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Notes on the Coast of the United States

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A

Coast Survey Office
July 16th 1861

Sir

I have the honor to send herewith a copy of Notes on the Coast of Georgia, accompanied by charts of the localities referred to in the notes.

Very respectfully
Yours
A. D. Bache
Supt.

Hon: S. P. Chase
Secretary of the Treasury

Notes on the Coast of the United States

by A. D. Bache Sup'dt U.S.C. Survey

Section V. { Coast of Georgia.

(With 10 Maps)

June. 1861.

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[Memoir C.]

Note This Memoir was prepared by Prof. A. D. Bache Sup'dt, assisted by Capt. C. P. Patterson Hydrog: Inspector and Prof. W. P. Trowbridge, Ass't, U.S.C. Survey.

Coast of Georgia (chart A)

The sea coast of Georgia extends from Tybee Entrance in latitude 32° 03′ N., longitude 80° 50′ W., to Cumberland Sound in latitude 30° 43′ N., longitude 81° 30′ W., or about one hundred and seven nautical miles, as measured in steps of about twenty miles.

A chain of islands separated from the coast by sounds and so-called rivers of greater or less width, and from each other by inlets, extends along the coast forming a smooth water navigation used by steamboats drawing some five feet of water, from the Savannah to the St. Mary's River. These sounds and inland passages are of various depths and have numerous bars and shoals, and especially dividings, or bars, where tidal currents meet coming from different directions and with different times of high and low water, and make deposits of mud or sand. The rivers of the coast generally empty into these interior bays and sounds.

Islands

In the description, the local names of the subdivisions of the Islands are purposely omitted as they would only tend to confuse.

Tybee Island, divided by creeks into Big and Little Tybee, is a low marshy island with patches of wood and a sandy shore, between Tybee Sound and Savannah River and Tybee River, extending along the Savannah river side about twelve miles, and along the ocean about seven miles.

Wilmington Island, is separated from Tybee Island on the east by Tybee River; from Wassaw island on the west by Wilmington river, and its southern side rests on Wassaw Sound, along which it extends some four miles. The island is wooded and in part cultivated. On the Wassaw sound side it is a low marsh, cut up by creeks.

Wassaw Island, (divided into Great and Little Wassaw) lies between Wassaw and Ossabaw Sounds, stretching about four miles along the outer coast, and is three miles across. It is divided by Odingsell Creek and its branches. In the interior it is marshy with dense hammocks; on the ocean side, sandy, with a belt of woods of mixed timber. One of the subdivisions (the south-western) is called Pine Island from the timber of that class growing upon it.

Romerly Marsh Creek, very important in the chain of inland navigation, separates Wassaw from Skiddaway island on the north.

Skiddaway Island belongs to the inner or back range.

It is separated from the main by Burnside's Creek, and Skiddaway Narrows, and from Wilmington Island by Wilmington River.

Behind Wassaw, and at the mouths of the Vernon, and Great and Little Ogeechee Rivers are numerous islands, the enumeration of which would be merely con--fusing. Green Island, between the Vernon and Little Ogeechee, is the principal one.

Ossabaw Island lies between Ossabaw and St. Catherine's Sounds. Bear River and its winding branches on the north separate it from the main. It is about five miles long on the ocean side and four miles wide, including an irregular group of islands or of nearly islands, on the north. The creeks head near each other in the interior of the island.

Milligan's Island projects into St. Catherine's Sound, between St. Catherine's River and Sudbury River.

St. Catherine's Island, on the ocean between St. Catherine's and Sapelo Sounds is about six miles and a half long, and less than two miles wide. The beach is interrupted by two islets, communicating with marshes. The north side of the island is very irregular in outline, the marsh forming it being cut up by creeks.

Numerous islands lie back of St. Catherine's between the Medway (or Sudbury) and Barbour's Island River.

The name Sapelo Island may extend over three distinct

islands, between Sapelo and Doboy Sounds, and forming a group ten miles long in the direction of the coast and about four miles wide.

Blackbeard Island is wooded and has had in former days good live oak upon it. Parts of Sapelo are well cultivated. High Point at the North end of Sapelo on the interior Sound is a remarkable feature in the landscape.

Wolf Island lies directly in the entrance to Altamaha River, dividing Doboy and Altamaha Sounds. Its shape is different from that of nearly all the sea islands, being trapezoidal, two miles and a half wide, East and West, and nearly the same in its mean breadth.

Very numerous islands, separated by passages, generally of considerable width and of moderate depth, occupy the space between Sapelo Sound and St. Simon's Sound. In fact, they may be considered as forming the delta of the Altamaha River.

The St. Simon's group, of which Little St. Simon's on the East, Long Island on the South, and St. Simon's, are the principal members, is eight miles long and about three and a half in mean breadth.

St. Simon's is well cultivated, and has upon it the remains of Frederica, one of the earliest settlements on this coast.

Jekyl Island is between St. Simon's and St. Andrew's

Sounds, six miles long and about two miles wide, lozenge shaped, the projecting angle being seaward.

Cumberland Island is between St. Andrew's and Cumberland Sounds (St. Mary's or Fernandina entrance) - it is sixteen and a half miles long and about two broad. It is in general well cultivated and has upon it the substantial mansion of Dungeness erected by General Greene.

As a rule, all these islands have a moderately straight sea-beach on the ocean side, with sand hillocks, and sometimes a fringe of wood. On the inner side upon the sounds they are marshy, except in rare cases. The interior is much diversified and cotton plantations are general.

Inlets.

The names of the Inlets have been given necessarily under the head of islands; beginning at the north, they are Tybee, Wassaw, Ossabaw, and St. Catherine's Sapelo, Doboy, Altamaha, St. Simon's, St. Andrew's, and Cumberland (or St. Mary's.)

