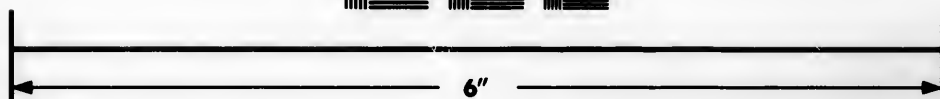
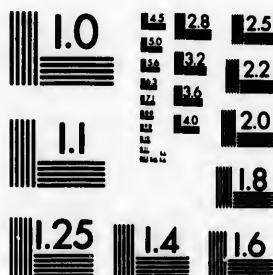


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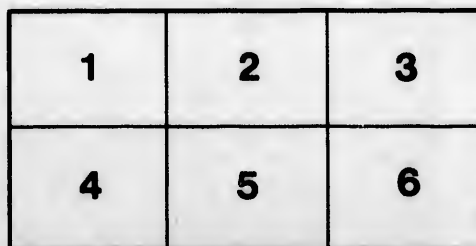
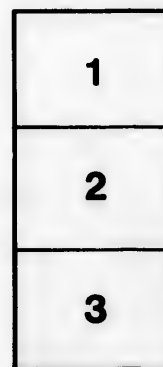
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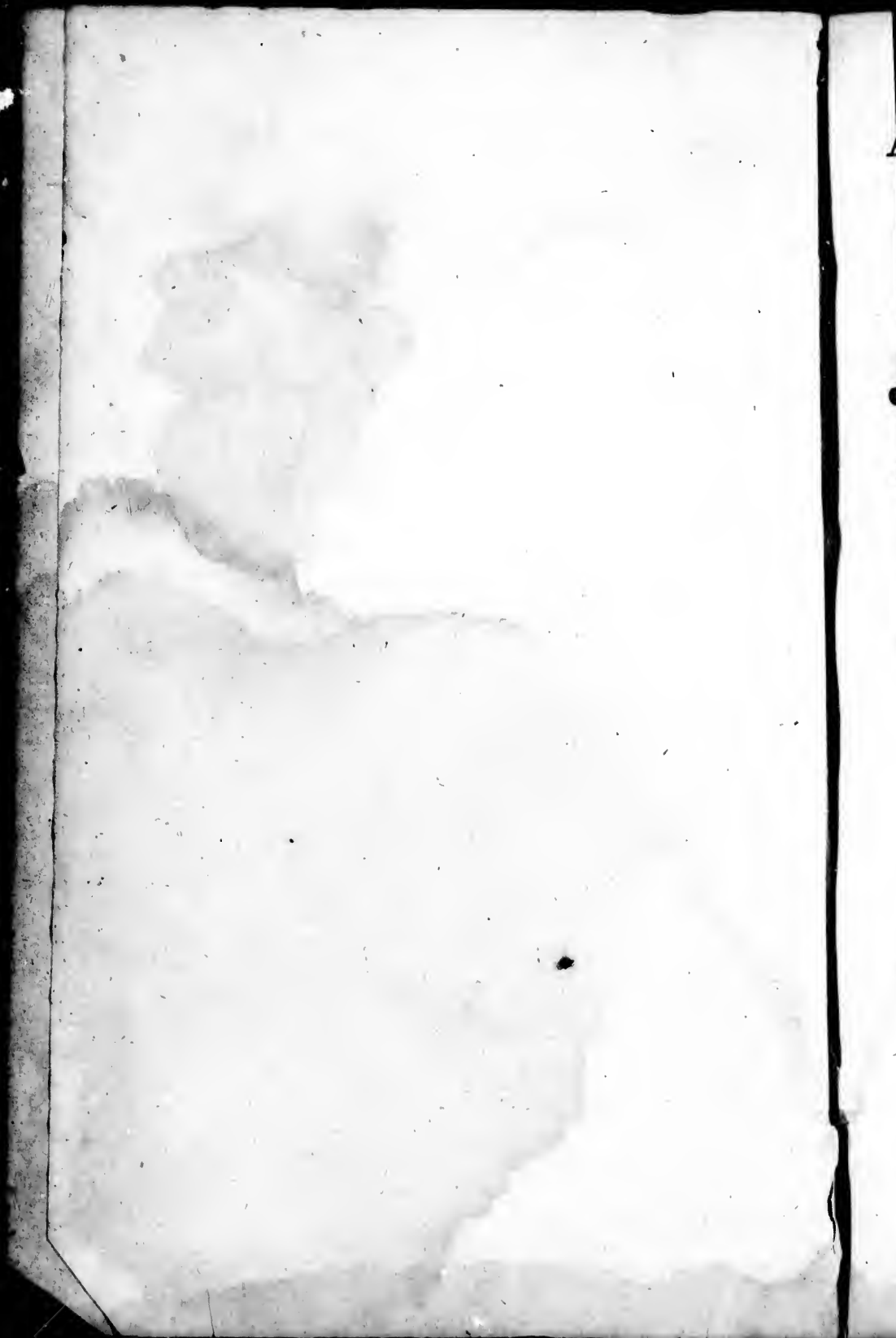
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THE  
**AMERICAN COAST PILOT:**

CONTAINING THE  
**COURSES AND DISTANCES**  
BETWEEN THE  
PRINCIPAL HARBOURS, CAPES, AND HEADLANDS,  
ON THE  
**COAST OF NORTH AND SOUTH AMERICA:**

*WITH DIRECTIONS FOR SAILING INTO THE SAME;*  
Describing the Soundings, Bearings of the Light-Houses and Beacons  
from the Rocks, Shoals, Ledges, &c.

WITH THE PREVAILING  
WINDS, SETTINGS OF THE CURRENTS, &c.  
AND THE  
**LATITUDES AND LONGITUDES**  
OF THE  
**PRINCIPAL HARBOURS AND CAPES.**

TOGETHER WITH A  
**TIDE TABLE.**

BY EDMUND M. BLUNT.

*Corrected and Improved by Information derived from Official Documents, Actual Observations,  
and the most experienced Pilots.*

—●●●—  
**ELEVENTH EDITION.**  
—●●●—

**NEW-YORK:**  
PUBLISHED BY EDMUND AND GEORGE W. BLUNT, 154 WATER-STREET,  
CORNER OF MAIDEN-LANE.  
*Gray & Bunce, Printers.*

Sept. 1827.

**SOUTHERN DISTRICT OF NEW-YORK, ss.**

**BE IT REMEMBERED**, That on the *sixteenth* day of *August*, A. D. 1827, in the *fifty-second* year of the Independence of the United States of America, **EDMUND M. BLUNT**, of the said District, hath deposited in this office the title of a book, the right whereof he claims as Author, in the words following, to wit,

"The American Coast Pilot: containing the Courses and Distances between the principal Harbours, Capes, and Headlands, on the Coast of North and South America; with Directions for Sailing into the same; describing the Soundings, Bearings of the Light-Houses and Beacons from the Rocks, Shoals, Ledges, &c. with the prevailing Winds, Settings of the Currents, &c. and the Latitudes and Longitudes of the Principal Harbours and Capes, together with a Tide Table. By Edmund M. Blunt. Corrected and improved by Information derived from Official Documents, Actual Observations, and the most experienced Pilots. Eleventh Edition."

In conformity to the Act of Congress of the United States, entitled "An Act for the encouragement of Learning, by securing the copies of Maps, Charts, and Books, to the authors and proprietors of such copies, during the time therein mentioned." And also to an Act, entitled "An Act, supplementary to an Act, entitled an Act for the encouragement of Learning, by securing the copies of Maps, Charts, and Books, to the authors and proprietors of such copies, during the times therein mentioned, and extending the benefits thereof to the arts of designing, engraving, and etching historical and other prints."

**FREDERICK J. BETTS,**  
*Clerk of the Southern District of New-York.*

**NOTICE.**

**GENTLEMEN** making Nautical Communications to the subscriber, will please address them to the care of **EDMUND** and **GEORGE W. BLUNT**, No. 154 Water-street, corner of Maiden-Lane, New-York; by whom, in future, all his works will be published. **E. & G. W. BLUNT** will, with pleasure, communicate every information in Nautical Improvements, having it from official documents, and those furnished by

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**N. B.** As some improvements are made since this work commenced, the reader is referred to the **APPENDIX**.

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## REPORT

*Of the Committee appointed to examine Blunt's Chart of the North-East Coast of North America, relative to the South Shoal of Nantucket.*

The committee appointed to examine the evidence relative to the position of Nantucket South Shoal,

### RESPECTFULLY REPORT,

That the South Shoal of Nantucket, which has been heretofore placed in lat.  $40^{\circ} 42' N.$  or thereabouts, on the charts of the Coast of North America, has been placed in lat.  $41^{\circ} 4' N.$  on a Chart of part of the Coast of North America recently published by E. M. Blunt, on the following evidence of its position.

1st. A survey by Capt. J. Colesworthy, made in June and July, 1821, for account of, and at the expense of Mr. E. M. Blunt.

2d. Observations of Capt. Colesworthy on the 11th of September following, assisted by Mr. Walter Folger, jr. of Nantucket, who accompanied him at the instance of several of the inhabitants of that Island, to determine whether a mistake had or had not been made by Capt. Colesworthy, in his previous surveys.

At this time, (11th Sept.) a good observation was had at noon half a mile south of the Shoal, according to the account given by Mr. Folger.

3d. A survey made by William Coffin, P. F. Coffin, Jona. C. Briggs, and several other experienced navigators of Nantucket, who were provided with a sloop equipped at the expense of the inhabitants of that Island, by subscription, for the express purpose of surveying the South Shoal, to ascertain whether the Shoal surveyed by Capt. Colesworthy was the "Old South Shoal," or not.

This party left Nantucket on the 20th of October last in the morning, and "at noon of the same day, observed in latitude  $41^{\circ} 4' N.$  by four good instruments, the Shoal east, two miles distant.

After this they traversed to the S. S. W. South, East, N. and E. and N. and W. between the parallels of  $40^{\circ} 40'$  and  $41^{\circ} 4'$ . They "had 30 fathoms in  $40^{\circ} 40'$ , and running on one hour to the south, had 35 fathoms."

In traversing over the position assigned to the Shoal on the old Charts, they found 30 fathoms, and not less at any time to the south of  $40^{\circ} 40'$ ; from that depth the soundings were found regular to 15 fathoms, near the Shoal, in  $41^{\circ} 4'$ .

Mr. Walter Folger, jr. says, in a letter dated October 21st, "this evening the vessel arrived here that was sent out to find the South Shoal in  $40^{\circ} 42'$ , on board of which were some of those who were most positive that it lay in that latitude. They informed me, that they could not find less than 30 fathoms water on that parallel. They observed yesterday, west from the Shoal that Capt. Colesworthy surveyed 24th June and 9th July, and that we observed at the south of, half a mile distant, on the 11th September; *I could then see the vessel from my house.*"

This statement is supported by the letters of William Coffin, P. F. Coffin, Jona. C. Briggs, and several others, which give particular accounts of the survey, and which accompany this Report.

Your Committee are therefore of opinion, that the position assigned to Nantucket South Shoal, by Mr. E. M. Blunt, on the Chart recently published by him (in lat.  $41^{\circ} 4' N.$ ) is the true place of the Shoal.

Your committee recommend the following resolutions for adoption—

*Resolved*, That this Society is satisfied that the position assigned to Nantucket South Shoal, (lat.  $41^{\circ} 4' N.$ ) by Mr. E. M. Blunt, on a Chart of part of the Coast of North America, recently published by him, is the true place of the Shoal, and that the position of that Shoal is established by more sufficient testimony than that of any other Shoal on the Coast of North America.

*Resolved*, That in detecting an error of 22 miles in the position assigned to the dangerous South Shoal of Nantucket, on the Charts heretofore published, Mr. E. M. Blunt has rendered an important service to the shipping interest, and to the mariners of the United States.

*Resolved*, That the Secretary be directed to transmit to Mr. E. M. Blunt a copy of the foregoing Report and Resolutions.

H. AUSTIN,  
ISAAC WAITE, } Committee.  
E. FISHER.

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# PREFACE

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OF THE

## AMERICAN COAST PILOT.



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THIRTY-ONE years have elapsed since the Author commenced this work. To it he has devoted his time, labour, and great expense; and the reception it has met with from that respectable class of society by whom it is used, may be inferred from the fact, that **TEN EDITIONS**, comprising *thirty-three thousand copies*, have been sold, previous to the publication of the present edition.

The difficulties of procuring all the improvements incident to an undertaking of this character, not only intended to enable the mariner to recognize the coast at a distance, but to direct him into a port when pilots cannot be obtained, renders it a work of great labour and responsibility. The life of the most experienced, is more endangered when he approaches the coast, than when exposed to the tempest which agitates the mid ocean. Pilots who are not always to be found in the discharge of their duty, are often prevented from offering their assistance to vessels endeavouring to make a harbour, by storms and violent winds. In such cases, unless the masters are acquainted with the port, the safety of the vessel depends upon the accuracy of the **Sailing Directions**. Charts are intended rather to give a general idea of the coast, than minute and accurate descriptions of particular harbours. It is, therefore, to their printed directions that they must resort, to procure information, which at such moments becomes vitally important. Their instruments and charts, by which they have been enabled to shape their course through a trackless ocean, are rendered useless by their ignorance of the channel through which they are to enter the harbour, and mariners, who have often escaped all former dangers of the voyage, are often shipwrecked upon some sunken rock, or shoal, at the entrance of their destined port. The knowledge of such dangers, important as it is to seamen generally, is particularly so, to those of the United States. Navigating waters filled with banks and bars, which are subject to change, formed in part by the Gulf Stream, and by the mighty rivers which discharge themselves from the coast of the North American continent, they require no ordinary skill and knowledge to avoid those extensive and intricate shoals that line our shores. This coast is rendered still more dangerous by rapid tides and eddies, peculiar to the American seas, and by a strong



current running counter to the Gulf Stream, from the Banks of Newfoundland to Cape Florida. The boisterous and variable weather, so common in this climate, also tends to increase the difficulties and dangers of our coasting trade.

The Charts of this country of foreign publication, were drawn from information given previous to the revolution, by masters of vessels who frequented such ports, as the policy of the British government caused to be surveyed at the time they deemed us colonies. These were few in number. In general the mariners were left to acquire their knowledge, from the shipwreck of others. Those we now publish, are from more authentic sources; and from our own government, ship-masters, and our own exertions we derive that information which will guide the Mariner on our own coast, adopting this general rule, that American publishers, in describing the coasts of their own country, have peculiar and local advantages, which must render their works superior to those published by foreigners.

As a proof of what the Author asserts, he will merely remark, that the *American Coast Pilot* has been copied verbatim, without acknowledgment, in European works, and our own Charts of the American coast, quoted as authentic.

The inaccuracy of the English Charts of this coast (which might have been reasonably presumed) has been fully proved by late surveys, taken by the orders of the government of the United States, as well as by the author, who will here remark, that it is too much the practice with those who neither understand the subject, nor have bestowed labour or expense to make any improvements of their own, by misrepresentation to undervalue American publications.

In preparing the *American Coast Pilot* for press, recourse has been had to every Nautical work of merit; but in all which relates to the *Coast of North, and part of South America*, we depend on American authorities; and with the assurance that neither pains nor expense have been spared, we hand it to the world as perfect as the nature of the work will admit. In completing this design, every source of maritime intelligence which our country afford, has been successively resorted to. Letters have been addressed to the Collectors and Pilots in the several ports of the United States, requesting nautical information, which they have given with commendable promptitude. Here the Author must express his feelings of gratitude to the several Collectors who have promptly aided him in the information requisite to this work, by communicating official documents relative to Light-Houses authorised to be built at the Session of Congress which terminated in March 1827, and for which, our readers are referred to the Appendix to this Edition. He must also make his acknowledgments to a gentleman in this city, who has favoured him with important manuscripts respecting the Pacific Ocean, &c.

Surveys, in pursuance of various acts of Congress, have been made of Savannah River, Capes Fear, Hatteras, and Look-out, of the entrance of the Chesapeake, the river Darien, Isles of Shoals, Ports-

mouth, Boston, and Newport Harbours; copies of which the author has been permitted to take by the politeness of the Honorable Secretary of the Navy, and the Commissioners of the Navy Department, and has inserted them in this edition of the Pilot. These, however, are but part of the improvements. The Bahama Bank, and the adjacent keys, which lie directly in the course of all vessels bound to New-Orleans and Havanna, and have long been the dread of our West India mariners, were surveyed in 1820, by Messrs. E. C. WARD, a mathematician in the employ of the United States, EDMUND BLUNT, GEORGE W. BLUNT, FRANCIS MALLABY, and MATTHEW STOUT, officers in the United States Navy, who, with the characteristic enterprise of American seamen, volunteered in that expedition, which was fitted out at the expense of the subscriber. The next year, the sloop Orbit, a surveying vessel in his employ, was sent to examine the South Shoal of Nantucket, the extent and situation of which he had long suspected were incorrectly described. It was then ascertained this Shoal, which had been laid down in all the English charts, as extending to the south as far as lat.  $40^{\circ} 42' N.$  in fact terminated in lat.  $41^{\circ} 4' N.$  The importance of this discovery to the navigation of the United States, may be easily conceived. Heretofore, mariners bound from Europe, or from the eastern ports of New-York, Philadelphia, or any of the southern ports, in their desire to avoid this dangerous shoal, kept so far to the south-east, as often to run into the Gulf Stream, and were thereby retarded from 60 to 70 miles per day. By this survey, a clear and perfectly safe channel, twenty-two miles wide, is added to the space, supposed to be between the stream and the shoal, which will enable them to keep more to the north-west, and to take advantage of the south-west current on the inner edge of the Gulf. An average gain of twenty-four hours, may be thus made in the passage of most European traders.

The accuracy of this survey, which was at first disputed, has been fully proved, by two different expeditions subsequently sent from Nantucket, to ascertain the extent of the shoal.

The surveying sloop Orbit, also accompanied a vessel sent by Capt. ISAAC HULL, at the request of the subscriber, to examine St. George's Bank, and the result is re-published in this edition of the American Coast Pilot.

Many improvements are made in this, which have increased its contents one-third over the last edition, by sailing directions for every harbour in the West Indies, Spanish Main, &c. &c. with a full description of the many Beacons, Buoys, &c. with the new Light-Houses, which have been erected on the coast, together with the alterations which have been made in some of the Light-Houses, which the Superintendants, from experience thought requisite, and a complete revision of the Latitudes and Longitudes, adapted to recent observations.

These are part of the improvements of the present edition; though many material corrections have been made, whenever the author was satisfied, by the testimony of mariners, or by surveys, that his former

directions were inaccurate. Alterations have not, however, been made, unless upon stronger evidence than what prompted him to insert the original directions.

In presenting the **ELEVENTH EDITION** of the American Coast Pilot to the public, the author does not flatter himself that it will prove entirely free from errors. The shifting nature of certain parts of the coast may occasionally present deviations from the present directions. Imperfection too, is the lot of man, and in attempting to give directions for the navigation of a coast 6000 miles in length, and which was traversed long after the European coast had been fully explored, he is sensible that he has undertaken a duty, the performance of which belongs **RATHER TO A NATION THAN TO AN INDIVIDUAL**. Of such a momentous task, it is matter of astonishment, that so much has been done; and not that so much remains to be performed. During the many years devoted to its execution, his zeal has not been excited, nor his industry quickened by the consciousness that he was engaged in a brilliant undertaking, which would attract the attention of mankind, neither was there opportunity or place in a work addressed to a class, using a peculiar dialect, and who required only perspicuity and accuracy, for the beauties of style and language. His pecuniary reward, has hitherto been nothing, the profits of each edition, having been wholly absorbed in the expense of subsequent improvements.

It is, however, no small satisfaction to reflect, that the average rate of insurance, since the first publication of the Pilot, has been diminished more than one half upon coasting vessels, and four-fifths on vessels bound to New-Orleans, and that, among other cases, the improvements in hydrography must have contributed to effect this great reduction. Still more satisfactory is the consciousness derived from many public and private acknowledgments, that, in no small number of instances, by following his directions, both vessels and crews have been saved from the rage of a merciless element, when the pilots were unable to come to their assistance.

With such pretensions to patronage, the Author is not unwilling to meet the scrutiny of the public, being more desirous that errors should be discovered in his publications, than that mariners should be endangered by inaccuracies, which neither his care nor industry could avoid.

September, 1827.

EDMUND M. BLUNT.

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## GULF STREAM, AND STRAIT OF FLORIDA.

THAT immense current, which continually sets from the Gulfs of Mexico and Florida, to the northward and north-eastward, should be well understood, which induces the author to commence the present edition with the important subject; as all, who navigate the coast of North America, experience more or less of its influence.

Three degrees to the N. N. E. of Vera Cruz, the current has been found setting to the N. E. one mile an hour. Then N. N. E. and N. by E. and again N. E. nearly to the parallel of  $25\frac{1}{2}^{\circ}$ , longitude  $91\frac{1}{2}^{\circ}$ . Here it changes more to the East, and becomes, in latitude  $26^{\circ}$  E. by S. changing southward to S. E. by S. In the direction of the river Mississippi, and latitude  $25^{\circ} 30' N.$  the current sets variously to the south-eastward. Its extent and exact direction are here unknown, but it is certain, that setting towards the N. W. part of Cuba, and striking on the banks of *Isabella* and *Colorados*, a portion of it winds round Cape Antonio to the south-eastward, while the great body of it sets eastward, to the northward of Cuba, winding to E. N. E., N. E. and North, through the strait of Florida, into the Atlantic Ocean.

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

"As it is undoubted that this general current is caused by a superabundance of waters, which seek, by this drain, to regain their level in the open ocean, it follows, that its rapidity will be greater or less, according to the said superabundance of waters; but as a change cannot be momentary, on account of the great reservoir in which the water is contained, but progressive, and, of course, slow, we hold that, having once ascertained the velocity of the current, we may calculate it for three days, or more, in advance, without much error, if the wind remain in the same direction; for an alteration in the wind may affect the force of the current considerably.

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

"As the velocity of the current varies, it is requisite for every navigator to ascertain its strength as frequently as possible, while within the stream. Every one who enters this channel, having marked well either the lands of Cuba or the Florida Reef, so as accurately to establish this point of departure, ought to determine, in his first day's work, the velocity of the current by the difference of latitude, by account and observation. We say during the first day's work, because the generality of common navigators make use of meridian altitudes of the sun alone, to find the latitude; but it is very clear, that altitudes of the planets and fixed stars ought not to be neglected; not only because by this you cannot be in doubt of your real latitude, but also because they may be more exact than latitudes deduced

from meridional altitudes of the sun, when that luminary passes in the proximity of the zenith, and because these repeated observations during the night assume, as much as possible, the situation of the ship. Thus you may go on, with a clear idea of the operation of the current, and the way that the ship is making. Having ascertained the velocity of the current, use can be made of it to find the ship's departure, and this knowledge will be most important when you fail in obtaining observations for latitude; because in such a case, wanting a knowledge of the difference of latitude given by the current, you will be in want of every thing; but if you know the velocity of the current, and with it the course which it follows, you may find the difference of latitude and departure which the current gives; and which, though it will not give the position of the ship with that precision with which it might be obtained by latitude observed, will still approximate sufficiently to the truth to enable one to avoid danger, if prudence and seaman-like conduct are combined."

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

1. That it is most convenient to direct your course in mid-channel; not only because it is the farthest from danger, but because you will there have the strongest current, which is desirable. [See remarks of Mr. Romanson on the Gulf Stream, page 14.]

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

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

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

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

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



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

At about  $8\frac{1}{2}$  degrees north of Cape Antonio, the current has, at times, been found setting to the S. W. winding towards the northern edge of the Yucatan Bank; but at a degree thence eastward, setting nearly S. E. Off the west end of Cuba, at ten leagues N. W. from Cape St. Antonio, it has been found setting S. W. by W. one mile an hour. But these cannot be considered as its "general directions."

The stream in mid-channel, on the meridian of Havanna, acquires the direction of E. N. E. and velocity of about  $2\frac{1}{2}$  miles an hour. On the meridian of the northernmost point of Florida its velocity, at about one-third over from the Florida Reefs, is commonly 4 miles. Between the Benini Isles and Cape Florida, its direction is about N. by E. and velocity more than 4 miles.\*

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

The winds are found to affect the position of the stream considerably. Between Cuba and Florida, northerly winds press it southward towards the shore of the former; southerly winds have a contrary effect. When turned to the north, easterly winds press it to the Florida side, and westerly winds nearer to the Bahamas. Southerly winds cause it to spread, and so may those from the north.

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

### *Remarks on the Stream, &c. by Capt. J. Steele Park.*

"Sailed from Jamaica for London, on the 20th May, 1824. At noon, on the 27th, was off the S. W. side of Cuba, in latitude  $21^{\circ} 26'$ , longitude by chronometers and lunars  $84^{\circ} 47'$  W. Here was discovered a current setting to the N. W. at the rate of two miles an hour. At 7h. 30m. Cape Antonio bore N. W. 5 or 6,

\* "The calculations of the velocity of the Gulf Stream are not to be depended upon. I have found it setting at the rate of five knots, and even upwards. This was on the 16th and 17th of August, 1817. On the 19th and 20th February, 1819, it seemed to be imperceptible. In September, 1819, it set at much about the rate described in the charts.

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

## BLUNT'S AMERICAN COAST PILOT.

miles. The current to the N. W." says Capt. Park, "swept us into the Gulf of Mexico; and there we were beating about three or four days, making nothing and westing in spite of our teeth. All this time the wind was easterly, and we might have cruised about there till Christmas, had the wind not got a little to the southward of east, which enabled us to get over to the N. E. side, where we found the current running directly opposite to the former, being now in the Florida Stream.

"After rounding Cape Antonio, the land of Cuba was not seen. At this time, (the latter days of May, 1824,) the Stream along the Florida side, and even in the Strait, was by no means so strong as it is generally found. In the narrowest part, where, of course, we had a right to expect the greatest velocity, it was running at the rate of only 2½ miles in the hour. This was correctly ascertained by meridian altitudes of sun and moon, and an excellent chronometer.

"When we cleared the Gulf," (Strait,) Capt. Park adds, "I was anxious to keep in the influence of the Stream, and pass near the Tail of the Bank of Newfoundland, but it came on to blow hard from the northward, in latitude  $34^{\circ} 35'$ , and longitude  $72^{\circ} 20'$ , (E. by S. from Cape Hatteras\*.) This, of course, drove us away to the eastward, out of the favourite track, and we passed about 300 miles to the northward of the Bermudas. During this gale, for several days, a current was found to proceed from the eastward to the W. S. W. but in latitude  $38^{\circ}$  and longitude about  $59^{\circ}$ , the ship was in the Gulf Stream, setting finely to the N. E.

"On June 23d, at noon, lat.  $37^{\circ} 51'$ , long.  $61^{\circ} 54'$ ; June 24th, lat.  $39^{\circ} 56'$ , long.  $57^{\circ} 28'$ , (by altitudes and chronometer.) Here the ship really made  $4^{\circ} 28'$  of easting in the 24 hours run, and the log gave only  $3^{\circ} 16'$ . In the same time nothing was made. The true difference of latitude was 125 minutes, but the log gave about 80 only. The vessel had been running all the time E. by N. by compass, and went through the water 173 miles. Allowing half a point of variation, gives the true course N. E. by E.  $\frac{1}{4}$  E. Subsequently, on making Scilly, there was not an error in the watch of a single mile.

"After the gale from the northward subsided, the winds became variable between N. W. and S. W. The ship passed near the Tail of the Great Bank, and continued to carry a fine north-easterly current at the rate of thirty, twenty-five, and twenty miles a day, until she reached lat.  $43^{\circ} 35'$  and long.  $36^{\circ} 50'$ , where it ceased."

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

Jan. 16	Lat. $17^{\circ} 55'$	Long. $87^{\circ} 30'$	Current
" 17	18 24	87 8	16 miles southerly in the 24 hours.
" 18	18 14	86 35	14 do. do.
" 19	19 31	85 58	16 do. do.
" 20	20 6	85 17	5 do. northward.
" 21	20 47	85 39	6 do. do.
" 22	22 9	85 44	5 do. do. and 20 eastward.
" 23	23 13	84 8	29 do. northward.
" 24	23 22	82 42	11 do. do.
" 25	24 47	80 10	no current.
" 26	26 52	79 54	9 miles northw'd. & 55 eastw'd.
" 27	28 22	79 50	49 do. northward.
" 28	30 0	78 34	29 do. do.
" 29	30 31	76 6	37 do. do.
			24 do. do.

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

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

The boisterous East, N. E. and North winds, which affect the Gulf Stream, generally begin in September, and continue until March; when, if the moon happens just at the time to be on the full or change, they commonly end with a hurricane.

On the southern edge of the Tortugas Soundings, lat.  $24^{\circ} 30'$  long.  $83^{\circ} 30'$  the current sets about E. by S. 20 miles in the 24 hours; and in latitude  $24^{\circ}$  long.  $82^{\circ} 20'$ , it sets about E. by N. 42 miles.

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

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

The Stream, from latitude  $26^{\circ}$  to  $28^{\circ}$ , generally sets north, rather easterly; from  $28^{\circ}$  to about  $31^{\circ}$ , it appears to run north, inclining a little in the direction of the coast, rather westerly; it thence suddenly turns to N. E. by E. or a little more easterly, to latitude  $35^{\circ}$ , or about the parallel of Cape Hatteras, where it runs within about 18 miles of the Cape.

The Stream, in the neighbourhood of the coast at Cape Hatteras, inclines more to the eastward, at the rate of about 2½ knots; then the shoals of Nantucket appear to front it, and to throw it off to the E. N. E. and E. by N. northerly. In about the parallel of  $39\frac{1}{4}^{\circ}$  longitude  $63\frac{1}{4}^{\circ}$ , it has been found to run at the rate of two knots between E. by N. and E. N. E.

Col. Williams, in his "Thermometrical Navigation," states that the whirlpools of the eddy, on the northern edge of the Stream, have been seen in lat.  $41^{\circ} 57'$  long.  $65^{\circ} 1'$ . He also observed great quantities of weed, supposed to be on the northern edge of the Stream, in latitude  $41^{\circ} 53'$  long.  $65^{\circ} 33'$ . It has subsequently been ascertained by Lieut. Charles Hare, R. N. that on the meridian of  $57^{\circ}$  W. in the summer season, the northern edge of the stream ranges up to  $42\frac{1}{2}^{\circ}$  N. and even in the winter months to above  $42^{\circ}$  N. This has been confirmed by twenty-five voyages across the Atlantic, assisted by chronometer, thermometer, &c. the last of which was made in the fall of the year 1824.

It is, however, to be considered, that a north, N. E. or east wind forces the stream towards the coast, contracts its breadth, and thus increases its rapidity. On the contrary, S. W. west and N. W. winds, force the stream farther into the ocean, and diminishes its strength.\* It is clear, then, that the stream fluctuates in

\* An experienced navigator before quoted, says, "It is always found that the strongest current is in the warmest water. I have observed the greatest degree of heat of the Gulf, between the meridian of Cape Hatteras and that of Nantucket, to vary at different times from  $75^{\circ}$  to  $67^{\circ}$  of Fahrenheit, and the strongest current to differ from 3 to 14 miles per hour; that the breadth of the Stream current is much less than is generally supposed, and that the winds cause a great effect on the Gulf: for instance, a wind that would produce a current of one knot, would retard one of 3 knots to 2 knots if opposed to it, and would accelerate the same to 4 knots, if in the same direction; and that a wind crossing a current obliquely, would affect it as the sine of the angle at which it is opposed. The direction of a current cannot, however, be materially changed, when forced against an opposing barrier."



its direction and force, according to circumstances, and no absolute rule can be given for ascertaining its more ordinary boundaries; it therefore follows, that a description of the indications by which it may be known, is of more importance. These are, the appearance and temperature of the water; the stream in its lower latitudes, and usual course in fair weather, where it flows uninterruptedly, may be known by its smooth and clear surface, and blue colour. The margin of the stream is marked by a ripple on its edge; the water in some places appears like boiling water; and in other places, it foams like the waters of a cataract, even in dead calms, and in places which are fathomless.

On the outer edge of the stream, especially in fair weather, there are great ripplings, which are very perceptible; and it has been observed by many navigators, that in the Gulf the water does not sparkle in the night. The appearance of the weed called Gulf-weed is also an indication of being in the Stream. This weed is never seen north of the Stream.

A scientific writer says, "I have seen the water in the Gulf, near the Bahama, a little luminous, but never to the eastward of Hatteras;" and we believe him correct, notwithstanding it has been said to the contrary.

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

The following fact may serve to illustrate the propriety of these directions. In June, 1798, the Mail-Packet, for Charleston, had 25 days passage in going, but returned in 7. The captain accounted for this by having calms, or very light airs, and a northerly current. This was the true cause. He was in the middle of the Stream, where there generally are calms or light winds; the edges only, which come in contact with colder regions, being tempestuous. After being in the latitude of Cape Hatteras, he found himself in that of Cape Henry, (37 leagues to the northward.) The vessel, however, arrived at last; and on the return voyage, the captain steered the same course back again; and, with the same light airs, he performed the voyage in seven days. Had this captain known the use of the thermometer, need he to have been much longer in going than in coming?

The thermometer is not only useful for ascertaining the current of the Gulf Stream, but it is likewise advantageous in discovering the approach to soundings from deep water.

In navigating the coast of the United States, the latitude is of more importance than the longitude: for the former, with the soundings, or temperature, will generally give the vessels place with considerable accuracy.

In June, 1791, captain W. Billings, of Philadelphia, in latitude  $39^{\circ}$  long.  $58^{\circ}$ , abreast of the Bank of Newfoundland, found that the mercury in the thermometer fell 10 degrees. It was near the same place that a similar observation was made by Dr. Franklin, in November, 1776, and another by Mr. Williams, in November, 1789, who has observed, that, "by the coincidence of these three journals, at so great a distance of time, and without any connexion with each other, this important fact seems to be established: A navigator may discover his approach towards objects of danger, when he is at such a distance as to be able easily to avoid them, by attentively examining the temperature of the sea; the water over banks and shoals being colder than that of the deep ocean."

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

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

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

Mr. Williams recommends to seamen to take three thermometers. "Let them," he says, "be kept in one place some days previous to sailing, in order to try their uniformity. The plate should be made of ivory or metal, for wood will swell at sea; and as the glass tube will not yield, it is from this reason very liable to break: bell-metal is the best. Let the instrument be fixed in a square metal box, the bottom of which, as high as the mark 80°, should be water tight; so that, in examining the degree of heat, the ball may be kept in the water; the remainder of the length should be open in the front, with only two or three cross-bars to ward off any accidental blow, like the thermometer used by brewers. Fix one instrument in some part of the ship, in the shade, and in open air, but as much out of the wind, and in as dry a place, as possible. The after part of one of the after stanchions, under the quarter rail, may answer, if no better place can be found.

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

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

As the eddies about the edges of the Stream must vary according to circumstances, more particularly along the outer edge, there is generally a current running in a contrary direction, which is accelerated by the wind, in proportion to its strength, blowing contrary to the stream, and retarded, or perhaps altogether obstructed, by the wind blowing in the direction of the stream. In the latter case, the limits of the stream will be extended.

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

During the prevalence of a southerly or easterly wind, which is not so common here, it has been found that the current is forced close to the shore, and in some parts upon the soundings. From a scientific nautical gentleman we received the following, viz. while off Cape Lookout, in 11 fathoms water; he had a strong current from the southward, owing entirely to the Gulf current. This also proves the Gulf influenced by winds. Being thus pent in between the wind and the shoal grounds near the shore, the breadth is greatly diminished, and the velocity proportionably increased. This circumstance has been, in particular, observed from

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

about the longitude of Block Island, along the edges of Nantucket shoals, thence beyond George's Bank; it has the same effect along the coast of Georgia and part of South Carolina. In the first place, the southerly winds forced the current to the edge of soundings, where it then ran from 1½ to 2 knots; and, in the latter place, that the easterly wind forced the current upon soundings.

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

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

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

Capt. Livingston says, "it set me, off Cape Hatteras, one degree and eight miles, by sidereal and solar observations, to the northward, in 18 hours by dead reckoning; and Capt. Joreal Colast, of Philadelphia, informed me that it set occasionally with greater velocity."

