	74	0.16
1.15	22.47	9. 0	5.49	45	0.57	4. 0	11.50	18.30	2.49	75	0.15
1.20	22.15	9.10	5.43	46	0.55	4.10	11.28	19. 0	2.44	76	0.14
1.25	21.44	9.20	5.37	47	0.53	4.20	11. 7	19.30	2.40	77	0.13
1.30	21.15	9.30	5.31	48	0.51	4.30	10.47	20. 0	2.36	78	0.12
1.35	20.46	9.40	5.26	49	0.50	4.40	10.28	20.30	2.32	79	0.11
1.40	20.18	9.50	5.20	50	0.48	4.50	10.10	21. 0	2.28	80	0.10
1.45	19.51	10. 0	5.15	51	0.46	5. 0	9.53	21.30	2.24	81	0. 9
1.50	19.25	10.15	5. 8	52	0.45	5.10	9.37	22. 0	2.20	82	0. 8
1.55	18.[illegible]	10.30	5. 0	53	0.43	5.20	9.21	23. 0	2.14	83	0. 7
2. 0	18.35	10.45	4.54	54	0.41	5.30	9. 7	24. 0	2. 7	84	0. 6
2. 5	18.11	11. 0	4.47	55	0.40	5.40	8.53	25. 0	2. 2	85	0. 5
2.10	17.48	11.15	4.41	56	0.38	5.50	8.39	26. 0	1.56	86	0. 4
2.15	17.26	11.30	4.35	57	0.37	6. 0	8.27	27. 0	1.51	87	0. 3
2.20	17. 4	11.45	4.29	58	0.36	6.10	8.15	28. 0	1.47	88	0. 2
2.25	16.44	12. 0	4.23	59	0.34	6.20	8. 3	29. 0	1.43	89	0. 1

THE SUN'S DECLINATION,

For the Years 1806, 1810, 1814, 1818.

Days.	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	South	South	South	North	North	North	North	North	North	South	South	South
	° ′	° ′	° ′	° ′	°	° ′	° ′	° ′	° ′	° ′	° ′	° ′
1	23 3	17 12	7 43	4 24	14 57	22 1	23 10	18 9	8 27	3 2	14 20	21 46
2	22 58	16 51	7 20	4 47	15 16	22 9	23 6	17 54	8 5	3 25	14 39	21 56
3	22 52	16 37	6 57	5 10	15 34	22 16	23 1	17 39	7 43	3 48	14 58	22 4
4	22 46	16 19	6 34	5 33	15 51	22 24	22 56	17 23	7 21	4 12	15 17	22 13
5	22 40	16 1	6 11	5 56	16 9	22 31	22 51	17 7	6 59	4 35	15 35	22 21
6	22 33	15 43	5 48	6 19	16 26	22 37	22 46	16 51	6 37	4 58	15 53	22 28
7	22 26	15 24	5 24	6 41	16 43	22 44	22 40	16 34	6 14	5 21	16 11	22 36
8	22 18	15 6	5 1	7 4	16 59	22 49	22 33	16 17	5 52	5 44	16 29	22 42
9	22 10	14 47	4 38	7 26	17 15	22 55	22 26	16 0	5 29	6 7	16 46	22 49
10	22 1	14 27	4 14	7 49	17 31	23 0	22 19	15 43	5 7	6 30	17 4	22 54
11	21 52	14 8	3 51	8 11	17 47	23 4	22 11	15 25	4 44	6 53	17 20	23 0
12	21 43	13 48	3 27	8 33	18 2	23 8	22 4	16 8	4 21	7 15	17 37	23 5
13	21 33	13 28	3 4	8 55	18 17	23 12	21 55	14 50	3 58	7 38	17 53	23 9
14	21 22	13 8	2 40	9 16	18 32	23 16	21 46	14 31	3 35	8 0	18 9	23 13
15	21 11	12 47	2 16	9 38	18 47	23 19	21 37	14 13	3 12	8 23	18 25	23 16
16	21 0	12 27	1 53	9 59	19 1	23 21	21 28	13 54	2 49	8 45	18 40	23 19
17	20 49	12 6	1 29	10 20	19 14	23 23	21 18	13 35	2 26	9 7	18 55	23 22
18	20 37	11 45	1 5	10 42	19 28	23 24	21 8	13 16	2 2	9 29	19 10	23 24
19	20 25	11 24	0 42	11 2	19 41	23 26	20 57	12 56	1 39	9 51	19 24	23 26
20	20 12	11 2	0 18 S.	11 23	19 54	23 27	20 46	12 37	1 16	10 13	19 38	23 27
21	19 59	10 41	0 6N.	11 44	20 6	23 28	20 35	12 17	0 52	10 34	19 51	23 28
22	19 45	10 19	0 29	12 4	20 19	23 28	20 24	11 57	0 29	10 56	20 5	23 28
23	19 32	9 57	0 53	12 24	20 30	23 27	20 12	11 37	0 6N.	11 17	20 18	23 28
24	19 17	9 35	1 17	12 44	20 42	23 27	19 59	11 16	0 18 S.	11 38	20 30	23 27
25	19 3	9 13	1 40	13 4	20 53	23 25	19 47	10 56	0 41	11 59	20 42	23 26
26	18 48	8 50	2 4	13 23	21 4	23 24	19 34	10 35	1 5	12 19	20 54	23 24
27	18 33	8 28	2 27	13 43	21 14	23 22	19 20	10 14	1 28	12 40	21 5	23 22
28	18 17	8 5	2 51	14 2	21 24	23 19	19 7	9 53	1 52	13 0	21 16	23 19
29	18 1		3 14	14 21	21 34	23 17	18 53	9 32	2 15	13 20	21 27	23 16
30	17 45		3 38	14 39	21 43	23 13	18 39	9 10	2 38	13 40	21 37	23 12
31	17 28		4 1		21 52		18 24	S 49		14 0		23 8