Tybee is the entrance to Savannah river, and is 5 1/4 nautical miles wide, between Hilton Head on the north and Tybee island on the south. 3 1/4 fathoms (19 1/2 feet) can be carried over the bar at low water, and 4 1/2 fathoms (26 1/2 feet) at high water. The northern part of the

entrance is occupied by shoal water, the main channel being a mile south, in latitude 32° 00' 1/3 and longitude 80° 46' 3/4, and 3 miles **East** of Tybee Point. The entrance is easy. (see Sailing Directions, etc. and chart **B.**)

<u>Sailing Directions</u> — When in four fathoms water, outside the Bar, with the beacon open to the Northward of Tybee Lt. House twice its width, and the Light bearing W. by N. (N. 75° W.) steer W. 1/4 N. (N. 84° W.) leaving the Outer Buoy (a red one) about 300 yards to the Northward. Continue this course, till Stoddard's House, and the Inner Buoy bear N.N.W. 3/4 W. (N. 27° W.) and are in range, when steer N.W. by W. 3/4 W. (N. 62° W.) till Tybee Beacon bears W.S.W. 1/4 W. (S. 74° W.)

If intending to anchor under Tybee Point, steer W. 1/2 N. (N. 81° W.) till the Lt. House bears about S.S.E., when anchor in from 4 to 5 fathoms muddy bottom.

But if bound higher up from the W.S.W. 1/4 W. bearing of the beacon, steer W.N.W. 1/2 W. (N. 70° W.) leaving a Black Buoy on the tail of the "Middle" on the Port Hand, and when the Lt. House bears S.S.E. 1/4 E. (S. 21° E.) change course to W. by N. (N. 75° W.) keeping the Lt. Boat open on the Port bow. Pass the Lt. boat on this course, and when Brick and Pulaski Beacons are in range, steer for them, passing to port of a Red Buoy and deepening into 3 and 3 1/2 fathoms, when anchor half way between the Red Buoy and the Brick Beacon.

Strangers should not attempt the navigation of the river.

Beating over the Bar. When to the Eastward of the Inner Buoy and standing to the Northward tack, when Square Beacon opens to the Northward of Tybee Point or before the Buoy ranges with Tybee Light to avoid the shoal between the Buoys, the Southern tacks can be kept (while Eastward of the Buoy) till the Light House bears W. ½ N. (N. 81° W.). When Westward of the Buoy, the Port tacks can be kept aboard till the outer Buoy bears E.S.E. and the Starboard tacks till Square Beacon is open but two ship's lengths to the Northward of Tybee Point. The lead is a safe guide, as the soundings are regular in the channel way except just to the Eastward of the Inner Buoy.

The Southern Breakers should not be approached nearer than in 3 fathoms water.

Name and Locality

	Latitude	Longitude West from Greenwich in arc	Longitude West from Observatory in time
Savannah Exchange	32° 04′ 53″	81° 05′ 17″	5h. 24m. 21.1s.
Tybee Light	32° 01′ 21″	80° 50′ 33″	5h. 23m. 22.2s.

Tides

	Ft. Pulaski	Savannah
Corrected Establishment	VII. H. XX. M.	VIII. H. XIII. M.
Rise of Highest Tide observed above the plane of reference	9.1 Ft.	9.8 Ft.
Fall of Lowest " " below " " "	2.3 "	1.3 "
Fall of Mean Low Water of Spring Tides below "	0.6 "	0.4 "
Height of Mean Low Water of Neap " above "	0.6 "	0.3 "
Mean Rise and Fall of Tides	7.0 "	6.5 "

Mean Rise and Fall of Spring Tides		8.0 Ft.	7.6 Ft.
Mean do. of Neap Tides		5.9 "	5.5 "
Mean Duration of Rise	Reckoning from the middle of one	5.h 49.m	5.h 4.m
Mean do. of Fall	Stand to the middle of the next.	6.h 35.m	7.h 22.m
Mean do. of Stand		0.h 26.m	0.h 14.m

Currents

Station	1st. Quarter Set	1st. Quarter Drift	2nd. Quarter Set	2nd. Quarter Drift	3rd. Quarter Set	3rd. Quarter Drift	Flood or Ebb
1 Off Head of Elba Island	S. 54° W.	1.1	S. 59° W.	1.4	S. 60° W.	1.0	Flood
	N. 54° E.	1.7	N. 45° E.	2.0	N. 51° E.	1.8	Ebb
2 Fig Island Buoy	N. 85° W.	0.7	N. 81° W.	0.9	N. 78° W.	0.5	Flood
	East	0.9	East	1.2	East	1.1	Ebb
3 Entrance of Back River	N. 58° W.	0.9	N. 54° W.	1.4	N. 54° W.	1.2	Flood
	S. 63° E.	0.7	S. 70° E.	1.1	S. 72° E.	0.6	Ebb
4 Head of Fig Island	N. 81° W.	0.6	N. 81° W.	0.7	West	0.5	Flood
	S. 85° E.	0.9	S. 85° E.	1.1	S. 76° E.	0.8	Ebb

Note. The observations were made as far as practicable when the the influence of the wind was small. The directions are Magnetic. The Rates are in Nautical miles per hour and are shown on the chart by the small figures at the ends of the current arrows for Maximum Flood and Ebb.

Variation of the Magnetic Needle at Tybee Light in April 1852 - - 3°.32'.E.

Wassaw Inlet into Wassaw Sound lies between the points of Little Tybee Island on the north and Wassaw ~~Sound~~ Island on the south. It is difficult to enter and has not been surveyed.

Ossabaw Inlet the entrance to Ossabaw Sound is 3⅓ miles wide between Great Wassaw Island on the north, and Ossabaw Island on the south. The cape on the north side of it is in latitude 31° 52' N., longitude 80° 59½ W. The depth on the outer bar is ~~21~~ 17 feet, but the channel is very narrow and the deepest water is in a line oblique to the general direction of the entrance. After entering the channel divides, and a second bar, into the Ogeechee river, has fourteen feet of water upon it. The shore line of the inlet has changed considerably within the last four years, but the general depth has remained about the same.