Mr. Williams observes, "In the Stream the water is much warmer than the air; indeed, I have known it 10 degrees warmer; but so soon as you get within the Stream, (that is, between it and the coast,) the water becomes colder than the air; and the more as you get on soundings and approach the shore." If mariners who have not the opportunity of determining their longitude by celestial observations, will only carry with them a good thermometer, and try the temperature of the water, and compare it with that of the air, every two hours, they may always know when they come into, or go out of the Gulf Stream. Indeed, I have always made a practice, when at sea, of comparing the temperature of the air and water daily, and often, very frequently during the day throughout my voyage; whereby I immediately discovered any thing of a current that way going; and afterwards found its strength and direction by observations for the latitude and longitude. It is of the utmost consequence, in making a passage to and from Europe, to be acquainted with this Gulf Stream; as by keeping in it when bound eastward, you shorten your voyage, and by avoiding it, when returning to the westward, you facilitate it inconceivably; so much so, that I have frequently, when bound from Europe to America, spoke European ships, unacquainted with the strength and extent of it, off the banks of Newfoundland, and been in port a very considerable time before them, by keeping out of the Stream, whereas

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

1791, June, Coast 61°	1789, November, Coast 47°	Difference between } Coast 14°
Stream 77	Stream 70	

Stream warmer 16

Stream warmer 23

The difference of heat is, therefore, greater in winter than in summer. See the concluding observation hereafter, and also the pamphlet published with "Blunt's Chart of the Western Ocean," which contains all the remarks of Mr. Williams on the subject.

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

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they lengthened their passage by keeping in it. The general course of the Gulf Stream is marked on the chart published by the author of this work in 1812, and improved to 1827; and I would advise those who make the north-ern passage from Europe, never to come nearer the inner line of it, by choice, than 10 or 15 leagues; and then the probability will be, that their passage will be assisted by the help of a counter current, which often runs within it. In coming off a voyage from the southward, be sure to steer N. W. when ap-proaching the stream, if the wind will permit you; and continue that course till you are within it, which may be easily known by the temperature of the water, as before mentioned. I have always considered it of the utmost consequence, when bound in, to cross the stream as speedily as possible, lest I should be visit-ed by calms or adverse winds, and by these means drove far out of my way, which would prolong the voyage considerably, especially in the winter season.

The course of ships bound from Europe, to the ports of the United States, is controlled, in a great degree, by the operation of the Florida Stream. Little, therefore, requires to be added to the subject here. Those bound to the north-ern and middle ports, when passing the shoal grounds on George's Bank, should take care to pass between these shoals and the Stream. Also, when passing the Nantucket Shoals, to keep between them and the Stream. The south part of the most dangerous shoal on George's Bank, is in latitude  $41^{\circ} 34' N.$  and the shoals extend to latitude  $41^{\circ} 53' 30'' N.$  and that of Nantucket South Shoal in latitude  $41^{\circ} 4' N.$

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

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

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

Sir Charles Blagden, M. D. and F. R. S. in the transactions of the Philosophi-cal Society, says, "during a voyage to America, in the spring of the year 1776, I used frequently to examine the heat of sea water newly drawn, in order to com-pare it with that of the air. We made our passage far to the southward. In this situation, the greatest heat of the water, which I observed, was such as raised the quicksilver in Fahrenheit's thermometer to  $77\frac{1}{2}$  degrees. This happened twice; the first time, on the 10th of April in latitude  $21^{\circ} 10' N.$  and longitude, by our reckoning,  $52^{\circ} W.$  and the second time, three days afterwards, in latitude  $22^{\circ} 7'$ , and longitude  $55^{\circ}$ ; but in general, the heat of the sea, near the tropic of Cancer, about the middle of April, was from  $76^{\circ}$  to  $77^{\circ}$ .

"The rendezvous appointed for the fleet being off Cape Fear, our course, on approaching the American coast, became north-westward. On the 23d of April, the heat of the sea was  $74^{\circ}$ ; our latitude, at noon,  $28^{\circ} 7' N.$  Next day the heat

\* The following notice relative to several short passages across the Atlantic, was given in a Liverpool paper, January, 1824, and affords a pleasing demonstration of improved know-ledge in the navigation of this ocean.

"The packet-ship *New-York*, Capt. Thomas Bonnet, arrived here on Thursday last, after one of the shortest passages, we believe, yet made between New-York and this port. She sailed on the 16th of December and arrived here in the morning of the 1st of January, being little more than fifteen days. The *Mary Catharine*, which left Charleston on the 16th De-cember, made her voyage, from port to port, in nineteen days. The *Marmion* arrived in the evening of the 7th of January, in eighteen days from Charleston, and two more from that town." The winds, &c. must, of course, have been favourable.



was only  $71^{\circ}$ ; we were then in latitude  $29^{\circ} 12'$ ; the heat of the water, therefore, was now lessening very fast, in proportion to the change of latitude. The 25th, our latitude was  $31^{\circ} 3'$ ; but though we had thus gone almost  $2^{\circ}$  farther to the northward, the heat of the sea was this day increased, it being  $72^{\circ}$  in the morning, and  $74^{\circ}$  in the evening. Next day, 26th of April, at half past eight in the morning, I again plunged the thermometer into sea-water, and was greatly surprised to see the quicksilver rise to  $78^{\circ}$ , higher than I had ever observed it even within the tropic. As the difference was too great to be imputed to any accidental variation, I immediately conceived that we must have come into the Gulf Stream, the water of which still retained great part of the heat that it had acquired in the torrid zone. This idea was confirmed by the subsequent regular and quick diminution of the heat; the ship's run for a quarter of an hour had lessened it  $2^{\circ}$ , the thermometer, at three-quarters after eight, being raised by sea-water, fresh drawn, only to  $76^{\circ}$ ; by nine, the heat was reduced to  $73^{\circ}$ ; and in a quarter of an hour more, to  $71^{\circ}$  nearly; all this time the wind blew fresh, and we were going seven knots an hour on a north-western course. The water now began to lose the fine transparent blue colour of the ocean, and to assume something of a greenish olive tinge, a well known indication of soundings. Accordingly, between four and five in the afternoon, ground was struck with the lead, at the depth of eighty fathoms, the heat of the sea being then reduced to  $69^{\circ}$ . In the course of the following night and next day, as we came into shallower water and nearer the land, the temperature of the sea gradually fell to  $65^{\circ}$ , which was nearly that of the air at the time.

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

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

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

"If the heat of the Gulf of Mexico were known, many curious calculations might be formed by comparing it with that of the current. The mean heat of Spanish town and Kingston, in Jamaica, seems not to exceed  $81^{\circ}$ ;\* that of St.

\* History of Jamaica, London, 1774, vol. iii. page 652, 653. The different observations of the heat, recorded in that work, do not agree together, but those adopted here are taken from that series which appear to me most correct.

the water, therefore, its temperature. The 25th, at 2° farther to the north, 72° in the morning, past eight in the day was greatly surpassed; it even extended to any accident, come into the Gulf, that it had acquired regular and constant, and in a quarter of an hour had lessened by sea-water, 77°; and in a quarter of an hour, and we were now beginning to see something of a difference, between the surface and the depth of 10°. In the course of the day, the water and nearer the surface was nearly that

making an observation at noon, we calculated the difference being 2° 23', was marked in the log miles to the north-

74° W. and I began, together with the others, were made, better than the 26th, from nine miles on a N. W. by N. ending bottom, we

the Gulf Stream, longitude west of the surface than the water, and evidently began to show that we were in the middle of the 26th, the breadth of the stream, could not be ascertained between the surface and the bottom, which evidently was not more than three miles from the Bahama distance from the surface, very remarkable, but gradually becoming less, which it issues. Various calculations of the mean heat of the surface, 71°; \* that of St.

different observations taken here are taken

Domingo, on the sea coast, may be estimated at the same, from Mons. Godin's observations;\* but as the coast of the continent, which bounds the Gulf to the westward and southward, is probably warmer, perhaps a degree or two may be allowed for the mean temperature of the climate over the whole bay; let it be stated at 82 or 83 degrees. Now there seems to be great probability in the supposition, that the sea, at a certain comparatively small distance below its surface, agrees in heat pretty nearly with the average temperature of the air, during the whole year, in that part; and hence it may be conjectured that the greatest heat of the water, as it issues out of the bay to form the stream, is about 82½, the small variation of temperature on the surface not being sufficient to affect materially that of the general mass. At the tropic of Cancer, I found the heat to be 77°; the stream, therefore, in its whole course from the Gulf of Florida, may be supposed to have been constantly running through water from 4 to 6 degrees colder than itself, and yet it had lost only 4° of heat, though the surrounding water, where I observed it, was 10° below the supposed original temperature of the water which forms the current. From this small diminution of the heat, in a distance of probably 300 miles, some idea may be acquired of the vast body of fluid which sets out from the Gulf of Mexico, and of the great velocity of its motion. Numerous observations of the temperature of this stream, in every part of it, and at different seasons of the year, compared with the heat of the water in the surrounding seas, both within and without the tropic, would, I apprehend, be the best means of ascertaining its nature, and determining every material circumstance of its movement, especially if the effect of the current, in pushing ships to the northward, is carefully attended to, at the same time with the observations upon its heat."

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

On the 28th, at noon, our latitude was 36° 40' N. and the heat of the sea, all day, about 65°. On the 29th, our latitude was 36° 2'; we had, therefore, in the course of these 24 hours, been driven by the wind 38 nautical miles to the southward; the temperature of the sea continued nearly at 65°. Next day, the 30th, our latitude, at noon, was 35° 44', only 13 miles farther to the southward, though, in the opinion of the seamen aboard, as well as my own, it had blown at least as hard on this as on any of the preceding days, and we had not been able to carry more sail; consequently, it may be concluded that some current had set the ship 20 miles to the northward. To know whether this was the Gulf Stream, let us consult the thermometer. At half past nine in the forenoon of this day, the heat of the water was 76°, no less than 11° above the temperature of the sea, before we came into the current.

\* Monsier Godin's experiments upon the pendulum were made at the Petit Grove. They continued from the 24th of August to the 4th of September, and the average heat during that time was such as is indicated by 25° of M. de Reaumur's thermometer, (see Mem. Acad. Science, 1735, p. 5, 7,) according to M. de Luc's calculation, (see Modifications de l'Atmosphere, vol. i. p. 378,) the 25th degree of Reaumur's true thermometer answers to about the 85th of Fahrenheit's; but the average heat in Jamaica, during the months of August and September, is also 85°, hence we may conclude that the mean heat for the whole year is nearly the same on the sea coasts of both islands.

† The lowest calculation of the mean temperature of the Gulf is preferred on this occasion, because of the constant influx of new water from the Atlantic ocean, produced by the trade winds, which water, not having been near any land, must, I think, be sensibly colder than that which has remained some time enclosed in the bay. On this subject, the observations made by Alexander Dalrymple, Esq. relative to the heat of the sea near the coast of Guinea, ought to be consulted. (See Phil. Trans. Vol. lxxviii. p. 394, &c.)

Towards evening the wind fell, and we stood N. W. by N. close hauled. As the sea still ran very high, and the ship scarcely went above two knots an hour, we did not make less than 8 points of leeway on this tack; the course we made good, therefore, was W. N. W. which on the distance run by noon next day, gave us about 16 miles of *nothing*; but that day, the 1st of October, our latitude was  $36^{\circ} 22'$ , 38 miles farther to the north than we had been the day before, the difference, 22 miles, must be attributed to the Gulf Stream. This, however, is only part of the effect which the current would have produced upon the ship, if we had continued in it the whole twenty-four hours; for though we were still in the Stream, at five in the afternoon of the 30th, as appeared by the heat of the water, being then above  $75^{\circ}$ , and at eight in the evening the heat being still  $74^{\circ}$ , yet by seven the next morning, we had certainly got clear of it, the heat of the sea being then reduced to its former standard of  $65^{\circ}$ . On this occasion, therefore, we did not cross the Stream, but, having fallen in with it obliquely on the western side, we pushed out again on the same side, as soon as the gale abated.

These observations having been made  $3^{\circ}$  to the northward of my former ones, it is curious to observe, that the heat of the Gulf Stream was  $2^{\circ}$  less. The seasons of the year, indeed, were very different: but, perhaps under such circumstances, that their effects were nearly balanced. In the latter observations, the meridian altitude of the sun was less; but then a hot summer preceded them; whereas in the former, though the sun's power was become very great, yet the winter had been past but a short time. Calculating upon this proportion, we may be led to suspect, that about the 27th degree of latitude, which is as soon as the Stream has got clear of the Gulf of Florida, it begins sensibly to lose its heat from  $82^{\circ}$ , the supposed temperature of the Gulf of Mexico, and continues to lose it at the rate of about  $2^{\circ}$  of Fahrenheit's scale to every  $3^{\circ}$  of latitude, with some variation, probably, as the surrounding sea and the air are warmer or colder at different seasons of the year.

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

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

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

In the mean time, I hope, the observations which have been here related are sufficient to prove, that in crossing the Gulf Stream, very essential advantages may be derived from the use of the thermometer; for if a master of a ship, bound to any of the southern provinces of North America, will be careful to try the heat of the sea frequently, he must discover very accurately his entrance into the Gulf Stream by the sudden increase of the heat, and a continuance of

close hauled. As two knots an hour, the course we made noon next day, gave over, our latitude was any before, the difference, however, is only upon the ship, if we were still in the heat of the water being still  $74^{\circ}$ , yet the heat of the sea occasion, therefore, quickly on the west-gale abated.

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

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

If, with adverse northerly, easterly, or N. E. winds, vessels happen to be in the mouth of the Gulf of Mexico, that is between the Havana and Cape Florida, they had best endeavour to make the Bahama Islands, or at least the soundings of them, and proceed under the lee-side, but, when they are to the north of them, it is best to keep in the eastern extent of the stream, or else they will not be able to clear their way through the strait, nor along the coast of East Florida; and may get on shore upon the reef's either of Cape Florida or Cape Canaveral, if not upon the beach between the two Capes, which is the least evil of the two; for thus the crew and cargo may be saved; and some vessels may also be brought off, provided the storm ceases before the vessel is made a wreck of. But, if at any time of the south run, or at any other time, the winds are westwardly, then the Atlantic Coast affords the most eligible lee for navigators, who do not choose to take the stream; but, if the current in the Gulf is well understood, it will greatly facilitate the progress, when bound to the northward, as fully illustrated in the following

#### *Remarks on Sailing along the MARTYRS, by MR. ROMANS.*

"During my several cruises within the Martyrs or Florida Reef, I have seen a great number of vessels borrow so close on the reef, that they appeared to be within it; and sometimes I could even see the people with the help of a glass: those people, I suppose, were well acquainted, or very bold; but let the man who does this be ever so experienced, he must be very careful to keep a strict



look-out; for my part, I would not come nearer than just to raise the land, especially as tides may have their influence further off than we are aware of.

"Besides this reason for standing longer off than in, there is one still greater. Every experienced mariner knows that a vessel will run towards shore in less time than she can run the same distance from it; and that the higher the land she works under, the quicker she runs in, consequently the slower she runs off. Hence almost every one, in bearing upon a lee-shore, will stand out a longer time than in; but few, even among the most experienced, know the philosophy of this phenomenon against which they guard so carefully. It is that great law of nature, whereby all light bodies must fall on the heavier ones.—I mean, *attraction*. To explain this by an experiment; take any vessel, fill it almost with water, put a cork or chip in it; while that remains in the centre, it is attracted from every side alike, and therefore stands fixed; but no sooner is it thrown out of the centre, than it will begin to approach the side; and, as it draws near, attraction is increased, till at last the velocity of the chip becomes so great, as to run with considerable violence against the vessel, where it remains fixed; and, if it is an oblong piece, in shape of a vessel, the same will happen as when a ship runs ashore stern-on, viz. it will wind broadside-to. The explanation of this phenomenon we owe to John Collins, Esq. of Newport, in Rhode-Island, formerly first counsellor of the state, and a very experienced commander.

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

"I once came out from Matcumbe, and was scarcely clear of the reef, before I was overtaken by a gale from the eastward, which was very violent. It was five o'clock in the evening, and it being dark, to attempt a re-entrance of the reef, I was forced to heave the vessel to, which I did under the balanced mainsail; she was a heavy schooner of about seventy tons, and a dull sailer. The succeeding night I passed in the deepest distress of mind, seeing the burning of the breakers in constant succession on the reef, till past one o'clock; the storm continued till ten next morning, when I made sail to the northward, and at noon, to my utter astonishment, I had an observation of the sun's altitude, which proved me to be in  $28^{\circ} 50'$  latitude, by which I had made a difference of latitude of 118 miles, in the short space of nineteen hours, seventeen of which I lay-to.

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

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"I am an utter enemy (continues Mr. Romans) to all theoretic and systematic positions, which has caused in me an indefatigable thirst for finding, in my experience, causes for all extraordinary appearances, be they what they may. And my experimental position of the cause of the increase of the velocity of this current, during the gales, that blow contrary to its direction, is no other than the reverberating current occasioned by the swelling of the water within the reef, which in the memorable gale of October 1769, when the Ledbury was lost, (as mentioned in note to page 3,) was no less than thirty feet above its ordinary level."

Besides the convenience of correcting a ship's course, by knowing how to make a proper allowance for the distance she is set to the northward by the current, a method of determining with certainty when she enters into the Gulf Stream, is attended with the farther inestimable advantage of showing her place upon the ocean in the most critical situation: for, as the current sets along the coast of America, at places on soundings, the mariner when he finds this sudden increase of heat in the sea, will be warned of his approach to the coast, and will thus have timely notice to take the necessary precautions for the safety of his vessel. As the course of the Gulf Stream comes to be more accurately known, from repeated observations of the heat and latitudes, this method of determining the ship's place will be proportionably more applicable to use. And it derives additional importance from the peculiar circumstances of the American coast, which from the mouth of the Delaware to the southernmost point of Florida, is every where low, and beset with frequent shoals, running out so far into the sea, that a vessel may be aground in many places where the shore is not to be distinguished, even from the mast-head. The Gulf Stream, therefore, which has hitherto served only to increase the perplexities of seamen, will now, if these observations are found to be just in practice, become one of the chief means of their preservation upon this dangerous coast.

*Extract of a Letter from Francis D. Mason, Esq. to Col. John Williams, Commandant of the Corps of Engineers, and Author of "Thermometrical Navigation," at New-York; dated,*

CLIFTON, (Eng.) 20th June, 1810.

"My voyage from New-York to Halifax, in the British packet *Eliza*, was so very tempestuous and unfortunate, (having carried away our foremast) that I did not make any thermometrical observations; but when we sailed from Halifax, on the 27th of April, I began them, and continued until I unfortunately broke both my thermometers. However short the time was, you will perceive that my observations have been very important, and I herewith send the result of them. You will perceive with what fidelity the thermometer indicated the banks, and the approximation towards islands of ice. The captain was so convinced of the usefulness of the thermometer, that he made regular remarks, and inserted them in his journal. I gave him one of your books, thinking it would be pleasing to you that I should extend the knowledge of a discovery so useful as yours, and I wish it were more generally known. After having miraculously escaped the islands of ice, and several severe gales, we arrived at Falmouth on the 22d of May, 1810."

## EXTRACT FROM THE ELIZA'S JOURNAL.

Dates.	Hours.		Heat of		Lat.	Long.	REMARKS.
	A. M.	P. M.	Air.	Water.			
Ap. 28	10		44°	40°			
		1	47	41	43°30'	62°52'	
		4	43	42			
		8	46	40			Sable Bank.
29	8		45	43			
	Noon.		49	48	42 27	60 54	
		5	50	62			
		7	48	64			
		10	48	54			Tacking towards edge of stream.
30	9		58	62			Steering in the stream.
	Noon.		60	61	42 1	55 21	
		5	58	61			
		9	60	60			
May 1	8		60	58			
	11		60	46			
		2	64	25	41 53	36 52	Sound in 70 fa. no bottom : the water at that depth 2° warmer than on the surface.
		3	62	46			An island of ice, bearing S. S. E. 7m.
		4	58	47			Abreast of ice $\frac{1}{4}$ mile to leeward.
		5	60	47			Island of ice bears S. S. W. 7 miles.
		6	57	45			
		8	56	48			
2	1		58	50			
	3		60	60			
	8		60	62			
	10		63	63			
	Noon.		64	63	41 25	53 8	
		3	61	64			
		6	62	58			Sound with 70 fathoms, no bottom.
		9	56	56			
		12	50	56			Sound with 80 fathoms, no bottom.
	4		43	43			Sound with 80 fathoms, no bottom.
	6		40	39			An enormous island of ice abreast, 100 yards. This was about 150 ft. high and 1 mile in diameter. When first discovered, it was not 100 yds. from the vessel, and we were sailing directly towards it. The obscurity was then so great, that at that distance it appeared only like a white cloud, extending from the sea over our masts.
	8		41	44			Passed several islands of ice, the largest bearing S. W. 7 miles.
	10		43	45			No bottom by 80 fathoms.
	Noon.		44	43	42 1	50 4	
		4	44	50			
		6	46	60			
	Midn. 12		46	60			
4	4		46	52			
	8		43	60			
	Noon.		54	59	42 54	46 2	
		8	49	60			
		12	48	60			
5	6		47	59			
	Noon.		63	59	43 12	41 43	Broke the thermometers.

## REMARKS ON THE FOREGOING JOURNAL.

The important point of comparison, is the difference in the heat of the water in different places, in or near the stream, in the ocean, out of the stream, on the coast, and near islands of ice, not the difference between the heat of the water and the air, as some have imagined. The latter is merely a concurrent observation; it serves to account for ordinary changes, and thereby to guide the judgment.

From April 28, at 10 A. M. to April 29, at 8 A. M. we see the temperature of the sea in the shoals of Sable, from 40 to 43. At 5 P. M. we see the warm influence of the Gulf Stream

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from 62° to 64°. At 10 P. M. we see the temperature between the influence of the stream in deep water and the coast at 54°, which is about a mean between the two; then standing off shore, at 9 the next morning, 30th, we see the warm influence of the stream again.

If these stripes of water had been distinguished by the colours of white, red, and blue, could they be more distinctly discoverable than they are by the constant use of the thermometer?

About 23 hours afterwards, May 1, at 8 A. M. we find the water cooling, and in three hours more the mercury falls 14 degrees (46°). Here no bottom could be found by the lead, and there was probably an island of ice, obscured by fog. (Let it be remembered, that the coldness of ice condenses the atmosphere, and of course the consequence must be fog.)—Passing this at 2 P. M. the thermometer rose to 54°, but in one hour more it fell to 46° again, and an island of ice appeared at the distance of seven miles. Let navigators reflect on this, and say that a sudden fall of 6° in this part of the ocean, ought to induce them to haul to the southward, and keep a good look out. From May 1, at 11 A. M. to the next morning at 1 A. M. we see the gradual changes as the ship passes the ice and comes again into ocean water; (50°) but in two hours more, the ship is in the warm influence of the stream again, and the mercury rises 10 degrees (60°). She proceeds in a nearly regular degree of heat during 17 hours, till at 6 P. M. the water begins again to cool, falling to 56° at midnight. Here was no bottom in 80 fathoms. May 3d, at 4 A. M. the water was at 43°, still no bottom in 80 fathoms. \*Now, from past experience, we must say, here is an island of ice in a less distance than 7 miles, because at that distance the water was 46°. When day appears, behold an enormous island of ice abreast, 100 yards, and the heat of the water reduced to 39°! A question now occurs. Had not the thermometer been thus used, had it not been continued during the night, what would have been the fate of the ship? Let the recollection of the miserable fate of the ship \*Jupiter, be an impressive answer; and let it be laid down as a maritime axiom, that want of caution, or ignorance, can alone cause such accidents in future.

JONA. WILLIAMS.

Temperature of the air and water on a passage from New-York to Ireland, March, 1816, in the ship Grand Turk, JOHN CARLTON, Commander.

March	7	Air.	Water.	Lat. N.	Long. W.	Wind
	8	Noon.				
	9					
	10					
	11	44 15	68 30	39 8 N.	61 36	N. In the Gulf.
	12	46 00	66 00	39 36	59 03	N. do.
	13	47 00	65 00			S. & W. do.
	14	56 30	64 00	40 36	54 17	N. do.
	15	64 00	59 30	40 42	52 47	W.
	16	56 00	54 00	42 00	49 51	S. W.
	17	44 00	59 00	42 25	47 04	N. E.
	18	58 00	61 30	42 25	45 42	S. and W.
	19					
	20	47 00	57 00	43 44	39 27	S. and W.
	21	52 00	57 00	44 22	37 15	S. and W.
	22	56 30	56 00	45 43	33 44	S. and W.
	23	51 00	54 00	46 46	31 33	S. and E.
	24					
	25					
	26	52 30	50 00	49 11	21 57	W.
	27					
	28	47 00	48 00	51 24	18 13	S. and E.
	29					
	30	48 00	50 00	51 15	17 25	E.
	31	48 00	50 00	51 15	15 55	N. and E.
April	1	48 00	50 00	50 50	12 44	N. W.
	2	45 00	50 00	50 44	10 24	S. W.
	3	48 00	50 00	51 17	10 24	E.
	4	48 00	50 00	50 30	9 13	E.
	5	49 00	50 00	49 54	10 46	N. E.
	6	49 08	50 00	50 18	10 23	N. E.
† West of the Bank.				‡ On the Bank.		§ East of the Bank.

\* Captain Law's protest, containing the particulars of the distressing circumstance of this ship, states,

*Off-Set from the Gulf Stream.*

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

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

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

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

"April 6, in latitude  $44^{\circ} 20'$ , longitude  $49^{\circ}$ , at 8 A. M. saw several pieces of broken ice, from which at 11 the same day, we supposed ourselves entirely clear, and steering W. by N. —W.—E. N. E. and foggy weather. At 2 P. M. began to discover islands of ice again, and at 3 o'clock saw a large field ahead, which appeared to have no opening. We then wore ship, and kept off to the southward and eastward; continually passing small islands of ice, until 5 P. M. when we found the ice extending so far to north and south that we could not clear it. We then hove about and stretched to the northward among the broken ice, till night came on, and no prospect of getting clear. We hove to under three topsails double reefed, in hopes to have sufficient drift to keep clear of the fields of ice to leeward, until daylight, but found at about 11 we were drifting fast upon a large field, and were obliged to wear ship and haul to the southward under easy sail, luffing and bearing away for the broken ice as occasion required, until half past 12, when we struck a small piece, which we found had gone through the starboard bow.

"Captain Law would recommend to any vessel bound to Europe, not to go to the north of latitude  $39^{\circ}$ , as the information of Captain Guiner in the schooner that relieved him, had been as far to the southward as  $41^{\circ} 30'$  and could see no southern termination."

By a reference to the journal of Capt. CARLTON, who ranks with the first Navigators of the age, and an ornament of the U. S. Navy, the importance of the marine thermometer is fully illustrated. On the 16th the ship crossed the bank, at which time the temperature of the water was  $15^{\circ} 45'$  colder than the previous and following days. A particular use of this instrument as you approach the coast, will unquestionably point out the soundings, and render useful services to the navigator. (See page 17.)



The soundings of the eddy, provided no reef be in the way, between the Stream and the Hawke Channel, run from 20 fathoms to 24; and when the reef divides the Stream and the Hawke Channel, the soundings, in some places, are from bottomless at once to 12 or 11 fathoms. Hawke Channel is the channel between Florida Reef and Keys.

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

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

It has been found that when Cape Henry, (the south point of the Chesapeake,) bore N. W. 160 leagues distant, a current was setting to the southward, at the rate of 10 or 12 miles per day, which so continued until Cape Henry bore W. N. W. 89 or 90 leagues; the current was then found setting to the N. E. at the rate of 33 or 34 miles per day, which continued until within 32 or 30 leagues of the land; then a current set to the southward and westward, at the rate of 10 or 15 miles per day, to within 12 or 15 miles of the land. This current, which is considered as the eddy of the Gulf Stream, sets, more or less, to the S. W. according to the figure of the coast.

It has also been observed by others, that a southern and western current constantly sets in high latitudes between the Gulf Stream and coast, more particularly in soundings, at the rate of half a mile an hour, or more, according to the wind.

An experienced officer of the navy, before quoted, has said, that "In all the observations I made, during five years cruising on the American coast, I never found this eastern current to the southward of latitude  $36^{\circ}$ , and only once, (the above mentioned time,) so far; it generally prevailing between the latitudes of  $37^{\circ}$  and

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\* Captain Thomas Hamlin, in the brig *Recovery*, when in the Gulf Stream, was set to the northward 104 miles, in the 24 hours of the 20th March, 1820. The ship's place, at noon,  $28^{\circ} 4' N. 79^{\circ} 50' W.$  To the north-eastward, on the next day, without the stream, in lat.  $29^{\circ} 35' \text{ long. } 77^{\circ} 25'$ , the current was found to have set only 11 miles north, but considerably more to the eastward.

On the 16th February, 1818, the ship *Mars*, under the same commander, was at the back of the Maternillo Bank, and no northerly current was found; and nearly two degrees farther eastward, in  $28^{\circ} 7' N.$  and  $76^{\circ} 58' W.$  the current, in 24 hours, had set  $3' S.$  and  $14' E.$  The ship was, therefore, evidently in the off-set from the Gulf Stream.

In proceeding onward, towards Ireland, in March, Capt. Hamlin passed about four degrees to the northward of the Azores, and was favoured by an easterly current from the parallel of  $35^{\circ}$ , and meridian of  $57^{\circ}$ , until he reached the Salters, on the S. E. coast, where his differences amounted to  $3^{\circ} 36' E.$

Captain Hamlin, in the *Recovery*, on his passage outward to Halifax, September, 1819, found the current westerly, from  $45'$  to  $30'$  per day, between the parallels of  $51^{\circ}$  and  $46^{\circ}$ , long.  $29^{\circ}$  to  $37^{\circ}$ . A gale, from the 28th to the 30th Sept. disturbed the ship's course in about  $43^{\circ} N.$  and  $41^{\circ} W.$  after which, to the eastward of the Newfoundland Bank, the current was found to set strongly to the eastward. The ship passed over the bank in the parallel of  $43^{\circ}$ ; the current still strong to the eastward; apparently the Gulf Stream. The *Recovery* thence proceeded to the southern edge of Banquereau, still finding a strong easterly current, but with diminished strength, which continued thence to the Bank of Sabie Island.

The brig afterwards proceeded from Halifax to Jamaica; and on the 22d of Nov. 1819, in  $40^{\circ} N. 62^{\circ} W.$  found a slight current to the southward; which, in the parallel of  $26^{\circ}$  to  $23^{\circ}$ , near the meridian of  $64^{\circ}$ , had changed to the eastward; but, on approaching the Silver Key Passage, a slight current to the westward appeared to prevail.



40°, from the longitude of 60° to that of 69°. And I have often, about the latitude of 36° or 37°, and about the above longitude, found a strong current to the south and S. W. Therefore ships from Europe, bound to America, should endeavour to make the passage either to the southward of latitude 37°, or to the northward of latitude 40°; that is to say, when as far, or to the westward of the Banks of Newfoundland, they should, as much as possible, avoid beating against the wind to the westward, between the latitudes of 37° and 40°.

*Upon soundings*, along the coasts of Georgia, Carolina, Virginia, New-Jersey, and New-York, the current runs, in general, parallel to the shore; and is, in general, influenced by the wind, which mostly prevails from between the south and west, producing a slow current of about one or a half knot to the N. E.; but when the N. and E. winds prevail, the current along shore to the S. W. will frequently run two knots; on which, the pilots of this coast remark, that the south and S. W. currents, though they but seldom happen, yet they are always stronger than those to the northward, which are more frequent. It is probable the tides may have some influence on these currents, particularly near the entrance of the great bays and inlets. The flood on this coast comes from the N. E. In the months of April and May I have observed, on crossing the Gulf Stream, in the latitude of Cape Henry, that, when near the inside of the Stream, the water begins to colour of a deeper green; and thence to the edge of soundings there is a strong current to the eastward. The colour of the water from green, turns to muddy when on soundings, the current still continuing until within the influence of the tide; this eastern current is, no doubt, occasioned by the discharge of water out of the Chesapeake, by the floods from the snow melting in the country; and it prevails, in some degree, throughout the year, but its effect is greater at this time. It is probable that a similar current prevails off the mouth of the Delaware.

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

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

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## CHAP. I.

### COAST OF THE UNITED STATES.

*Directions to go to the eastward of the island of Campo Bello, between the said island and the \*Wolf Islands, and up the Bay of Passamaquoddy.†*

THE Bay of Passamaquoddy divides the United States from that of the British territory, the western side of which is distinguished by a light-house on West Quoddy Head. If bound to the river of Passamaquoddy, in a large vessel, your best way is to go to the eastward of Campo Bello, keeping your course N. E. by E. which will carry you to the Wolf Islands, distant about 3 leagues. The Wolves lie about E. N. E. from Campo Bello; and when the passage between Campo Bello and the White Horse bears W. N. W. you must steer W. N. W. leaving the White Horse on your starboard hand, and keep Campo Bello island best on board. The White Horse is a large white rock, which lies off the N. E. end of Campo Bello. You will see the fine harbours of Harbour Delute and Fryer's Bay, on the west side of Campo Bello island, and at its S. W. end lies Snug Cove, another good harbour. Off the N. E. end of Campo Bello also lies Head Harbour, easy of access. From Campo Bello Island to Moose Island, the course is W. S. W. distant 2 leagues, where you may anchor in 9 or 10 fathoms, muddy bottom. Here is the best harbour in the United States for making dry docks, as you may have them either on the south of Moose Island, or 30 or 40 miles up Scodoc river. Common tides rise here 25 feet. At full and change it is high water at half past 11 o'clock at Moose Island, and runs, when strongest, between Moose Island and Marble Island, and between Deer Island and Campo Bello, nearly 5 miles an hour. In the western passage, common tides rise from 20 to 25 feet.

*Vessels from the southward*, when bound up for this bay, should make for the western coast, or that of the United States, as it is the most clear, and the flood most favourable, being from 7 to 8 miles wide: both shores bold; the depth quickly increasing, on each side, from 12 to 70 and 75 fathoms; the greatest depth near Manan, where you haul quickly from 10 to 75 fathoms.

*There are three passages* into Passamaquoddy Bay, namely, the *Western Passage*, the *Ship Channel* or *Middle Passage*, and the *Eastern Passage*. The first is that between the Isle of Campo Bello and the main land to the west. *Middle Passage* lies between Campo Bello and Deer Island; and the *Eastern Passage* is to the eastward and northward of both islands.

\* The Wolves, or Wolf Island, which lie 9 miles to the N. E. from Grand Manan, are from 60 to 100 feet in height, steep and bold. The passages between them are deep, and they afford temporary shelter, in the depth of from 20 to 12 fathoms. Between Manan and these isles, the depths vary from 70 to 40 fathoms, bottom of ooze and mud.

† There are three rivers which fall into Passamaquoddy bay: the largest is called by the modern Indians the Scodoc, but by Demons and Champlains, Etchemins. Its main source is near Penobscot river. The mouth of the river has 25 fathoms water, and the land is very bluff.

In November, 1817, the commissioners appointed by the respective governments under the treaty of Ghent, (the last treaty of peace,) decided that *Moose, Dudley, and Frederick Islands*, in the Bay of Passamaquoddy, do belong to the United States; and that all the other islands in the same bay, with Grand Manan, in the bay of Fundy, do belong to Great Britain, by virtue of the treaty of peace of 1783. The citizens of the United States continue to enjoy the privilege of navigating through the ship channels between Deer Island and Campo Bello.

If bound into the *Western Passage*, give a birth to the *Sail Rocks*, which are two remarkable rocks that lie about half a mile from *West Quoddy Head*, and, at a distance, resemble a ship. To the eastward of these, there is a whirlpool. In passing here, it is requisite to give these objects a birth of half or three-quarters of a mile before you haul in. After passing them, steer to the westward, keeping nearest to the south shore, for two and a half or three miles, where you may come to anchor in 4 or 5 fathoms, well sheltered, either by day or night. You must not proceed higher, as a rocky bar stretches across, which is dry at low water. Here a pilot may be obtained, on firing a gun, and making the usual signal, who will take the ship to *Snug Cove*, or *Moose Island*, whence another may be obtained for *St. Andrews*, or the river of *Scoodic*.

Between the *Wolves* and the island of *Campo Bello* there is a depth of from 50 to 60 fathoms. With the latter bearing S. S. E. or S. E. there is a depth of 19 and 20 fathoms, where ships may anchor securely from all winds. The course thence to *Moose Island* is W. S. W. 2 leagues.

If bound from *Moose Island* up the river *Scoodic*, as you pass *Todd's Head*, (which is half a mile N. E. from the town landing on *Eastport*,) give it a birth of half a mile, as a ledge of rocks lies off it. Having passed this *Head*, the course and distance to *Cak Point* or *Devil's Head*, will be N. by W. 8 leagues; in going which distance, (24 miles,) you pass *Fross' Ledge* on your larboard hand, six miles from *Todd's Head*, and three-quarters of a mile from the land; when, continuing your N. by W. course 5 leagues, you will come to *Robinstown*, two miles above which, off a small island, from which it bears N. E. is a shoal on your larboard hand, and to avoid it you must keep your starboard hand best on board, till you come up with *Neutral Island*, which you leave on your larboard hand, one-fourth of a mile distant; and your course from this to the *Devil's Head*, (before mentioned,) which you leave on your larboard hand, is N. N. W. 3 miles. When you have passed the *Devil's Head*, your course is W. N. W. 1 league, when you will come to a large ledge of rocks that you must leave your larboard hand, which is bare at two hours ebb, and extends half way across the river. Keep your starboard hand on board, and when you pass this ledge, your course is W. S. W. distant one mile to *Turner's Point*; and from said point to the harbour, your course is N. W. by N. distant 3 miles, and the next reach to the Falls is W. N. W. distant one mile; the tide flows here 25 feet, and there are only 6 or 7 feet in the channel at low water, with long flats of mud on both sides. The *Devil's Head* may be seen the distance of 10 or 12 miles.