This Table will be found correct, to the nearest minute, for the years 1806 and 1810; but, in order to obtain the declination equally correct for the years 1814 and 1818, a correction is to be applied to the numbers above given, from the following table, which is either to be added or subtracted, as expressed.—+ signifies *add*, and — *subtract*.

	Jan. & July	Feb. & Aug.	Mar. & Sept.	April & Oct.	May & Nov.	June & Dec.
Days.	1.7.13.19.25	1.7.13.19.25	1.7.13.19.25	1.7.13.19.25	1.7.13.19.25	1.7.13.19.25
			+	+ + + + +	+ + + + +	+ + + + +
1814	0 0 1 1 1	1 1 1 1 1	1 1 1 1 1	1 1 1 1 1	1 1 1 1 1	1 0 0 0 0
1818	0 1 1 1 1	1 2 2 2 2	2 2 2 2 2	2 2 2 2 2	2 2 1 1 1	1 1 0 0 0

THE SUN's DECLINATION.

For the YEARS 1807, 1811, 1815, 1819.

Days.	Jan.		Feb.		March		April		May		June		July		Aug.		Sept.		Oct.		Nov.		Dec.	
	South		South		South		North		North		North		North		North		North		South		South		South	
	°	′	°	′	°	′	°	′	°	′	°	′	°	′	°	′	°	′	°	′	°	′	°	′
1	23	4	17	16	7	49	4	13	14	53	21	58	23	11	18	13	8	33	2	56	14	14	21	44
2	22	59	16	59	7	26	4	41	15	11	22	7	23	7	17	58	8	11	3	19	14	54	21	53
3	22	54	16	42	7	3	5	4	15	29	22	14	23	3	17	43	7	49	3	42	14	53	22	2
4	22	48	16	24	6	40	5	27	15	46	22	22	22	58	17	27	7	27	4	5	15	12	22	11
5	22	42	16	6	6	17	5	50	16	4	22	29	22	53	17	11	7	5	4	29	15	30	22	19
6	22	35	15	48	5	54	6	13	16	21	22	36	22	47	16	55	6	43	4	52	15	49	22	27
7	22	28	15	29	5	31	6	35	16	38	22	42	22	41	16	39	6	20	5	15	16	7	22	34
8	22	20	15	11	5	7	6	58	16	54	22	48	22	35	16	22	5	58	5	38	16	21	22	41
9	22	12	14	52	4	44	7	20	17	11	22	53	22	28	16	5	5	35	6	1	16	42	22	47
10	22	3	14	32	4	21	7	43	17	27	22	58	22	21	15	48	5	13	6	24	16	59	22	53
11	21	54	14	13	3	57	8	5	17	43	23	3	22	14	15	30	4	50	6	47	17	16	22	58
12	21	45	13	53	3	34	8	27	17	58	23	7	22	6	15	12	4	27	7	9	17	33	23	3
13	21	35	13	33	3	10	8	49	18	13	23	11	21	57	14	54	4	4	7	32	17	49	23	8
14	21	25	13	13	2	46	9	11	18	28	23	15	21	49	14	36	3	41	7	54	18	5	23	12