St Catherine's Inlet, into the sound of the same name, is ¾ of a mile wide, between Ossabaw Island on the east and St. Catherine's island on the west. The bar is bad. ~~having but feet of water upon it.~~

Sapelo Inlet, the entrance to Sapelo sound, is ⅞ of a mile wide between St. Catherine's and Blackbeard islands. It is one of the easiest entrances on the southern coast. The bar has 18 feet of water upon it, and is very narrow. Two courses carry into the sound. A new channel across this bar was found by the Coast Survey, south of the old one. Breakers mark the shoals north and south of the channel. Before the Buoys were removed this

entrance was an admirable one. (See chart E.)

Sailing Directions – Do not approach within less than 4 fathoms water. Get upon the Channel Course as laid down on the chart, by bringing the Inner Beacon on the S. Point of St. Catherine's Island to bear W. ¾ N., and the Outer Beacon a little open to the Northward of the Inner one; when stand in on a W.N.W. ¾ W. course, until striking 5½ fathoms water, with the Inner Point of Black Beard Island bearing W. ¾ S., then steer for the latter, until well in under the Point, when anchor in 6 fathoms water, soft bottom.

If bound up either of the rivers, endeavour to keep in the Channel by a close attention to the Lead and Chart, as there are no conspicuous landmarks by which Sailing Directions can be given.

The Courses and Bearings are Magnetic.

Latitude of Outer Beacon	31° 32′ 58″.2
Longitude of do. W. from Greenwich Obsy in arc.	81° 10′ 00″.3
Longitude of do do do in time	5ʰ. 24ᵐ. 40ˢ.
Variation of the Magnetic Needle in Jan. 1860 (computed)	3° 36′ E.
Present annual decrease 1′.2	

Tides

Corrected Establishment	VII.h. XXXIII.m.
Rise of Highest Tide observed above the plane of reference	8.6 Ft.
Fall of Lowest " " below do. do.	1.3 "
Fall of Mean Low Water of Spring Tides below do.	0.8 "
Height of Mean Low Water of Neap Tides above do.	0.9 "
Mean Rise and Fall of Tides	6.6 "
Mean do. of Spring Tides	7.8 "
Mean do. of Neap Tides	5.4 "
Mean Duration of Rise } Reckoning from the middle of one	6h. 02m.
Mean do. of Fall } stand to the middle of the next.	6h 20m.

Doboy is one of the entrances to Altamaha Sound and river, and the first one through which the town of Darien is reached. The bar is farther to seaward than Sapelo bar, say four miles.

The entrance is rather more than a mile wide between Sapelo Island and Wolf Island The light is probably now extinguished. (see chart I.)

Sailing Directions – Keep in 5 fathoms water until the Lt. House bears N.W. by W. ¼ W. (N. 55 ¼° W.) when the outer buoy which is in 3 fathoms water will be seen. Stand in W. ½ S. (S. 88° W.) passing to the Northward of the buoy and near it; keep this course to clear the North Breaker Head till the Black

Beacon opens to the Southward of the keeper's house; then haul up W.N.W. ½ W. (N 69° ½ W.) for the middle buoy passing it on either side, and steer N.W. ½ W. (N. 46° ½ W.) for the inner buoy, which leave on the port side, giving it a berth of 100 yds.

When past the buoy steer N.W. by W. ½ W. (N. 58° W.) keeping in not less than 4 fathoms to anchorage abreast of the Lt. House.

The water shoals gradually on the South side of the Channel, but on the North side the breakers are steep to.

Chimney Spit is bare at half tide, and is a good guide to the anchorage.

Latitude of Sapelo Lt. House (approx.)	31° 23′ 30″
Longitude of do. do. W. from Greenw. Obs'y in arc	81° 16′ 57″
Longitude of do. do. do. in time	5.h 25.m 08.s
Variation of the Magnetic Needle in 1855 (approx.)	3° 45′ E.

Tides

Corrected Establishment	VII.H. XXXIII.M.
Mean Rise and Fall of Tides	6.6 Ft.
Mean do. do. of Spring Tides	7.8 "
Mean do. do. of Neap Tides	5.4 "
Mean Duration of Rise } Reckoning from the middle of one	6.h 02.m
Mean do. of Fall } stand to the middle of next	6.h 20.m

Altamaha Inlet into Altamaha Sound and River is a bad one, so that Doboy for general purposes may be considered as the best entrance. The width between Wolf island on the north and St. Simon's on the south is $\frac{3}{4}$ of a mile. Egg Island lies opposite to the entrance, which has never been lighted or buoyed.

St. Simon's Inlet (Chart G.) the entrance to St. Simon's sound which leads to Brunswick and Blythe Island, is about a mile wide between St. Simon's and Jekyl islands. latitude 31° 08' N., longitude 80°. 25' W. The bar is 5 miles from the general line of the coast, is but little more than one fourth of a mile wide, and has 17 feet upon it at low water, and about 24 feet at high water. This is one of the best entrances on the coast. The light has probably been extinguished.

Sailing Directions — For St. Simon's Sound and Brunswick Harbor. — When in 5 fathoms bring the Light to bear W.N.W. (N. 63° W.) (King's Cotton House is now in range with the Light) cross the bar on this range, giving the Outer Bar Buoy a berth of not less than 100 Yards and leaving on Port hand the Inner Bar Buoy: when on this range a Dead Tree on the North Point of Jekyl Island bears W. $\frac{1}{2}$ N. (N. 79 $\frac{1}{2}$° W.) then steer for the Tree: when the Light bears N.W. $\frac{3}{4}$ W. steer N.N.W. (N. 63 $\frac{1}{2}$° W.) leaving Jekyl spit Bouy on the Port-hand. when the Light bears E. $\frac{1}{2}$ N. steer S.S.W. $\frac{3}{4}$ W. (S. 35° W.) until the Old Dubignon House bears E. by S. $\frac{1}{2}$ S. then steer

W. by S. $\frac{3}{4}$ S. (S. 74° W.) leaving the upper Buoy of the Middle Ground on the Starboard hand. Cedar Hammock bearing W. $\frac{1}{2}$ S. steer in for the Brunswick Shore, giving it a berth of 2 cable's length, until Turtle River is opened; when if bound to Blythe Island steer for it and keep the shore aboard until good anchorage is reached; if bound to Brunswick keep 1$\frac{1}{2}$ to 2 cable's length distant from Starboard shore and anchor off the City.