There are several good harbours on the west side of this river, and all the difficulty is the great depth of water, which is, in general, from 18 to 24 fathoms. There is also a good harbour on your starboard hand going into *Deer Island*, which lies to the southward of *St. Andrews*, 2 leagues distant. It may be easily known, as there is a large bay between the two islands, which lies N. E. from the river *St. Croix*, 3 leagues distant. *St. Croix* lies in lat.  $45^{\circ} 7' N$ .

**ST. ANDREWS.**—The town and harbour of *St. Andrews* lie on the eastern side of the entrance of the *Scoodic*. The town is a pleasant little place, and the harbour being good, many ships load timber here, which is generally much longer than of *Nova-Scotia*. The merchants of this town load timber also at other places; viz. at *Oak Bay* on the *Scoodic*, and at *Rushabee*, *Didiquash*, and *Magadovick*, on the N. E. side of *Passamaquoddy Bay*, all being excellent and very convenient harbours. In the bay, in general, there are from 17 to 23 fathoms water.

#### REMARKS.

The prevailing winds throughout the whole coast of *Nova Scotia* are from W. S. W. to S. W. nearly as steady as trade winds, except during the summer months, when they are rather more southerly, accompanied with but little intermission, by fog, which requires a north-westerly wind to disperse it. It is, therefore, recommended not to leave an anchorage, without making arrangements to reach another before dark, or the appearance of a fog coming on, which, with a S. W. wind, is so sudden that you are unawares enveloped in it; nor to keep at sea during the night, if it can be avoided. Whenever the wind blows directly off the land, the fog is soon dispersed.

*Directions for the Eastern Coast, when you fall in with Grand Manan\*, or Mount Desert Hills.*

These places may easily be known from the western coast. Mount Desert Hills may be seen 20 leagues at sea, and when within 4 or 5 leagues of them, you may see Scutoc Hills bearing about N. N. E. The tide of flood sets here E. N. E. and the ebb W. S. W. but as soon as you are 9 or 10 leagues from the land, the current runs in general to the S. W. westward.

If you fall in with Mount Desert rock, which lies S. 6 leagues from Mount Desert hills, you must observe the tide of flood sets W. S. W. along shore, till you come to the Fox Islands; but the same flood runs up to the northward, into Blue Hill bay, Union River, and Isle-au-haut bay.

The most remarkable land is Penobscot hills, which you will see over the Fox Islands, bearing from the N. W. to the N. N. W. of them. When you pass the

\* GRAND MANAN.—This island, 14½ miles in length, by 7 in breadth, is included in Charlotte County, in the province of New-Brunswick. Its northern point is in latitude 44° 54' and longitude 66° 45'. The nearest distance, from the opposite coast of Maine, is nearly 9 miles. The western side is very high; its cliffs being nearly perpendicular, and about 600 feet high above the level of the sea. On this side is but one little inlet, (*Dark Cove*,) which affords shelter for boats only. The northern head is equally abrupt and bold: but to the eastward of it is *Whale Cove*, having anchoring ground, with 25 to 15 fathoms, in which ships may stop for a tide, during a southerly gale, but it is exposed to the easterly gales.

To the S. E. of Whale Cove, on the N. E. side of the island, is Long Island Bay, so called from the island on the S. E. side of it. The N. E. point of this bay, called, from its shape, the *Swallow's Tail*, is high, bold, rugged and barren. The bay is open, but possesses all the advantages of a harbour; the bottom is wholly of mud, excepting a ridge of rocks and gravel, that shows itself within the Swallow's Tail, and the north end of Long Island: there is, also, a small cluster of sunken rocks, of five feet at low water, at half a mile from Long Island Point.

Under Long Island, and opposite to the beach, ships may anchor, even locking in the north end of Long Island with the Swallow's Tail, on a strong muddy bottom, entirely sheltered from the wind and sea. In the northern part of the Bay, bottom of stiff clay, vessels have frequently been protected during a severe gale.

Half-way down, on the eastern coast of Grand Manan, is Great Duck Island, under which there is good ground; but here a pilot may be required, as there are hidden dangers in the vicinity. To the south-eastward of Duck Island lie Ross, Cheney, and White Head islands; the latter occupied by a skilful and intelligent pilot: from these the rocks and foul ground extend 3 leagues to the S. by E.

On the southern bank of Grand Manan, the most dangerous ledge is that called the *Old Proprietor*, which lies two leagues S. S. E. from White Head Island, and covers the space of half an acre at low water; it is dry at half-ebb. When covered, the tide sets directly over it, at the rate of four miles an hour. At three miles more to the S. E. is another shoal, *Clerk's Ground*; and east from it, nearly four miles, lies the *Roaring Bull*, a bank of 8 fathoms, over which is a heavy and dangerous ripple. The S. W. head of Manan, open of all the islets off the south side of that island, will lead clear to the southward of these dangers. The north-easternmost high land, open of the islets on the east, leads clear to the eastward of them. During an easterly wind the tide-rips are impassable.

The *Three Islands*, (*Kents*), the southernmost of the Manan Islets, are low and ledgy. The eastern side of the largest is bold to the rocks, which are at all times visible. Off the N. W. of these rocks is a ledge called the *Constable*, dry at low water. These islets, with Green Islets to the northward of them, afford occasional anchorage, in from 14 to 7 fathoms. *Wood Island*, on the south side of Manan, and the S. W. end of the latter, form a bay containing excellent ground. The upper part and head of it, in a gale of wind, are places of security; and here supplies, if requisite, may be obtained from the inhabitants.

Between Wood Island, on the West, and Ross Island, on the east, is the passage to *Grand Harbour*, a shallow muddy basin. It is a convenient place for ships without anchor or cable, as they may lie in the mud, in perfect security. At the entrance, which is narrow, the depths are from 7 to 5 fathoms, bottom of clay.

† The Isle-au-haut is remarkable land, composed of high steep cliffs, and makes with a large bay on each side of it; has good landing at its eastern end, and anchorage half a mile off, in 18 fathoms, with the low point bearing about N. E. by N. where is also a stream of water running into the sea. The highest part of the island is in the middle, and represents a saddle.

Isle-au-haut, in steering W. S. W. you will leave Mantinicus Islands, and Mantinicus Seal Islands to the southward of you. If at night, or thick weather, it is advisable to go to the southward of all these islands, unless you are well acquainted. When you pass to the westward of Mantinicus Islands, the main passage from sea to Penobscot bay lies about N. by W. If you go into this passage, you leave Mantinicus Island on your starboard, and the two Green Islands on your larboard hand, steering north-westerly 4 leagues; and if bound up the bay, follow your directions for Penobscot bay,

If you come in from sea, and make the island of Manheigen, on which is a light-house, (described in page 34.) when it bears N. or N. N. W. it appears like two islands, but when it bears east or west, it appears in one island. Damiscove Islands lie to the W. by N. of it, which are all bare of trees except the north part. The rocks called Bantam Ledge, lie two miles from Damiscove, W. S. W. When you are 6 or 7 leagues off at sea, you will have 70 or 80 fathoms water, with a S. S. W. current. In general, between Damiscove and Manheigen island, the flood tide parts, and sets E. N. E. to the eastward, and W. S. W. to the westward, as far as the island of Seguine, and to the northward up to Broad Bay, Sheepscut and Kennebeck rivers, and the ebb sets the contrary way.

#### *Directions from Machias to Passamaquoddy.\**

When you leave Machias, and are bound to Passamaquoddy, bring Grass Island to bear S. W. by W. and steer N. E. by E.  $\frac{1}{2}$  E. distant 9 leagues to West Passamaquoddy light-house, near which is an ALARM BELL, which will, during foggy weather, strike ten times in a minute, unless neglected, which is too often the case, as the machinery is out of order, and it is now rung by hand; but when rung, the sound may, when calm, be heard five miles. But if the wind takes you to the eastward, there is a good harbour, about two leagues to the N. E. of Cross Island. This harbour bears due west from the middle of Grand Manan island, and is called Little River, but you cannot see it except you are near the north shore. You must not run in for it before it bears N. W. or N. N. W. There is a bluff point of rocks on the starboard hand, as you go in, and an island in the middle of the harbour. As you pass in, leave the island on your larboard hand, and when you have passed it half a mile, you may anchor in 4 or 5 fathoms. muddy bottom, and remain safe from all winds. Your course from this harbour to West Passamaquoddy light, is N. E. by E.  $\frac{1}{2}$  E. distant 7 leagues. When you come from the S. W. and are bound into West Passamaquoddy, you must give the Sail Rocks, before mentioned, a birth of three-quarters of a mile, before you haul in for the harbour, as there is a whirlpool to the eastward of them. The bay is about one league from this point; it is high water here at full and change of the moon, about half past 11 o'clock.

There is a good bay that lies about W. S. W. from this point, three-quarters of a mile distant, where you may anchor; but it is not safe for any stranger to go over the bar without a pilot, which may be easily obtained. The bar bears N. N. W. from the anchoring ground, three-quarters of a mile distant.

When up as far as Allen's Island, if you leave it with the tide of flood, steer N. N. E. 3 miles, when you will have the tide against you four hours; and two hours before high water the tide sets S. S. W. till you come down to the Collector's Island, when it sets over the bar S. S. E. The tide rises here 25 feet. There is a fine cove on the south end of Moose Island, where a ship of 500 tons may lie, moored head and stern, safe from all winds, but the anchors are very much exposed with the wind to the south-east.

\* Passamaquoddy light is situated on West Quoddy Head. The lantern is elevated 90 feet above the level of the sea, and contains a fixed light, which may be seen at the distance of 7 leagues, in clear weather.



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### Directions for Titmanan Light-House.\*

In coming from the westward, bound to Pigeon Hill, or Bowbear Harbour, bring the light to bear S. W. and run for it, giving it a birth of one-fourth of a mile, and then steer N.  $\frac{1}{2}$  W. 4 miles: in steering this course, you will leave the Egg Rock on your starboard hand, when you will make the westerly shore, giving it a birth of half a mile; then steer N. N. E. one mile, when you will be opposite Dyer's house, where you may anchor safe from all winds, in 3 fathoms water.

In coming from the eastward, bound to Dyer's Bay, give Titmanan Island light three-fourths of a mile birth, leaving it on your starboard hand; bring the light to bear N. E. three-fourths of a mile distant, then steer N. by W. which will carry you into the mouth of the bay, leaving a large dry ledge on your larboard hand: when abreast of this ledge, which is bold to, give it a birth of 5 or 6 rods, then steer N.  $\frac{1}{2}$  E. 4 or 5 miles, where you may anchor safe from all winds, in 4 or 5 fathoms, muddy bottom.

Goldsborough harbour lies N. N. W. from Titmanan light-house, two leagues distant, leaving one island, covered with trees, on your starboard hand, and two on your larboard hand; then your course is N. N. W.  $1\frac{1}{2}$  mile, then N.  $\frac{1}{2}$  E. 4 miles, which will bring you up with Goldsborough point, where you may anchor safe from all winds, in 3 or 4 fathoms, muddy bottom.

In coming from the eastward, bound to Prospect harbour, give Titmanan light a birth of three-fourths of a mile, bring it to bear E. S. E. and steer W. N. W. 4 leagues, which will bring you up with the western shore, or Birch head harbour. In running the above course, you will leave Cranberry Rock point on your starboard hand, Moulton's ledge, and the two black ledges on your larboard hand. Your course, from Cranberry Rock point in, is N. W. by N. In case you should not make the point, continue your course W. N. W. until you make the western shore, giving it a birth of half a mile, then steer N. N. E. until you open the harbour, then steer N. W. which course will carry you safe in. If you fall in with Shuttock island, and are bound to Prospect, give it a birth of three-fourths of a mile, then steer N. N. E. which course will carry you safe into the harbour. In running this course, you will leave the two black ledges on your starboard hand, giving them a birth of three-fourths of a mile.

Moulton's ledge bears from the light-house W. by N. 4 miles distant; this ledge is not bare, except at low tides: strangers should not approach too near it; it lies due south from Goldsborough Harbour. There is a sunken ledge that lies S. E. by E. from the light-house, 12 miles distant, on which there is but 5 feet, at low water.

S. S. W. 4 miles distant from the light-house, lies a sunken ledge, on which there are 12 feet at low water.

### Directions from Mount Desert,† to Goldsborough, and ‡Machias.

In going from Mount Desert to Goldsborough, you must steer E.  $\frac{1}{2}$  N. for §Shuttock Point, 4 leagues, where is an island, which you may pass either side of, but it is best to leave it on your larboard hand, and then steer N. E. about  $3\frac{1}{2}$  leagues, which will carry you up with Goldsborough Harbour. You will see

\* Titmanan light-house stands on the S. E. part of Titmanan Island. It is a stone building, 25 feet high; contains a *fixed light*, from lamps 53 feet above the level of the sea.

† Mount Desert Island is about 15 miles long, and 12 broad. It is intersected in the middle by the water flowing into the south side from the sea. There are two considerable islands on the S. E. side of Mount Desert Island, called Cranberry Islands, which assist in forming a harbour in the Gulf, which sets up on the south side of the island.

‡ Machias light-house is built on Libby Island, which lies on the western entrance to Machias Bay, 66 feet above the level of the sea, and contains a *revolving light*.

§ There are five hills on Shuttock, remarkable from any hills in the eastern country, and at a distance they appear round.

three Islands which lie in the mouth of the harbour; you must leave them on your larboard hand, and go in the eastern passage. In standing in for this place, you will see Titmanan Island, which has a light house on it, containing a *fixed light*, already described, which you leave on your starboard hand. North from Titmanan, one eighth of a mile distant, lies a ledge, bare at half tide, which you keep within half a cable's length of when going over the bar, which you pass on your starboard hand, when bound eastward, at which, as you pass the bar, Shuttock island will be a handspike's length open to the southward of \*Shuttock point, but to go over this bar requires a pilot. When near the bar, and up with Titmanan Island, keep E. S. E. one half a mile distant, which will clear a ledge having 9 feet water at low water, that lies E. of the channel going over the bar, one-fourth of a mile distant. There is a bar that runs from the shore to this little island, which is about 1 league from the land. This bar has  $3\frac{1}{2}$  fathoms at high water, and 9 feet at low water.

If you are bound to Machias or Passamaquoddy, your course from Mount Desert is E.  $12\frac{1}{2}$  leagues, which will carry you up with †Moose Peck light, which you leave on your larboard hand; then steer N. E. by E. for Machias light,  $4\frac{1}{2}$  leagues. In steering the above courses and distances, you pass by nothing but islands on your larboard hand, with inlets and sundry good harbours, pleasant rivers, Moose Peck Reach, and Chandler's River, which are all good harbours, but too intricate to be described for strangers to attempt with safety. If you cannot steer your courses as above directed, you must observe, after passing Moose Peck Head light, there are three low islands to the S. W. of Grand Manan Island, which lie due S. E. from Machias, called Seal Islands, distant 4 leagues, which you must be careful of in the night. You may see the island of Grand Manan 6 leagues before you come to it, and when it bears N. E. these islands run S. W. from Grand Manan, about 2 leagues distant, and in thick weather, if you make these islands, you may run for Machias light, bringing the S. W. end of Grand Manan to bear S. E. by E. and then run N. W. by W. for the entrance of Machias, 5 leagues distant, and when you have passed Cross Island, which you leave on your starboard hand, you may steer N. but in passing Cross Island, you must be careful of some dangerous ledges lying off it  $1\frac{1}{2}$  miles, in a S. W. direction. In steering this course, you will leave a large white rock on your larboard hand; and if you do not want to go into Machias harbour, you may haul to the westward. After you have passed this rock about half a mile, bring a high round island that is covered with trees to bear N. when you may anchor in 4 or 5 fathoms, muddy bottom. This is called Jones' harbour, but if you mean to go up to Machias, you must keep your course N. till you pass a round high island on your larboard hand, when you may shape your course W. N. W. or N. W. by W. for a point that is covered with young birch trees, and a house on it, for on the starboard hand there is nothing but flats and shoals. You may keep your larboard hand after you pass this house, until the river opens to the northward, when you may run up to Cross river, where you may anchor in 4 fathoms; but if you are bound up to the S. W. mills, you must haul away to the westward. When you get up with Mr. Parker's house and barn, which are on the starboard hand, you must leave the barn open to the southwestward of the Pott-head. This Pot-head is a large hill that you leave on your starboard hand. [For description of Grand Manan, see page 23.]

#### *Directions from Long Island to the southwest Harbour of Mount Desert.*

Your course is N. N. E. distant  $3\frac{1}{2}$  leagues. You must leave the two Duck Islands on your starboard hand, and three islands on your larboard hand. It is

\* Shuttock Point forms the eastern, and Mount Desert the western extreme of Frenchman's Bay.

† Moose Peck Head light is built on Ship Harbour Island, and contains a revolving light. Ship Harbour Island is the middle Island of the three.

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### Mount Desert.

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not safe for a stranger to run here in the night, as there is a large ledge that is covered at high water, and bare at half tide. You leave this ledge on your starboard hand, which is about one mile from the harbour. There is a long ledge on the larboard hand, which runs off half a mile, but there is a good turning channel between them. The S. W. passage is fit to enter even with a large vessel at low water, keeping nearest the starboard hand as you go in, for there is a long point that lies about half a mile off from the larboard hand. When you pass the point on your larboard hand, you have the harbour open, and must bear up N. W. or W. N. W. and anchor well up the harbour in 5 or 6 fathoms, muddy bottom, where you may lie safe from all winds. If you are in a large vessel, and make the Isle-au-haut, bring it to bear W. by S. and steer E. by N. 10 leagues, which course and distance will carry you up the eastern passage going into Mount Desert. You must leave all the islands to the northward, and go to the northward of Mount Desert rock, which lies E. S. E. from the Isle-au-haut, S. E. from Long Island, and S. from the Duck Islands. When you bring the harbour to bear W. N. W. you may steer directly in, for you may go about with a first rate man-of-war in this passage. You may steer in this channel, with a fair wind, from W. N. W. to W. by N. till you come to Langley's Island, which lies about one league up the harbour, and makes the starboard hand of the river that runs from the N. E. Be careful of this island, as there is a sunken ledge of rocks abreast of it, near half a mile off. The river above mentioned has water enough for any ship to go in, and is a safe harbour.

### *Directions for sailing through Fox Island Passage.*

When bound from the westward, and intend going through Fox Island passage, bring \*Owl's head light to bear W. by S. and steer E. by N. from Owl's head, 4 leagues distant. If you have a head wind, and are obliged to go into the mouth of the bay, be careful of a ledge of rocks that bears from Crabtree point S. W. or S. W. by S. called Crabtree Ledge, distant 4 or 5 miles. This passage has rocks on both sides; Crabtree point is on the larboard hand. It is on the northern Fox Island, and there is a long point of rocks near one league to the S. W. of it. This passage is not fit to enter in the night, unless you are well acquainted. When you get in, bring Crabtree point to bear W. S. W. and steer E. N. E. about 3 leagues, which will bring you to Young's Narrow. In steering this course you will make two large bare rocks, called the Sugar Loaves, which you may go on either side of, but to follow your directions you must leave them on your starboard hand, and also be careful of a ledge that lies about north one third of a mile from them. The entrance to Young's point is narrow at low water, off which lies a ledge of rocks, which are covered at high water. There is also a quantity of sunken rocks at the larboard hand, near a mile to the W. N. W. which lie off the Dumplins. These Dumplins are three islands, which you leave on your larboard hand. Your course in this passage is E. S. E. and W. N. W. keeping your starboard hand on board. When you pass this point on your starboard hand, you must keep your starboard hand on board, and steer E. S. E. about two miles, when you will make Deep cove on your starboard hand, which lies to the eastward of a very high bluff of rocks. If you have neither cables nor anchors, you may run into said cove, or secure your vessel with the main or fore-sheet, or come to anchor in 7 fathoms water off the said cove. There the flood meets, one from the W. N. W. the other from the E. N. E. which makes an eddy against this cove and highland; here you may ride safe with any wind. When you leave this place, and are bound to the eastward, you steer E. S. E. and keep

\* Owl's head, a headland on the west side of Penobscot bay, N. by P. from White Head light in the State of Maine. On the eastern part of the head is a light-house, showing a *fixed light*. It has a good harbour on the larboard hand as you go to the eastward. The harbour makes with a Deep cove, has 4 fathoms water, and a muddy bottom. (See page 29.)

your starboard hand on board till you come up to a clear spot of land where the trees have been cut off. As soon as said spot bears W. S. W. you steer E. N. E. for the middle narrows. When you draw near the narrows, you will see two large white rocks in the middle of the passage, unless at high water, at which time they are covered about one hour, but may be seen at all other times of tide. You may go on either side, but the deepest water is at the southward of them. Continue your course E. N. E. about 1 league, when you must keep your starboard hand on board, as there are several sunken rocks and ledges on your larboard hand, which are covered at high water. You will make the eastern narrows on your starboard hand, and as soon as you bring it to bear S. S. E. you may run through, where you will have a fine harbour, which is safe to ride in with all winds except at E. N. E. but you may remain in the west passage with the wind at E. N. E. or anchor at the northward of a bare island, that you will see on your starboard hand as you go back to the westward. When you pass the eastern passage of Fox island, you must steer E. N. E. about 4 miles, which course will carry you into a large bay that lies between Fox island and the Isle-au-haut. This bay lies N. and S. and about 4 leagues E. and W. When you get into this bay from the above mentioned passage, and are bound to the eastward of the Isle-au-haut, you may steer E. S. E. 6 leagues, which course will carry you to the southward of the Isle-au-haut.

N. B. When you come from the westward, and pass the island of Manheigin, and the entrance of Penobscot bay, you may steer E. N. E. which course will carry you between the Fox Islands and Matinicus Islands, leaving all the Fox-Islands on your larboard hand, but bring the Isle-au-haut to bear W. N. W. and steer E. N. E. 7 leagues to Long Island, which you leave on your larboard hand. If you are bound to Blue Hill Bay, or Union River, as soon as you pass Long Island, you will open a large Sound to the N. N. W. which course you are to steer 7 leagues, when you will be up with Robertson's Island, leaving the Ship and Barge\* on your larboard hand. Robertson's Island is the only Island near that place that has a house on it. The south part of the island is clear of trees, on which the house stands. When you come near the south part of the island, give it a birth of three quarters of a mile, as there are several sunken rocks off said point. When you bring this island to bear from S. W. to N. W. you may anchor in 6 or 7 fathoms water, muddy bottom; but if you are bound to Blue Hill Bay, you may stand to the northward direct for the Blue Hills, which you may see 10 or 15 leagues off. If you are bound for Union River, you had better take a pilot at Robertson's Island, for it is not fit for a stranger to go without one.

### *Directions for White Head Light.†*

Vessels bound from the southward, and intending to fall in with White Head light-house, should endeavour to take their departure from the High Land of Cape Cod, on which is a light-house, containing a *fixed light*, from which to Manheigin light, the course is N. N. E.  $4^{\circ}$  E. distant  $35\frac{1}{2}$  leagues. The shore near Manheigin is bold, with good water on all sides, having no shoals or sunken rocks about it; there are some dry islands and ledges on the north side, but they are bold, and good water  $\frac{1}{2}$  among them. From Manheigin light to White Head light, the course is N. E. distant about 7 leagues, with a fair open sound. There is a small ledge lies about half a mile from White Head light, bearing S. by E. which is just out of water at common tides; at low water you pass between this ledge and the light to go in the Muscle Ridge channel, or into the harbour. You con-

\* The Ship is an island that has three trees on it, and appears like a ship at a distance; and the Barge is a dry rock, which appears like a barge.

† White Head light is situated at the western entrance of Penobscot Bay. The lantern is elevated 50 feet above the level of the sea, and contains a *fixed light*. This light cannot be seen more than 4 or 5 leagues distant.



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tinue your course N. E. by the light about three quarters of a mile, when you will open the harbour on your larboard hand, between a small ledgy island next the light, and a high white island with some spruce trees on it. When you open the harbour N. W. you steer N. W. and sail on till you pass all the ledges on your larboard hand, and anchor in about 5 or 6 fathoms, good holding ground.

Vessels of 60 or 70 tons, may double close around the head off the light, soon as it bears N. E. and anchor right abreast of the store. This is called Sail Harbour. Vessels taken with calm and ebb tide, may anchor any where off the light, in from 12 to 20 fathoms water. If the wind takes you at N. E. and ebb tide, that you cannot get into Sail Harbour, you may run into Tennant Harbour, which bears W. by S. about 4 miles distant. You will continue your W. by S. course, till the first house on the starboard hand bears N. N. W. when you may anchor in about 4 or 5 fathoms water, good ground.

### *Directions from Tennant Harbour to the Muscle Ridges, and thence up Penobscot Bay.*

In sailing from this harbour, you may steer east one league, to White Head light, but be careful not to haul in for it till it bears N. E. as there is a large ledge of rocks bearing about W. N. W. from said Head, one mile distant, but within it, a pistol shot from the shore, is safe navigation. In going in, you must give the larboard hand a birth, as there is a sunken ledge, which extends about two thirds across the mouth of the harbour, that breaks when there is any sea, unless at high water.

Your course from White Head light is N. E. to Ash Point or island, one league distant, which has a large rock to the S. W. of it, about half a mile distant, which you must leave on your larboard hand. It is not in the way, except you are obliged to go about. When you haul round this island, give it a small birth, and steer N. N. E. or N. E. by N. for the Owl's Head, leaving two islands on your starboard hand; but when you draw near the larboard shore, you steer about E. N. E. for the Owl's Head, which has a good harbour on the larboard hand as you go to the eastward. This harbour makes with a deep cove. You may bring a rocky point that lies on your starboard hand to bear N. E. and a ledge of rocks that lies without said point to bear E. N. E. and anchor in 4 fathoms, muddy bottom.

This harbour is open to the wind at E. by N. and E. N. E. but in all other winds you are safe. The tide of flood sets to the eastward, and the tide of ebb S. W. through the Muscle Ridges.

If it is night when you come to White Head light, you had better not attempt going through the Muscle Ridges. Your best way is to go by Two Bush Island, which you must leave on your larboard hand, keeping your course E. N. E. or N. E. by E. [Two Bush Island is round and barren, but has only one bush on it. Formerly it had two bushes.]

If you are in a large vessel, your best way is to go in this passage, as it is the most safe. You must follow your course, as above directed, about two leagues, when you will have \*Penobscot Bay open, and then you may direct your course

\* PENOBSCOT BAY AND RIVER.—This extensive bay is included between Sedgwick Point, on the east, and White Head on the west: the distance between these points is about 11 leagues; and it therefore includes the Isle-au-Haute, Deer Island, the Fox Islands, Long Island, and a number of small isles, rocks, and ledges. Through the bay to the mouth of the river of its name, the western channel is by the headland on the west, called Owl's Head: thence, by Camden on the west, and Cape Rosarie on the east, to Bagaduce Point or Castine River. The eastern channel is between Isle-au-Haute on the west, and the smaller isles on the east, through a channel called Long Reach, formed by the shore of Sedgwick on one side, and Deer Island on the other, until it unites with the main channel between Cape Rosarie and Long Island. Above this, on the east, stands Fort Castine, near to which is the town of CASTINE, opposite to Penobscot. Castine is the port of entry. This noble river,

to either side of Long Island. If you go to the westward, your course is N. N. E. to Great Spruce Head, which having passed seven leagues, your course is N. E. by N. five leagues, to Old Fort Point. In steering said course, you will leave Belfast Bay and Brigadier's Island on your larboard hand, which island has a good harbour, and if you mean to go into it, you must leave it on your larboard hand, and steer in about N. or N. by W.

You may run up above this island, and anchor on the starboard hand, if the wind is to the eastward; but if to the westward, or S. W. you must not. There is a bar that lies from this island to the main land, which is covered at high water. There is also a good harbour to the westward of this island, called Long Cove. If you turn into either of these harbours, you must be careful of some rocks that lie to the southward of this island, more than half a mile from the main land. But in going to Penobscot, proceed as above, and keep your larboard hand on board. When you pass this island for the Old Fort Point, which has no trees on it, you must observe before you come to it, that a large ledge of rocks lies about three-quarters of a mile to the E. S. E. of it, which is covered at high water, but bare at half tide. You may go within a cable's length of Old Fort Point, in smooth water. These rocks may be discovered when the wind blows.

If you are bound up Penobscot, from Old Fort Point, with the tide of ebb, and the wind a-head, you may make a good harbour in the east river, which lies about E. N. E. from Old Fort Point, about one league. This river lies to the southwestward of Orphan Island, in which place you will lie safe from all winds, and anchor in six or seven fathoms, good holding ground.

Orphan Island is a large island, which you are to leave on your starboard hand, and sundry rocks on your larboard hand, which are above water. When you pass Orphan Island, you may anchor to the N. W. of it, on the starboard hand, as you go through: but if wind and tide are in favour, you may proceed up to Marsh Bay, keeping the larboard hand best on board. Marsh Bay is about two leagues from Orphan Island. When you pass Marsh Bay, you may keep in the middle of the river, and you have neither rocks nor shoals until you get up to the falls. You have no particular course in going up this river, but may sometimes go to the westward of N. and sometimes to the eastward of N.

When you enter Penobscot Bay, and are bound to the eastward of Long Island, you must steer N. E. by N. leaving Long Island on your larboard hand, which course will carry you up to Castine. If you intend going into this harbour, as soon as it bears E. N. E. you may run in, steering E. N. E. keeping the middle of the channel until you pass the first island, giving it a birth of half a mile; then haul to the southward until the island bears W. S. W. when you may anchor in 8 or 10 fathoms, muddy bottom, and lie safe from all wind.

In going into the harbour of Castine, you leave three islands on your starboard hand: but if you are bound up Penobscot River, you must steer north, leaving the ledge of rocks off the Old Fort Point on your larboard hand: then follow the same directions you have for running into Penobscot River, which will carry you up to the Falls. The tide ebbs and flows, at full and change, about 10 or 11 feet.

#### *Directions for sailing into George's River.*

Bring the North Damiscope Island, which is called White Island, (from its being white,) to bear W. S. W. and steer E. N. E. for \*Franklin light-house,

which empties its waters into the bay, and which is now decorated with numerous townships, is the most considerable in the State of Maine, and has its sources about 130 miles above the inlet of Castine. The head of tide and navigation is, however, at Bangor, about 30 miles from the same: but vessel of 30 tons may approach within a mile of this place. At the entrance of the river is a depth of 10 fathoms.

\* Franklin Light is erected on the north end of Franklin Island, near the entrance of George's river. The lantern is elevated 50 feet above the level of the sea, and contains a fixed light.



your course is N. by E. your course is said course, you will leave it on your

starboard hand, if the wind must not. There is a ledge covered at high water, called Long Cove. It is composed of some rocks from the main land. On your starboard hand on which has no trees on a ledge of rocks lies a ledge covered at high length of Old Fort when the wind blows. With the tide of ebb, the east river, which

This river lies to the west of the island, will lie safe from all wind.

On your starboard hand, above water. When you are on the starboard hand, you may proceed to Marsh Bay is in Marsh Bay, you may go to shoals until you reach up this river, but the eastward of N. by E. eastward of Long Cove, on your starboard hand, going into this harbour. N. E. keeping the river to the north of it a birth of half S. W. when you are from all wind.

On your starboard hand, you must steer north, on your starboard hand: then the river, which is full and change,

land, (from its Franklin light-house,

nearous townships, about 130 miles at Bangor, about 10 miles of this place.

the entrance of the river and contains a

that you leave on your starboard hand, and which you may pass within a cable's length of. When abreast of Franklin Island light, (which is on your starboard hand,) steer N. E. for Otter Island, 4 miles distant, and continue until within one-quarter of a mile of it, leaving it on your larboard hand; then steer E. N. E. for \*Cauldwell's Island, at the S. W. end of which, is a high round rock, called Goose Rock. When abreast of said rock, which you may pass within one cable's length of, leaving it on your starboard hand, steer N. E. by E. and N. E. keeping Cauldwell's Island best on board, to avoid a ledge in the middle of the river.

In beating into George's River, you must be careful of a sunken ledge which bears E. N. E. from Franklin Island light, 6 miles distant; also of a ledge off the S. E. end of Gay's Island, which extends one-third of the way across to Goose Rock.

Should you fall in with Manheigin Island light, and bound to George's River, you may steer N. N. W. leaving Manheigin Island on your starboard hand, until Franklin Island light bears N. E. by E. when you may run for it, and steer as above directed. Franklin light may with safety be run for when bearing from N. E. by N. to E. N. E.

In running from White Islands for George's River, be careful of New Harbour Ledges, which bear E. N. E. from Penmequid Point, one league distant, on which are 5 feet water at low water. After passing these ledges, you will see a large dry rock, called the Western Egg Rock, which bears E. N. E. from Penmequid Point, two leagues distant, and W. by S. from Franklin light, one league, which you leave on your larboard hand; you will also see the Eastern Egg Rock, which bears south from Franklin light, one league distant, which you leave on your starboard hand. These Egg Rocks bear E. S. E. and W. N. W. from each other one league distant, and their appearance much alike, which you pass between, with a clear and open channel. You may distinguish one from the other by their bearings from the light.

Should you have the wind ahead, and be obliged to turn to windward, you may stand to the northward until Franklin Island light bears E. N. E. and to the south-eastward until it bears N. N. E. without danger.

To the northward of the range of Penmequid Point and the western Egg Rock and M'Cobb's Island, the ground is foul and rocky; and also to the eastward of the range of Franklin Island light and the eastern Egg Rock. [NOTE. M'Cobb's Island is the western entrance of George's River, and bears N. W.  $1\frac{1}{4}$  mile distant from Franklin Island light.]

Should you fall in to the eastward of Seguine, and wish to go outside of Demiscove Islands, bring †Seguine light to bear E.  $\frac{1}{2}$  N. and steer E.  $\frac{1}{2}$  S. 5 leagues distance, to clear Bantam Ledge, which lies east from Seguine  $3\frac{1}{2}$  leagues distant, and S. S. W. from †Pumpkin Rock, one league: you then steer N. E. until you make Franklin light, and then steer as above directed, or continue your E.  $\frac{1}{2}$  S. course until Pumpkin Rock bears north, then steer N. E. for Franklin light. Your course from Pumpkin Rock to Franklin light is N. E. by E. five leagues distant. In hazy weather you will do well to get a departure from this rock, as you cannot see Franklin light more than 4 miles distant. You may anchor in Gay's Cove, taking care to avoid a sunken ledge, which lies E. from Gay's Cove, near the middle of the channel, and has 4 feet water at low water. This ledge must be left on your larboard hand, keeping Cauldwell's Island close on board. Gay's Cove lies on your larboard hand, about 8 miles to the E. N. E. of Franklin's Island light. You may know this Cove, as Gay's house and barn lie to the N. W. of it. But if you are bound through Herring Gut, bring §Capt. Henderson's house to bear N. N. W. and steer S. S. E. for Herring Gut. This Her-

\* Cauldwell's Island lies on the east side of George's River, about  $9\frac{1}{2}$  miles from the entrance; it is a high round island, covered with trees.

† Seguine light-house is situated on an island near the mouth of Kennebeck river. The lantern is elevated 200 feet above the level of the sea, and contains a fixed light of the first magnitude, and may be seen at the distance of 9 or 10 leagues in clear weather, as more particularly described in page 36.

‡ Pumpkin Rock lies off the S. E. point of Demiscove Islands, half a mile distant. It is a dry flat rock, elevated about 20 feet above the level of the sea.

§ Captain Henderson's house is white and his store red, and both lie on the larboard hand.

ring Gut has a bar from side to side, but you may go over it at two hours flood, keeping your larboard hand best on board. As you come on the bar, you will see a large rock on your starboard hand, and the deepest water is within a cable's length of the rock: your course over the bar is S. S. E. You may anchor to the N. W. of the bar in 4 or 5 fathoms, muddy bottom, and wait for the tide. The tide of flood sets to the northward, and the ebb to the southward.