15	21	14	12	53	2	23	9	32	18	43	23	18	21	40	14	18	3	18	8	17	18	21	23	16
16	21	3	12	32	1	59	9	54	18	57	23	21	21	30	13	59	2	55	8	59	18	36	23	19
17	20	52	12	11	1	35	10	15	19	11	23	23	21	21	13	40	2	32	9	1	18	51	23	21
18	20	40	11	50	1	12	10	36	19	24	23	25	21	11	13	21	2	9	9	23	19	6	23	24
19	20	28	11	29	0	48	10	57	19	38	23	26	21	0	13	2	1	45	9	45	19	20	23	25
20	20	15	11	8	0	24 S.	11	18	19	51	23	27	20	49	12	42	1	22	10	7	19	34	23	27
21	20	2	10	46	0	1N.	11	38	20	3	23	28	20	38	12	22	0	59	10	28	19	48	23	27
22	19	49	10	25	0	23	11	59	20	15	23	28	20	27	12	2	0	35	10	50	20	1	23	28
23	19	35	10	3	0	47	12	19	20	27	23	28	20	15	11	42	0	12N.	11	11	20	14	23	28
24	19	21	9	41	1	10	12	39	20	39	23	27	20	3	11	22	0	12S.	11	32	20	27	23	27
25	19	7	9	19	1	34	12	59	20	50	23	26	19	50	11	1	0	35	11	53	20	39	23	26
26	18	52	8	56	1	58	13	18	21	1	23	24	19	37	10	41	0	58	12	14	20	51	23	24
27	18	37	8	34	2	21	13	37	21	11	23	22	19	24	10	20	1	22	12	35	21	2	23	22
28	18	21	8	12	2	45	13	57	21	22	23	20	19	11	9	59	1	45	12	55	21	13	23	20
29	18	6			3	8	14	15	21	31	23	17	18	57	9	38	2	9	13	15	21	24	23	17
30	17	49			3	31	14	34	21	41	23	14	18	43	9	16	2	32	13	35	21	34	23	13
31	17	33			3	55			21	50			18	28	8	55			13	55			23	10

This Table will be found correct, to the nearest minute, for the years 1807 and 1811; but, in order to obtain the declination equally correct for the years 1815 and 1819, a correction is to be applied to the numbers above given, from the following table, which is either to be added or subtracted, as expressed.— signifies *add*, and — *subtract*.

	Jan. & July	Feb. & Aug.	Mar. & Sep.	April & Oct.	May & Nov.	June & Dec.
Days.	1.7.13.19.25	1.7.13.19.25	1.7.13.19.25	1.7.13.19.25	1.7.13.19.25	1.7.13.19.25
	— — — — —	— — — — —	— — — — +	+ + + + +	+ + + + +	+ + + + +
1815	0 0 1 1 1	1 1 1 1 1	1 1 1 1 1	1 1 1 1 1	1 1 1 1 1	1 0 0 0 0
1819	0 1 1 1 1	1 2 2 2 2	2 2 2 2 2	2 2 2 2 2	2 2 1 1 1	1 1 0 0 0

THE SUN'S DECLINATION,

For the Years 1808, 1812, 1816, 1820.