Note – The Courses and Bearings without the Brackets are Magnetic, those within are True, and the Distances are in Nautical Miles. The Soundings are expressed in feet to 18 feet or within the dotted lines, beyond them in fathoms, and show the depth at mean low water the plane of reference.

The dotted lines beyond low water mark represent the bottom within the respective depths of 6, 12 and 18 feet, thus ..... for 6 feet ..... for 12 feet ..... for 18 feet.

The characteristic soundings only are given on the Map; they are selected from the numerous soundings taken in the survey so as to represent the figure of the bottom.

Latitude of St. Simon's Lt. House (approx.)	31° 08′
Longitude of do. do. W. from Greenwich Obs'y in arc (approx)	81° 36′
Longitude of do. do. do. do. in time (approx)	5ʰ 26ᵐ 24ˢ

Tides

Corrected Establishment for St. Simon's Entrance	VII.h XLIII.m
Rise of Highest Tide observed above the plane of reference	8.9 Ft.
Fall of Lowest do. do. below do.	2.3 "
Fall of Mean Low Water of Spring Tides below do.	0.7 "
Height of Mean Low Water of Neap Tides above do.	0.7 "
Mean Rise and Fall of Tides	6.8 "
Mean do. of Spring Tides	8.2 "
Mean do. of Neap Tides	5.4 "
Mean Duration of Rise } Reckoning from the Middle of one	6.h 10.m
Mean do. of Fall } Stand to the middle of next	6.h 16.m
Mean do. of Stand	0.h 20.m

Currents

	Locality	1st Quarter		Maximum		3rd Quarter		Flood or Ebb
		Set	Drift	Set	Drift	Set	Drift	
1	Near Outer Bar Buoy	N. 66° W.	0.7	N. 66° W.	1.5	N. 76° W.	0.8	Flood
		S. 80° E.	0.7	S. 66° E.	1.3	S. 66° E.	0.9	Ebb
2	One mile Westward of Inner Bar Buoy	N. 72° W.	1.3	N. 78° W.	2.0	S. 74° W.	0.6	Flood
		S. 66° E.	1.4	S. 86° E.	2.0	S. 76° W.	1.6	Ebb
3	Westward of Lt. House	N. 66° W.	0.5	N. 69° W.	1.8	N. 66° W.	1.5	Flood
		S. 86° E.	0.8	N. 84° E.	2.5	S. 84° E.	1.8	Ebb
4	Near Buoy off Jekyl Creek	S. 79° W.	0.4	N. 86° W.	1.0	S. 79° W.	0.5	Flood
		S. 86° E.	1.8	N. 89° E.	1.8	N. 80° E.	1.3	Ebb
5	Junction of Brunswick and Turtle Rivers	N. 40° E.	0.9	N. 56° W.	1.3	N. 52° W.	1.1	Flood
		S. 71° E.	0.9	S. 46° E.	1.3	S. 42° E.	0.8	Ebb
6	Turtle River off Blythe Island	N. 4° E.	0.9	N. 14° E.	1.0	N. 4° E.	0.8	Flood
		S. 14° W.	1.2	S. 24° W.	2.0	S. 24° W.	1.4	Ebb

The observations were made as far as practicable when the influence of the wind was small. The Directions are True. The Drifts are in Nautical miles per hour: shown on the chart by figures near the ends of the current arrows.

Signifies 1st. Quarter " " Maximum " 3rd. Quarter Flood " Ebb

Cumberland Inlet, also called St. Mary's or Fernandina Entrance, lies in latitude 30° 42' ¾ longitude 81° 27½, between Cumberland island on the East and Amelia island on the West (see chart I) – the width being ⅞ of a mile.

The main bar is 1¾ miles East by South from Amelia island, is quite narrow and has 14½ feet of water on it at low water. It is somewhat changeable from storms as well as from circumstances running through a period of many years. The north and south breakers mark the channel entrance. Besides the main entrance there is a channel, with 10 feet, close to Cumberland Island.

A part of Fort Clinch has been erected for the defense of the main channel, and it is said that sand batteries have been erected by the secessionists on the ~~other~~ northern point of Amelia Island.

Sailing Directions – Main Ship Channel. Bound into St. Mary's, while in 6 fathoms, bring Amelia Island Lt. House to bear S.W. (S. 49° W.) then steer for it, keeping the South Beacon in range. Cross the Bar between the Outer Buoy and Buoy No. 1 leaving the latter one third of a cable's length (40 fathoms) on the Port hand. When abreast of Buoy No. 1 steer S.W. ¾ W. (S. 57° W.) until on the same range with, and half way between Buoys No. 2 and No. 4. Then steer S.W. ¼ W. (S. 51° W.) until abreast of Buoy No. 4 which leave on the Starboard hand. Then run for the Inner Buoy on Kingsley's Bank leaving it on the Port-

hand. When the Light bears S.W. by S. ¾ S. steer N.W. ½ W. (N. 47° W.) until the East Beacon bears S.W. ¼ S. (S. 46° W.) then run W. ½ S. until Amelia River is opened, when steer in for it, keeping one and a half, or two Cable's length from the Amelia shore. This brings into good anchorage.

Cumberland Channel. – When in 4½ fathoms, bring the South point of Cumberland Island to bear S.W. ¾ S. (S. 40° 30' W.) and steer for it, until in 15 feet water, with the bastion of Fort Clinch bearing S. ½ W., then steer S.S.W. ¾ W. (S. 35° W.) and continue this course until the Bar is passed, giving Cumberland Island Point a cable's length berth. When in 4 fathoms, stand in for Amelia River on the course S. by E. ½ E. (S. 11° 30' E.) leaving Tiger Island Bank to the Starboard.

If bound into St. Mary's River follow the course S.S.W. ¾ W. (S. 35° W.) until the Buoy on Tiger Island Bank bears S.E. when steer N.W. ¼ W. (N. 41° W.) for the Buoy of the entrance to St. Mary's River.