When you go out of this harbour, and bound to the eastward, be careful and give the larboard hand a good birth, for there are two ledges of rocks on the same hand of the eastern point, which are under water, and lie off about a cable's length. When you are clear of these ledges, you may steer E. by S. or E. S. E. one mile to the barren island, which you leave on the larboard hand, and 3 or 4 islands or ledges on the starboard hand. When you pass these ledges and Musqueto Islands, if bound to White Head, you may steer N. E. by E. 2 leagues, and when you bring the light to bear N. E. run for it, but when you pass the S. W. White Head, leave it on your larboard hand, and be careful of a sunken rock that lies S. E. from the eastern White Head, about one cable's length distant. Your course through to the eastward is N. E. and to the westward S. W. keeping near the middle of the passage. Before you come up with Ash Point, you must be careful of a sunken rock, which lies off the point, about one third of the passage, which has not more than 2 feet water at low water. But if you should go through this passage in the night, keep Potatoe Island, which is right against Ash Island, about S. S. W. from it, and bare of trees, which you leave on your starboard hand, best on board. When you pass Potatoe Island, and are bound into Owl's Head, your course is N. N. E. about 2 miles, which will leave two islands on the starboard hand. When you open the passage to Owl's Head and bound to Edgemavoggan Reach, your course is N. E. by N. till you pass the Lime Islands, which you leave on your larboard hand. Continue said course till you make a large bare rock on your starboard hand, and a little round island to the eastward on the same hand, which is covered with trees. Continue your course to the N. E. and you will make a large island on your starboard hand; when you pass this island, you have the passage open to Buck's Harbour; continue your course N. E. till you pass by all the islands, to the southward and northward. In the day time you may see Blue Hills bearing E. N. E. over all the land. This passage is safe to go through with a first rate man of war. When you come within two miles of the reach, you will make a small island on your starboard hand, which has a sunken rock to the northward of it. Your safest way is to keep the middle of the passage, as there is a sunken rock (or ledge,) on the larboard hand, that lies E. by S. from an island which you leave on your larboard hand, about half a mile distant. If you want to make a harbour, you may go into Buck's Harbour by a N. E. or N. E. by N. course. When you come into this harbour, (which is 12 leagues from Owl's Head,) you must leave an island, covered with young birch trees, on your starboard hand, steering N. N. W. and when you get to the northward of said island, you steer E. S. E. till you bring it to bear S. S. W. where you will be land-locked from all winds, in 4 or 5 fathoms, soft bottom. When you leave Buck's Harbour, and bound to the eastward, you steer S. E. till you come to a large rock and four islands, which you leave on your larboard hand, keeping the said rock and islands best on board, for there is a sunken ledge that lies S. S. W. from them. You will make a black island on your starboard hand, with burnt trees on it. This ledge lies N. N. E. from said island, near the middle of the passage, but keeping the eastern shore best on board, you will go clear of it. When you have passed this ledge, you leave two islands on your starboard, and two or three on your larboard hand. Continue your course to the S. E. till you make two islands, between which and Buck's Harbour the course is S. E. and N. W. 6 leagues. To the eastward you may go between both islands, steering E. by S. 1 league, which course will carry you up with Trum Cap, which island has a bar of rocks, that lie near half a mile to the northward; but if you have a head wind, and are obliged to run through, you will observe the channel is two miles wide at Channel Rock, which is always above water.

When you leave this Trum Cap, steer E. by S. which will carry you between

the Ship and Barge, and three islands which you leave on your larboard hand, which are covered with large rock-maple trees. The Barge is a bare rock, which you leave on your starboard hand; but there is a rock about a cable's length to the northward of the Barge. Continue your course E. by S. for Bass Harbour, distant from Trum Cap 5 leagues; but you must have some regard to the tide of ebb, which sets very strong to the S. S. E. and the tide of flood to the N. N. W. If you are bound into Bass Harbour, you keep Rich's Point within a cable's length, which you leave on your larboard hand, for there is a large ledge of rocks, that lie off about half a mile, which is bare at half tide, and bears S. E. from Rich's barn, and S. by W. from the entrance of Bass Harbour. You give the larboard hand a good birth in going to Bass Harbour; in entering which, you must give both sides a birth, for at low water it is shoal. When you get into this harbour, anchor on the larboard hand, with a cove to the westward of you, in 3 or 4 fathoms, muddy bottom.

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### *Directions from Bass Harbour.*

When you leave this harbour, bound to the eastward, steer out S. W. till you bring Bass Harbour bar to bear S. S. E. then run S. S. E. keeping the larboard hand best on board. This bar has not water enough for a loaded vessel before half tide, having  $8\frac{1}{2}$  feet only at low water; but a light vessel may go over at low water, keeping the larboard hand best on board. When you get over this bar, you steer E. by S. till you bring the S. W. entrance of Mount Desert to bear N. E. then you may run N. E. leaving Cranberry Island on your starboard hand. But this passage is shoal at low water, and not fit for loaded vessels to go through; but at full tide there is water enough, keeping the middle of the passage. Continue your course to the N. E. till you pass Cranberry Island; then you may steer E. S. E. and anchor between the two Cranberry islands, where you will be safe from easterly or S. W. winds. You may lie in from 4 to 7 fathoms, good holding ground.

When you leave this port, bound to the eastward, you steer E. by S. till you get up with Baker's Island, which lies to the eastward of the Cranberry islands; then you steer E. by N. 4 leagues, to Shuttock Island. When you pass said island, and are bound to Goldsborough, you must steer N. E. about 5 leagues, and keep that course till you bring Goldsborough harbour to bear N. N. W. then you must leave three islands on your larboard, and one on your starboard hand, and run into the harbour, where you may lie safe from all winds, and anchor in 5 or 6 fathoms. (See page 25.)

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### *Directions for Dyer's Bay, &c.*

This harbour lies a little to the eastward of Goldsborough. When you make Titmanan light, (page 25) bound to Dyer's Bay, leave it on your starboard hand, and steer north for the eastern head. You leave a large dry rock on your larboard hand, and, after passing it, you will see a small island, covered with trees, which you leave on your starboard hand; then haul round said island, where you will be safe from all winds.

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### *Directions from Shuttock Island.*

When you come from the westward, and bound to Titmanan, you pass Shuttock island; steer E. N. E. from Shuttock Island 5 leagues, to Titmanan light, before described.

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### *Directions from Titmanan Light to Ladle Island.*

When you pass the light, bring it to bear S. W. and steer N. E. about 4 leagues, which course will carry you to Ladle Island. This island has a remark-

able appearance, being formed exactly like a ladle, and has a large black rock to the S. W. a little distance from it. You may go any side of this island, but the best channel is to the S. E. of it.

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#### *Directions for Cape Splitt Harbour.*

When you pass Titmanan light, bring it to bear S. W.  $\frac{1}{2}$  S. and steer N. E.  $\frac{1}{2}$  N. for Cape Splitt, distance 5 leagues, which course will carry you safe into the harbour. In steering said course, you will make a black rock, which you leave on your starboard hand, distance one mile from Cape Splitt. This harbour is safe from all winds but S. W. which blows right in; but if you anchor in a cove on the starboard side, and moor N. W. and S. E. you will lie safe from all winds.

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#### *Directions for Pleasant River.*

When you come from the westward, and bound to Pleasant River, in passing Titmanan light, bring it to bear S. W. by S. and steer N. E. by N. 5 leagues distance. In steering said course, if it is clear weather, you will see Capt. Wasse's house open between the island and main land; but this passage will not do at low water. You must leave this island (and a high dry ledge of rocks that lie to the westward of it,) on your starboard hand; when you pass the bare ledge, you will see a bare isle, which you leave on your starboard hand; then you may haul up for Capt. Wasse's house, and anchor, and take a pilot for Pleasant River, as it is not safe going without one, except you are well acquainted.

*Narrow Guages* is one mile to the westward of Pleasant River, too difficult to be described, as there are sundry small islands at the mouth of the harbour or bay. The best way for a stranger, is to go into Cape Splitt harbour and get a pilot, as there is no difficulty in going into Cape Splitt in the day-time, keeping the larboard hand best on board.

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#### *Directions for Moose Peck Reach.*

When you come from the westward, and pass Ladle Island on your larboard hand, steer N. E. by N. for Tibbet's Island, which you leave on your larboard hand. When you come to the east end of this island, give it a good birth, for at low water there is a ledge of rocks that lie a cable's length to the S. E. of said island. When you pass it, and bring Moose Peck reach open, you may steer east for Mr. BEAL's house, but you must keep the starboard hand best on board, for there is a rock that lies about the middle of the sound, which has not above two feet of water on it at low water. You may anchor to the westward of Mr. BEAL's house.

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#### *Directions for going through Moose Peck Reach.*

When bound to the eastward, over Moose Peck bar, which you must not cross before two hours flood, you steer for Kelly's coffee-house, which lies on the larboard hand, as you go to the eastward, on the N. E. point of Moose Peck reach. When you are entering on the bar, you will bring a bushy tree right against Kelly's house, which stands on the point. Your course over the bar is east. You leave the Virgin's Breasts, one on your starboard and one on your larboard hand; but if you are bound to Chandler's River, you will leave the Virgin's Breasts on your starboard hand, and Rogue's Island on the same hand. There is a muddy

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NOTE.—For a description of Manheigin Island light, see page 35.

bar that lies between Rogue's Island and the main land, but water enough on it at two hours flood. Rogue's Island has a good harbour at the N. W. of it, safe from all easterly winds, and a small distance from Chandler's River.

When you go over Moose Peck bar, bound to Machias, you leave the Virgin's Breasts as before mentioned, keeping your course east, and a bare rock, called Pulpit Rock, on your starboard hand; you must keep Libby's Island light open to the southward of this bare Rock. [N. B. This bare rock, which you leave on your starboard, may also be left on your larboard hand; and steer E. S. E. for Libby's Island light.]

### *Directions from Moose Peck Head \*Light to Machias.*

Give the light a birth of one mile, leaving it on the larboard hand, and steer N. E. by E.  $\frac{1}{2}$  leagues, when you will be up with Libby's Island light on your starboard hand; then run N. N. E.  $\frac{1}{2}$  leagues, which will bring you up with Stone's Island, on your larboard hand, having a rock lying E. one third of a mile from the centre of the island; from this steer N. for Round Island, from which follow the eastern directions for Machias, (page 26.)

### *Directions from Townsend to †Manhegin Light.*

When you take your departure from Squirrel Island, you steer E. S. E. for Manhegin light, on the north side of which are some small dry islands and ledges, but good water between them and the other sides of the island, keeping that course until the passage between George's Island and Manhegin bears N. E. You may then steer N. E. about seven leagues, through a fair open sound, for White Head light, (see page 28,) leaving George's islands, (which are three in number,) on your larboard hand. The eastern island has no trees on it. There are two dangerous rocks, bearing due south from the middle of the middle island, called the *Old Man* and the *Old Woman*, which are bare before low water. They lie about one mile from the shore; and at high water, when the wind blows off the land, they do not appear. If you are bound to the eastward, and the wind should take you ahead, when you are between Manhegin and George's islands, bring the middle of Manhegin to bear S. and run in N. which course will carry you between the eastern George's Island and the middle island. You may run as near as you wish to the eastern island, but the middle island has a ledge of rocks that lie to the eastward of it, which are always dry, that you are to leave on your larboard hand. When you get to the northward of this island, you must haul to the westward and run up between it and the western island, so as to bring the body of the middle island to bear N. E. of you. Here you moor your vessel, if you stay any time.

If you are bound to the eastward from this island, you may go to the northward of the eastern island, but you must be careful of a ledge that lies to the eastward of said island, which you must leave on your starboard hand; and when you bring Manhegin light to bear S. W. you may go N. E. If night should come on, or the wind ahead, you may haul up about N. E. by N. for Tenant Harbour, which lies about 8 leagues from George's islands. You cannot miss this harbour in the day-time. You will make Musqueto Harbour, which lies between two islands, covered with spruce trees. The entrance of the harbour is north. Having passed this harbour, you will run about two miles, keeping your course N. E. by N. when you will pass an island with burnt trees on it, which you leave on your larboard hand, and two islands on your starboard hand, which

\* Moose Peck Head light is revolving, as described in page 26.

† Manhegin Island light has ten lamps and reflectors, fitted on two sides of an oblong square, one side producing a blood red light, the other a common white light, and is a revolving light.



also have burnt trees on them; then you must bring the harbour to bear W. N. W. before you enter. This is a good harbour, provided you have neither cables or anchors, as you may save your vessel by running up to the head of it, on muddy bottom, which will be dry at low water.

### *Directions for Townsend Harbour.*

The entrance of Townsend is wide: from the Cuckolds to the Damiscove islands is about three miles; and Squirrel Island lies N. E. by N. about  $2\frac{1}{2}$  miles; and from Squirrel Island to the western shore is about  $1\frac{1}{2}$  mile; and Burnt Island\* light bears N. distant about two miles from the westerly point of Squirrel Island. Bunting Ledge lies south, a little westerly, from Burnt Island light. If you are outside of Damiscove islands, be careful to stand so far to the westward as to bring Burnt Island light to bear N. by E. then you may run for it without fear.

If the wind should be ahead, and you have to beat into the harbour, you may stand from shore to shore without fear, and beat up either to the eastward or westward of Squirrel Island; you may find good anchorage under the lee of Squirrel Island, and go round the island with any vessel.

*In coming from the westward*, leave Seguin Island on your larboard hand, giving it a birth of about half a mile; then steer N. E. by E. 3 leagues, when you will, if clear weather, open Townsend light, on Burnt Island, bearing about N. N. E. but still continue your N. E. by E. course until Burnt Island light bears N. by E. then stand for it, continuing N. by E. leaving it on the larboard hand, till up the harbour. About three-quarters of a mile N. N. E. from the light, there is a small island, called Mouse Island, which you leave on your starboard hand, which is bold; after passing it, you haul up N. E. for the eastern harbour, or continue your course N. by E. till you get the western harbour to bear W. N. W. then you may run in till you shut Burnt Island light in by the land; or you may anchor any where inside of Mouse Island, as there are neither rocks or shoals lying off from the land.

*In coming from the eastward*, get Manhegin light to bear E. S. E. and steer W. N. W. about 5 leagues, which course and distance will carry you into the passage between all the outer islands and the main; and in steering said course, you will make Burnt Island light, bearing about N. W. by W. then steer W. by N. till you get Burnt Island light to bear N. W. then haul up for it, keeping it on your larboard bow, till you get up with it, then steer N. by E. and follow the directions before given, in coming from the westward.

### *Directions for Kennebeck† and Sheepscut Rivers.*

If coming into Kennebeck river from the westward, keep about one-fourth of a mile from Seguin Island‡ light, in doing which you will avoid Jack-knife ledge,

\* Burnt Island lies off the entrance of Townsend (Booth Bay.) On it is a light-house, containing a fixed light.

† Kennebeck river is one of the most important in the State of Maine. Swan Island,  $4\frac{1}{2}$  miles long, lies 30 miles from the mouth of the river, and 5 miles from the chops.

‡ Seguin Island, on which a light-house is erected, containing a fixed light as before mentioned, lies  $2\frac{1}{2}$  miles S.  $\frac{1}{2}$  E. from Pond Island, on which is also a light-house, containing a fixed light. It is remarkable, when bearing east or west, being nearly 2 miles from land, and when it bears north, shuts in with it. Cape Small Point bears N. W. from it, and Wood Island N. N. W.  $1\frac{1}{2}$  miles distant. There are several rocky ledges near Seguin, which bear from the light as follows; 5 fathoms ledge S. by W. distant three quarters of a mile—Eldringwood's rock north, one quarter of a mile—Seguin ledges, N. N. E. half a mile, always dry—Jack Knife ledge, N. W.  $1\frac{1}{2}$  mile, 8 feet water—Wood Island reef, N. N. W.  $1\frac{1}{2}$  mile, 4 feet water—Whale's Back, N. N. E.  $1\frac{1}{2}$  mile.



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which bears from Seguine light N. W. distant 1½ mile, and Ellingwood's rock, lying N. one-fourth of a mile from Seguine. After passing Ellingwood's rock, bring Seguine light to bear S. and steer N. for Pond Island light,\* which is 2½ miles from Seguine. Leaving Pond Island a cable's length on the larboard hand, care should be taken on the flood tide to haul quickly round Pond Island point, to avoid the Sugar Loaves, (two small islands north half a mile from Pond Island) upon which the tide sets very strongly. The course after passing Pond Island, is about N. W. to the fort on Hunnewell's point. (which you will give a birth of a cable's length) and steer north for Coxe's Head (on which also is a fort) one mile. The course is then N. E. to Perkins' Island, which you will leave on the starboard hand about one mile, and you will give it a birth of a cable's length to shun two sunken ledges that lie nearly abreast of Perkins' Island, and about in the middle of the river; then steering about north one mile, you have fine anchorage at Perkins' flats, in 4, 5 and 6 fathoms. This is as far as it would be prudent for a stranger to attempt with a heavy vessel.

There is good anchorage in moderate weather any where between Seguine and Pond Island, within half a mile of the latter, in from 5 to 8 fathoms. Should the wind blow violently, or in case of stress of weather, and if far enough to the windward to weather Ellingwood's rock and Seguine ledges, it might sometimes be advisable to run to Townsend harbour.†

If bound into Kennebeck, and falling to the eastward of Seguine, bring the light on Pond Island to bear N. W. by W. and run for it till within a cable's length, then follow the preceding directions.

There is safe anchorage with an off-shore wind, any where between Small Point and Seguine, avoiding Jack-knife ledge, before mentioned.

Safe anchorage may be had from Coxe's Head to Perkins' Island, nearest the eastern shore. The usual rapidity of the tide, between Seguine and the mouth of the river, is 3 and 4 knots.

There is also a passage into Kennebeck river, leaving Pond Island on the starboard hand, but only 16 feet can be carried at high water, and it is not recommended.

You have deep water to the eastward of Seguine. At the westward the tide of flood sets strong to the northward into New Meadows, and W. N. W. into Broad Sound, and up to Portland, and the ebb tide the reverse. Your soundings, between Seguine and Cape Elizabeth, are various; at times you have 18 or 20 fathoms, rocky bottom, and within a cable's length you will find 30 or 35 fathoms, muddy bottom.

The land between Seguine and Cape Elizabeth, is all in islands: on the Cape is a pyramid, bearing S. 10° W. from Portland light-house, 4 miles distant, and a windmill to the westward, near Richmond's Island, which is the first windmill you see when coming from the eastward. Richmond's Island lies 1 league west of Portland, and has a bad ledge lying about S. E. from the N. E. end of it, half a mile distant. [See page 39.]

If you are bound to Sheepscut river from the westward, and make Seguine light, you may leave it on your starboard hand, giving it a birth of half a mile; when you pass it to the eastward you must bring it to bear S. W. by S. and steer N. E. by N. which course will carry you to Ebenicook harbour, distant 3 leagues, leaving three dry ledges on your starboard hand, and one on your larboard. This harbour is very narrow at the entrance, but makes a large basin when you get into it; in the entrance it lies E. N. E. You cannot get in here with a N. E. or easterly wind, but must have the wind south or westerly; after you get into this harbour you must haul up N. E. or N. E. by N. for there are several sunken

\* The lantern of Pond Island light-house is 30 feet above the level of the sea at high water, and contains a fixed light, bearing N. ½ W. from Seguine light, distant 2½ miles.

† A dry rock lies off the eastern shore, about half a mile above the lower fort, called *Slog Rock*, and is the only obstacle between Hunnewell's point and Coxe's head.

‡ With the wind at N. W. and a flood tide, you may, by fetching within a cable's length of the lower Sugar Loaf, and leaving it on the larboard hand, run into good and safe anchorage, in from 6 to 3 fathoms, in Heald's eddy.

rocks on the starboard hand as you go in, which you are to avoid. The best anchorage is against Capt. Smith's wharf, where are 4 fathoms, muddy bottom; and you will lie safe from all winds. But if you are bound up Sheepsfoot river in a large vessel, and come from the westward, you must go to the southward of Seguin light, steering about N. E. or N. E. by E. 1 league, and when the river bears north, or north a little westerly, you may run north, and must keep the starboard hand best on board: there are many rocks and ledges, some of them above and some under water, which are all to the eastward of Seguin. When you get up as high as Ebenicook, you leave the two Mark Islands on your larboard hand, keeping your course north a little easterly, but if you only come here to make a harbour, when you get up to Capt. Hodgson's, you will see a bare ledge on your larboard hand, if it is low water, which is covered at high water; you may anchor in 8 fathoms to the northward of it.

If you want to go up to Wiscasset point, you must keep your starboard hand best aboard, north-easterly, till you come to Cross river, which you leave on your starboard hand. You will not attempt to go up to Wiscasset point with a head wind and the tide of ebb, for it is 1½ leagues from Cross river; but when you have a fair wind and tide, you may proceed without fear. This river is narrow, and lies more to the westward: when you are about a mile or a mile and a half up, you must keep your larboard hand best on board, for there is a ledge of rocks which reaches near half way across the river, which is on your starboard hand, and the rock near the middle is covered at high water, but may be seen two hours before. The river runs straight to Decker's Narrows, then turns round to the westward: when you enter these narrows, you may see the town. In case you should go up in the night, you must be careful of two large rocks that lie W. S. W. of these narrows; the tide of flood sets very strong for them, and they are covered at half tide; you may go on either side of them, and may anchor in 10 or 12 fathoms water, muddy bottom.

It is high water here at full and change of the moon, about 10h. 45m.

### *Directions for sailing into New Meadows.*

This river bears N. E. 8 leagues distant from the Pyramid on Cape Elizabeth, and about one league east from Cape Small Point. If you should fall into this bay with the wind at S. E. or S. S. E. and bound to the eastward, you may make a good harbour in the above river. In standing to the northward, you will have a large round island on your starboard hand, covered with spruce trees, together with two large rocks, one called the *Brown Cow*, and the other the *White Bull*, which are some distance from each other. You must leave the Brown Cow on your starboard, and the White Bull on your larboard hand, the latter of which you may go within a cable's length of, and when you have passed it, must stand over for Horse Island, that lies on the starboard, which has a house on it, that you may go within a quarter of a mile of. To the westward of the island lies a large rock, which is covered at high water, but bare at half tide; you may go on either side of it when it is in sight, but the widest passage is to the eastward. When you have passed this rock, steer N. by W. or N. N. W. which course will carry you up with a large island, called Bear Island, which is covered with spruce and birch trees. When you have passed this island about one quarter of a mile, you may haul in for the starboard shore, and anchor in 5 or 6 fathoms water. This is the best place to anchor, with the wind at S. S. E. or east, but be careful of a ledge of rocks, that runs to the northward of this island, about half a mile off. You may anchor in this bay according as the wind may be; if it should be at the eastward, anchor on the east side. If you have lost your cables and anchors, there is a large cove on the starboard hand, about two miles from Bear Island, bearing about N. which is sufficient to hold 30 or 40 sail of vessels. It is land-locked all round, so that no wind can damage a vessel after she gets into it.

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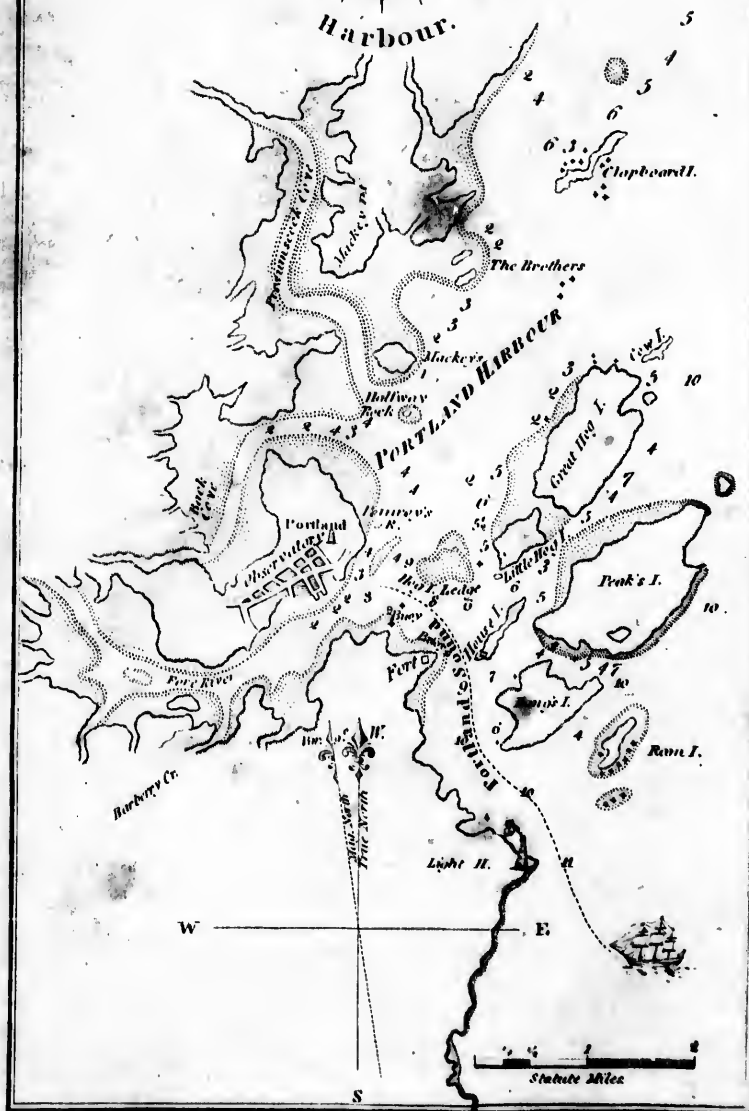
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*Engraved for the American Coast Pilot*

## plan of

PORTLAND.

Harbour.



New York, Published by Edmund & George W. Bant.

1527

*Directions for Hussey's Sound.*

If you come from the eastward, and make Seguin light, (see page 36,) bring it to bear E. and steer W. for Hussey's Sound, if you have a fair wind and daylight, as you have nothing but islands on your starboard hand. The tide of flood sets very strong in between these islands; when you get within two miles of Hussey's Sound, you will make two islands which have no trees on them, called Green Islands. You continue your course till you make Hussey's Sound, bearing N. N. E. then you may steer in with your course N. N. E.

There is a large sound, called Broad Sound, about half way between Seguin light and Hussey's Sound. You leave Merrikeneek Island on your starboard, and Half-Way Rock on your larboard hand; but this Sound has several rocks under water, and is not fit for strangers to go into.

When you pass the two islands, after entering Hussey's Sound, you leave three islands on your larboard, and two islands on your starboard hand; the northern island, on your starboard, is called Smith's Island; when you pass said island about three-quarters of a mile, you may haul away E. N. E. till you shut in said island to the S. E. then you may anchor in 3 or 9 fathoms, muddy bottom; Hog island to the S. W. Basket Island to the N. W. Great Gabague Island to the N. E. and Smith's Island to the S. E. Here you may moor 200 sail of ships, safe from all winds, and when wind and tide serve, you may be out to sea in one hour.

*Directions for Portland Harbour.*

Coming from the south-westward, when within half a mile of Cape Elizabeth,\* the red buoy, on Broad Cove rock, may be seen; it bears N. N. E. from the pitch of the cape, distance  $1\frac{1}{2}$  mile, and lies in 24 feet water. When up with this buoy, leave it on the larboard hand, half a cable's length distant, and steer

\* A column, or distinguishing land-mark, in the form of a pyramid, is erected on Cape Elizabeth, one-eighth of a mile N. W. from the south-eastern extremity of the cape. It is built of stone, the lower half painted white, the upper black, height 50 feet from the foundation, and 125 feet above the level of the sea.

*Bearing, distance, &c. of several dangerous rocks, near the entrance of Portland Harbour.*

The column bears from Portland light, S.  $1^{\circ}$  W. distant 4 miles.

From the column to the outer part of Trundy Reef, N.  $20^{\circ}$  E. distant  $2\frac{1}{2}$  miles.

do.	to Broad cove rock	N. $25^{\circ}$ E. do.	$1\frac{1}{2}$ do.
do.	to New ledge	N. $74^{\circ}$ E. do.	$6\frac{1}{2}$ do.
do.	to Alden's Rock,	S. $61^{\circ}$ E. do.	$3\frac{1}{2}$ do.
do.	to Taylor's Reef, E. point	S. $41^{\circ}$ E. do.	1 do.
do.	to do. do. W. point	S. $24^{\circ}$ E. do.	1 do.

From S. E. point of the Cape, to the outer part of Watts' ledge, which tends off from Richmond island is S.  $42^{\circ}$  W.

From Portland light to New ledge, S.  $67^{\circ}$  E. distant  $6\frac{1}{2}$  miles.

do.	to Alden's rock,	S. $20^{\circ}$ E. do.	$6\frac{1}{2}$ do.
do.	to Trundy reef,	S. $15^{\circ}$ E. do.	$2\frac{1}{2}$ do.
do.	to Broad cove rock,	S. $9^{\circ}$ E. do.	$3\frac{1}{2}$ do.

The above bearings are by compass; the variation ascertained at the same time to be  $8^{\circ} 30'$  W.

The following depths are calculated for low water spring tides: Trundy's reef extends from the shore, the depth agreeable to the above bearing, 15 feet.

Broad Cove rock is nearly dry; there is a channel between it and the shore, with 4 fathoms, sandy bottom. Alden's rock, depth 8 feet.

New ledge extends about E. N. E. and W. S. W. one-quarter of a mile. Depth 11 to 15 feet.

Taylor's ledge extends E. N. E. and W. S. W. near one-quarter of a mile; on the eastern end, 5 fathoms, western do. 15 feet.

There is also another small rock, a cables length within the latter, depth 15 or 16 feet; between these and the cape there is a very good and safe channel, with 7, 8, and 9 fathoms, one-quarter or three-quarters of a mile from the shore.





N. by E.  $\frac{1}{2}$  E. 1 mile, which will carry you up with the white buoy on Trundy's reef, which lies in 16 feet water. Giving it the same birth as the other, you may then run N. by W.  $\frac{1}{2}$  W. for Portland\* light-house, 3 miles distant. When up with the head, on which the light-house stands, give it a small birth, and steer N. by W. leaving's Bang's Island on the starboard hand, till you come to House Island, the S. W. point of which bears N. from the light-house, distant almost 2 miles. Before you are up with this island, the black buoy on Spring Point ledge may be seen; it bears N. W. by W. from the S. W. part of House Island, distant half a mile, and lies in 14 feet water. (When up with this buoy, you open the town.) Giving the black buoy a small birth, you may haul up N. W. for the white buoy on Stanford's ledge: this buoy lies also in 14 feet water, and one mile distant from Spring Point ledge buoy. Giving the white buoy a small birth, you may keep up midway the river, and anchor opposite the town, where you please, in safety.

[N. B. All the above mentioned buoys are to be left on the larboard hand, in coming in, and the depth of water put down, is at low water; the courses are by compass.]

There are also two small buoys, on two ledges in Whitehead passage, at the N. E. part of Bang's Island. This passage is narrow, and but seldom used with large vessels. By keeping midway between the two buoys, the red on the starboard, and the white on the larboard hand. in coming in, you will have not less than 5 fathoms water. After passing the buoys, keep midway the passage, and run one mile distance, which will carry you into Ship Channel, the same as if you had passed the light-house.

**NOTE.** *If by accident either of the buoys should be removed, the following directions for sailing into Portland harbour will be found useful.*

When you come from the south-westward, and intend to go into Portland, give Cape Elizabeth, (on which is a pyramid, as before described,) a birth of half a mile, and steer N. N. E. until you bring Portland light-house to bear N. N. W. when you must haul up N. N. W. if the wind will permit; but if you are in a large ship, and the wind N. W. or 'N. N. W. your safest way is to continue your course N. N. E. which will carry you safe into Hussey's Sound, allowing it to be tide of flood, as Portland Sound is narrow, but bold between the light-house and Bang's Island, the latter of which is on your starboard hand. If you should turn into Portland in the night, in standing to the south-westward, you must go about as soon as the light bears N. N. W. and in standing to the eastward, you must go about as soon as the light bears W. N. W. for there is a ledge of rocks that bears S. by E. from Portland light-house, and also a low island, called Ram Island, east-northerly, one mile distant from the light-house: but if you have a leading wind, you may go in without fear, keeping about middle of the channel way, and when abreast of the light, steer about N. by W. for House Island, which you leave on your starboard hand; when you pass House Island, bring it to bear S. E. by E. and steer N. W. by W. or W. N. W. with the tide of flood. In steering the above course, you will see a round bushy tree to the north of the town, and a house with a red roof, and one chimney; bring the tree to the west of the house, which course will carry you up the channel way, in 6 or 7 fathoms water; but when you come abreast of the fort, which stands on a hill, haul away W. S. W. as there is a shoal bank on your starboard hand that has not more than 10 or 12 feet on it at high water, which you are to avoid. Here you will be careful of two ledges of rocks, one called Spring Point ledge, two miles N. by W.  $\frac{1}{2}$  W. from the light-house, and the other three miles, bearing N. by W.  $\frac{1}{2}$  W. called Stanford's ledge, which has a buoy on it, and stretches off from your larboard hand near half a mile in length. They lie to the S. W. of House Island, and are all bare at low water. If you are obliged to turn in here, they are much in the

\* Portland light-house is on a point of land, called Portland Head, at the western entrance of the harbour. It is a stone edifice, 72 feet high, exclusive of the lantern, which is 13 feet, and contains a fixed light.

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way, and when you are standing to the southward, be careful of them. The marks will do in the day-time, but are of no service in the night. There is a pilot who generally attends here. This harbour is open to the wind at N. E. and E. N. E. If you should come in in a dark night, your best way is to go into Hog Island road, which may be done by steering as follows:—When you pass the light-house, steer N. by W. until you pass Bang's Island, which you will leave on your starboard hand; in steering this course, you will make House Island, which you will leave on your larboard hand; when you are between both of these islands, you steer N. E. by E. till you come to the second island on your starboard hand. If it is day-time, you will see a large house on said island, and may anchor as soon as abreast of it, in 10 or 12 fathoms, muddy bottom.

If you should fall into the eastward of Portland, and make Segune light, bring it to bear E. and steer W. which course you are to continue till you make Portland light to bear from N. W. to W. N. W. when you may run for it without fear. Var.  $8^{\circ} 00' W.$

N. B. You must have some regard to the tide of flood, which sets very strong between the islands to the eastward of Portland. [See the Plate.]

### *Notice to Masters of Vessels.*

Masters who sail from Portland, or ports adjacent, are informed, that from the OBSERVATORY on Fort Hill, by means of the telescope placed there, vessels approaching the coast may be discovered at 15 leagues distance; and their colours or private signals can be distinguished 8 leagues, if the weather should be clear and the colours hoisted, or suspended in such a manner as to present them fair to the observatory. Should any need assistance, they will set their ensign over their private signals; and may be assured if they can be discerned, that their situation will be made known to their owners.

The Observatory bears N. N. W.  $\frac{1}{4}$  W. from Portland light-house, 4 miles distance; and these, in range, are a good mark to clear Alden's rock; which, keeping the above in range, you will be nearly three-quarters of a mile to the eastward of.

The Observatory is on an eminence 141 feet above high water mark; and the building 32 feet high, painted red, and the telescope placed near the top.

### *Boon Island Light.*

Boon Island is very low land, about one quarter of a mile in length, and has a light-house on it, which bears S. E.  $\frac{1}{4}$  S. from Cape Neddock, distant 2 leagues. It is built on the west part of the island, where the monument formerly stood: the edifice is stone, contains a *fixed light*, elevated 32 feet above the level of the sea, and may be seen, in clear weather, 6 or 7 leagues. Two other buildings are erected near it: one for a dwelling house, the other for an oil house. From Boon Island to Boon Island ledge, the course is east, distant one league. It is not safe for strangers to go very near this ledge, for several of the rocks are to be seen long before low water. From Agamenticus Hill, Boon Island bears S. E. distant 5 or 6 leagues; and when you come in from sea, and make Agamenticus Hill, bearing N. W. by N. you are then to the westward of Boon Island ledge; but when said hill bears N. W. by W. you may be sure you are to the eastward of it.

*Remarks on the White Hills.*

These Hills lie N. W. from Portland, and N. N. W. from \*Wood Island light-house. You may see them in clear weather when no other part of the land is in sight. At the first sight they appear like a cloud, and are always white, occasioned, it is said, by their being covered with white moss. They have been seen when in lat.  $43^{\circ} 10'$  N. (23 miles S. from the Pyramid on Cape Elizabeth.) The depth of water in the above latitude is 80 fathoms, muddy bottom. When you steer N. W. or W. N. W. from this latitude, you will make Agamenticus hills, and when bearing W. by N. 6 or 7 leagues, they appear like three hills, and the smallest of them to the eastward. At the same time you will make Wells' Hills, bearing W. N. W. and when you are on the northern part of Jeffrey's ledge†, in 45 fathoms water, you will see the hills of Agamenticus bearing W. by N. or W. N. W.

I would recommend to all mariners, in coming from the eastward, not to go to the northward of lat.  $43^{\circ}$  N. in thick weather, unless they are well acquainted, and judge themselves to be to the westward of Boon Island ledge, as this has proved fatal to many who were unacquainted.