Days.	Jan.	Feb.	March	April	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
	South	South	South	North	North	North	North	North	North	South	South	South
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
1	23 5	17 20	7 32	4 35	15 6	22 5	23 8	18 2	8 17	3 13	14 29	21 51
2	23 0	17 3	7 9	4 59	15 24	22 13	23 4	17 47	7 55	3 56	14 48	22 0
3	22 55	16 46	6 46	5 21	15 42	22 20	22 59	17 31	7 33	4 0	15 7	22 9
4	22 49	16 28	6 23	5 44	16 0	22 27	22 54	17 15	7 11	4 23	15 26	22 17
5	22 43	16 11	6 0	6 7	16 17	22 34	22 49	16 59	6 48	4 46	15 44	22 25
6	22 37	15 52	5 36	6 30	16 34	22 40	22 43	16 43	6 26	5 9	16 2	22 32
7	22 29	15 34	5 13	6 52	16 51	22 46	22 36	16 26	6 4	5 32	16 20	22 39
8	22 22	15 15	4 50	7 15	17 7	22 52	22 30	16 9	5 41	5 55	16 37	22 45
9	22 14	14 56	4 26	7 37	17 23	22 57	22 23	15 52	5 18	6 18	16 55	22 51
10	22 6	14 37	4 3	7 59	17 39	23 2	22 15	15 35	4 56	6 41	17 12	22 57
11	21 57	14 18	3 39	8 21	17 54	23 6	22 8	15 17	4 33	7 4	17 28	23 2
12	21 47	13 58	3 16	8 43	18 10	23 10	22 0	14 59	4 10	7 26	17 45	23 7
13	21 38	13 38	2 52	9 5	18 25	23 14	21 51	14 41	3 47	7 49	18 1	23 11
14	21 28	13 18	2 28	9 27	18 39	23 17	21 42	14 22	3 24	8 11	18 17	23 15
15	21 17	12 58	2 5	9 48	18 53	23 20	21 33	14 4	3 1	8 33	18 32	23 18
16	21 6	12 37	1 41	10 10	19 7	23 22	21 23	13 45	2 38	8 56	18 47	23 21
17	20 55	12 17	1 17	10 31	19 21	23 24	21 13	13 26	2 14	9 18	19 2	23 23
18	20 43	11 56	0 54	10 52	19 34	23 26	21 3	13 6	1 51	9 40	19 17	23 25
19	20 31	11 34	0 30	11 13	19 47	23 27	20 52	12 47	1 28	10 1	19 31	23 26
20	20 18	11 13	0 6S.	11 33	20 0	23 28	20 41	12 27	1 4	10 23	19 45	23 27
21	20 6	10 52	0 17N.	11 54	20 12	23 28	20 30	12 7	0 41	10 45	19 58	23 28
22	19 52	10 30	0 41	12 14	20 24	23 28	20 18	11 47	0 18N.	11 6	20 11	23 28
23	19 39	10 8	1 5	12 34	20 36	23 27	20 6	11 27	0 6S.	11 27	20 24	23 27
24	19 25	9 46	1 28	12 54	20 47	23 26	19 53	11 6	0 29	11 48	20 36	23 26
25	19 10	9 24	1 52	13 13	20 58	23 25	19 40	10 46	0 53	12 9	20 48	23 25
26	18 56	9 2	2 15	13 33	21 9	23 23	19 27	10 25	1 16	12 30	20 59	23 23
27	18 41	8 40	2 39	13 52	21 19	23 21	19 14	10 4	1 40	12 50	21 10	23 20
28	18 25	8 17	3 2	14 11	21 29	23 18	19 0	9 43	2 3	13 10	21 21	23 18
29	18 9	7 54	3 26	14 30	21 38	23 15	18 46	9 21	2 26	13 30	21 31	23 14
30	17 53		3 49	14 48	21 47	23 12	18 32	9 0	2 50	13 50	21 41	23 11
31	17 37		4 12		21 56		18 18	8 38		14 10		23 6

This Table will be found correct, to the nearest minute, for the Years 1808 and 1812; but, in order to obtain the Declination equally correct for the Years 1816 and 1820, a correction is to be applied to the numbers above given, from the following table, which is either to be added or subtracted, as expressed.— + signifies *add*, and.— *subtract*.