Note. The Courses and Bearings without the Brackets are Magnetic, those within are True. The Distances are in Nautical miles. The Soundings are expressed in feet, to 18 feet or within the dotted lines; beyond them in fathoms, and show the depth at mean low water – the plane of reference. The dotted lines, beyond low water mark, represent the bottom within the respective depths of 6, 12, and 18 feet, thus ..... for 6 ft. " " " " " " for 12 ft. " " " for 18 ft.

The characteristic soundings only are given on the map. They are selected from the numerous soundings taken in the survey so as to represent the figure of the bottom.

Latitude of Astronom. Station Fernandina		30° 40′ 17″.6
Longitude of do. do. W. from Greenw. Obsy.	in arc } data to	81° 27′ 42″.8
Longitude of do. do. do.	in time } 1857	5ʰ 25ᵐ 50ˢ.8
Variation of Magnetic Needle in April 1857		4° 01′ E.

Tides

Corrected Establishment	VII.ʰ L.ᵐ
Rise of Highest Tide observed above the plane of reference	7.5 ft.
Fall of Lowest Tide do. below do. do.	1.9 "
Fall of Mean Low Water of Spring Tides below do. do.	0.5 "
Height of do. of Neap Tides above do.	0.4 "
Mean Rise and Fall of Tides	5.9 "
Mean do. of Spring Tides	6.7 "
Mean do. of Neap Tides	5.3 "
Mean Duration of Rise } Reckoning from the middle of one	6ʰ 09ᵐ
Mean do. of Fall } Stand to the middle of the next	6ʰ 15ᵐ

Currents

Locality	1st. Quarter		Maximum		3rd Quarter		Flood or Ebb
	Set	Drift	Set	Drift	Set	Drift	
1 St. Mary's Bar, near Buoy No. 4	S. 84° W. N. 84° E.	0.5 0.4	N. 46° W. S. 74° E.	0.7 0.7	N. 66° W. S. 74° E	0.4 0.3	Flood Ebb
2 North of Fort Clinch	S. 61° W. N. 64° E.	0.9 1.7	S. 76° W. N. 64° E.	2.1 2.1	S. 76° W.	1.9	Flood Ebb
3 Amelia River opposite Old Fernandina	S. 04° W. N. 06° W.	1.0 2.0	S. 14° W. N. 19° E.	1.8 2.0	S. 14° W. N. 04° E.	1.5 1.0	Flood Ebb
4 Amelia River opposite New Fernandina	S. 44° W. N. 17° W.	0.8 1.1	S. 54° W. N. 15° E.	1.0 1.4	S. 23° W. N. 04° E	0.9 1.1	Flood Ebb
5 St. Mary's R. between North River and Point Peter	S. 83° W. S. 75° E.	1.0 1.2	West S. 75° E.	1.9 1.6	West S. 75° E.	1.2 1.5	Flood Ebb
6 St. Mary's R. opposite St. Mary's	S. 84° W. N. 54° E.	0.8 1.0	S. 54° W. N. 44° E.	1.1 1.2	S. 64° W. N. 64° E.	0.9 1.1	Flood Ebb

The observations were made as far as practicable when the influence of the wind was small. The Bearings are True, the Drifts are in Nautical miles per hour, shown on the chart by figures near the ends of the current arrows.

Signifies end of 1st. Quarter — Maximum — 3rd Quarter Flood
" " — " — " " Ebb

Coast of Georgia

Sounds and Rivers

Calibogue Sound, between Hilton Head and Dawfuskie Islands is an arm of the sea stretching into and partially across Tybee entrance, the direct communication between which and Savannah River along the north western shore is cut off by shoals running north and south, and upon which the sea breaks.

Tybee Entrance has been described already, leading into Savannah River. Following up the channel the depths decrease regularly except at the bars to the city of Savannah fourteen and a half nautical miles, to which twelve feet can be now carried at low: and eighteen and a half feet at high water, a channel through the shoals having been artificially dredged. Before the dredging, ten feet could be be carried to the "wrecks" just below the city, and eight feet across the bar thus named, and Garden Bank just above it. The shoals referred to are the "Knoll" two and a quarter miles above Tybee Light; the "Mud Flats" five and a half miles higher up; "Four Mile Point Bar"; "The Wrecks" two miles south of Savannah Exchange; and "Garden Bank" just above them.

The larger class of vessels visiting the port of Savannah anchor at "Venus Point" below the "Mud Flats", and discharge a portion of their cargoes by lighters. There are numerous

islands in the river, the greatest length of which is in the direction of the stream: also shoals of mud, sand, and Oyster shells as shown by the chart. The navigation is, however, by no means difficult.

Fort Pulaski, on Cockspur Island, two miles and a quarter from Tybee Light House defends the entrance, and Fort Jackson the immediate approach to the City. Fort Pulaski is about half a mile from the marshy shore of Tybee, the passage between varying from six feet to four and a half fathoms.

The shores of Savannah River are lined with rice plantations above the mouth of Augustine Creek, above which the water is usually fresh at low tide.

Hutchinson's Island, opposite to Savannah, separates the Back and Front Rivers from each other, the latter being next the City. The wet culture of rice is not allowed upon it. The Back River has a deeper and wider channel than the Front.

Wassaw Sound and St. Augustine River. Wassaw inlet and sound are, in fact, a second entrance into the Savannah river. St. Augustine river joining the main stem four miles below Savannah. This sound has not yet been surveyed by the Coast Survey.

Steamboats from Savannah to Fernandina or the St. John's River pass out at Wassaw Sound, re-entering at Ossabaw or Sapelo, or pass by a narrow, tortuous, and shoal channel through the Romerly Marsh, south of Skiddaway Island.

where there is but three and a half feet at low water. (see chart C) The vessels are warped through.

On St. Augustine River is the fishing village of Thunderbolt, about four miles from Savannah by the road, some thirteen miles by water. The Cemetery of Magnolia is near Thunderbolt, and good, but sandy roads communicate with the city.