Between Jeffrey's and the Isles of Shoals you will have 70 and 75 fathoms water, muddy bottom, and a strong current setting to the S. W. You may see the Isles of Shoals 5 or 6 leagues when you are to the eastward of them, but will first see the light-house, which is on White Island, and the meeting-house on Star Island, bearing N. E. and S. W. from each other, distant seven-eighths of a mile.

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*Directions from Cape Porpoise to Wood Island Light.*

Wood Island, on which a light-house is erected, containing a *repeating light*, is high woody land, very even, and lies N. E. 3 leagues distant from Cape Porpoise. In running for the light, bring it to bear N. N. W. or N. W. and run till within a cable's length with safety. You may go into this harbour either at the eastward, or westward of the island. There are several rocks to the westward of the island, and also a long bar which lies to the S. W. about three-quarters of a mile distant. When you have the wind to the southward, you may lay your course in, and anchor near Stage Island: this is called Winter Harbour. You may go in the eastern way, and have room to turn your vessel (which is an advantage you cannot have in going in to the westward;) but here you are exposed to the wind at N. E. and E. N. E. but if your cables and anchors are not good, you may run into the Pool, and lie safe from all winds.

In running in the eastern passage, you open a small channel for boats only, between Wood Island and Negro Island, but no man of experience would mistake it. Negro Island is small, with two stores on it, and is left on the larboard hand.

Saco lies about a league to the northwest, but it is a barred place, and has not above 10 feet at high water, which makes it not fit for a stranger to go in; there is, however, considerable navigation owned here, and the inhabitants are enterprising.

The next place to Wood Island is Richmond's Island, which lies about N. E. northerly 4 leagues. This place is only fit for small vessels, such as coasters, and but few vessels put in here, it being only one league to the westward of Portland, which is the principal port in the State.

In sailing by Richmond's Island, you must be careful of a sunken ledge, called

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\* Wood Island light is situated near the entrance of Saco river, on the east side of the island. The lantern is elevated 45 feet above the level of the sea, and contains a *revolving light*, which may be seen 7 or 8 leagues distant. When you first make it, the eclipse will be total, until you are within 6 or 7 miles of it, when the light will not wholly disappear, but in the revolutions the greatest power of light will be to the least as 24 to 1.

† Jeffrey's ledge lies between  $42^{\circ} 20'$  and  $43^{\circ} 37' 30''$  N. latitude, and between  $68^{\circ} 52' 30''$  and  $69^{\circ} 45'$  W. longitude.

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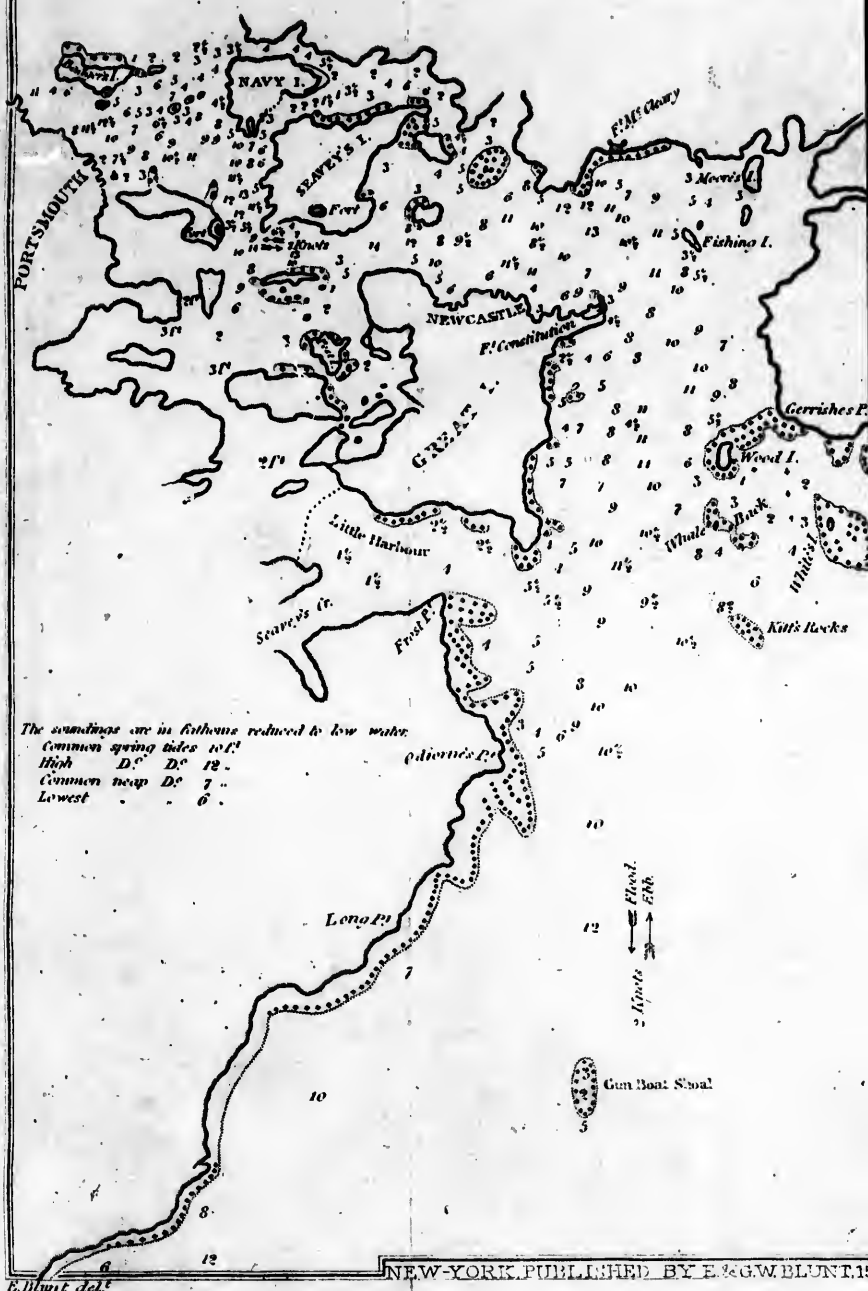
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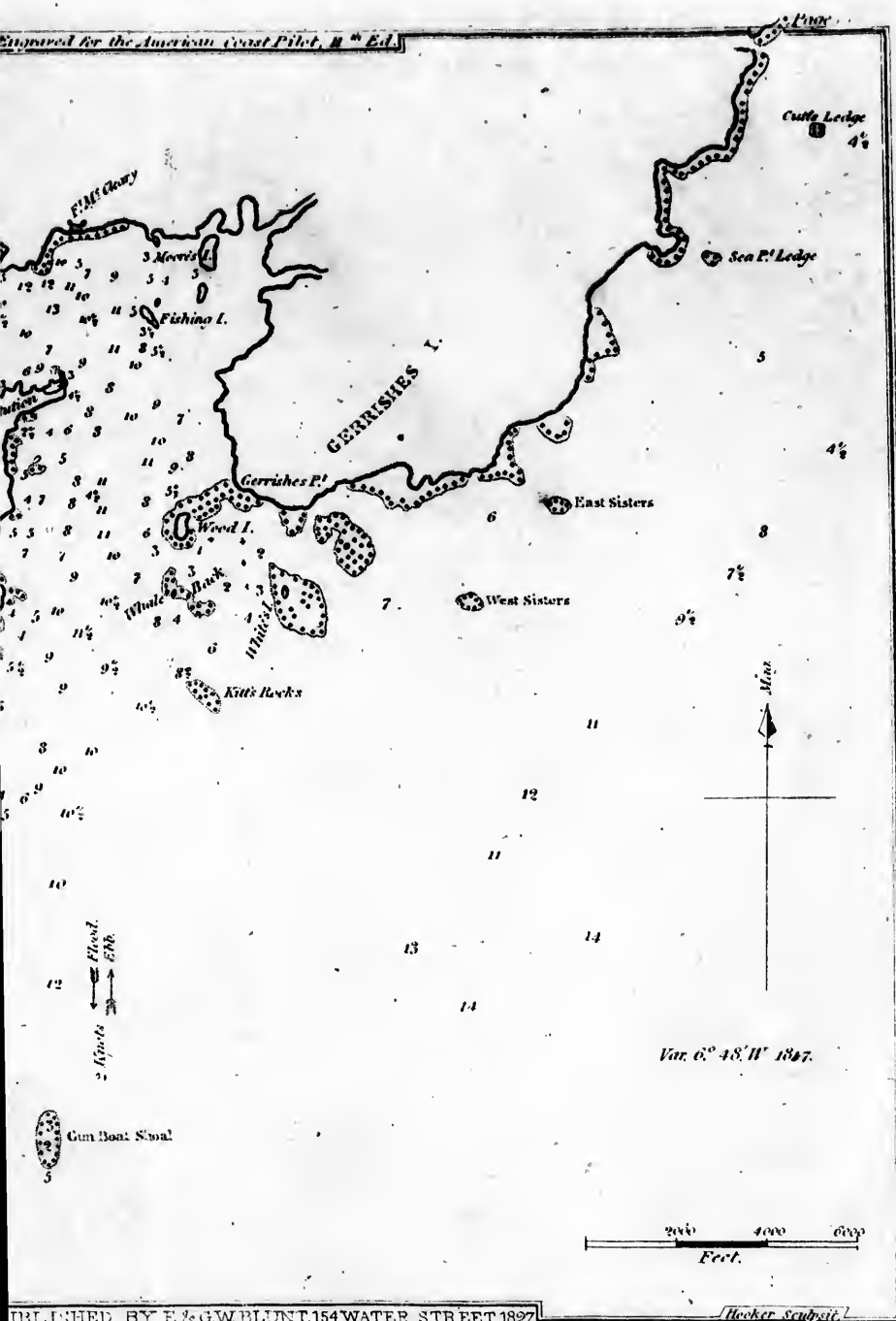
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Watch Ledge, that lies off about S. E. near half a mile from the N. E. end of the island; it does not show itself except the wind blows fresh, but you need not go so near the island, unless you have a scant wind, or turning to windward.

At the mouth of Kennebunk harbour are two piers, one on the eastern and one on the western side of the channel, running from the shore about 3 or 400 feet towards the bar, extending a little beyond low water mark, with a flag-staff and beacon on the top, which may be seen about one mile distant. A ledge of rocks lies off the harbour, called the *Fishing Rocks*, distant about three quarters of a mile from the head of the piers, between which is the anchoring ground. The ledge bears due south from the head of the piers, and is all covered at high water. Vessels approaching the harbour should keep well to the eastward of the ledge, though there is a tolerable passage to the westward, but it ought not to be attempted by a large vessel without a good pilot.

Depth of water on Kennebunk bar, at low water, from 2 to 3 feet; rise and fall of common tides from 8 to 9 feet, increasing sometimes to 10 and 12 on full and change. Time of high water, full and change, 11h. 15m.

### *Directions for sailing from Cape Neddock to Cape Porpoise.*

Your course from Cape Neddock to Cape Porpoise is N. E. distant 4½ leagues. Cape Porpoise is a bad harbour, and not to be attempted, unless you are well acquainted or in distress. In going in, you must leave two small islands on your larboard hand, and three on your starboard. It may be known by the high land of Kennebunk, which lies to the N. W. of it. When the harbour\* bears N. W. you must haul in, but be careful of the point on your larboard hand, and not go too near it, as it is very rocky. As soon as you are in the harbour, and clear of the point of rocks on your starboard hand, your course must be N. W. about two cable's length, when you must come to, and moor N. E. and S. W. or run direct for the wharf. A vessel that draws 10 feet will be aground at low water. The harbour is so narrow that a vessel cannot turn round; is within 100 yards of the sea, and secure from all winds, whether you have anchors or not.

### *Directions for Portsmouth Harbour.*

If you fall into the eastward, and make Cape Neddock, and are bound to Portsmouth, when within half a mile of said cape, your course is S. S. W. 4 leagues, which course you will continue till you bring † Portsmouth light-house to bear N. and run within one quarter of a mile of the light, then steer N. by E. or N. N. E. until you are abreast of the light, when you must steer N. W. until the light bears S. S. E. and anchor in 9 fathoms, at low water, good bottom.

If, when coming from sea, you make the Isles of Shoals, and are to the eastward of them, you must run for them till within one mile of the eastern isle, then steer W. N. W. until Portsmouth light-house bears N. then follow your directions as above.

If you come to the westward of the Isles of Shoals, give White Island light a birth of one mile and a half, bring it to bear east, and then run N. by W. for Portsmouth light, 9 miles distant. If you have a head wind, and obliged to beat into the harbour, you must observe there is a sunken rock at the east side of the entrance, called Kitt's rock, which has a buoy on it, and S. by W. one quarter of a mile from the light-house, lies a sunken rock, called Stillman's rock, which also has a buoy on it. Give the buoys a good birth, and there is no danger.

\* At the eastern side of the harbour lies a ledge, on which it always breaks.

† Portsmouth light-house has a *fixed light* in it, elevated 85 feet above the level of the sea, and stands on Fort Point, (New Castle Island) at the entrance of the harbour. N. by W. and S. by E. moon makes high water at full and change.



The bay which is now formed between Smutty Nose, Cedar, and Star Islands, (by the Sea Wall which connects Cedar and Smutty Nose Islands) will afford a safe harbour for vessels bound to this port, when a northerly wind and ebb tide prevent them from entering the river. The wall makes safe anchorage also for small craft, whenever the wind is from south-east to north, and protects the boats on Star Island beach in an easterly storm.

When you come from the S. W. and make Cape Ann, and to the eastward of the Dry Salvages, bring them to bear S. by E. and steer N. by W. or N.  $\frac{1}{2}$  W. In steering this course you will make the Isles of Shoals, from which you may take a new departure, by bringing the light-house to bear east, distant  $1\frac{1}{2}$  mile, and run N. by W. for Portsmouth light. If the wind should come to the northward, and you are obliged to turn into this port, you must not stand to the westward farther than to bring the light to bear N.  $\frac{1}{2}$  W. till you get within Odiorne's point, and when standing to the eastward, to go about as soon as the light bears N. N. W. until you get within Wood Island. Be careful of Odiorne's Point coming from the south-westward, for it lies off more than half a mile, with sunken rocks, which do not show themselves when the wind is off the land: likewise, in standing to the east, you must be careful of the Whale's Back, which lies S. S. W. of Wood Island, and is covered at half tide. If you are bound to the eastward from this port, you steer S. by E. one league from the light-house, then steer N. N. E. for Old York or Cape Neddock, which is 4 leagues from Portsmouth; but if the wind should come from the northward, you must be careful of York Ledge, which bears from Swett's Point S. E. distant 2 leagues. There is a sunken ledge that lies S. W. one mile from York Ledge; it is never bare, but always breaks at low water, and is called the Triangle. Some part of York ledge is bare at half tide, and the N. E. breaker and Boon Island light bear E. by N. and W. by S. 5 miles distant.

The next you come to is Boon Island (on which is a light-house containing a fixed light, which lies S. E.  $\frac{1}{4}$  S. from Cape Neddock, or the Nubble, so called.)

When you pass Boon Island, bound to the eastward, and take the wind at N. N. E. you must take care of a ledge of rocks due N. from Boon Island, one mile distant. Var.  $6^{\circ} 48'$  W.

[N. B. I have passed this place several times, but never discovered the ledge till the year 1753, when, being bound to the eastward, the wind took me from the westward, but the vessel having no more than steerage way, I hove over a line to catch fish, and found I had 24 fathoms water, sandy bottom, and in a few minutes I had but 10 feet of water, and my vessel drawing 9; all that saved me from striking was, that the water being entirely smooth, the current set me to the eastward, and I got into 24 fathoms within the length of the vessel, from where I sounded, and had but 10 feet.]

[See the Plate.]

### *Description of the Isles of Shoals.*

By the benevolence of the Massachusetts Missionary Society, aided by the subscriptions of several gentlemen in Newburyport and the neighbouring towns, a meeting-house has been erected on Star Island (one of the above islands.)

The following is the description and relative situation of the islands. White Island (the south-westernmost island) is a rocky island, three quarters of a mile in length, from S. E. to N. W. and about one mile and three quarters distant from the meeting house. There is a reef that extends about one-third of a mile from the N. W. end, which, in passing, you must give a good birth. The S. E. end bears from the meeting-house S. W.  $\frac{1}{4}$  S. the N. W. end S. W. by W.  $\frac{1}{4}$  W.

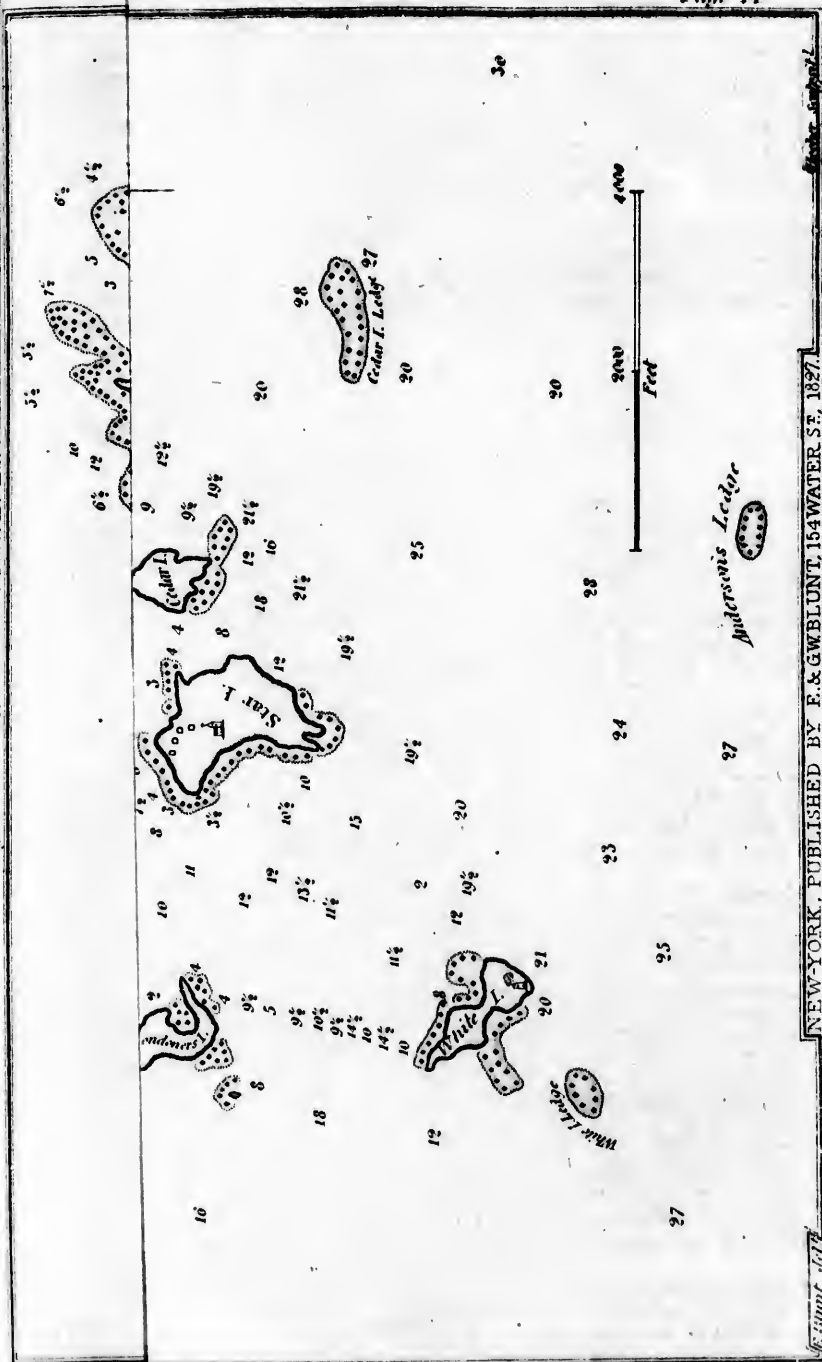
On this island is a light-house, with a lantern elevated 67 feet from high water mark, containing 15 patent lamps with reflectors on a revolving triangle, which will make one complete revolution in three minutes and thirty seconds, exhibiting on one side a bright red light, on one side a blue, and on the other the natural colour of the light.

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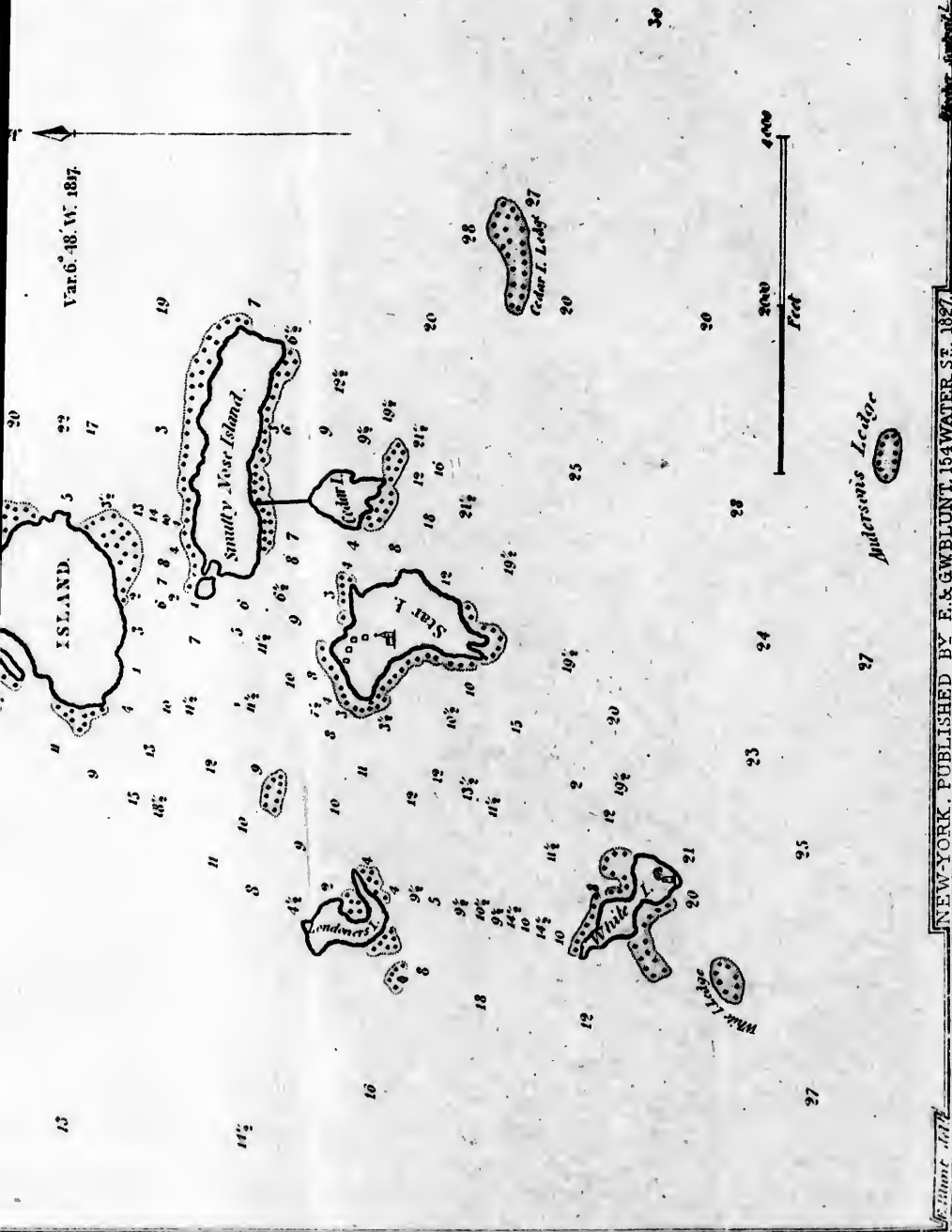
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A BELL of 800 lbs. weight is suspended in the tower of the light-house, which will be kept tolling by machinery at the rate of about ten strokes a minute, by night and day, whenever from fog, or any other cause, the light or light-house cannot be seen at least four miles; at which distance it is calculated the bell may be heard in moderate weather.

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*The following bearings from White Island Light-house, are the mean of a number of experiments by compass.*

Portsmouth light-house bears N. N. W. distant nine miles. Square rock lies directly in the range, distance from White Island five-eighths of a mile. Boon Island light, N. E. by N. distant 12 miles. Cape Ann lights, S.  $\frac{1}{4}$  W. distant 21 miles. Rye meeting-house, N. W. by W.  $\frac{1}{4}$  W. distant 9 miles. Star Island meeting-house, N. E. distant seven-eighths of a mile. There is a rock called Inner's Rock, bearing S. W. by S. from this island, two miles distant, bare before low water. North-west point of Hog Island, N. by E.  $\frac{1}{4}$  E. Cedar Island Ledge E. by N.  $\frac{1}{4}$  N. distant  $1\frac{1}{2}$  mile. Anderson's Ledge, S. E. by E.  $\frac{1}{4}$  E. distant  $1\frac{1}{2}$  mile. White Island Ledge, W. S. W. distant one third of a mile.

Londoner's (or Lounging) Island lies about  $1\frac{1}{2}$  mile to the northward of White Island, is about five-eighths of a mile in length from S. to N. and is high at each end: in high tides the middle is sometimes covered; a number of rocks lie close about the island, in almost every direction, some of which are always bare. The south end bears W. from the meeting-house; the north end W. N. W.  $\frac{1}{4}$  W. about half a mile distant. About half way between this island and Star Island, lies a rock which is bare at low water; it bears from the meeting-house N. W. by W.  $\frac{1}{4}$  W. one third of a mile distant.

Star Island (on which the meeting-house stands) is about three-fourths of a mile in length from S. E. to N. W. and about half a mile in breadth; it is covered with buildings on the north side. The meeting-house stands on an eminence a little to the northward of the middle of the island; is 12 feet high from the foundation to the roof; to the top of the steeple is 30 feet more; the whole height from the surface of the water is about 65 feet; it is painted white, and the steeple is placed in the middle of the building; it stands fronting the west, and may be seen at the distance of eight or nine leagues, in almost any direction at sea; it bears from Thatcher's Island lights (Cape Ann) N.  $\frac{1}{4}$  E.  $6\frac{1}{2}$  leagues distant; from Pigeon Hill N. by E.  $6\frac{1}{2}$  leagues distant; from Newburyport light-houses N. E.  $\frac{1}{4}$  E. 6 leagues distant; from Portsmouth light-house S. S. E.  $\frac{1}{4}$  E.  $3\frac{1}{2}$  leagues distant; from the western Agamenticus mountain S.  $\frac{1}{4}$  E. from the eastern do. S.  $\frac{1}{4}$  E. from Boon Island light-house S. W.  $\frac{1}{4}$  S.  $4\frac{1}{2}$  leagues distant; from Boon Island Ledge (which lies one league E. from Boon Island) S. W. by W.  $4\frac{1}{2}$  leagues distant. Off the south end of this island, about three-quarters of a mile from shore, lies Anderson's rock, which is bare at half tide; in passing, give it a good birth; it lies from the meeting-house S. S. E.

Cedar Island is small, and about one-third of a mile in length from east to west, situated between Star and Smutty-nose Islands. A Sea Wall, 784 feet in length, breadth 11 feet, and 6 feet high from full sea, sunk in 26 feet water, making an excellent causeway, connects Cedar and Smutty-nose Islands, which afford safe harbour for vessels bound to Portsmouth, when a northerly wind and ebb tide prevent them from entering the river. The wall makes safe anchor-

age also for small craft whenever the wind is from south-east to north, and protects the boats on Star Island Beach, in any easterly storm. The east end of Cedar Island bears from the meeting-house E.  $\frac{1}{4}$  N. and the west end E. N. E.  $\frac{1}{4}$  E. three-eighths of a mile distant. A rock lies off the S. E. end of this island, half a mile distant, bare at half tide, bearing from the meeting-house E. by S.

Smutty-nose Island (connected as before mentioned, with Cedar Island by a Sea Wall) is about one mile in length from E. to W. and about half a mile in breadth, and may be known by a wind-mill on the north part of the island; at the west end is a fine harbour, called Haley's Cove, where 15 or 20 small vessels may lie safe from all winds. There are several buildings near this harbour. There is a fine channel between this island and Hog Island, which has water sufficient for any vessel, keeping near the middle of the passage. The west end of Smutty-nose Island bears from the meeting-house N. by E.  $\frac{1}{4}$  E. and the east end E. N. E. about five-eighths of a mile distant.

Hog Island is a high island, lying to the northward of Smutty-nose Island; is about one mile in length from E. to W. and five-eighths of a mile from N. to S. The west end lies from the meeting-house N. by W.  $\frac{1}{4}$  W. east end of do. N. N. E. seven-eighths of a mile distant.

Duck Island (the northernmost island) is a long, low, rocky island, some parts of it are covered at high water, with rocks projecting in every direction, especially at the N. W. end, where a ledge runs off half a mile. It is the most dangerous of any of the Isles of Shoals, and ought carefully to be avoided; it is about seven-eighths of a mile in length from N. W. to S. E. The east end bears from the meeting-house N. N. E.  $\frac{1}{4}$  E. The west end N. by W.  $\frac{1}{4}$  W. about  $3\frac{1}{2}$  miles distant. [See the Plate.]

### *Directions for Newburyport, Ipswich Bay, &c.*

When you come round Cape Ann, and are two miles to the northward of the dry Salvage Rock, bring said rock to bear S. E. and steer N. W. by W. 3 2-5 leagues, which course and distance will carry you up with Newburyport Bar. In running for the bar from the eastward, strangers should not approach too near Hampton Harbour, as off the mouth of it lie several sunken rocks. Hampton Harbour lies about five miles north from the southern extremity of Salisbury Point, between which and Hampton Harbour N. by E.  $\frac{1}{4}$  E. from the lights on Plumb Island\*, 3 miles distant lies another dangerous rock, having only

\* Plumb Island, so called, is situated between the mouth of Merrimack River, on the north, and Ipswich Bay on the south, and is separated from the main land by a narrow sound. Its length is about eight and a half miles, and its width from the sea to the main not more than 500 paces. On the north end of the island are two light-houses, containing *fixed lights*, which are constantly lighted at night, and so constructed as to be easily moved, a circumstance requisite, from the frequent shifting of the bar at the mouth of Newburyport Harbour. This bar is probably formed by the current of the river in its progress out, meeting the drift of the sea and opposing winds, and by that means forming a bank of loose sand, which the strength of the tide is insufficient to force out. It extends across from Plumb Island, about a mile below the lights, to Salisbury Beach. The channel over it is extremely narrow, and terminated on each side by very dangerous shoals; that on the north, called the North Breaker, and that on the south, the South Breaker. The light-houses are always so situated as to be brought in a range by the mariner coming over the bar; and as by the violence of winds or tides, the bar shifts, the light-houses are shifted to conform to it. By keeping the lights in one, vessels may, by day or night, come in with safety, and find good anchorage, in 4 or 5 fathoms water, abreast or between the two lights.

That part of the island, bounding on the sea, and extending above half its width, consists entirely of yellow sand, perfectly smooth on the beach, but farther from the sea, driven by the wind into hillocks, or heaps, of fantastic forms, and preserved in that shape by the successive growth of grass and shrubs. On the back part of the island, where it is washed by the sound, is an extent of salt marsh, bounding its whole length. The products of Plumb Island



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3½ feet water on it. If you go no farther to the westward than for the lights on Plumb Island to bear S. W. there is no danger from either of the above-men-

are scarcely worthy of remark; beach grass is the principal, and is used only for manufacturing brooms. A species of plumb, from which the island derives its name, grows here in tolerable abundance. It is produced on low running shrubs, on the summit and sides of the sand hillocks, it is pleasant to the taste, and generally in its season, an article for the market. There is likewise the beach pea, of which little or no use has ever been made; and indeed it is not found in sufficient plenty to become much more than a article of curiosity. At the southernmost end of the island there are several houses, with families, and a considerable spot of land, in good cultivation. To the northward of this, there is a grove of pine trees, of a mile and a half in extent.

The Marine Society of Newburyport erected some years since, at their own expense, several huts at proper distances from each other, and from the shore, and supplied them with fire-works, fuel, straw, &c. but owing to the strong winds, driving the sand from their foundations, and the inhuman conduct of people who visited the island in summer, these huts were, in a few years, totally destroyed. The misfortunes attending this generous and humane attempt in favour of the shipwrecked mariner, deterred the Marine Society, as well as other bodies and individuals, from a like benevolent attempt, until the establishment of the Merrimack Humane Society in 1802, conceiving it absolutely necessary that some relief should be afforded the unfortunate sufferer on so desolate a spot, and in the most inclement season of the year, the society voted to build three huts on the island, and have already carried their generous resolutions into full effect. The exertions of this benevolent institution will be, in future, to preserve these huts in repair, and in perfect supply of materials for fire, and other necessities for the support and preservation of life. Many, no doubt, will owe their lives to the humanity of this design, and with grateful feelings contribute themselves, to the preservation of others. The expense and trouble will be trivial in comparison with the noble purposes it may answer: and the hope of its answering these purposes, will be alone a sufficient remuneration to the generous projectors.

From the report of a committee, appointed by the society, we have the following description of the huts, and directions to the mariner to find them.

The house for the keeper of the lights, erected by the United States, is about twenty rods south from the light-houses.

About 2500 paces, or  $1\frac{1}{2}$  mile south from this house and the lights, on the inside of the island, is the first hut to which the mariner, in day-light, may be directed by a beacon, about 300 paces to the E. with a hand pointing to the hut.

2900 paces, or about  $1\frac{3}{4}$  mile south from this is the second hut, with a similar beacon, about 400 paces S. E. pointing to it.

1700 paces, or about one mile south from this, is a third, with a beacon, bearing E. 500 paces distant.

5000 paces, or about 3 miles S. of this, is a house, occupied by Mr. Spiller and family, which is about one mile from the S. end of the island, and about  $\frac{1}{4}$  one mile from the S. end of the island, are two other houses with families.

These huts, together with the other houses mentioned, form a chain from one extremity of the island to the other. The unfortunate mariner, whose fate may wreck him on this shore, can, by noticing the point of compass from which the wind blows at the time of his being wrecked, be governed in his course across the island, where he will find himself under the lee of the higher land, and protected, in some measure, from the violence of the tempest. By keeping along the margin of the island, where the travelling is good, and before coming quite to the marsh, either N. or S. he will be certain of meeting with one of these huts or houses, where he may find temporary relief. To facilitate still further the means of conveying immediate assistance to those unfortunate mariners who may be wrecked on this island, a number of gentlemen were incorporated for the purpose, and have completed a bridge and turnpike road from Newburyport to Plumb Island. This road leads in a south-easterly direction from Newburyport, and the bridge crosses Plumb Island near about one-quarter of a mile to the S. W. of Seal Island. An elegant hotel has been erected at the east end of the bridge, within 100 rods of the sea shore, one mile south from the lights, and about three-fourths of a mile northerly from the northernmost house erected by the Merrimack Humane Society before-mentioned. The hotel is painted white, has three white chimneys, and may serve as a land mark for seamen.

If a vessel, by stress of weather, should be obliged to run ashore on this island, and the master can make any choice of place, it is most eligible to run on as nearly opposite this house as possible, as assistance and shelter can be more promptly afforded; and the communication more direct with Newburyport.