	Jan.&July	Feb.&Aug.	Mar.&Sept.	April&Oct.	May&Nov	June&Dec.
Days	1.7.13.19.25	1.7.13.19.25	1.7.13.19.25	1.7.13.19.25	1.7.13.19.25	1.7.13.19.25
	— — — — —	— — — — —	— — — — +	+ + + + +	+ + + + +	+ + + + +
1816	0 0 1 1 1	1 1 1 1 1	1 1 1 1 1	1 1 1 1 1	1 1 1 1 1	1 0 0 0 0
1820	0 1 1 1 1	1 2 2 2 2	2 2 2 2 2	2 2 2 2 2	2 2 1 1 1	1 1 0 0 0

THE SUN's DECLINATION,

For the YEARS 1809, 1813, 1817, 1821.

Days	Jan.		Feb.		March		April		May		June		July		Aug.		Sept.		Oct.		Nov.		Dec.	
	South		South		South		North		North		North		North		North		North		South		South		South	
	°	′	°	′	°	′	°	′	°	′	°	′	°	′	°	′	°	′	°	′	°	′	°	′
1	23	2	17	8	7	37	4	30	15	2	22	3	23	9	1	6	8	22	3	7	14	24	21	49
2	22	57	16	50	7	14	4	53	15	29	22	11	23	5	17	51	8	0	3	31	14	43	21	58
3	22	51	16	35	6	51	5	16	15	55	22	18	23	0	17	35	7	38	3	54	15	2	22	7
4	22	45	16	15	5	28	5	39	15	55	22	26	22	55	17	19	7	16	4	17	15	21	22	15
5	22	38	15	57	6	5	6	2	16	13	22	32	22	50	17	5	6	54	4	40	15	40	22	23
6	22	31	15	39	5	42	6	24	16	30	22	39	22	44	16	47	6	32	5	4	15	58	22	30
7	22	24	15	20	5	19	6	47	16	47	22	45	22	38	16	30	6	9	5	27	16	16	22	37
8	22	16	15	1	4	55	7	9	17	3	22	51	22	32	16	13	5	47	5	50	16	33	22	44
9	22	8	14	42	4	32	7	32	17	19	22	56	22	25	15	56	5	24	6	13	16	51	22	50
10	21	59	14	23	4	9	7	54	17	35	23	1	22	17	15	39	5	1	6	35	17	8	22	56
11	21	50	14	3	3	45	8	16	17	51	23	5	22	10	15	21	4	38	6	58	17	25	23	1
12	21	40	13	43	3	22	8	58	18	6	23	9	22	2	15	3	4	15	7	21	17	41	23	6
13	21	30	13	23	2	58	9	0	18	21	23	13	21	55	14	45	3	52	7	43	17	57	23	10
14	21	20	13	3	2	34	9	22	18	36	23	16	21	44	14	27	3	29	8	5	18	13	23	14
15	21	9	12	42	2	11	9	43	18	50	23	19	21	35	14	8	3	6	8	28	18	29	23	17
16	20	58	12	22	1	47	10	5	19	4	23	22	21	26	13	49	2	43	8	50	18	44	23	20
17	20	46	12	1	1	23	10	26	19	18	23	24	21	16	13	30	2	20	9	13	18	59	23	23
18	20	34	11	40	1	0	10	47	19	31	23	25	21	5	13	11	1	57	9	35	19	13	23	25
19	20	22	11	18	0	36	11	8	19	44	23	27	20	55	12	52	1	33	9	56	19	27	23	26
20	20	9	10	57	0	12S.	11	28	19	57	23	27	20	44	12	32	1	10	10	16	19	41	23	27
21	19	56	10	35	0	12N.	11	49	20	10	23	28	20	32	12	12	0	47	10	40	19	55	23	28
22	19	42	10	14	0	35	12	9	20	22	23	28	20	21	11	52	0	23	11	1	20	8	23	28
23	19	28	9	52	0	59	12	29	20	33	23	27	20	9	11	32	0	0N.	11	22	20	21	23	27
24	19	14	9	30	1	23	12	49	20	45	23	26	19	56	11	11	0	24S.	11	43	20	33	23	27
25	18	59	9	7	1	46	13	9	20	56	23	25	19	44	10	51	0	47	12	4	20	45	23	25
26	18	44	8	45	2	10	13	28	21	6	23	23	19	31	10	30	1	10	12	25	20	57	23	23
27	18	29	8	22	2	33	13	47	21	17	23	21	19	17	10	9	1	34	12	45	21	8	23	21
28	18	13	8	0	2	57	14	6	21	27	23	19	19	4	9	48	1	57	13	5	21	19	23	18
29	17	57			3	20	14	25	21	36	23	16	18	50	9	27	2	21	13	25	21	29	23	15
30	17	41			3	43	14	44	21	45	23	13	18	35	9	5	2	44	13	45	21	39	23	11
31	17	24			4	7			21	54			18	21	8	44			14	5			23	7