Ossabaw Sound, Vernon, Little and Great Ogeechee Rivers. After entering the sound the channel divides, the western, leading into the Great Ogeechee, has a bar of fourteen feet near Ossabaw Island on the west; the eastern, into Vernon River, has a bar of twelve feet at the entrance towards Pine Island on the east. Deep water is carried up the Vernon river to the bar at the mouth of the Little Ogeechee, where there is but fourteen feet.

Raccoon Key lies between the Vernon and Ogeechee rivers, at the north part of the Sound, and a passage called Hell-Gate, with from four fathoms to ten feet in depth, where the currents run swiftly, connects the two rivers.

Little Don Island is to the north of Raccoon Key. Thirteen feet can be carried up to Montgomery on the Vernon River, the site of a proposed city, but in fact a plantation, fourteen miles from the outer bar of Wassaw Inlet.

The Ogeechee River, heads high up in the State of Georgia, and has rich rice plantations upon its banks. Ten feet of water can be carried up to the Florida passage, seven miles

from the Ossabaw bar.

The so-called Savannah, Albany and Gulf Railroad, from Savannah south-westward crosses the Ogeechee about twenty-six miles from the Ossabaw bar, and fifteen from Savannah.

St. Catherine's Sound is a broad sheet of water, of moderate depth, and with numerous shoals. It has not yet been surveyed by the Coast Survey. It is crossed by the steamboats passing from the Savannah to Florida. The channels make towards the sea, so as to avoid the shoals stretching south of Milligan's Island.

The ~~Medway~~ Medway or Sudbury River has rice plantations upon its banks, and the small village of Sudbury is about nine miles from the sea.

Newport River empties into the western part of St. Catherine's Sound.

Sapelo Sound (see chart E.) is a broad and deep sheet of water, its greatest length being in an ~~south~~ east and ~~south~~ west direction, about four nautical miles, and receiving numerous rivers and arms of the sea or creeks, of no special importance. The chart shows clearly the form of the shoals, and the place of deep water. Off the entrance to Newport River is a fifteen feet shoal in mid channel.

Sapelo River is a continuation of Sapelo Sound, changing its name without changing its character, except in width.

Doboy Sound (chart E.), and the arms of the sea connected with it, occupy a wide space some twelve miles between

Sapelo and Altamaha rivers, the water course turning among the low islands forms quite a labyrinth.

Darien River is one of these arms and the old town of Darien, once a place of considerable business, is on its eastern or left hand, about thirteen miles from Sapelo Light House. If the beacons are in place the river is easily navigated, though there are frequent bars and shoals. Fifteen feet can be carried to Darien.

Altamaha Sound is of small consequence, the navigation being much interrupted by islands and shoals, and the entrance being in fact through Doboy inlet and sound. The Altamaha river and its tributaries reach the centre of the State, Macon being upon the Ockmulgee one of its two principal branches. A large trade in Pine timber has been driven on this river, and a project for connecting it with the Savannah by a canal was partially executed. Darien is thirty-five miles by a good but sandy road from Walthourville station on the Savannah, Albany, and Gulf Railroad: forty miles from Savannah, and by the river about thirty miles from the railroad crossing, fifty three miles from Savannah.

St. Simon's Sound and Turtle River (chart G.) lead to Brunswick and Blythe island, purchased by the United States Government for the site of a naval depot. Frederica, Mackay's, and Back rivers, which are in fact arms of the sea or creeks, come in at the eastern head of

St. Simon's Sound. Frederica River is on the main passage between Altamaha and St. Simon's Sound, next to St. Simon's island. The sound is about four miles long and one mile wide. From the bar to Brunswick is about thirteen miles, and to the site for the proposed naval depot about fifteen miles. The navigation is easy, and three fathoms and a half can be carried to near the shore of Blythe island. A bar with ten feet water upon it closes the lower entrance of Brunswick harbor, the less direct access from the channel on the north side of Marsh or Buzzard's island, giving rather more water than the direct one. The bottom is generally soft, though some of the shoals are hard sand. The Brunswick railroad is, it is believed, now connected with the Savannah, Albany and Gulf railroad.

St. Andrew's Sound receives the Satilla River, which with its branches drains the country to the very middle of the southern part of Georgia. On the north-east it receives the Little Satilla River, and on the north Jekyl creek, which is part of the main passage from Savannah to Frederica, being close to Jekyl island. The sound is some seven miles long and from three quarters of a mile to two miles wide. The sound is deep, but interrupted by numerous shoals, and the bar is not easy to cross. A reconnaissance was made in 1850, of which the chart is marked H.

Cumberland Sound lies between Cumberland Island and the main, receives the St. Mary's River from the west, and the waters of Fernandina harbor and several small streams from the south. There is deep water in the Sound, say from three and a half to six and three quarter fathoms. A small shoal with eight feet on it, and five and a half and three and a half fathoms close to its eastern edge, is near the entrance to Fernandina harbor, it is however easily avoided. A bar with seventeen feet on it lies at the mouth of St. Mary's river, at the meeting of the Jolly river with it. This depth, or more, can be carried to St. Mary's, and there is thirteen feet just off the wharves of the town.

Inland Passage

There is an inland passage from Savannah to Fernandina used by steamboats drawing five feet of water, but requiring thorough local knowledge to follow its windings, and local knowledge of the tides so as to avoid detention at the various shoals called "dividings", where the tides coming through different openings meet and divide. Beginning at Savannah and passing down the river the inland pass enters Augustine Creek and its continuation Wilmington River, (see sketch B.). When the tide does not serve to pass through Romerly Marsh where there is but two and three feet at the shoalest points (see charts C and A.) at low water, the boats go out of Wassaw Sound, returning by Ossabaw,