It rarely happens that any life is lost on this beach, in attempting to escape from the wreck, when the crew remain on board till low tide. Unless the vessel is in imminent danger of going to pieces immediately, the seamen should *never take to their boat*.

tioned rocks, but that course to the bar, would run you on the north breakers; therefore you must bring the lights to bear W. by S. and anchor in 11 or 12 fathoms water, if the tide will not permit your coming in. No vessel, in coming in, ought to go nearer the south breaker than 7 fathoms water, nor nearer the north breaker, in coming from the eastward, than 9 fathoms. There are several pilots belonging to this harbour, who will, if possible, be outside the bar, to take command of any vessel wanting their assistance. If they cannot, you must keep the lights in range, and run for them till within a cable's length of the eastern light, when you must haul to the westward, and anchor between the two lights in 4 fathoms water. A vessel that draws 10 feet water may come in at two-thirds flood. They should always keep to the windward of the bar, unless the wind should be fair. If the sea is so great as to prevent the pilots getting over, a signal will be made by him, when you must run direct for his boat, keeping the lights in range, which will carry you safe over. If your cables and anchors are not good, you may bring the western light-house to bear S. E. by S. and run N. W. by N. for Salisbury Point;\* but as soon as you make said point, you must haul up N. W. which course will carry you clear of Badger's Rocks,† Black Rocks, and the Hump Sands. Across the channel, from the Hump Sands to Black Rock creek, lie 7 or 8 piers, on which are from 7 to 2½ feet water, at low water, which were sunk in the year 1776, and have not since been removed; the mark to pass between them is to bring the beacon, at the west end of the town of Newburyport, (which may be distinctly seen in clear weather,) over the south corner of the north meeting-house. The Hump Sands lie S. W. from Salisbury Point, which makes the channel very narrow and difficult for strangers. When you pass the Black Rocks, you must haul up W. by S. ½ S. which will bring you in channel way, and good anchorage. And if it be in the night, or dark weather, when you judge yourself about half a mile from Black Rock, you may come too

\* In a course nearly N. from the light-houses on Plumb Island, and about half a mile distant, across the mouth of Merrimack river, is the southern extremity of Salisbury beach, called Salisbury Point. From this point, a sand beach extends on the verge of the ocean, without an inlet or interruption of any consequence, until it reaches Hampton river. This beach is connected with the main land by a salt marsh of considerable extent, intersected by a variety of small rivulets and creeks, which render it impossible for a ship-wrecked mariner to reach the inhabited parts of Salisbury. Here, too, the hapless seaman is sometimes destined to suffer the misfortunes of shipwreck, and to reach a desolate and inhospitable shore, only to aggravate the horrors of his death. If he can attain the first and wished-for object, in evading the jaws of the angry ocean, he yet finds himself a solitary wanderer on the coast, without shelter and without sustenance; and in his fruitless search for them, must inevitably perish. As the N. E. storms are generally most fatal to vessels on this part of the coast, Salisbury beach is not so often a place of shipwreck as Plumb Island. But to guard against a possibility of accident, which must sometimes happen to the unskilful or inexperienced navigator, the Marine Society erected a hut, similar to those on Plumb Island. Here they deposited every thing necessary for the relief of such as might need it, and were at the pains and expense frequently to inspect it, and renew their generosity by replenishing it; but this has shared the same fate with those on Plumb Island, not so much, however, from the insufficiency of its foundation, or the violence of the winds, as from the wantonness of individuals and companies who frequent this spot in the warm season, on parties of pleasure. The Merrimack Humane Society have extended their benevolent views to this part of the coast, and have erected a hut about three-quarters of a mile north from Black Rocks, so called, and about 150 paces from the sea shore. This hut will be maintained in commodious repair, and provided with every thing suitable for those who may be so unfortunate as to need its shelter. Others on the same coast will be erected as speedily as the funds of the society, and the charities of individuals, will render it possible, and will be conveniently furnished, and provided for the same laudable purposes.

† Badger's rocks bear N. W. ½ N. from the light-houses, distant half a mile, and are covered at two-thirds flood, which you leave on your starboard hand. Black Rocks bear N. W. from the light-houses, three-quarters of a mile distant, and are always dry, which you also leave on your starboard hand. Half tide rocks, (on which is placed a pier,) bear W. by S. ½ S. from Black Rocks, distant one mile and a half, and bare at half tide, which you leave on your larboard hand. North rocks, (which also have a pier on them,) bear W. by S. from Black Rocks, distant one mile and a half, and are seen only at very low tides, which you leave on your starboard hand, between which and Half Tide Rocks is the channel.

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with safety. I would recommend to all masters, whether they belong to Newburyport or not, to avoid attempting that port in a gale of easterly wind, except they are well acquainted, and have a good prospect of getting in, as no pilot can get over the bar when it blows a gale from the eastward. And if you should make Cape Ann lights, and bring them to bear S. by E. or the Dry Salvages to bear S. by E. you may run with safety N. by W. or N.  $\frac{1}{2}$  W. distant 10 leagues from Cape Ann to Portsmouth. In running the above course, you will make the Isles of Shoals, if it is any way clear, from which you take a new departure : when you pass the said islands, you bring Star Island, (on which the meeting-house stands,) to bear S. S. E. and then steer N. N. W. distant from said island 3 leagues to Portsmouth ; or give White Island light a birth of a mile and a half, bringing it to bear east, and then run N. by W. for Portsmouth light. (White Island is the south-western-most island.) There is a very good harbour in the Isles of Shoals from the wind from north-easterly round to southerly, and you may lie land-locked with any of them ; but if the wind hauls to the S. W. or W. N. W. you may run in between Smutty-Nose Island, which has a wind-mill on it, and Hog Island, where there is water enough for a first rate man of war ; and where you anchor, have 12 fathoms, muddy bottom. (For description of Isles of Shoals, see page 44.)

In going into Portsmouth, you may bring the light-house to bear N. N. W. till you get within Wood Island. Then you may haul away N. or N. by E. till you pass the light-house ; you may then haul up W. N. W. or N. W. by W. and bring the light-house point to shut in with Wood Island, where you will be safe from all winds, and may anchor in 8 or 9 fathoms water.

When you come from the eastward, with the wind at E. or E. S. E. with which wind you cannot weather away Cape Ann ; and you are to the northward of the Isles of Shoals, your only shift is to Portsmouth, and you are obliged to run so far to the westward as to bring said port to bear N. N. W. as, generally, the wind at E. at sea, hauls two or three points to the northward, which makes it a head wind. [See the Plate.]

## SIGNALS FOR VESSELS,

When in sight, supposed to be bound for Newburyport, and the sea is so large on the bar that pilots cannot get out to their assistance.

When a vessel comes into the bay, and cannot come over the bar at HIGH WATER, owing to insufficiency of the tide, a RED SQUARE FLAG will be hoisted up and a PENDANT under it, and as soon as those signals are seen from the vessel in the bay, she must keep off, and try some other port.

When the usual signals for vessels are kept up, the vessel must lay off and on at the bar, keeping to windward, until signals be made for her to come in ; and when it is a suitable time to come over the bar, a RED SQUARE FLAG will be hoisted half mast ; she may then come in, *keeping the lights in range*.

When a PENDANT is hoisted half mast, the vessel may come in, *keeping the lights a little open to the northward*.

When a BLUE BURGEE is hoisted half mast, the vessel may come in, *keeping the lights a little open to the southward*.

When a vessel is seen in the bay, and does not come in before night comes on, the following lights will be made, viz.

For a vessel to keep off, and not attempt to come in over the bar during the night, a LANTERN will be hoisted to the top of the flag-staff.

When there is a proper time for a vessel to come in over the bar during the night, two LANTERNS will be hoisted, one at the top of the flag-staff, and the other half mast high. The vessel must then lay off and on at the bar until a light is made in the eastern light-house, at a window about eight feet below the lantern. The vessel may then come over the bar, *keeping the lights in range*, and when she gets abreast of the upper light, there is good anchorage.

The signal for a vessel in distress, is a WHITE SQUARE FLAG, with a large black ball in the centre, hoisted half mast high.



*Directions for Annis Squam Harbour\* in Ipswich Bay.*

The masters of vessels out of Newburyport should generally be acquainted with the harbour of Squam; and for their benefit a PLAN of the harbour has been taken from actual survey, which will be of the greatest importance, when obliged to make a harbour from Ipswich Bay, through stress of weather. When a vessel at anchor off Newburyport Bar, cannot get into port, or parts a cable, with the wind at N. E. or E. N. E. if she can carry double reefed sails, she may run S. S. E. 5 leagues, which course, if made good, will carry her a little to the eastward of Squam Bar; and if the weather is so clear as to see half a mile when you make the land to the eastward of Squam, you may run within a cable's length of the shore; your course is S. S. W.


Squam Bar bears from Hallowboat Point (the N. E. point of Cape Ann) from W. S. W. to S. W. distant about two leagues. In running from Hallowboat Point, you must be careful of Plumb Cove Ledge, which shows itself till near high water, and bears from Squam light N. N. E. a little northerly, distance five-eighths of a mile. When you have passed this ledge, you leave a deep cove, called Hodgkin's Cove, and a long point or neck of land, called Davis' Neck, on your larboard hand. When up with this neck, haul S. W. or S. W. by W. for Squam Bar.

In sailing into this harbour, bring the light to bear due S. when at the distance of one mile, and run directly for it, leaving Haradan's Rock (which lies N. by E.  $\frac{1}{4}$  E. from the light, distant three-eighths of a mile) on your larboard hand; continue your course till within 56 yards of the light-house, then haul up S. S. W. for the Bar Rock, leaving the light-house on your larboard, and the bar, which runs nearly N. E. and S. W. (leaving the river about 90 fathoms broad, opposite the light-house) on your starboard hand. In running this course you will leave the Lobster Rocks (which lie S. by W. from the light-house, distant 200 yards, and are dry at low water) on your larboard hand. When up with the Bar Rocks (which lie on the starboard hand, and are dry till nearly high water) steer S. by E.  $\frac{1}{4}$  E. till you open the houses, and you may anchor in from  $3\frac{1}{4}$  to 5 fathoms, clear sandy bottom; or run your vessel on shore on the starboard hand, in case you have neither cables nor anchors.

When a stranger is obliged to run for Squam Harbour, and is doubtful whether to enter on account of the depth of water, he had best anchor back of the bar, and he will immediately have assistance from the light-house, if it is possible for a boat to live; if the weather is so boisterous that a boat cannot come off, a flag will be hoisted on shore near the light-house, as soon as there is water enough for a vessel on the bar, when he may run in as above directed.

A canal connects this harbour with that of Gloucester. It is about 120 rods in length, 30 feet wide, and has for its depth about the whole flow of the tide, which is about 12 feet in spring tides, and 8 feet in neap.

If you are bound to Ipswich, your course from Hallowboat Point to the mouth of the channel that leads into the harbour, is W.  $\frac{1}{4}$  N. distant about eight miles. There are two beacons erected a small distance to the southward of Castle Hill, which may be run for, but as the bar is often removed by storms, it is not safe to run into the harbour unless acquainted.

[ See Plan of Annis Squam.]

\* Annis Squam light-house is a wooden building, of an octagonal form, about 40 feet high, containing a *fixed light*, elevated about 50 feet above the surface of the water at common high tides. It is painted white, and may be known by being lower than any other light-house on the coast of Massachusetts, and its inland situation. It bears from Portsmouth light-house about S. by W. distant 10 or 11 leagues, and from Newburyport Bar S. S. E. 5 leagues.

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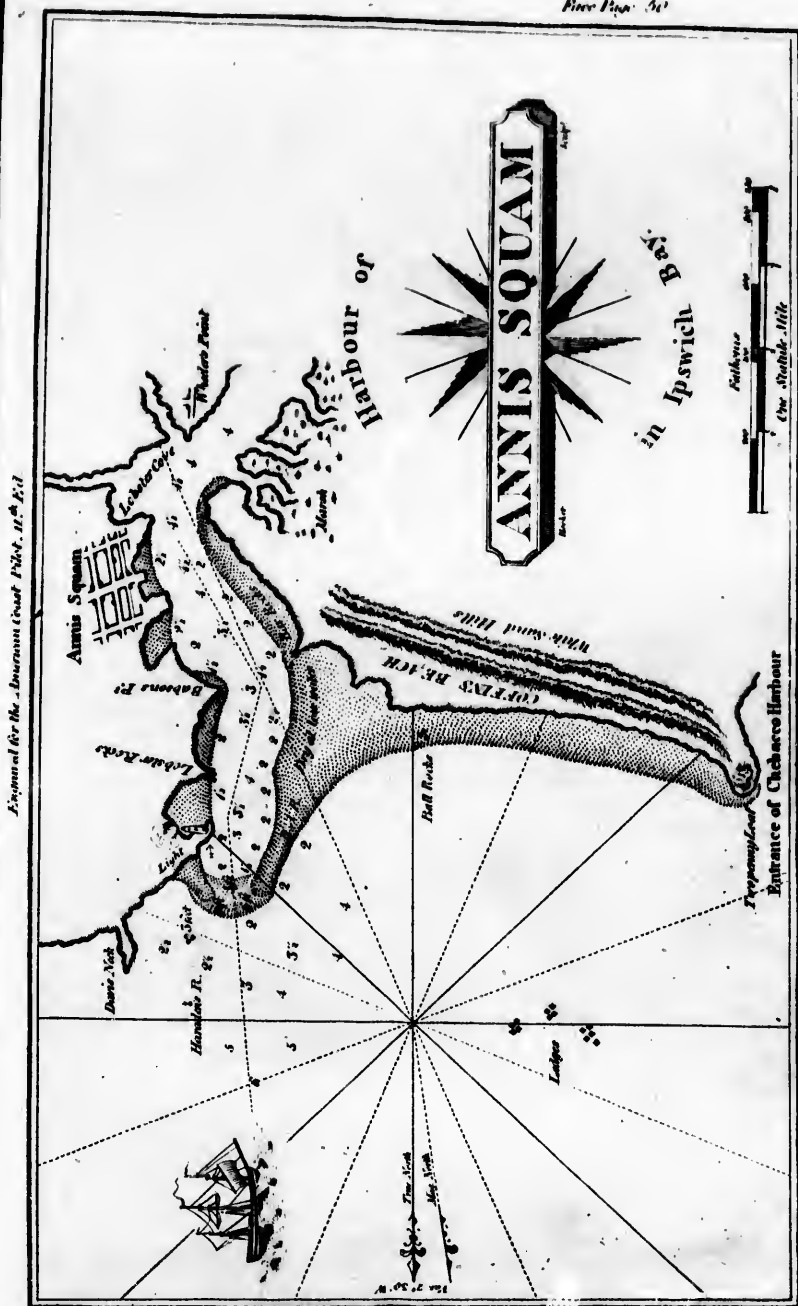
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Price Five Cts.



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# CAPE ANN HARBOUR.

Surveyed by the

*Rev. C. F. Fitch & W. A. Mallory, Esq.*

*in 1819, by direction of*

*Com. Wm. Bainbridge, U.S.N.*

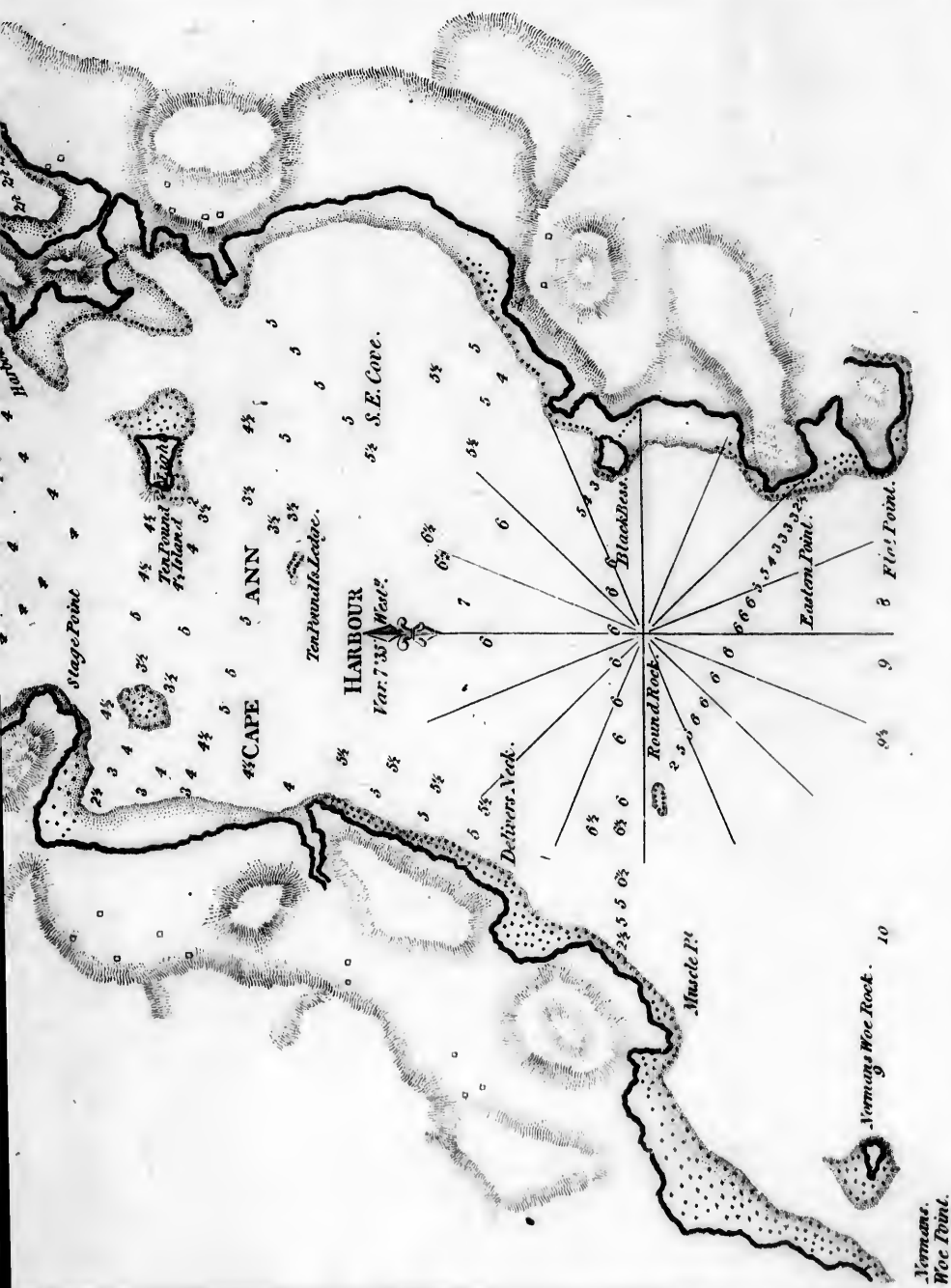
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Let by DAN. HARRISON, N.Y.







# CAPE ANN HARBOR.

Surveyed by the

*Rev. Co. Fitch & W. T. Mallory, Esq.*

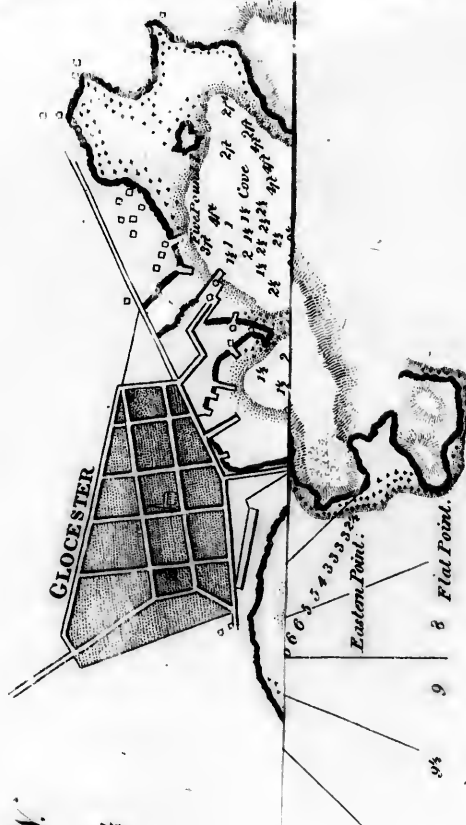
*in 1819, by direction of*

*Com. Wm. Bainbridge, U.S.N.*

One Statute mile.



Ledyard & Thurston, N.Y.



Normans Woe Rock. 10

Normans Woe Point.

*Directions to go into Cape Ann Harbour.*

When you come from the eastward, and make Cape Ann lights\* to the right, bring them to bear S. W. and run direct for them, which course will carry you within the Londoner, and when you pass the said rocks, bring the two lights in one, at which time they will bear N. by E.  $\frac{1}{2}$  E. and then steer S. S. W.  $\frac{1}{2}$  W. keeping said course about one mile, which will carry you clear of Milk Island, which is very low, and cannot be seen in a dark night. When you judge yourself to the westward of said island, you haul to the westward until you bring the lights to bear E. N. E. when you must steer W. S. W. about five miles, which course will carry you to Eastern Point. When you pass said point, keep your course W. S. W. until you bring Norman's Woe, which is the highest land on the north side of the harbour, to bear N. N. W. then run N. N. W. till you shut the lights in, then N. N. E. will carry you safe in.

If you want to go inside the Salvages, keep close aboard Hallowboat Point, which has a tree on the eastern part of it, and steer S. S. E. for Straight's Mouth Island, but be careful to avoid Avery's Rock, by keeping the lights on the dry point of Straight's Mouth Island, till you get up close aboard, then haul round the point, and S. S. E. will carry you to the lights. To avoid the Londoner, you must keep the lights close aboard the body of the island, on which they stand; the Londoner lies half a mile off, breaks at all times of tide, is quite dry at low water, and bears E. S. E. from the middle of Thatcher's Island. A long shoal runs off N. E. half a mile distant from the Londoner. Between the Londoner and Thatcher's Island there are  $3\frac{1}{2}$  fathoms at low water. From the Salvages to Hallowboat Point and Sandy Bay, there lies a large spot of flat ground, which at low water will take up a small vessel. Outside the Salvages is very bold. Hallowboat Point bears from the Salvages W. N. W.  $2\frac{1}{2}$  miles distant, and the Salvages bear from the lights N. N. E. 3 miles distant.

In sailing from Cape Ann lights to Cape Ann Harbour, you will first open Braces Cove, before you come up with the harbour, which will, when open, bear N. N. W. which you must avoid. Cape Ann Harbour lies one mile farther to the westward, and when open, bears N. N. E.

We are also requested by a gentleman in whom implicit confidence may be placed, to state, that no shoal or ledge lies off the western shore of this harbour, from Kettle Bottom to Ten Pound Island, more than a cable's length; therefore giving the western shore a birth of  $1\frac{1}{2}$  cable's length, and steering N. E. keeping Ten Pound Island light open with Norman's Woe, until Baker's Island lights are shut in with Norman's Woe, then steer E. N. E. until Ten Pound Island light bears from N. to N. N. W. will bring them into as good anchorage as any in the harbour, to the eastward of Ten Pound Ledge, in 7 to 10 fathoms water, clear bottom, and good holding ground.

*Ten Pound Island Light-House.†*

Vessels bound for Cape Ann Harbour, and falling in to the eastward of the eastern point, must give the point a birth of about one mile, and when the light on Ten Pound Island bears N. N. E. you are then to the westward of the ledge, that extends off from the point, on which is a Spar Buoy, the head painted red,

\* Cape Ann light-houses are built on Thatcher's Island, which lies about two miles east of the south east point of Cape Ann, and forms the northern limits of Massachusetts Bay. The lanterns are elevated about 90 feet above the level of the sea, and contain *fixed lights*, which may be seen seven or eight leagues distant. A ledge lies off Thatcher's Island, as described page 58, &c. under "Directions for Marblehead."

† Ten Pound Island lies in the harbour of Cape Ann. There is a light house on it, containing a *fixed-light*; the base of which is about 25 feet above the level of the sea, and the tower 20 feet high.



Drawn by A. Blunt.

in 10 feet water, at low water, bearing from Ten Pound Rock E.  $\frac{1}{2}$  S. and may steer direct for the light: (this ledge bears from the light on Ten Pound Island S. by W.  $\frac{1}{2}$  W. and is about half or three-quarters of a mile from the shore.) Running this N. N. E. course, will carry you between Ten Pound Island and Ten Pound Ledge, which bears from the light S. W.  $\frac{1}{2}$  W. about two-thirds of a mile distance, has but six feet water at low spring tides, and is about 10 fathoms diameter. Passing between the island and the ledge, you will have 13 to 15 feet water at low spring tides; the east end of Ten Pound Island is foul ground, and no safe passage: the south, west, and north sides are bold, and may be approached within 40 to 80 fathoms at low water; give the west end of the island a birth of 50 to 70 fathoms, and steer in for the inner harbour N. E.; you may anchor at any distance from 100 fathoms to three-quarters of a mile from the island, the light will then bear from S. to S. W. anchor in 6, 5, 4, or 3 fathoms spring low tides, muddy bottom; this inner harbour is safe against all winds that blow.

Bound for Cape Ann Harbour, and falling in to the westward, as far as Half-way Rock, take care not to bring the light on Ten Pound Island to bear to the eastward of N. E. by N. until you are a mile or a mile and a half to the eastward of Half-way Rock, to avoid the S. E. breakers that extend from Baker's Island, and which bear from the lights on Baker's Island S. E.  $\frac{1}{2}$  S. to S. S. E.  $\frac{1}{2}$  E. and about  $2\frac{1}{2}$  miles distant. On the S. E. part of these breakers is placed a spar buoy, painted black, bearing from Half-way Rock N. E. by E. about one mile distant, and from the lights on Baker's Island S. S. E.  $\frac{1}{2}$  E.  $2\frac{1}{2}$  miles. When passed to the eastward of these breakers, you may then bring the light on Ten Pound Island to bear N. E. and run for it; on this course you will leave Ten Pound ledge on your starboard hand, and the ledges off Norman's Woe Rock and Fresh Water Cove on your larboard hand; when up with Ten Pound Island, anchor as above directed.

The outer harbour of Cape Ann is a safe and good anchorage against a northerly or east wind, when you may anchor in  $7\frac{1}{2}$  to  $6\frac{1}{2}$  fathoms, low tides, muddy bottom, the light-house bearing about S. E. by E. distant about one mile or a mile and a half.

The S. E. harbour is also a safe and good anchorage against a northerly, east, and to the south-east winds; bring the light to bear from N. by E. to N. N. W. anchor in 9, 8, 7, or 6 fathoms at low spring tides, muddy bottom; distance from the light, one-eighth to half a mile.

Gloucester canal, which connects the harbour with Squam river, passes immediately by the west part of the town, or what is called the harbour parish. It is about 120 rods in length, 30 feet wide, and has for its depth about the whole flow of the tide. It was excavated at low water mark, spring tides; say in spring tides 12 feet, neap tides 8 feet.

*Bearings of several Ledges from the light on Ten Pound Island, viz.—*

The ledge that makes off from the eastern point, bears from the light S. by W.  $\frac{1}{2}$  W. about two miles distant, and has from 6 to 10 feet water at low tides: this ledge lies off from the eastern point about half a mile.

There is a single rock that lies about midway between the eastern point and Norman's Woe, called the *Round Rock*, on which is a spar buoy, in 24 fathoms, low water. The head of this buoy is painted black, and bears from the light-house on Ten Pound Island, S. W.  $\frac{1}{2}$  S. distant  $1\frac{1}{2}$  mile. Round Rock and Ten Pound ledge bear from each other S. S. W.  $\frac{1}{2}$  W. and N. N. E.  $\frac{1}{2}$  E.—Ten Pound rock and Cove ledge bear W.  $\frac{1}{2}$  N. and E.  $\frac{1}{2}$  S. from each other—Round Rock and Cove ledge bear S. by W. and N. by E. from each other.

A spar buoy is placed on Cove ledge or Old Field rocks, in two fathoms at low water. The top is painted black, and it bears from the light-house W. by S. half a mile distant.

A spar buoy, placed on the west end of Dog Bar ledge, with the top painted white, in two fathoms at low water, common tides, bearing from the light-house

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on Ten Pound Island S. by W.  $\frac{1}{2}$  W. distant  $1\frac{1}{2}$  mile—Dog Bar and Ten Pound ledge buoy bear N.  $\frac{1}{2}$  E. and S.  $\frac{1}{2}$  W.—Dog Bar and Round Rock N. W. by W.  $\frac{1}{2}$  W. and S. E. by E.  $\frac{1}{2}$  E.—Dog Bar and Cove Ledge S. by E.  $\frac{1}{2}$  E. and N. by W.  $\frac{1}{2}$  W.

The shoal called *Round Rock*, is a shoal formed by large and small popple stones, and always has the same uniform depth of water on it, as before mentioned. *Dog Bar* consists of large rocks.

About 30 fathoms off from Norman's Woe point is a large high rock, called Norman's Woe Rock, of 20 to 30 fathoms diameter, and about 100 fathoms off this rock, in a southerly direction, is a ledge that has 7 or 8 feet water on it at low tides. About one quarter of a mile off from Fresh-water Cove lies a ledge with only 3 feet water, low spring tides, bearing from the light W.  $\frac{1}{2}$  N. distant 2 miles.

Half-way rock and the rock on Ten Pound Island, bear S. W.  $\frac{1}{2}$  W. and N. E.  $\frac{1}{2}$  E. of each other; distance about 8 or 9 miles.

### Remarks on Cashe's Ledge.

BY AN EXPERIENCED NAVIGATOR.

I took my departure from Thatcher's Island, which lies two miles to the eastward of Cape Ann. The island bore from me N. 3 miles distant; from the bearing, I steered E.  $\frac{1}{2}$  N. 65 miles, with a fair wind, and fell in with the north part of the bank, where Cashe's ledge is, about two leagues to the northward of the shoal, in 60 fathoms, hard black clay. This bank lies N. and S. 7 leagues, and E. and W. 2 leagues, and in the centre of the bank is the shoalest ground. Its length and breadth is one quarter of a mile. There are on it in some parts 10 fathoms, in others only  $4\frac{1}{2}$ , all exceeding rocky. In the length of a boat you will have from 10 to  $4\frac{1}{2}$  fathoms, and there are 17 fathoms within a cable's length of the shoal, which gradually deepens as you stand from it, all over the bank, to 90 fathoms: at this sounding you are on the edge of the bank. You will, in general, have upon the bank oozy and sandy bottom, with black stones and broken shells, till you get into 25 or 30 fathoms; it then becomes rocky.

The current sets exceeding strong and irregular; in less than an hour it will run all round the compass. All ships and vessels should endeavour to steer clear of this shoal, for I am persuaded, that in a fresh gale of wind they must strike; if not, the sea must run so as to founder them.

By four days observation, the weather being exceedingly clear, found the shoal to lie in lat.  $43^{\circ} 04' N.$  long.  $69^{\circ} 11' W.$

### GEORGE'S SHOALS.

*A Report relative to the Survey of George's Shoals, made in the United States schooner Science, and the sloop Oriskany, by direction of the Board of Navy Commissioners, and under the orders of Capt. ISAAC HULL, in 1821.*

There are, properly, four shoals on George's Bank; the whole of them included between latitudes  $41^{\circ} 34' N.$  and  $41^{\circ} 53' 30' N.$  and longitudes  $67^{\circ} 18' W.$  and  $67^{\circ} 59' W.$  Between them there is from 15 to 35 fathoms water.

The largest, and on which is the chief danger, is the most southerly and westerly. It is somewhat triangular, with a long and narrow spit making out from the S. E. angle. The S. E. point is in latitude  $41^{\circ} 34' N.$  and longitude  $67^{\circ} 40' W.$  The west point is in lat.  $41^{\circ} 42' N.$  and longitude  $67^{\circ} 59' W.$  The N. E. point is in latitude  $41^{\circ} 48' N.$  and longitude  $67^{\circ} 47' W.$  The eastern side of this shoal, although somewhat irregular, runs nearly S. S. E. and N. N. W. having on it from three feet to nine fathoms at common low water.



It is composed of a great number of sand spits, very narrow, so that the width of a narrow vessel will make several fathoms difference in the depth of water. The general range of the spits is from S. E. to N. W. As there are no rocks, they are consequently liable to change, in some measure, their positions and ranges. On the eastern edge, even in calm weather, unless it be high or low water, the tides run with great rapidity, and form considerable breakers when setting to the westward, and a large waterfall when setting to the eastward. This is accounted for, by a knowledge of the fact, that directly on the edge of this shoal, there is from twelve to sixteen fathoms of water, so that the edge forms a species of dam, stopping the force of the flood tide, and over which the ebb falls.

When there was considerable wind, we observed that the breakers were higher within the edge, to the westward, than on the edge; and I have no doubt that the water there was still shoaler, and that we should have seen the sand, had it not been for the heavy sea. The breakers were such, unless it were entirely calm, that it was impossible to go among them with boats; nor was it considered safe to attempt it with the vessels. For, besides the danger of striking on the hard sand spits, the vessels would have been liable to be filled by the breakers. Even on the eastern edge, and at nearly slack water, the vessels were at times nearly covered with them. And it was not thought necessary to attempt it, as the objects of survey, to ascertain if there was danger on the shoals, and the situations and extent of them, could be accomplished without the risk.

Had not the sea been very smooth, and at high water, we should not have been able to have gotten on where we found three feet, reducing it to low water. The prevailing wind was to the eastward; and I have no doubt but that this place would have been bare with any continuance of an off-shore wind.

I think there are no rocks about the shoals. We had one cast on the S. W. side, which indicated rocky bottom, in 15 fathoms; but I believe it to have been some sharp stone that the lead struck on, although I have marked it according to the appearance, on the chart.\*

The centre of the northern shoal is in latitude  $41^{\circ} 53' 30''$  N. and long.  $67^{\circ} 49'$  W. It extends east and west about four miles. The shoalest part having six fathoms, is very narrow, and composed of hard sand. But there is not more than twelve fathoms of water for three miles south of the above latitude. On the north side, at two cable's length from the shoal, the sloop dropped into 33 fathoms. The breakers on this shoal are very heavy, and when there should be a sufficient sea to endanger a vessel, they may be seen some miles, and heard at a very considerable distance; and as the shoalest part is not more than a cable's length inside, and no danger near it, a vessel might avoid it.

To the eastward of the last mentioned shoal, in latitude  $41^{\circ} 51'$  N. and longitude  $67^{\circ} 26'$  W. is another small shoal, with 8 fathoms water, having, however, considerable breakers. There are but 17 fathoms for three miles N. of it. But very near to the east of it, are 31 fathoms, and from twenty to thirty fathoms to the south and west.

The centre of the east shoal is in latitude  $41^{\circ} 47'$  N. and longitude  $67^{\circ} 19'$  W. It is about two miles long from east to west, and has several fathoms water. To the south, there are but 17 fathoms for two miles. In other directions there are from twenty to thirty fathoms.

The above described shoals, I am confident, are all which are on George's Bank. Their positions and sizes may be relied on, as well as the places of the sounding which I have laid down on the chart. They were ascertained by a vast number of celestial observations, taken with good, and well adjusted instruments on board the two vessels, and very carefully and faithfully calculated. The rates of the chronometers were found by a transit instrument previously to sailing from Boston, and after our return, and all the observations re-calculated for the small variation which appeared.

At anchor, different places, and on different days, we determined the set and strength of the tides, and as nearly as possible their rise and fall. The rise of

\* This Chart is published by the author of the American Coast Pilot.

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them is from one to one and a half fathoms. They set round the compass every tide, setting S. E. nearly, at full moon, and running from one to four knots per hour, at a mile's distance from the breakers. The mean rate however, is materially varied by the winds; they set strongest at W. S. W. and E. N. E. and which is undoubtedly the strength of the flood and ebb. From these causes and variety in the tides, arises a principal danger in approaching the shoals. When under way about the shoals, in a few hours time we found ourselves drifted far out of our reckonings, and to ascertain our situations, when both vessels were under weigh, we took continued observations for the longitude by the chronometers, and at the same time double altitudes for the latitudes; which latter were calculated by Brosier's new and certain method. By allowing for the sets of tides, as ascertained at anchor, the observations and reckoning agreed very nearly; so that the latitude and longitude of every sounding placed on the chart may be considered as certain. Should any vessel fall in with the shoals, a knowledge of the course and strength of the tides would be of the greatest importance. And they can be calculated for any day and hour by the preceding facts.

In going from Cape Cod to the Shoals, at 5 leagues from the light, there are 26 fathoms, muddy bottom. The water gradually deepens to 133 fathoms; and then gradually decreases towards the shoals. In lat.  $41^{\circ} 51' N.$  and long.  $68^{\circ} 11' W.$  there are 90 fathoms. In lat.  $41^{\circ} 50' N.$  and long.  $68^{\circ} 3' W.$  there are 49 fathoms, sand and gravel, on the western edge of the bank. The water then shoals fast. To the northward of the shoal, in lat.  $41^{\circ} 59' N.$  and long.  $67^{\circ} 52' W.$  on the south side of the north channel, there are 60 fathoms, soft mud. In lat.  $42^{\circ} 12' N.$  and long.  $67^{\circ} 51' W.$  there are 102 fathoms. In lat.  $42^{\circ} 10' N.$  and long.  $67^{\circ} 18' W.$  there is no bottom at 175 fathoms. To the eastward we did not ascertain the extent of the Bank. In two miles southward of the S. E. point of the shoals, there are from 20 to 26 fathoms of water, which soundings continue for at least 20 miles to the southward and westward.

The bottom on the Bank, so far as we ascertained it, is of such a narrow character, that it is difficult for a vessel to ascertain her situation by it. We often found a great variety of soundings in a very short distance; such as sands of various colours, and differently mixed, coarse and fine, gravel pebbles, of various colours, stones, sponge, and shells. Of all these except sand, I saved a number of specimens, with marks to note the places from whence they were taken.\*

Notwithstanding this variety, some general character of the soundings may be useful. To the westward of the shoals, and at some distance from them, the bottom is coarse sand and gravel of all colours; to the N. W. a mixture of white, black, and yellow sand; to the N. black and white sand; to the N. E. chiefly gravel and pebbles; to the E. fine white and yellow sand, and in lat.  $41^{\circ} 57' N.$  and long.  $68^{\circ} 40' W.$  some white moss: to the S. E. fine white and yellow sand.

As the shoals are approached, in whatever direction, the soundings become coarse, and are frequently mixed with shells of different kinds. Near the shoal much of the bottom is pebbles; and to the east of the largest and most dangerous shoal, there are stones of the size of hen's eggs, with moss and sponge on some of them. Near the S. E. point is from 15 to 20 fathoms; a prevailing character of the soundings is green shells, and chiefly of the species usually called sea-eggs. If a vessel be far enough south to avoid danger, she will have no shells. The quality of the soundings, as far as we were able to survey the bank, will be best understood from the chart, where they have been carefully rated.