This Table will be found correct, to the nearest minute, for the years 1809 and 1813; but in order to obtain the declination equally correct for the years 1817 and 1821; a correction is to be applied to the numbers above given, from the following table, which is either to be added or subtracted, as expressed.— + *signifies add, and* — *subtract.*

	Jan. & July					Feb. & Aug.					Mar. & Sept.					April & Oct.					May & Nov.					June & Dec.				
Days.	1.	7.	13.	19.	25	1.	7.	13.	19.	25	1.	7.	13.	19.	25	1	7.	13.	19.	25	1.	7.	13.	19,	25	1.	7.	13.	19	25
	—	—	—	—	—	—	—	—	—	—	—	—	—	—	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
1817	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0
1821	0	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	0	0	0

THE VARIATION of the SUN'S DECLINATION to every 10 Degrees of Longitude.

	Degrees of Longitude from the Meridian of Greenwich.																	
Daily Var.	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
Min.	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′
2	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1
3	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
4	0	0	0	0	1	1	1	1	1	1	1	1	1	2	2	2	2	2
5	0	0	0	0	1	1	1	1	1	1	1	2	2	2	2	2	2	2
6	0	0	0	0	1	1	1	1	1	2	2	2	2	2	2	2	3	3
7	0	0	1	1	1	1	1	2	2	2	2	2	3	3	3	3	3	3
8	0	0	1	1	1	1	1	2	2	2	2	3	3	3	3	3	4	4
9	0	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4
10	0	1	1	1	1	2	2	2	3	3	3	3	4	4	4	5	5	5
11	0	1	1	1	2	2	2	3	3	3	3	4	4	4	5	5	5	5
12	0	1	1	1	2	2	2	3	3	3	4	4	4	5	5	5	6	6
13	0	1	1	1	2	2	2	3	3	4	4	4	5	5	5	6	6	6
14	0	1	1	2	2	2	3	3	3	4	4	5	5	5	6	6	7	7
15	0	1	1	2	2	3	3	3	4	4	5	5	5	6	6	7	7	7
16	0	1	1	2	2	3	3	4	4	5	5	5	6	6	7	7	8	8
17	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	7	8	8
18	1	1	2	2	3	3	4	4	5	5	6	6	7	7	7	8	9	9
19	1	1	2	2	3	3	4	4	5	5	6	6	7	7	7	8	9	9
20	1	1	2	2	3	3	4	4	5	6	6	7	7	8	8	9	9	10
21	1	1	2	2	3	4	4	5	5	6	6	7	8	8	9	9	10	10
22	1	1	2	2	3	4	4	5	6	6	7	7	8	9	9	10	10	11
23	1	1	2	2	3	4	4	5	6	6	7	8	8	9	10	10	11	11
24	1	1	2	2	3	4	5	5	6	7	7	8	9	9	10	11	11	12

To find the SUN's DECLINATION by the foregoing Tables.