or more frequently by Sapelo entrance. If the tide serves to pass the "dividing," (marked x on the chart) at Romerly Marsh in the passage South of Skiddaway Island (the average rise of tide is about seven feet) the boats are warped through into Odingsell Creek, between Skiddaway and Little Wassaw islands: in this Creek near the head is a "dividing". A narrow passage (Hell Gate) leads into the Ogeechee River, a branch of which, Bear River, passes along the north side of Ossabaw island & communicates with St. Catherine's Sound: there is a "dividing" about two miles from the Ogeechee, crossing St. Catherine's Sound, avoiding the shoals east of Milligan's island; the passage runs to the south and east of Colonel's island, about four miles from the south east point of which there is a "dividing". The passage is through Johnson's creek on the north side of St. Catherine's island, (a tortuous and narrow creek on the south-west part of which is "English Cut") crosses Sapelo Sound, and skirting Black Beard and Sapelo islands on the north and west or inner sides is through Mud River and New Tea-Kettle Creek into the North River. High Bluff on Sapelo is near the entrance to this Creek; about two miles above is a "dividing."
The channel to Darien crosses Sapelo Sound, and passes through narrow and tortuous creeks. Darien is about seventy-eight miles from Savannah; it lies west of the inland passage, and when the tides do not suit the boats

pass by, especially those of the greater draughts. There is a "dividing" east of General's island (see chart A) on the main passage. Frederica River, which forms part of the main passage, is on the inside of St. Si-mon's island; there is a "divide" near the N. W. entrance of it. The remains of Old Frederica are about eighty-two miles from Savannah. Brunswick is about ninety-eight miles from Savannah, and lies west of the main passage, which goes across St. Simon's Sound and up Turtle River to Jekyl creek, through which it passes. There is a "dividing" near the entrance of Jekyl creek, but it is not a serious obstruction. The passage crosses St. Andrew's Sound into Cumberland River, on the West side of Cumberland island, and thence across Cumberland Sound, and passing to the mouth of St. Mary's river to Fernandina river. St. Mary's and Fernandina are about one hundred and twenty miles from Savannah by this passage. Through Kingsley's cut and out at Nassau River and inlet the mouth of the St. John's is reached. There is a passage by water, but only practicable for row boats, between Fernandina River and the St. John's.

The distances from Savannah to the different "dividings" etc. are nearly as follows.— To mouth of Augustine creek four miles, to Romerly Marsh sixteen, to Wassaw "dividing" nineteen, to Ossabaw "dividing" twenty-seven,

to Colonel's Island "dividing" forty-four, to Sapelo Island "dividing" sixty-two, to General's Island "dividing" seventy-four, to ~~Fernandina~~ Frederica River "dividing" seventy-nine, to Jekyl Creek "dividing" ninety-four, to St. Mary's and Fernandina about one hundred and twenty nautical miles.

Sea Coast of Georgia. (chart A.) The surveys of the inlets and their approaches on this coast being deemed the most important objects, the hydrography between them and the off-shore work of the section were only in progress in 1861, all the inlets except Wassaw and St. Catherine's, those being of the least importance, had been surveyed, or at least a reconnaissance had been made.

The coast is quite clear, or free from dangers beyond the bars of the inlets, which are at various distances from the land, - between two and three quarter nautical miles at Tybee, four and three quarters and five miles at St. Simon's and St. Andrew's, and one mile and three quarters at Fernandina, and going into Florida one mile at the St. John's. One mile beyond these bars there is at Tybee three and a half fathoms water, and then four to five fathoms at the other inlets, to Fernandina and the St. John's where there is seven fathoms at one mile beyond the bar. The distance from the land is not a guide to the depth of water, though from Tybee to St. Andrew's four to five fathoms are to be found, be-

tween four and six miles from land, and south of that the bottom shelves more rapidly, giving seven fathoms at between two and three miles from land. Within the same limits north and south six fathoms occur about nine to ten miles from the land.
An average section perpendicular to the coast would give nine and a half fathoms at twelve miles and a half from the land, eleven and a half at twenty-four miles, thirteen and a half at thirty-six miles, fifteen and a half at forty-eight, and seventeen at sixty; but the depths are too irregular to make them certain indices of distance.

Lights and Beacons

Martin's Industry Light-vessel, off Port Royal entrance, about fifteen miles eastward of Tybee Light. Two fixed lights, 44 feet above sea, visible twelve nautical miles. To guide into Port Royal harbor and along the coast clear of danger to the Tybee entrance. There is also a bell and horn for fog-signal.

Calibogue Sound Light-vessel, in 4½ fathoms water at mean low tide. One fixed light, 30 feet above the sea, visible 9 nautical miles. also bell and horn for fog-signal. Tybee Light bears S. ¾ W.: Tybee beacon, S.; Braddock Pt. N. by E.; and the south Pt. of Hilton Head, E.N.E.

Tybee Light-House, on northeast end of Tybee island, and on south side of ~~the~~ the entrance to Savannah River. One fixed light, 108 feet above sea, visible sixteen nautical miles — tower white.

Tybee Beacon at the point of Tybee island, with Tybee light ranging a little north of the bar. One fixed light, 62 feet above sea, visible twelve nautical miles, tower white.

Tybee Island Knoll Light-vessel — off the "Knoll" north of Tybee island, in the Savannah River. One fixed light, 40 feet above sea, visible ten nautical miles. — also bell and horn for fog-signal.

Cockspur Island Beacon on a knoll connected with the eastern end of Cockspur island, in the Savannah River. — One fixed light, 25 feet above sea, visible nine nautical miles — tower white.

Oyster Beds Beacon opposite to Cockspur island, to mark the south channel of Savannah River. One fixed red light, 35 feet above sea, visible nine nautical miles; — tower white, also a bell for fog-signal.

Fig Island Beacon, a wooden beacon colored white, on the east end of Fig Island in the Savannah River, a guide to vessels going up to the city at night. One fixed light, 26 feet above sea, visible nine nautical miles — also a bell for signal.

The Bay, an iron shaft, bronzed — lighted with gas — at the east end of the "Bay", in the city of Savannah — One fixed red light — 77 feet above sea — visible nine nautical miles.

Sapelo Light House forty six miles from Tybee Light, on south end of Sapelo island, north side of the entrance to Doboy Sound, to which it is a guide. One fixed light varied by flashes, with forty seconds interval — 74 feet above sea — visible fourteen nautical miles. The tower has red and white horizontal stripes.

Sapelo Beacon, in front of the main light, has one fixed light, 50 feet above sea, — painted black.