The time and weather prevented making a complete survey of all parts of the Bank; and although we ascertained the boundaries of it to the westward and northward, I have not delineated it on the chart, being unwilling to borrow any thing from charts which disagree so essentially, and which we found very incorrect in the material points. Of the shoals themselves, I do not believe a more perfect survey can be made, unless in a calm time, the main shoal could be pene-

\* It may be worthy of remark, that at one cast of the lead, on examining the arming, I found one-third black sand, one-third white, and one-third green shells, in as distinct dimensions as they could have been drawn.

trated. This, however, does not seem to be an object, as no vessel would be safe in attempting to pass over it.

The reports that rocks have been seen on the Shoals, are undoubtedly incorrect. Had there been any there, we could not have failed of discovering them. At the west part of the bank, in strong tide rips, we saw large quantities of kelp and sea-weed, which, at a distance, had the appearance of rocks. But on sounding, we found good water, and a regular and clear bottom.

It will be seen by the bottom, that the holding ground is not good. But the vessels employed in the survey, by having a long scope of cable, rode out a considerable gale of wind for 22 hours, on the east side of the main shoal, and to windward of it. At this time the sea broke very high in 10 fathoms water.

C. FELCH.

**NOTE.**—In coming from the southward for George's Bank, you will get soundings in lat.  $40^{\circ} 4' N.$  if on the S. S. W. part of the bank. Should you not get soundings in the lat. of  $40^{\circ} 30' N.$  you may be certain you are to the eastward of the shoal, when you must direct your course accordingly to clear it, when your first soundings will be in from 75 to 60 fathoms. When steering to the northward, you will shoalen your water gradually to 20 fathoms, when you will be in lat.  $41^{\circ} 20' N.$  which depth of water you will have 10 or 12 leagues distant, either east or west.

Soundings from George's Bank continue W. by S. until you are nearly abreast of the east of Long Island, then southward to Cape Hatteras.

### *Directions for Salem Harbour.*

Vessels inward bound, and falling in with Cape Ann, must observe the following directions, viz.—When abreast of Cape Ann lights, bearing N. N. W. about two miles distant, steer W. S. W. about three leagues, which will carry them up with the eastern point of Cape Ann, then steer W. by S.  $\frac{1}{2}$  S.  $7\frac{1}{2}$  miles, which will carry them up with the lights on \*Baker's Island.

Ships bound to Salem, falling to the southward and running for the lights, must, when they have made them, keep the northern or lower light open to the eastward of the southern light, and run for them, which will carry them to the eastward, and clear of the south breaker of Baker's Island, which bears from the lights S. E. by S.  $2\frac{1}{4}$  miles distant, and is very dangerous.

Vessels bound to Salem, having made the lights with a westerly wind, in beating up, must not stand to the southward or westward, further than to shut one light in with the other, on account of the south breaker, nor to the northward, further than to bring the lights to bear W. by S.  $\frac{1}{2}$  S. on account of Gale's ledge, which bears from the lights N. E. by E.  $\frac{1}{2}$  E.  $1\frac{1}{2}$  mile distant, having but 4 feet water at low tides.

In going into Salem by the common or ship channel, between Baker's Island and †Misery Island, being up with Baker's Island, you may pass within 100

\* Baker's Island lies on the south side of the principal entrance of Salem harbour, is about a third of a mile in length, from north to south, bearing east from fort Pickering, distant about 5 miles east, from the town of Salem. There are now two separate light-houses on Baker's Island, the bases of which are about 45 feet above the level of the sea. One is 25 feet, and the other 56½ feet high, and bear from each other N. W.  $\frac{1}{4}$  W. and S. E.  $\frac{1}{4}$  E. The southern light is the highest, and may be seen from 6½ to 7 leagues. The water is deep near the island, but there is no convenient landing-place. The north and east sides are high and rocky. There is a small channel between the south rocks and the dry breakers, but it is safe only to those who are acquainted with it.

† Misery Island lies from Baker's Island about one mile, is joined by a bar to Little Misery, which makes the north side of the channel opposite Baker's Island. Misery ledge has eight feet water at low spring tides, and bears from the light-house N. W. by W.  $\frac{1}{4}$  W.  $1\frac{1}{2}$  miles distant. Misery Island, or Great Misery, is 174 rods in length from N. to S. and 96 rods in breadth. Little Misery is 40 rods in length, with its most western point projecting into the channel. South part of Little Misery Island bears from the lights N. W.  $\frac{1}{4}$  N. three-quarters of a mile distant.

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fathoms of it, and steer W. by N. for the \*Haste; this course will carry you clear of Hardy's rocks, leaving them to the southward, and will leave Bowditch's ledge to the northward. If you are in the mid-passage, between Baker's Island and the Misery, you may steer W. N. W. till you have passed Bowditch's ledge, or till you get Cat Island open to the westward of Eagle Island, then haul up for the Haste. Any stranger may there anchor in safety, in about 5 fathoms of water, good anchorage; but if you choose to proceed into Salem harbour, you must steer about west for the Haste, which you will leave on your larboard hand, about half a mile distant, then steer S. W. by W. which will carry you into Salem harbour; but you must observe, that there is a ledge runs off from the N. E. end of Winter Island, and that Abbot's rock lies abreast of it; to avoid which you must keep above a quarter of a mile from the shore. Abbot's rock is found by bringing Castle hill and house into the cove north of Fort Pickering, and Beverly meeting-house well in with Juniper point (or S. E. point of Salem neck.) Abbot's rock has 7 feet at common ebb. The mean of common tides is 12 feet. In keeping off shore, to avoid Abbot's rock, you must not go too far off, for fear of the Aqua Vitæ, which are sunken rocks, lying E. S. E. from Fort Pickering, distant nearly half a mile.

When coming from the southward, if you are near Cat Island, you may pass to the eastward or westward of it; if you are to the eastward, you must give a birth of a quarter of a mile, and steer N. by W.  $\frac{1}{4}$  W. or N. N. W. leaving the \*\*Brimbles and Eagle Island to the starboard, and ††Coney Island ledge to the larboard—that course will carry you clear of Eagle Island bar; continue upon the same course till you have passed the Haste, and get into common ship channel, or you may continue the same course till you get under the north shore, where there is good anchorage.

If you are to the westward of Cat Island, you may pass in the middle channel

\* The Haste rock is a broken rock above water, lying near the channel, bearing from Baker's Island lights W.  $\frac{1}{4}$  N. distant  $2\frac{1}{4}$  miles, and  $1\frac{1}{4}$  mile from Salem rock.

† Hardy's rocks (on which a beacon is erected) bear W.  $\frac{1}{4}$  N. from Baker's Island lights, distance five-eighths of a mile. They are covered at high water; and are dangerous. At half tide they appear with 7 feet on them at low water. Rising States ledge bears W.  $\frac{1}{4}$  N. from them, 150 fathoms distant.

‡ Bowditch's ledge, on the east end of which a black spar buoy is placed, in  $2\frac{1}{2}$  fathoms, bears from Baker's Island light-house, W. N. W.  $1\frac{1}{4}$  mile distant, and is seen at low spring tides.

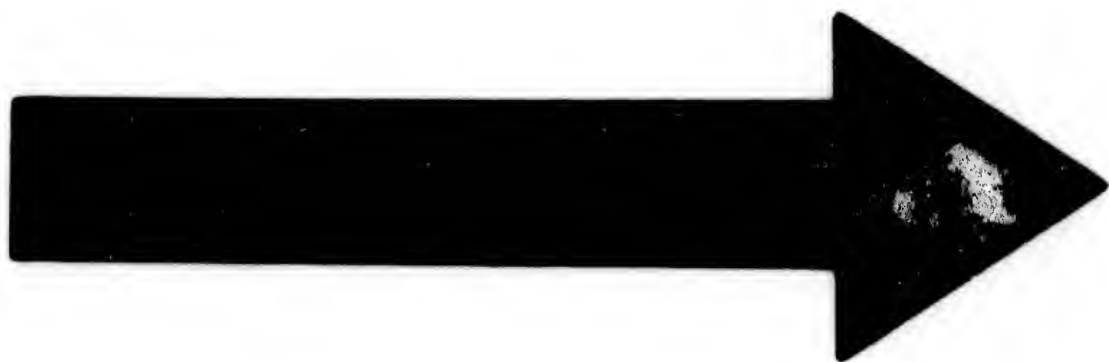
§ Cat Island is situated about S. W. by W. from Baker's Island, 2 miles distant, and about  $1\frac{1}{4}$  mile from Marblehead neck, and ranges from Baker's Island just clear of Marblehead neck. On the N. W. end is a high beach, directly opposite the point of Marblehead, called Peach's point. The shore is irregular and rocky. Beyond, and in a line with the island, are two other heads, of nearly the same projection; and on the southern side are three high rocks, but not so large as the former. Two of them are connected with the island by bars of sand, out of water at the ebb; the other stands boldly up within these two, but more southerly. The Marblehead Marine Society has erected on Cat Island rock a spar, 40 feet high, to the top of which is annexed a cask of about 130 gallons measure, which is seen at sea 20 or 30 feet above the land. A black spar buoy lies off the S. E. end, bearing from the lights S. E.  $\frac{1}{2}$  S. to S. S. E.  $\frac{1}{2}$  E.  $2\frac{1}{4}$  miles distant.

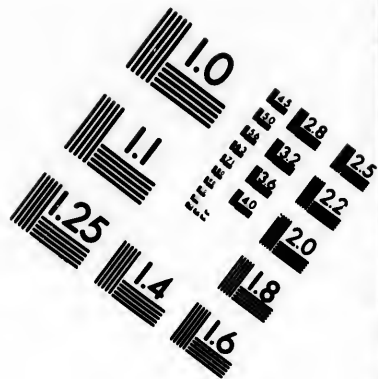
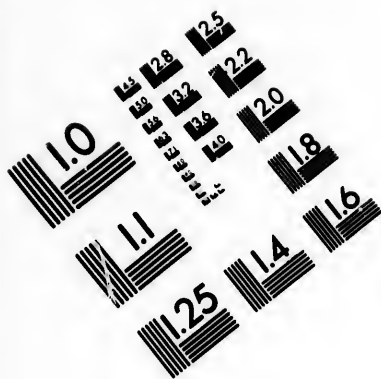
|| Eagle Island is about  $1\frac{1}{4}$  mile from Peach's point, and bears from the light-houses W. by S.  $\frac{1}{2}$  S. distant  $1\frac{1}{2}$  mile. A bar runs off from the western point of this island in a N. W. direction, half a mile distant, and has a red spar buoy on the end of it.

¶ Winter Island lies on the north side of the entrance of Salem Harbour, about half a mile in length; the highest part is on the south of the island, opposite a point of rocks on the neck (which is a point of land running north-easterly from the town, about one mile.) It has a store and wharf on the southern end, at the entrance of Cat cove. On the eastern point stands Fort Pickering.

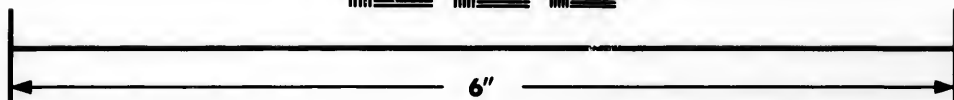
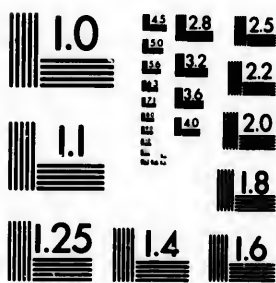
\*\* The Erimbles bear S. W. by W. from the light-house, distant  $1\frac{1}{4}$  mile S. S. E. from Eagle Island, nearly half a mile distant. They are sunken rocks, bare at low water: near to it is a spar buoy painted red. It comes out of water at half ebb.

†† Coney Island is a small island that lies near the mouth of Salem harbour: it bears from Marblehead point, N. E. one mile distant; from Fort Pickering on Winter Island, E.  $\frac{1}{4}$  S. two miles distant; and from Baker's Island light W.  $\frac{1}{4}$  S.  $2\frac{1}{4}$  miles distant.





# IMAGE EVALUATION TEST TARGET (MT-3)



# Photographic Sciences Corporation

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between that Island and \*Marblehead rock, and steer over north for the ship channel, leaving †Gray's rock and Coney Island to the westward. After passing the Haste, and entering the ship channel, you may proceed as before directed.

If in coming from the southward and eastward, you should find yourself near †Half-way rock, you may bring it to bear S. E. and steer N. W. for the Haste, passing near to §Satan, or Black Rock, leaving it on the larboard hand, and the Brimbles and Eagle Island on the starboard; continue this course, and you will leave the Haste on the larboard hand, enter the common ship channel, and proceed as above.

There are several other channels for entering Salem harbour, but they ought not to be attempted without a pilot.

### *Directions for Beverly and Manchester.*

To enter Beverly Harbour, follow the directions for Salem Harbour, till you bring the Haste to bear E. S. E. and run W. N. W. about two miles, and you reach Beverly Bar, which is a spot of sand running out from the southern or Salem side of the entrance, and has commonly a beacon upon the head of it, above a quarter of a mile from the shore. The bar has very shoal water on the eastern or outward side near it, but good anchorage within. There is good water at the head of the bar. Having passed the bar, there is a sandy point from Beverly, on the northern side of the entrance, and beyond this point are the Lobster Rocks, which bear from the head of the bar W. a little S. and not half a mile distant, and they are above water at half tide. To avoid this point, after having well cleared the bar, you will steer towards Ram-horn rock, which has also commonly a beacon, and is to be seen at half tide, bearing S. W. by S. from the head of the bar, one-eighth of a mile distant. There are several fathoms of water within a vessel's length of Ram-horn rock. Giving this a good birth, you then clear the sandy point, and steer for the Lobster Rock beacon, bearing from Ram-horn beacon N. W. by W. distant about one-quarter of a mile. Giving this a good birth, you are then opposite to the wharves, and may anchor in deep water, in a very safe and excellent harbour.

To enter Manchester Harbour, you must bring the southern light on Baker's Island to bear S.  $\frac{1}{4}$  E. and run N. one mile distant, where you may anchor on good bottom.

N. B. Eastern point bears from Baker's Island lights E. by N.  $\frac{1}{4}$  N.  $\frac{7}{8}$  miles distant. Half-way Rock bears from the lights S.  $\frac{1}{4}$  E. 2 miles distant. Hardy's rocks bear from the lights W.  $\frac{1}{4}$  N. distant five-eighths of a mile.

### *Directions for sailing into Marblehead.*

Vessels inward bound, and falling in with the lights on Thatcher's Island, may observe the following directions, viz: Thatcher's Island ledge bears from the body of the island from E. S. E. to S. S. E. extending about two miles from

\* Marblehead rock bears S. W. from the western part of Cat Island, distant three-fourths of a mile. It is above water, and may be approached on either side, very near, with safety.

† Gray's rock bears N. W. from Cat Island, distant three-quarters of a mile, W. by S.  $\frac{1}{4}$  S. from the light-house, distant  $2\frac{1}{2}$  miles, is high out of water, and may be approached with safety.

‡ Half-way rock is about 180 feet in diameter, 40 feet high, and bold to; lying about half way between Boston and Thatcher's Island light-houses, on which a pyramidal monument has been erected, the stone work of which is 15 feet high, with a base of ten feet; above the stone work is a spindle 15 feet high, on which is a copper ball, 2 feet in diameter.

§ Satan, or Black Rock, is above water, steep to, and bears S. W. by S. from Baker's Island, distant  $1\frac{1}{2}$  mile, and from Half-way Rock N. W. by W.  $\frac{1}{4}$  W. a mile and one-sixth.

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the island. After getting the west light to bear N.  $\frac{1}{2}$  W. you are to the westward of the ledge: then haul to the N. W. to bring the lights to bear N. E. by E. and steer S. W. by W. for the eastern point, which is about  $7\frac{1}{4}$  miles distant from Thatcher's Island. Then your course is W. by S. distant  $7\frac{1}{4}$  miles, for the lights on Baker's Island.

Vessels bound to Marblehead, and falling to the southward, and running for the lights, after making them, must keep the north and lower one open to the eastward of the southern light, and run for them, which will carry them to the eastward, and clear of the south breakers off Baker's Island, which bear from the lights from S. E.  $\frac{1}{4}$  S. to S. S. E.  $\frac{1}{4}$  E. distant two miles and one quarter.

Having made the lights with a westerly wind, and beating, when within  $2\frac{1}{4}$  miles of them, you must not stand to the southward and westward so far as to shut the north light up with the south light, on account of the south breakers, nor to the northward further than to bring the lights to bear W. by S.  $\frac{1}{4}$  S. on account of Gale's Ledge, which bears from the lights N. E. by E.  $\frac{1}{4}$  E. distant  $1\frac{1}{4}$  mile. Drawing near to the lights, take care of a ledge, called the Whale's Back, which bears from the lights N. by E. distant four-fifths of a mile, and comes out of water at quarter ebb.

In going into Marblehead, and being up with the lights, give the north point of Baker's Island a birth of one-quarter of a mile or less. Having the lights one in with the other, you are up with the point. When the south light is open with the north light, you have then passed the point (leaving the Misery Island on your starboard hand, which bears from the lights N. W.  $\frac{1}{4}$  N. three-fourths of a mile.) Then steer S. W. by S. or S. S. W. until you bring the south light to bear N. E. by E.  $\frac{1}{4}$  E. then steer S. W. by W.  $\frac{1}{4}$  W. distant 3 miles, for Marblehead Harbour. You will leave Hardy's Rocks, Eagle Island, and Gray's Rock, on the starboard hand; Pope's Head (which is a large high rock, bearing S. W. by W. from the lights, two-thirds of a mile distant) Brimbles, and north point of Cat Island, on the larboard hand. The Brimbles bear from Eagle Island S. S. E.  $\frac{1}{4}$  E. distant half a mile; and Gray's Rock from the north point of Cat Island N. W. by W. seven-eighths of a mile.

Falling in with the south point of Baker's Island, and it blowing hard from the eastward, if you cannot avoid it, you may pass the point by keeping it well on board, say at the distance of from 20 to 50 fathoms from the shore, where you will have from 4 to 5 fathoms water. When up with the S. W. point, steer W. S. W. which will carry you between the north Gouseberry Island (which bears S. W.  $\frac{1}{4}$  S. from the lights, distant two-thirds of a mile) and Pope's Head, leaving the former on your larboard hand, and Pope's Head on your starboard hand, between which you will have from  $3\frac{1}{4}$  to 5 fathoms of water. As soon as you have passed Pope's Head, haul to the northward, until the south light bears N. E. by E.  $\frac{1}{4}$  E. then steer S. W. by W.  $\frac{1}{4}$  W. for Marblehead harbour.

Vessels coming from the eastward, and running for Half-way rock, which is a high bold rock of about 30 fathoms diameter, lying S.  $\frac{1}{4}$  E. from Baker's Island lights, distant two miles, (and described in page 56) must not bring the rock to bear to the southward of W. S. W. to avoid the south breaker, which bears from Half-way rock N. E.  $\frac{1}{4}$  E. distant one mile. Being up with Half-way rock, and bound into Marblehead, bring the rock to bear E. by S.  $\frac{1}{4}$  S. and steer W. by N.  $\frac{1}{4}$  N. for Fort Head, distant 3 miles, leaving Cat Island on the starboard hand, which bears from Half-way rock W. N. W. distant  $1\frac{1}{4}$  mile, and \*Marblehead Rock on the larboard hand, which bears from Half-way rock W.  $\frac{1}{4}$  N. distant two miles. Black Rock bears from Half-way Rock N. W. by W. distant  $1\frac{1}{4}$  mile. Cat Island Rock and Point Neck bear east and west of each other, distant about one mile.

\* On Marblehead rock is erected a monument, painted white at the bottom and black at the top, being about 8 feet in the base, and 15 in height. Strangers will observe that the course from Half-way rock to Marblehead fort is W. by N.  $\frac{1}{4}$  N. 3 miles distance, leaving the beacon which is placed on Cat Island rock on the starboard hand, and the monument on the larboard hand; the monument bears from the beacon W. by S.  $\frac{1}{4}$  S. distance seven-eighths of a mile.

Vessels being up in Boston Bay, may, by bringing Boston light to bear S. S. W. run N. N. E. for Marblehead Rock—they are distant from each other about 12 miles. Half-way Rock and Boston light bear of each other S. W. and N. E. distant 15 miles.

Hardy's Rocks are covered at high water, and may be seen at quarter ebb. Whale's Back is covered at high water, and may be seen at quarter ebb. Gale's Rocks have but 4 feet water at low tides, and bear N. E. by E.  $\frac{1}{2}$  E. from the lights, distant  $1\frac{1}{2}$  mile. The south breakers, off Baker's Island, are always covered. The Brimbles are covered at high water, and are seen at half tide. Black Rock is always out of water, but low. Cat Island Rock, Half-way Rock, Marblehead Rock, Gray's Rock, and Pope's Head are large, and high above water. Half-way rock is very hold all round it. Eagle Island is bold only on the south and east; from the N. E. part of it, quite to Hardy's Rocks, is very shoal water, and no passage for ships.

### *Bearings and distances of the principal Islands, Rocks, &c. in the vicinity of Salem, from Baker's Island lights.*

The lights bear from each other N. W. $\frac{1}{2}$ W. and S. E. $\frac{1}{2}$ E. 40 feet distant.	
Eastern point of Cape Ann bears . . . . .	E. by N. $\frac{1}{2}$ N. $7\frac{1}{2}$ miles distant.
Gale's Ledge, which has a white Spar Buoy on the S. W. end, and on which are 5 feet water, low tide . . . . .	N. E. by E. $\frac{1}{2}$ E. $1\frac{1}{2}$ mile do.
House Island, at the mouth of Manchester Harbour . . . . .	N. N. E. 1 mile do.
Saube's Ledge in Manchester . . . . .	N. $\frac{1}{2}$ W. $\frac{3}{4}$ mile do.
East part of Whale's Back . . . . .	N. by E. $\frac{3}{4}$ mile do.
Pilgrim's Ledge (13 feet low common tides) . . . . .	N. E. $1\frac{1}{2}$ mile do.
Great Misery . . . . .	N. by W. $\frac{1}{2}$ W. 1 mile do.
Misery Ledge (has 8 feet at low tides) . . . . .	N. W. by W. $\frac{1}{2}$ W. $1\frac{1}{4}$ mile do.
South part of Little Misery . . . . .	N. W. $\frac{1}{2}$ N. $\frac{3}{4}$ mile do.
Whale's Back (comes out at two-thirds ebb) . . . . .	N. by E. $\frac{1}{2}$ E. $\frac{3}{4}$ mile do.
Bowditch's Ledge . . . . .	W. N. W. $1\frac{1}{4}$ mile do.
North part of Hardy's Rocks . . . . .	W. $\frac{3}{4}$ N. $\frac{1}{2}$ mile do.
North part of Haste Rock . . . . .	W. $\frac{1}{2}$ N. $2\frac{1}{2}$ mile do.
South part of Coney Island . . . . .	W. $\frac{1}{2}$ S. $2\frac{1}{2}$ mile do.
Nagus Head, or Marblehead shore . . . . .	W. $\frac{1}{2}$ S. do.
Gray's Rock . . . . .	W. by S. $\frac{1}{2}$ S. $2\frac{1}{2}$ miles do.
North part of Eagle Island . . . . .	W. by S. $\frac{1}{2}$ S. $1\frac{1}{4}$ mile do.
South part of Marblehead neck . . . . .	S. W. by W. $\frac{1}{2}$ W. do.
North part of Cat Island . . . . .	S. W. by W. 2 miles do.
Middle of Pope's Head . . . . .	S. W. by W. $\frac{3}{4}$ mile do.
North part of Western Gooseberry . . . . .	S. W. $\frac{1}{2}$ S. $\frac{3}{4}$ mile do.
South Gooseberry . . . . .	S. S. W. $\frac{1}{2}$ W. $\frac{3}{4}$ mile do.
Satan or Black Rock . . . . .	S. W. by S. $1\frac{1}{2}$ mile do.
Eastern Gooseberry . . . . .	S. S. W. $\frac{1}{2}$ W. $\frac{3}{4}$ mile do.
Half-way Rock . . . . .	S. $\frac{1}{2}$ E. 2 miles do.
South Breakers of Baker's Island . . . . .	S. E. by S. $2\frac{1}{4}$ miles do.
Archer's Rock, on which is a spar buoy, painted red, has 7 feet at low tides . . . . .	S. W. by W. $\frac{1}{2}$ W. $2\frac{1}{2}$ miles do.

Outer Breakers, known generally by the name of Outer, Middle, and Inner Breakers; this is a very extensive and dangerous shoal, extending from Searl's Rocks, in a S. E. direction, about two miles, and in a westerly direction about three-quarters of a mile, bearing from the lights S. E.  $\frac{1}{2}$  S. to S. S. E.  $\frac{1}{2}$  E.  $2\frac{1}{2}$  miles; to pass to the eastward of this dangerous shoal, have the northern or low light a little open to the eastward of the high light.

Searl's Rocks, a small part comes out of water at low spring tides, and bears from the south light S. E. three-eighths of a mile distant, and from the S. E. points of Baker's Island S. E. distant a small one-fourth of a mile. There is a good channel between the island and Searl's Rocks, by keeping the island best on board, say at the distance of 30 to 40 fathoms; in this channel is 3 to 5 fathoms water, at low common tides.

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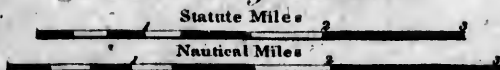
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# **BOSTON HARBOUR**

*From the Survey of A. S. Wadsworth Esq. U.S.N.*

*and the Chart of Don Quieres.*



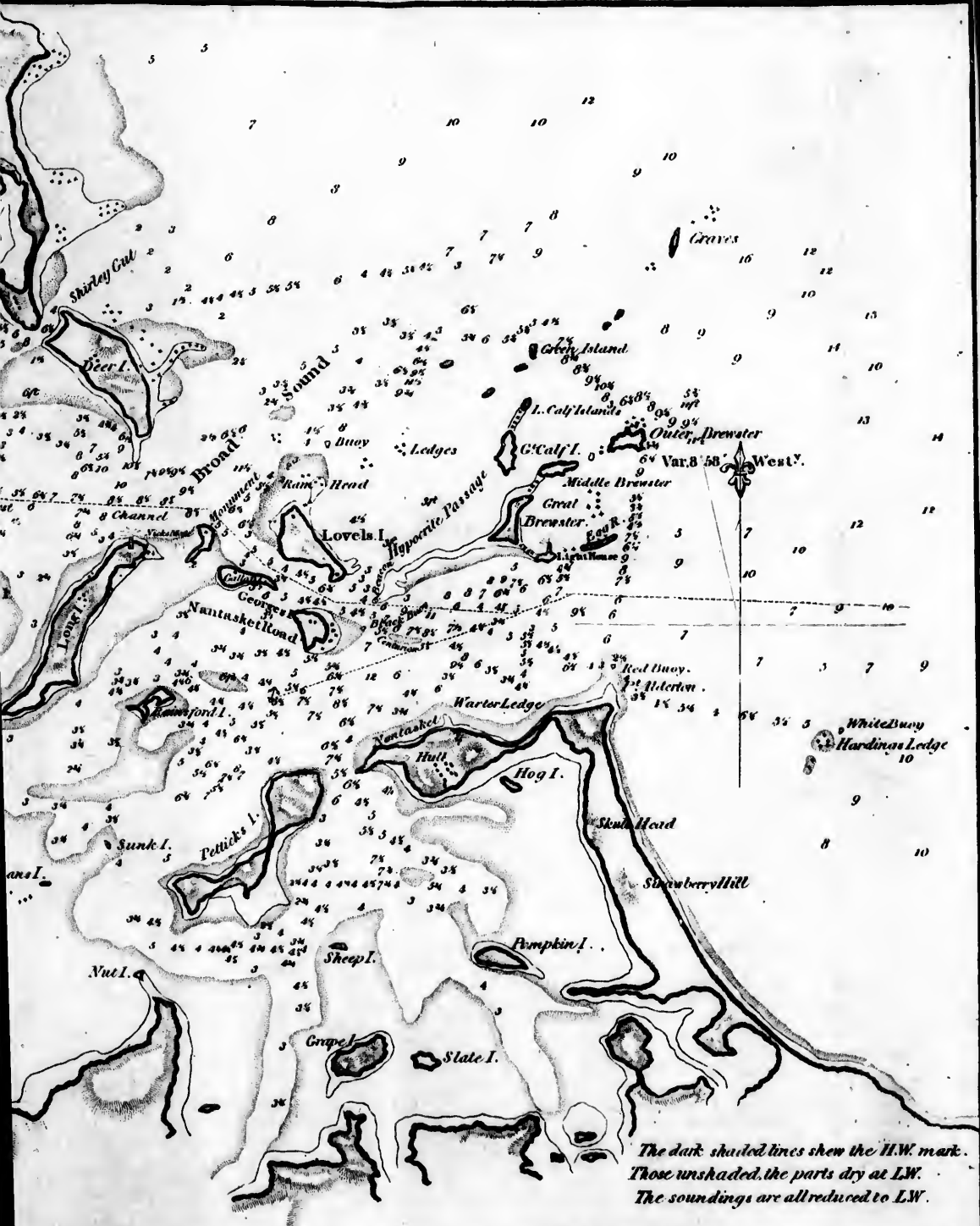
*Common tides rise 10 feet. Spring tides 13 feet.  
though frequently varied by the winds.  
High water at full & Change at XI. 1/2.*

*Engraved by D. R. Harrison.*

*Drawn by E. Blunt.*

*Published by E. & G. W. Blunt New York.*







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*Directions for sailing into Boston Harbour.*

From \*Cape Ann to Boston light-house, the course is S. W.  $\frac{1}{2}$  distance 2½ leagues. After making the light, with the wind fair, you will bring it to bear W. by N. or W. N. W. and then run for it, till you come within two cable's length of it. If the weather is bad, and you cannot get a pilot from the light-house, after running abreast of it so as to bring it to bear N. by E. you may run W. by S. about 1½ mile to Nantasket Road, where you may anchor in from 7 to 5 fathoms, in safety.

The main entrance into Boston Harbour lies between †Light-House Island on the north side, and Point Alderton on the south, (off which lies a shoal, as described in the Plate, to which the reader is referred.)

To work into Boston Bay, you may stand to the southward till you bring the light to bear W. N. W. and to the northward till you bring it to bear W. S. W. till you come within one league of the light; then you must not stand to the northward any farther than to bring it to bear W. by N. and to the southward, to bring it to bear W. N. W. You may anchor in the bay with safety if the wind is off shore. If you fall to the southward of Boston Harbour, be careful to avoid Cobasset Rocks, which lie above water some distance from the land, say from 1½ to 2 roiles; the outer part of which, called Minot's Rock, has a black buoy on it, that lies in 5 fathoms water, which you leave on your larboard hand. This rock comes out of water at low common tides, and bears from Boston light-house S. E.  $\frac{1}{4}$  E. 9 miles. Your course from this buoy to the light-house is N. W. by W. distant 3 leagues. In running the above course and distance, you will pass a white buoy which lies in 4 fathoms water, that is on the N. E. part of Harden's Rocks, and bears S. E.  $\frac{1}{4}$  S. from the light-house, distant 1½ leagues, which rocks may be seen two hours before low water, that you also leave on your larboard hand. There is another buoy on your larboard hand, which is red, that lies in three fathoms water on †Point Alderton. When in the middle of the light-house channel, steer W. by N. one mile distant, to the beacon on the Spit, which you may run within one-quarter of a cable's length of, leaving it on your starboard hand, opposite to which lies a black buoy in 2 fathoms water, on George's Island Rocks. Between the light-house and George's Island lies a rock, having a black buoy on it, called the Centurion, in mid-channel, with 14 feet water on it, bearing from the light-house W. S. W. Your course from this to Gallop's Island Point, is N. W. by N. half a mile distant. From thence

\* We must here remark the necessity of every commander's making himself acquainted with the different light-houses on the American coast, and on first appearance know at once his situation, as an error may be attended with disastrous consequences; which was the case in Nov. 1826, when a fine brig of 314 tons, was lost, with one of her officers and a seaman, by mistaking SCITUATE LIGHT for BOSTON LIGHT. The Capt. says, "he made Cape Ann light, bearing N. two or three leagues distant, on Tuesday, at 6 o'clock, P. M. run W. made Salem lights, soon after run S. W. made a light ahead, supposed Boston, thinking Boston a standing light, continued the course until within about 6 miles, then run southerly until the light bore W. by N. then run W. until she struck near the light."

† Boston light-house is situated on an island at the entrance of the harbour. The lantern is elevated 82 feet above the level of the sea, and contains a revolving light, which may be seen 9 or 10 leagues distance. When at the distance of 7 or 8 leagues, the time of darkness will be twice that of light; as you approach it, the time of darkness will decrease, and that of light increase, until you get within three leagues of it, when the light will not wholly disappear, but the greatest power of light will be to the least, as 44 to 1. Two huts are erected at Long Beach (on Nantasket) for the accommodation of shipwrecked seamen.

‡ Remarks on the single rock that lies off the north part of Point Alderton, viz. The rock on with the first fence that runs over the east side of Strawberry Hill—Newcomb's barn (on Gallop's Island) half way between the light-house on Long Island and the Beacon on the Spit. When Newcomb's barn is on with the beacon, you pass just to the north of this rock, on the north of which the buoy is placed, and near it.

§ Marks for a Shoal in Light-house Channel.—The east low point of Gallop's Island just seen clear of the N. E. of George's Island: the buoy on the Centurion just clear to the north of the Great Brewster: this is something of a shoal; on it, at low water, are 12 to 13 feet. Mr. Wilson, Pilot for Boston Harbour, struck on this shoal in a ship drawing 14 feet 9 inches water. Then the tide had flowed about three-quarters of an hour.

White buoy  
Harden's Ledge  
10

the H.W. mark.  
dry at L.W.  
used to L.W.

San Eng. by Hatch.

through the narrows, by Nick's Mate, your course is N. N. W. half a mile distant. Nick's Mate has a monument on it, and must be left on your larboard hand, one cable's length distant, and then steer W. by N. for Castle Island, distant 4 miles. In running W. by N. from Nick's mate, you will first leave a white spar buoy on the Lower Middle, on your starboard hand, distant 3 miles from Nick's Mate; then, three-quarters of a mile distant, you will see a white buoy, which is on the Castle Rocks in two fathoms, which you leave on your larboard hand. When abreast of the Castle, steer N. N. W. one quarter of a mile, to clear the Upper-Middle Ground, which has a black buoy on it in two fathoms water, that you leave on your larboard hand; if the buoy should be removed, run N. N. W. till you bring the two northernmost steeples in Boston a handspike's length open, then steer N. W. by W.  $2\frac{1}{2}$  miles, which will carry you opposite the town.

Broad Sound, which is the north entrance of Boston harbour, is not a proper channel for large vessels; but those who frequent it, will follow the directions here given: when up with the Graves, which are a parcel of dry rocks that appear white, you must leave them on your larboard hand, two cable's length distant, then bring them to bear S. E. and run S. W. by W. 4 miles, when you will be up with Long Island light, which is elevated on a tower 20 feet, on which is a lantern 7 feet high, bearing from the old light-house, W.  $\frac{1}{2}$  N. It is lighted with 10 patent lamps. You leave it on your larboard hand.

In passing from the Graves to Long Island light, you will see two buoys on your larboard hand, one of which is on a reef called the Devil's Back, is painted red, and lies in 4 fathoms water; the other is on Ram's-head bar, painted black, and lies in 15 feet water on the N. E. end, bearing from Long Island light E. N. E.; you will also pass a white buoy on your starboard hand, which lies on the N. E. point of Faun bar, in  $2\frac{1}{2}$  fathoms, (at which time Long Island head light will bear S. W.) when you must follow the directions above, for the town.

A black buoy with a white vane, has been placed near to the Barrel Rock, which lies in the Broad Sound channel, at the entrance of Boston harbour. The buoy is moored about 7 fathoms N. E. from the rock, in  $3\frac{1}{2}$  fathoms water, about  $\frac{1}{2}$  mile W. by S. from the body of the Graves, one-half mile N. W. from the Devil's Back, W. N. W. from the house on Green Island, and N. E.  $\frac{1}{2}$  E. from the tree on Long Island head. This rock is 10 or 12 feet long, and 5 or 6 feet wide, ranging N. N. W. and S. S. E. having 4 or 5 feet of water upon it at low tide, and  $3\frac{1}{2}$  fathoms round it. Vessels may pass with safety either side of the buoy, giving it a birth of 12 or 15 fathoms, but the eastern passage is said to be preferable for strangers.

The Lower Middle Ground lying in the way, the directions are as follows, viz.