EACH page of the foregoing tables contains the sun's declination for the years expressed at the top; the first column to the left hand shews the day of the month, and the others the months of the year; so that, if it be required to find the sun's declination for any day, suppose, for example, on the 14th of August, 1808; first, I look for that table which has 1808 at the top of it, and then right against the 14th day of the month, and under August, I find 14° 22′, which shews the sun's declination at noon to be 14 degrees 22 minutes north, according to the title at the top of the column.

The sun's declination in these tables being calculated for the meridian of Greenwich, if you should be considerably to the eastward, or to the westward, of Greenwich, it will cause some alteration in it; to correct which, the above table of the variation of the sun's declination is to be used as follows:

First, look out the declination for the given day of the month, and for the day following it, and subtract the lesser from the greater, the remainder is the daily variation.

Secondly, observe whether the declination be increasing or decreasing, which you may know thus: if the declination for the day following the given day be greatest, then it is increasing; but, if it be least, then it is decreasing.

Thirdly, look for the daily variation in the first column of the above table, and see what number stands right against it, and under the given degrees of longitude; which number is to be used as follows:

If the difference of longitude be easterly, and the declination increasing, it must be subtracted from the declination found in the tables for the given day; but, if the declination be decreasing, it must be added.

If the difference of longitude be westerly, and the declination increasing, it must be added; but if the declination be decreasing, it must be subtracted; the sum in one case, and the remainder in the other, will be the sun's declination at noon in the longitude required.

Suppose, on August 14, 1808, a ship in longitude 80 degrees west of Greenwich; what is the sun's true declination when on the ship's meridian?

	D. M.	
Declination at Greenwich, Aug. 14, 1808	14 22 N.	And because the Declination is decreasing, the difference must be subtracted; therefore, opposite to 18, and under 80 degrees of longitude stands 4 minutes, which, subtracted from 14 degrees 22 minutes, gives 14 degrees 18 minutes, the declination at the ship.
Ditto at Greenwich, Aug. 15 - - - - -	14 4 N.	
Daily variation of declination - - - - -	18 Miles	

Again, suppose that in longitude 63 degrees E. on March 21st, 1809, the sun's declination be required. The daily difference being then 24.

	D. M.	
Sun's declination, March 21 - - -	0 12 N.	As the declination is increasing, and the longitude is east, it must be subtracted, and the remainder shews the declination required to be 8 minutes north. In like manner may the declination be found to any other meridian.
Variation for 60 degrees - - - -	0 4	
Declination at noon - - - - - - -	0 8 N.	

Should the declination be required when the sun is not upon the meridian, find the declination for the preceding and following noons, and take the difference.—Then say, as 24 hours is to that difference, so is the number of hours from noon to a fourth number, which being added or subtracted according to the increasing or decreasing declination, and the time in the fore or afternoon, gives the sun's declination at the given time.

Suppose the sun's declination Aug. 14, 1808, at 8 hours 15 minutes in the morning, was required?

First, by the table, the sun's declination Aug. 13, 1808, is 14 degrees 41 minutes; and for Aug. 14, it is 14 degrees 22 minutes. The difference is 19 minutes. Then say, as 24 hours is to 19 minutes, so are 20 hours, the time elapsed since last noon, to 16 minutes, nearly; which, as the declination is decreasing, gives 14 degrees 25 minutes, the declination at the given time; but, had the declination been increasing, the 16 must have been added to the declination on the noon preceding. The fractions, for greater nicety, may be included in the calculation if desired.

In the same manner, the declination may be found for any hour of the day, and under any other meridian; nothing more being requisite but to reduce the difference of longitude into time, and to add or subtract it from the given time, as the longitude is east or west. Then find the declination as above.