Wolf Island Beacons ranging with the outer bar of the

southern entrance — are near the north end of Wolf Island, and S.S.E. of Sapelo Island Light — they are colored white — the lights are fired 25 & 15 feet above sea, visible nine nautical miles.

St. Simon's Light House on the south end of St. Simon's Island, and the north side of the entrance to St. Simon's Sound; One fixed light, 80 feet above sea, visible fourteen nautical miles — tower white.

Little Cumberland Island Light House on the south side of the entrance to St. Andrew's Sound and the Satilla River. One fixed light, 70 feet above sea, visible fourteen nautical miles — tower white.

Latitudes and Longitudes

	Latitude	Longitude W. from Greenwich	
Martin's Industry Lt. vessel	32° 05′ 31″	80° 35′ 13″	5h. 22m. 21s.
Culiboque Sound Lt. vessel			
Tybee Lt. House	32° 01′ 21″	80° 50′ 33″	5 23 22
Tybee Beacon	32° 01′ 19″	80° 50′ 08″	5 23 21
Tybee Island Knoll Lt. vessel			
Cockspur Island Beacon	32° 01′ 00″	80° 52′ 48″	5 23 31
Oyster Beds Beacon	32° 02′ 22″	80° 53′ 30″	5 23 34
Fig Island Beacon	32° 04′ 58″	81° 03′ 35″	5 24 14
The Bay			
Sapelo Lt. House	31° 23′ 30″	81° 16′ 57″	5 25 08
Sapelo Beacon	31° 23′ 25″	81° 16′ 51″	5 25 07
Wolf Island Beacons	31° 21′ 05″	81° 16′ 34″	5 25 06
St. Simon's Lt. House	31° 08′ 04″	81° 23′ 26″	5 25 34
Little Cumberland Island Lt. House	30° 58′ 36″	81° 24′ 36″	5 25 38

Note. — It is probable that these lights have been extinguished and the buoys removed.

Fresh water

The following notes of localities where fresh water may be procured are communicated by Assistants and Sub-Assistants of the Coast Survey.

As a rule, the first rice plantation indicates that the water of the stream is fresh, as salt kills the rice.

On all the islands near the sea, drinkable water may be procured by sinking casks above high water mark, in sandy localities where there is little or no vegetable matter.

Savannah River: is generally fresh at low water near the city of Savannah — is fresh (when the river is high) at three quarters ebb opposite "Shadd's Old Chimney" — in freshets sometimes 10 miles lower down.

Romerly Marsh — including the channel of inland navigation from Wassaw Sound southerly to Odingsell's Creek: A small supply, poor in quality and accessible only at high tide, may be obtained from Mr. Waring's plantation, at the landing about 1 mile north-westerly from the westernmost part of the channel, on the east side of Skiddaway Island.

At Thunderbolt, at the head of Wassaw Sound, where

the channel turns northward under the name of Wilmington River, it is believed that fresh water is obtainable.

Ossabaw Sound — there is a pretty good well on Green Island, about 3 or 4 miles from the mouth of the Sound, and on north side. There is nobody living on the island.

Ogeechee River and other rivers of Georgia: fresh water to be met about 20 miles up from the mouth.

Sapelo Sound and River: — for 12 miles upward from the entrance of the Sound have never found water fresh enough for use, though it may become so in freshets.

Watering places in this vicinity were: On Sapelo Island from a well at the landing close to the cottonhouse at Mr. Spalding's plantation on Mud River, called "Chocolate", 2½ miles from N.W. point (High Point) of Sapelo Island: — a shallow place accessible only at high water. —

On St. Catherine's Island, at the plantation of Mr. Wallrugh (formerly Dr. Kollock's), 5 or 6 miles from the south end of the island, ¼ mile east of a small wharf on Johnson's Creek (main channel of inland navigation). The landing is accessible through a small branch ⅜ ths. mile south of the wharf: — the wells are near the north end of the negro quarters, but casks have to be rolled ⅓ mile to the landing.

Ascending the river, a small supply is obtainable at the plantations: as at Mr. Cooke's, north end of Creighton Island, at his residence up Broro River, where it narrows and turns to N.E.: — and at Sutherland's Bluff, 10 miles

above entrance of Sapelo Sound, where a good supply is probably procurable from the bluff clay bank, by sinking barrels. — Good water is to be had at Blaisden's Bluff. (a summer residence of the planters) between 1 and 2 miles west of the south end of Creighton Island, on the right bank of a river or water-channel connecting (?) with Mud River, and also with Doboy Sound: — it may be reached in a small boat from Sutherland's Bluff, passing through tortuous marsh channels of Back River, skirting the marsh on the west side of Creighton Island. The Bluff is concave, about 20 feet high, of dark colored clay, apparently full of springs: — the water is remarkably limpid and the supply abundant. This is a desirable Water Station, if there be a good water communication with Doboy Sound.

Doboy and Altamaha Sounds: — Merchant vessels usually fill their water from along side, as low down as Doboy Island, at a favorable state of the tide. — the water may be turbid, but when settled is palatable and of good keeping qualities.

Doboy Island: — there is a good well just inside of Doboy Sound, at the north end of an old mill.

Altamaha River — in all its branches, the water at ordinary times is fresh at low water, about 12 miles up, at the city of Darien, and during freshets is found about 2 miles further down — during freshets the river waters of the Altamaha are said to come down the south branch

past the westerly shore of St. Simon's Island into St. Simon's Sound, and vessels have watered there.

Between the Altamaha and the St. John's Rivers it is difficult to obtain water except at the plantations or towns of Brunswick, St. Mary's, or Fernandina, — and there only in small quantities (about a cask-full) at a time, as the wells are shallow.

St. Simon's Sound and Turtle River, — a small supply may be obtained from wells, at St. Simon's Light House and at Mr. King's plantation, on the south end of St. Simon's Island.

At Brunswick City: there is a well from which vessels are supplied, just above the head of the steamboat wharf.

Turtle River: — As far up as the head of Blythe Island, 17 miles from the entrance of St. Simon's Sound, the river water is not fresh enough for use.