When the longitude and time of the day are given, turn the longitude into time, by allowing one hour for every 15 degrees, or 4 minutes for every degree, and add it to the given time when the longitude is west; but subtract it when east, and the sum or difference will be the reduced time at the ship: then say, as 24 hours are to the daily difference of declination, so is the time at the ship to a fourth number, which must be either added to, or subtracted from, the declination of the preceding noon, as the declination is increasing or decreasing.

The declination in the foregoing tables is computed to the nearest minute; which is sufficiently exact for determining the latitude by observation. But, in finding the time, in order to determine the longitude, the declination must be taken from the Nautical Ephemeris, it being there calculated to minutes and seconds.

THE END.

ERRATA AND ADDENDA.

The Reader is requested to correct with his pen the following Errata.

Page 3, col. 2, line 1.—Read, S by E and N by W.
——————————14.—Read, ESE and WNW.
—— 4, col. 1, line 24.—Read, SE and NW.
——————————34.—Read, N by E and S by W.
—— 9, col. 1, line 32.—Read, begins *at* the
—— 14, col. 2, line 4.—Read, S by W.
—— 26, col. 2, line 22.—Read, WNW.
—— 27, col. 1, line 16.—Read, NW and SE.
—— 37, col. 1, line 28.—For Mesh-stone read Mewstone.
—— 48, col. 1, line 26.—Read, WNW ¼ W.
——— col. 2, line 14.—Read, and *presenting* a bright, &c.
—— 53, col. 1, line 9.—Read, but *has* good soft, &c.
——————————15.—For flows read *flaws*
—— 76, col. 2, line 17 and 19.—Read, ENE.
—— 78, col. 2, line 26.—Read, W½S.
—— 82, col. 1, line 16.—Read, *as* ENE.
—— 82, col. 2, and on following pages, for Cape la Hogue read La Hague
—— 95, col. 1, line 12.—Read, northern *side*, &c.
——— col. 2, line 24.—For port read part
—— 109, col. 2, line 15.—For Gunfleet-land read Gunfleet-sand.
—— 110, col. 1, line 19.—Read, of 2½ and 3 fathoms
—— 112, col. 1, line 25.—Read, SE¾S.

Page 118, col. 2, line 21.—Read, SE¾S.
——————————line 25.—Read, S½E.
—— 121, col. 1, line 4.—For Hasting read Easton.
—— 128, col. 1, line 2, from bottom, Read, This sand is *dry* at, &c.
—— 232, line 8, erase the parenthesis.

YARMOUTH-ROADS.—Since the foregoing sheets were printed, the following notice has been received from the Trinity-House:

" A Buoy, painted red and white in quarters, is placed in 5¼ fathoms, at low water, on the SE end of a shoal lately grown up to the eastward of the Cross-sand, *(St. Nicholas Bank)* with the following marks:

North Long Mark—Yarmouth steeple NW by N½N.

South Long Mark—Lowestoffe church SW by W.

Tkwart Marks—A large tree standing in the country over-end with the gable of a new house standing on the beach to the southward of the entrance of Yarmouth-harbour, bearing WNW ½ N. and the Cross-sand buoy W ½ N. distant about one mile.

The shoal lies E by S and W by N. with about 18 feet on the shoalest part at low water.

LONDON, SEPTEMBER 1st 1806.

GENTLEMEN, possessing ORIGINAL SURVEYS, or DOCUMENTS, for the improvement of charts, and who are disposed to part with the Result of their Labors, for the Benefit of the Nautical World, are respectfully informed, that they will be Engraved with ACCURACY, ELEGANCE, and UNIFORMITY of STYLE, on Application to P. STEEL, at the *Navigation-Warehouse, Little Tower-Hill, London;* by whom they will be expeditiously published.

N. B.—Any Hints or Communications, tending to the IMPROVEMENT or CORRECTION of CHARTS and NAUTICAL PUBLICATIONS in general, will be most thankfully received.

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