The *Lower Middle Ground*, which lies on the north side of the channel, a little above Spectacle Island, is in part dry at low water. On the eastern part is a red buoy, and on the western part is a black buoy, in two fathoms water, both which you leave on your starboard hand; at which time you may see the white buoy on the Castle rocks, before mentioned.

Puttling point, or Shirley gut entrance, is between Faun bar and Winship's bar. You must bring it to bear S. W. and run for it, leaving Shirley point on the starboard, and \*Deer Island on the larboard hand. The channel from this gut to Boston is so crooked and narrow, that no person should attempt to go in with a large vessel, unless acquainted, without a pilot.

### *Directions for the Hypocrite Passage, in to the Narrows.*

Coming from sea, you leave the *Graves*, †*Roaring Bull*, *Green Island*, and *Half*

\* In consequence of part of Deer Island's washing away, a shoal is made off from the S. or S. W. point, in about a W. S. W. direction, called the *Handkerchief*, about 40 or 50 fathoms long, ranging about E. N. E. and W. S. W. It is covered at high water, but dry at very low tides, which makes it dangerous for vessels coming in and going out through *Broad Sound*. A black buoy is now placed near the point, which must, in passing, be left to the northward, when passing through *Broad Sound*.

† The *Roaring Bull* lies between the west end of the *Graves*, and the east end of *Green Island*.

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Beac  
East  
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Light

South  
Pig I  
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Tink  
Bake  
East  
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North

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to fall

\* Cap  
On the  
up. (F

*Tide Rocks*, on your starboard, and the *Outer Brewster*, *Little* and *Great Calf Island*, on your larboard hand. [NOTE.—*Half Tide Rocks* lie to the west of *Green Island*, one third of a mile, and opposite *Little Calf Island*, distant about half a mile,] and come out at half ebb.

Giving the *Graves* a birth of one quarter of a mile, the course up for *Little Calf Island's* N. E. point is about W. by S. distant  $1\frac{1}{2}$  mile from the *Graves*. As you pass up, give the south side of *Green Island* a birth of one quarter of a mile to avoid a ledge of rocks that runs off from the south side of the island, about one-eighth of a mile. When nearly up with the N. E. point of the *Little Calf*, give it a birth of about 40 or 50 fathoms, and after passing it, steer for the north point of the *Great Calf Island*, from the west end of which the course is S. W. or run up by it, keeping the S. W. head of *Pettick's Island* open to the west of the beacon on the spit. In passing between *Lovell's Island* and the beacon on the spit, keep nearest the island, as a ledge of rocks extends from the spit from 60 to 80 fathoms, and comes out of water at half-ebb, lying about one-third of a mile N. E. from the beacon. There is also a ledge (or rock) lying about midway between the beacon and S. E. point of *Lovell's Island*, having 8 feet on it at low spring tides. After passing the beacon, you enter the Narrows. *Lovell's Island* makes the east side of the entrance to the Narrows.

#### Marks taken on shore, at the old Light-House.

White buoy of Harden's Rocks . . . . .	S. E. $\frac{1}{4}$ S.
Red buoy on Point Alderton . . . . .	S. S. E.
Black buoy on the Centurion . . . . .	W. S. W.
Black buoy on George's Island rocks, . . . . .	W. by S. $\frac{1}{4}$ S.
S. E. head of George's Island . . . . .	W. by S. $\frac{1}{4}$ S.
Beacon on the spit . . . . .	W. $\frac{1}{4}$ S.
East head of Pettick's Island . . . . .	S. W. by W.
Outer rocks of Cohasset . . . . .	S. E. by E. $\frac{1}{4}$ E.
Light-house on Long Island Head . . . . .	W. $\frac{1}{4}$ N.

#### Bearings of sundry places from the East Head of Nahant.

South side of Nahant Rock . . . . .	N. N. E. $\frac{1}{2}$ E.
Pig Rocks (south dry rocks) . . . . .	N. E. $\frac{1}{4}$ E.
Half Way Rock . . . . .	N. E. by E.
Tinker's Island (south point) . . . . .	N. E. $\frac{1}{4}$ E.
Baker's Island Lights . . . . .	N. E. $\frac{1}{4}$ E.
East end of the Graves . . . . .	S. by E. $\frac{1}{4}$ E.
Long Island Light House . . . . .	S. W. $\frac{1}{4}$ S.
North point of Deer Island . . . . .	S. W.

Vessels outward bound, from Boston light-house, who would wish to fall in with \*Cape Cod, the course is S. E. by E.  $\frac{1}{4}$  E. distant 11 leagues; thence three leagues to the light-house. When up with the light-house, and it bears S. W. two leagues distant, you may then steer S. S. E. which will carry you out of the south channel.

Vessels in Boston Bay, who put away for Cape Cod harbour, must endeavour to fall in with Race Point light-house, which contains a *revolving light*, and run

\* Cape Cod is low and sandy land. Cape Ann is middling high, with many trees on it. On the latter is a remarkable land, called Pigeon Hill, which appears like a boat bottom up. (For description of Cape Cod light, see page 68.)



for it until within half a mile; when it bears E. N. E. haul up E. S. E. or as near as the wind will permit, and anchor in from 10 to 4 fathoms, in *Herring Cove*, where is a good lee, with the wind from N. N. E. to S. E. by E. Should the wind shift to the N. W. Provincetown Harbour is under the lee, to which we refer. (See page 69.) Should you first make Cape Cod light, bring it to bear E. by N. and run for it until you have soundings in 14 or 15 fathoms water, then steer N. E. until the light bears E. by S. then run in N. W. for the harbour. The course from Boston light-house to Sandwich, is first S. E. by E. 3 leagues to Cohasset rocks, thence to Sandwich S. S. E. 14 leagues.

When between Cape Ann and Cape Cod, you will have 95 to 119 fathoms water, which latter sounding is within 2 leagues of Boston light-house; the quality of the soundings is more to be depended on than the depth of the water. As you will find a difference of 5 or 6 fathoms in running a cable's length, you will observe that the quality of soundings is rough on Cape Ann side, and sandy on Cape Cod.

At full and change, it is high water off Race Point at 10 o'clock and 45 minutes. Vessels in leaving Cape Cod, bound to Boston, should calculate the tide, as the flood sets strong to the S. W. off Cape Cod, from the Race to Chatham; flood sets to the south; ebb to the north; southern tide, 9 hours; northern tide, 8 hours.

N. B. The upper buoys in Boston Harbour will be taken up during the winter season; but those in the vicinity, including Salem and Cape Ann, are not taken up during the winter. (See the Plate.)

#### *Directions from Boston light-house to \*Cape Elizabeth.*

From Boston light-house to Thatcher's Island lights, which lie two miles east from Cape Ann, the course is N. E.  $\frac{1}{2}$  N. and the distance  $8\frac{1}{2}$  leagues; but to clear the Londoner, which you leave on your larboard hand when bound to Cape Elizabeth, the course is N. E. by E. About half way, and near the north shore, is a high bold rock, called Half-way rock, of about 30 fathoms diameter, (on which is a monument) bearing S. W. by W. distant  $7\frac{1}{2}$  miles from the eastern point of Cape Ann, before described, (page 58.)

From Thatcher's Island E. S. E. one-half of a mile, lies a ledge of rocks, called the Londoner, which show themselves at half tide, and extend E. N. E. and W. S. W. distant two miles from the island. If you should be forced to the northward of Cape Ann, there is a very clean bay, called Ipswich bay, and north-east from it lies the harbour of Portsmouth, the entrance to which is formed by Great Island on the west, and Gerrish's Island on the east, on the former of which the town of Newcastle is built. (See page 43.)

From Cape Ann lights to the Isles of Shoals, the course is N.  $\frac{1}{2}$  E. distant  $6\frac{1}{2}$  leagues. These Isles are low and level, and near two miles in length. South from their west end, half a mile distant, lies a rock, which may be seen at half tide, and by giving the west end of these islands a birth of  $1\frac{1}{2}$  mile, a N. by W. course will carry you to the entrance of Portsmouth harbour, 9 miles distant. The southernmost of these islands has a light-house on it, as fully described in page 44.

Strangers should never attempt to go round the east end of these islands; but if driven thereto, give them a birth of half a mile and steer N. W. by N. which will carry you to Portsmouth. North-east from the east end of these islands, 4 miles distant, lies York ledge, which is always to be seen, and extends N. E. and S. W. two miles. From York ledge to Boon Island light the course is E. N. E. distant 9 miles. From Boon Island light to Boon Island rock, (on which the sea always breaks) the course is east, and the distance 3 miles. From Boon Island light to Wood Island light, the course is N. N. E. distant 12 leagues, and from thence to Cape Elizabeth the course is N. E.  $\frac{1}{2}$  E. distant 4 leagues.

\* On Cape Elizabeth two light-houses are to be built, but when they will be completed, is at present unknown. June, 1827.



*Directions for sailing in and out of Boston Bay, from Cape Cod or Cape Ann, to Boston light-house.*

Boston light-house, as before-mentioned, (page 61) stands on a small island at the entrance of the channel, and is about 82 feet high, including the lantern. To steer for it from Cape Cod, when in 5 fathoms, off \*Peaked Hill bar, your course is N. W. by W.  $\frac{1}{4}$  W. 14 leagues. Should it be thick weather, and you should fall in with the south shore of Scituate in 15 fathoms, steer north till you get in to 16 fathoms, when Boston light will bear W. N. W.

From the Race Point light-house to Boston light-house, is about 11 leagues. From Cape Ann lights to Boston light, the course is S. W.  $\frac{1}{4}$  S. distant  $8\frac{1}{2}$  leagues.

There are two lights on Thatcher's Island. This island contains about 30 acres of land, secured by an iron-bound shore, and is situated about two miles east of the main land of Cape Ann. It affords no harbour, nor is there any safe anchorage very near it. There is a passage between that and the main, through which small vessels may pass even at low tide, but the water is shoal, and the bottom covered by a collection of large round stones. The light-houses were erected there for the benefit of vessels coming in from sea, as well as for those coasting around the shores. As soon as these lights are discovered, they can know their real situation; for being *two lights*, they cannot be taken for the *single revolving light* at Boston harbour, or for the *Plymouth lights*, where there are also *two*, but the distance between them is only 11 feet 6 inches, while the distance between those on Thatcher's Island is about one-third of a mile, and can be brought to range one with the other when you are abreast of the island, and bear N. by E.  $\frac{1}{4}$  E. and S. by W.  $\frac{1}{4}$  W. from each other, and those on Plumb Island bear E. by N. and W. by S. from each other. The lights on Thatcher's island are of great use to all vessels in their passage in or out, as they point out the situation of the Salvages on the north, and the Londoner on the south. Besides, from the different bearings of the lights, a safe departure may be taken to the different harbours in the bay, as well as for those bound northerly and to sea. For remarks more minute, you will find them in the directions for sailing to Boston light (page 61) to Baker's Island lights (page 56) and to those on Plumb Island, at the mouth of Newburyport harbour (page 46.)

Var.  $6^{\circ} 30'$  W.

*Directions for †Scituate harbour.*

The light-house at the entrance of Scituate harbour was erected more for the benefit of foreigners, who fall into the bay southward of Cohasset rocks, and as a guide to southern coasters to avoid Cedar point, which is flat, and projects into the bay beyond the cliffs, than for any advantages to be derived from the harbour, which is small, having only about 12 feet water on the bar at high water middling tides. Scituate light-house is four miles to the southward of Cohasset rocks, elevated thirty feet above the level of the sea, showing *two lights*, one above the other, the lower one *red*, and the upper one *white*, distinguishing it from Boston light, on the north, which is a *revolving light*, and Plymouth lights on the south, which show *two lights* (or lanterns on the same building.)

From the body of the light-house, the northerly part of Cedar point, and a ledge called Long ledge, extends N. N. W. nearly one mile; so that vessels fall-

\* *Remarks by Capt. Trevett, off CAPE COD.*—"Being well in with the land, when the light-house on the Highlands was abeam, we steered N. W. by W. about two leagues, which brought us up with Peaked Hill bar; then W. S. W. 3 leagues, which brought us up with Race Point; then steered S. S. E. for Wood End point, about 3 leagues, or until we got the light on the Highland to bear E. by N. then run E. by N. about 4 miles, to good anchorage.

† Scituate light-house is erected on Cedar point, which makes the north chop of the harbour, the first cliff, (so called) making the south chop. There are four of these cliffs extending towards the south main, the southernmost of which being the highest, was considered the most suitable site for the light-house which will, we hope, prevent a repetition of a similar disaster to the one mentioned in note to page 61, and in consequence of which the alteration of the lights at Scituate, took place September 1, 1827.

lag in a little more than one mile northward of the light, may bring the light to bear south; and if they make good their course north, they will clear the outer ledges of Cohasset rocks: half a mile east of the body of the light will clear Cedar point, Long ledge, and the first Cliff ledge.

[NOTE.—There are ledges extending from all the four cliffs, but none between them; and half a mile from the shore will clear all, except frigates and large vessels.]

From the body of the lights, running S. S. E. will clear Branche's point, consequently, giving the lights half a mile birth, there will be no danger in running S. S. E.

There is a passage within Cohasset rocks, used by coasters, which is found by giving the lights half a mile birth, and running N. W. by N. to the southerly entering rock.

There is a meeting-house about two miles W. by N. from the lights; and a farm-house near the north-west side of the harbour, with two large barns a little north. To go into the harbour (the mouth of which is about one-third of a mile wide) bring the meeting-house or farm-house to bear about W. by N. from the middle of the entrance of the harbour, and run in W. by N. for the farm-house, until you have passed the bar, which is a hard bed of stones and gravel that does not shift; and after passing the bar, and coming on sandy bottom, haul up and anchor near the beach on the south side of the harbour.

### *Directions for \*Plymouth Harbour.*

The high land of the Monument bears from the lights S.  $\frac{1}{4}$  W. 3 miles, and † Monument point S. S. E. 3 leagues, and Branche's point N.  $\frac{1}{4}$  W. about 3 leagues, Saquash head W.  $\frac{1}{4}$  S. 3 miles, the easternmost part of Brown's Islands or shoal that dries, S. S. W.  $1\frac{1}{4}$  mile, and the Gurnet rock from the body of the light-house E. by S.  $\frac{1}{4}$  S. one-third part of a mile; on this rock you have but 3 feet at low water, at which time all the soundings were taken, and  $3\frac{1}{4}$  fathoms along side at the same time. A white buoy is placed near this rock, bearing E. S. E. from the light-house, distant about one-third of a mile. When you have shut in the Sandy hill with the Gurnet head, you are clear of the rock; after which you must mind not to haul in too close to the head, as there are many sunken rocks some distance from the shore. When you bring Saquash head to bear W. by N. you may then steer up W. by S. and if you are bound for Plymouth, you must keep that course for a large red cliff on the main, which is a very good mark to carry you clear of Dick's flat; then you must steer more southerly for Beach point, or run up until you are abreast of Saquash head, giving it one-quarter of a mile distance; then steer W. by S.  $\frac{1}{4}$  S. which will clear you of Dick's flat, and carry you directly for Beach point, keeping within 15 or 20 yards of the Sandy point, steering away for the southward, keeping that distance until you have shut in the lights, where you may anchor in 3 and 4 fathoms, but the

\* This harbour is capacious, but shallow, and is formed by a long and narrow neck of land, called Salt-house beach, extending southerly from Marshfield, and terminating at the Gurnet head, and by a smaller beach within, running in an opposite direction, and connected with the main land near Eel river, about 3 miles from the town. There are two light-houses on the Gurnet, which are about 86 feet above the surface of the sea, 15 feet apart, containing fixed lights, and cannot be brought into one, to the northward, unless you are on the shore: But to the southward you may bring them in one, which is a very good mark to clear you of Brown's Island or sand bank. On Salt-house beach is placed one of the huts erected and maintained by the Humane Society of Massachusetts, for the reception and relief of shipwrecked mariners. There is a breach in the inner beach, which exposes the shipping, even at the wharves, during an easterly storm. The Gurnet is an eminence at the southern extremity of the beach.

† Monument Bay (from which the point takes its name) is formed by the bending of Cape Cod. It is spacious and convenient for the protection of shipping.

channel is very narrow, having nothing but a flat all the way to Plymouth, except this small channel, which runs close by this neck of land: you will have 4 and 5 fathoms close to this point. If you are bound into the Cow-yard, you must steer as before directed, which will clear you of the stone monument on Dick's flat, and that on the Muscle bank, both which you leave on your starboard hand, when you may anchor in 7 or 8 fathoms water. If bound to Kingston, you will keep the house on Gurnet head just open with Saquash head, until you have opened the high pines with Clerk's Island; then you are clear of the Muscle bank, when you may steer N. W. until you have 3 fathoms at low water, not running into less.

In coming from the northward, bound into Plymouth, you must not bring the lights more southerly than S. by W. to avoid High Pine ledge, which lies north from the Gurnet head, about  $2\frac{1}{2}$  or three miles. When you are on the shoalest part of this ledge, some part of which appears at low ebbs, you will have the high pines in range with Captain's hill, which will then bear W. by S. This ledge of rocks lies  $\frac{1}{2}$  mile from the shore, extending about N. N. E. for near a mile, and close to this ledge you will have 4 and 5 fathoms, which deepens gradually as you run from it to the eastward: within one mile you will have 10 and 12 fathoms.

In coming from the southward, bound into Plymouth, you must not open the northern light to the westward, but keep them in one, which will carry you in 5 fathoms by the easternmost part of Brown's Islands or shoal, keeping that course until you are within half a mile of Gurnet head, or nigher, where you will have but 4 fathoms; then Saquash head will bear W. by N. a little northerly, and the two outermost trees on the head in one; then you may steer directly for them, until you bring the lights to bear E. N. E. and the house on Saquash head to bear N. W. just open with the first Sandy beach, where you may anchor in 4 fathoms in Saquash road, good clear bottom; but if you are bound for Plymouth, or the Cow-yards, you must steer as before directed. If in the night, it is best to anchor here, as it is difficult to make Beach point (as it is mostly covered at high water) if dark, or to go into the Cow-yard.

In turning into Plymouth, you must not stand to the northward into less than 3 fathoms, as it runs a flat a long way from the Gurnet head to Saquash; and from both the heads lies off a point of rocks a good way from the shore, many of them but just under water at low ebbs. And all the way from Saquash to the Muscle bank, you have shoal water; so that you must not stand in less than before-mentioned. And in standing over for the sands to the southward, you must go about as soon as you have shoalen your water to 4 fathoms, as it is bold to, and you may observe the rips, unless it is very smooth. This sand extends from abreast of the lights to Beach point, most of which is dry at low ebbs. From the easternmost part of this sand to Dick's flat, it rounds with a considerable sweep; you have but 5 fathoms water from the easternmost part of Brown's Island to the Gurnet head, and not more than 7 or 8 until you are abreast of Dick's flat, where you will have 13 or 14 fathoms in a deep hole, and then shoalen to 5 fathoms abreast of Beach point.

If you should fall into the southward of Brown's Islands or shoal, between them and the Monument land, where you have 20 fathoms in some places, you must not attempt to run for the lights, until you have them shut in one with the other, when they will bear N. N. W.  $\frac{1}{2}$  W.; if you do, you may depend on being on Brown's islands or shoals, as there is no passage for even a boat at low water.

In coming in from the northward in the night, you must not bring the light to bear more southerly than S. by W. to avoid High Pine ledge, and keep that course until you have them to bear N. W. or N. W. by W. when you will be clear of the rock, and may steer up W. by S. until you have the lights to bear E. N. E. where you had best anchor in the night. Here the tide runs strong channel course from the Gurnet to the Race point of Cape Cod; the course is E.  $\frac{1}{2}$  N. about 6 leagues distance; and from the Gurnet to the point going into Cape Cod harbour, is E. by S. 7 leagues.

If you should make the lights in hard northerly or N. W. winds, and cannot get into Plymouth, you may then run for Cape Cod harbour, bringing the

lights to bear W. by N. and steer directly for Race Point light, following the directions given for entering Provincetown harbour, by the *fixed light* on Long Point, and come to anchor. If it should blow so hard that you cannot turn up the harbour, you may anchor off the point, clear bottom; you have 8 and 9 fathoms very nigh the shore, so that there is no danger of being on it, unless very dark.

At the Gurnet and Plymouth, the tides are much the same as at Boston; that is, a S. E. moon makes full sea.

### *Directions for Cape Cod Harbour.*

If you wish to go into Cape Cod harbour, you may pass within half a mile of the light on \*Race Point. After passing it, bring it to bear N. N. W. and run S. S. E.; run until the light on the Highland bears E. by N.; then run for it 2 or 3 miles, when you will be clear of Wood End bar; then N. E. to bring the light on the Highland to bear E.  $\frac{1}{2}$  S. when haul up N. W. for the harbour, and anchor in 4 fathoms, when the light will bear E. by S.  $\frac{1}{2}$  S. 5 or 6 miles distant.

In going into Cape Cod harbour in the night, you may follow the above directions till the light on the Highlands bears E. by N. when you may run for it till you get into 5 fathoms, when you must steer N. W. for Provincetown, keeping same soundings, about 2 miles distant.

Good anchorage may be found in a N. E. gale, by running for Race Point light, giving it one-third of a mile distance as you pass it; as soon as it bears E. by N. haul up E. S. E. and anchor in from 10 to 4 fathoms.

Vessels inward bound, who fall in with the back of Cape Cod, may bring the light to bear S. W. 2 leagues distant, and then steer W. N. W. for Boston light-house, which contains a *revolving light*.

When up with Race Point, you will find it very bold about one mile to the westward of the light-house, and it may be known by a number of fish-houses on it. About one mile to the southward of Race Point is what is called Herring cove, where you may have good anchorage half a mile from the shore, the wind from E. to N. N. E. in 4, or even in 3 fathoms water.

In passing Race Point to the southward, you must give it a birth of one mile, as there is a long flat of sand that lies to the southward of said point. You must not haul to the eastward till you come near Herring Cove.

In running from Race Point to Wood End, after you pass the Black land or Hummocks, you will come up with a low sandy beach which forms the harbour, extending between two and three miles to Wood End, which is difficult to be distinguished in the night; it is very bold, and you will have 25 fathoms water within one quarter of a mile of the shore.

In beating into Cape Cod harbour, you must keep the eastern shore aboard until you get into 5 fathoms water. Stand no further to the westward than to bring the light to bear E. by S. as there is a long spit of sand runs off from the western shore, which being very bold, you will have 11 fathoms water within a stone's throw of the shore.

If it blows so hard that you cannot beat into the harbour, you will have good anchoring without, in from 10 to 15 fathoms water. Or, if it blows hard at N. E. bring Race point light to bear N. W. by N. and steer S. E. by S. 7 leagues, which course will carry you into Wellfleet. In steering this course, you will make

\* There is a light-house erected on the extreme point of Race Point, which contains a *revolving light* (on the same plan as Boston light) to distinguish it from the one on Highland of Cape Cod, but it cannot be seen from vessels coming from sea until it bears S. S. W.  $\frac{1}{2}$  S. when they run for it. The light is 25 feet above the level of the sea, and 155 feet from high water mark.

† The light-house is erected on land at the Clay Pounds (*high land of Cape Cod*) elevated about 150 feet, which, with the elevation of the lantern, makes the whole height 200 feet above high water mark. It contains a *fixed light*.

Harwich right ahead: When you open the bay, you will bring Billingsgate Island light on your larboard hand, when you may haul to the eastward, and anchor safe from all winds.

### *Directions for entering Provincetown Harbour.*

In running for this harbour, vessels may pass Race Point light within half a mile; then steer S. S. E. until the light on \*Long Point bears N. E. by N. which will clear Wood End bar; then steer for the light until within one-third of a mile, at which distance pass it; then haul up N. N. W. and anchor in from 3 to 5 fathoms water, low tides.

Beating into this harbour, vessels may stand towards the eastern shore, into 4 to 2½ fathoms, with gradual soundings; the western side is bold, having from 9 to 10 fathoms, close to Long Point.

### *†Billingsgate Island Light House,*

Is fitted up with eight Lamps and Reflectors. It is a *fixed light*, and situated so far up Barnstable Bay, that it cannot be mistaken for any other.

Billingsgate Island is about 13 feet above the level of the sea at high water, which, with the elevation of the lantern, makes the whole height 40 feet above high water mark. It is high water in this Bay, at the full and change of the moon, at 11 o'clock; the rise of the spring tides is from 12 to 14 feet; common tides 9 to 11 feet. From the west end of Billingsgate Island extends a long shoal of hard sand 10 or 11 miles, in a W. by S. ½ S. to W. by N. from the light-house, and in a N. W. to N. N. W. direction, 5 or 6 miles; at the distance of 1½ to 2 miles from the light, is about 8 feet at low water, common tides; and the meeting-house with a steeple in Brewster, S. by E; at the distance of five miles from the light-house, 10 to 12 feet, the meeting-house bearing S. S. E.; at the distance of 7 miles, 2½ fathoms of water, the meeting-house bearing S. E. by S.; at these depths of water the light-house bore from E. by N. to E. by N. ½ N. Crossing this shoal point of flats, you drop into 4 to 5 fathoms at the distance of 40 fathoms from the edge of this shoal, when the light-house will then bear E. N. E. Vessels drawing 12 feet of water, or upwards, should bring the light-house to bear E. N. E. to N. E. by E. and steer in E. by S. to E. S. E. until the light-house bears N. by W. when they will have good anchorage in 3 to 4 fathoms low water, common tides, soft muddy bottom, and distance from the light-house, 1½ to 1¾ miles; Brewster meeting-house on with a windmill that stands not far from it, when they will bear S. by W. ¾ W. also the north meeting house, that stands on a hill in Eastham, and no other building near to it, bore at the same time, E. ½ N.

The following bearings and distances taken from the light-house:—The high land of the North Point of the Monument, W. by N. ¾ N. distance about ten leagues; entrance of Barnstable, the Black Land, called by some Scargo hill, in Dennis, S. W. distance 16 miles, S. W. ½ S. about 11 miles, Brewster meeting-house with a steeple to it, S. by W. to S. 9 miles; entrance of Orleans, S. E. ¾ S. 6 miles; Eastham north meeting-house, S. E. by E. ¾ E. 4 miles; Silver Spring Harbour of Eastham, E. by N. ¾ N. 4 miles. The above places are all barred harbours, and flats extend off shore from 1 to 2 miles, with little water over them.

\* A light-house, containing a *fixed light*, has been erected on Long Point, at the entrance of Provincetown Harbour, and lies close to the Point.

† On Billingsgate Island a light-house is erected, which exhibits a *fixed light*.



A Rock that is in the passage way up to Wellfleet, that is about 12 feet long and 3 feet broad, called Bay Rock, on which is about 1 or 2 feet water at low tide, and round this rock is 9 to 11 feet water at low tide, bearing from the light-house E. by S.  $\frac{1}{4}$  S. distance  $1\frac{1}{2}$  mile. When on this Rock, Chipman's Windmill, which is the South mill in Wellfleet, a little open to the north of a large rock called Blue Rock, by some, and stands near the shore of Wellfleet, when it will bear N. N. E.  $\frac{1}{4}$  E.; this rock is covered at high water; and a Windmill on a hill in Eastham, over the salt mills, which is near the shore at Eastham, these bearing E. by S. from Bay Rock. The East point of the Horse Shoe bears from the light-house E. N. E. distant about one-third of a mile. On the south side of Billingsgate Island, the flats extend off the distance of  $\frac{1}{2}$  to  $\frac{3}{4}$  mile, having on them at low water, common tides, 6 to 9 feet water.

There is no meeting-house with a steeple to be seen to the eastward of Barnstable, but the one in Brewster; and this meeting-house is a good mark to pass over the Long Shoal Point that extends off from the light-house.

From the light-house on the Race Point of Cape Cod, when bearing E. N. E. the course to Billingsgate point of flats, is S. by E. distance 21 miles. Vessels drawing 12 feet water or upwards, should steer from the Race light-house, south, when distant from the Race, 1 or 2 miles.

### *Remarks on Barnstable Bay.*

From Center Hill point to Sauset inlet, is about 4 miles, bearing S.  $\frac{1}{4}$  E. This is a clean and bold shore, and may be approached at the distance of one-third to half a mile, carrying  $3\frac{1}{2}$  to 4 fathoms, sandy bottom. There is a bar of sand that lies parallel with the shore, near Center Hill point, extending to the southward, and terminating about three-quarters of a mile to the northward of Sausett. From the shore over this bar to 3 fathoms water, the distance is 240 to 250 fathoms, and the bar is from 100 to 140 fathoms wide, having on it from 9 to 11 feet water, and between that and the shore from 3 to  $3\frac{1}{2}$  fathoms. From the south end of this bar along shore to the entrance of Sandwich, is 3 fathoms, and distance 70 to 90 fathoms, sandy bottom, and regular soundings, as you approach the shore.

On the south side of Sausett inlet is a low rocky point of 90 fathoms. Three fourths of a mile off shore are 3 fathoms, and at the distance of  $1\frac{1}{2}$  or 2 miles, are 9 to 10 fathoms, muddy bottom.

Passing from Sandwich towards Barnstable, the flats run off shore 100 to 180 fathoms.

The soundings are reduced to low water; the neep tides 3 feet; common tides 9 to 10 feet; spring tides 12 to 13. High water in the bay at full and change of the moon, at 11 o'clock.

### *Directions for entering Barnstable Harbour.*

When coming from the northward, the bar must not be approached in less than 5 fathoms water, until the light-house on Sandy Neck bears S. W.  $\frac{1}{4}$  W. as there is a long bar makes out from the point 3 miles, in a N. E. direction, with a buoy on the eastern part of it, in 12 feet water, bearing from the light N. E.  $\frac{1}{4}$  E. 3 miles distant. When up with the buoy haul close round, leaving it on your starboard hand, and run about two cables' length S. S. W. to clear the S. W. part of the bar, then steer S. W. by W.  $\frac{1}{4}$  W. for about  $1\frac{1}{2}$  miles, or until the light bears S. W. by S. which will be the case when up with Yarmouth flats, then steer for the light. Be careful to make the above courses good, as the tide of flood sets strong over Yarmouth flats, and the ebb strong to the northward over

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the bar. Continue your course for the light until within a cable's length of the beach, and follow the shore round the point. There is safe anchorage inside, abreast of the light, against all winds, the light bearing from S. W. to N. E. in 5 to 2½ fathoms. In proceeding up to town, pass the point a cable's length, steer S. W. by W. ¼ of a mile, then W. by S. until the meeting-house bears south, when you will have good anchorage in 2½ fathoms.

There are from 6 to 7 feet water on the bar at low water, and from 2 to 3 fathoms in the channel.

Vessels drawing 8 feet water, may, at high water, bring the light to bear S. W. ¼ W. and run directly for it. Full sea at full and change, 11 o'clock.

*Description of the eastern coast of the county of Barnstable from Cape Cod, or Race Point, in lat. 42° 5' N. to Cape Malebarre, or the Sandy point of Chatham, in lat. 41° 34' N. pointing out the spots on which the Trustees of the Humane Society have erected huts, and other places where shipwrecked Seamen may look for shelter.*

The curvature of the shore, on the west side of Provincetown, and south of Race point, is called Herring cove, which is three miles in length. There is good anchoring ground here, and vessels may ride safely in four or five fathoms water, when the wind is from northeast to south-east.

On Race point stand about a dozen fishing huts, containing fire-places and other conveniences. The distance from these huts to Provincetown, which lies on Cape Cod harbour, is three miles. The passage is over a sandy beach, without grass, or any other vegetable growing on it, to the woods, through which is a winding road to the town. It would be difficult, if not impossible, for a stranger to find his way thither in the dark; and the woods are so full of ponds and entangling swamps, that if the road was missed, destruction would probably be the consequence of attempting to penetrate them in the night.

Not far from Race point commences a ridge, which extends to the head of Stout's creek. With the face to the east, on the left hand of the ridge, is the sandy shore: on the right is a narrow sandy valley: beyond which is naked sand, reaching to the hills and woods of Provincetown. This ridge is well covered with beach grass, and appears to owe its existence to that vegetable.

Beach grass, during the spring and summer, grows about two feet and a half. If surrounded by naked beach, the storms of autumn and winter heap up the sand on all sides, and cause it to rise nearly to the top of the plant. In the ensuing spring, the grass sprouts anew; is again covered with sand in the winter, and thus a hill or ridge continues to ascend, as long as there is a sufficient base to support it, or till the circumscribing sand, being also covered with beach grass, will no longer yield to the force of the winds.

On this ridge, half way between Race point and the head of Stout's creek, the Trustees of the Humane Society have erected a hut. It stands a mile from Pecked hill, a land-mark well known to seamen, and is about 2½ miles from Race point. Seamen, cast away on this part of the coast, will find a shelter here; and in north-east storms, should they strike to the leeward of it, and be unable to turn their faces to the windward, by passing on to Race point, they will soon come to the fishing huts before-mentioned.

At the head of Stout's creek the Trustees have built a second hut. Stout's creek is a small branch of East harbour in Truro. Many years ago there was a body of salt marsh on it; and it then deserved the name of a creek. But the marsh was long since destroyed; and the creek now scarcely exists, appearing only like a small depression in the sand, being entirely dry, and now principally covered with beach grass. The creek runs from north-west to south-east, and is nearly parallel with the shore on the ocean, from which it is at no great distance. Not far from it, the hills of Provincetown terminate; and should not the hut be found, by walking round the head of the creek, with the face to the west, the hills on the right hand, and keeping close to the shore on the harbour, in less than an hour the shipwrecked seaman would come to Provincetown. It is high water at Truro about 30 minutes sooner than at Boston.

The Humane Society, several years ago, erected a hut at the head of Stout's creek; but it was built in an improper manner, having a chimney in it, and was placed on a spot where no beach grass grew. The strong winds blew the sand from its foundation, and the weight of the chimney brought it to the ground, so that in January, 1802, it was entirely demolished.—This event took place about six weeks before the Brutus was cast away. If it had remained, it is probable that the whole of the unfortunate crew of that ship would have been saved, as they gained the shore a few rods only from the spot where the hut had stood.

The hut now erected stands on a place covered with beach grass. To prevent any accident

from happening to it, or to the other hut near Peaked hill, the Trustees have secured the attention of several gentlemen in the neighbourhood. Dr. Thaddeus Brown, and Capt. Thomas Smalley, of Provincetown, have engaged to inspect both huts, to see that they are supplied with straw or hay in the autumn, that the doors and windows are kept shut, and that repairs are made when necessary. The Rev. Mr. Damon of Truro, has also promised to visit the hut at Stout's creek twice or thrice a year; and the Rev. Mr. Whitman, of Wellfleet, distinguished through the country for his activity and benevolence, has undertaken, though remote from the place, the same charge.

From the head of Stout's creek to the termination of the salt marsh, which lies on both sides, and at the head of East harbour river, the distance is about  $\frac{1}{2}$  miles. A narrow beach separates this river from the ocean. It is not so regular a ridge as that before described, as there are on it one or two hills which the neighbouring inhabitants call islands. It may without much difficulty be crossed every where except over these elevations. By these hills, even during the night, the beach may be distinguished from those hereafter to be mentioned. It lies from N. W. to S. E. and is in most parts covered with beach grass. The hills have a few shrubs on the declivities next the river. At the end of the marsh the beach subdues a little, and there is an easy passage into a valley in which are situated two or three dwelling houses. The first on the left hand, or south, is a few rods only from the ocean.

The shore, which extends from this valley to Race point, is unquestionably the part of the coast the more exposed to shipwrecks. A N. E. storm, the most violent and fatal to seamen, as it is frequently accompanied with snow, blows directly on the land; a strong current sets along the shore; add to which, that ships, during the operation of such a storm, endeavour to work to the northward, that they may get into the bay. Should they be unable to weather Race point, the wind drives them on shore, and a shipwreck is inevitable. Accordingly, the strand is every where covered with the fragments of vessels. Huts, therefore, placed within a mile of each other, have been thought necessary by many judicious persons. To this opinion the Trustees are disposed to pay due respect, and hereafter, if the funds of the Society increase, new huts will be built here for the relief of the unfortunate.

From the valley above-mentioned the land rises, and less than a mile from it the high land commences. On the first elevated spot (the Clay Pounds) stands the light-house, which contains a fixed light, which every navigator should impress on his mind. The shore here turns to the south; and the high land extends to the table land of Eastham. This high land approaches the ocean with steep and lofty banks, which it is extremely difficult to climb, especially in a storm. In violent tempests, during very high tides, the sea breaks against the foot of them, rendering it then unsafe to walk on the strand, which lies between them and the ocean. Should the seaman succeed in his attempt to ascend them, he must forbear to penetrate into the country, as houses are generally so remote, that they would escape his research during the night; he must pass on to the valleys, by which the banks are intersected. These valleys, which the inhabitants call hollows, run at right angles with the shore: and in the middle, or lowest part of them, a road leads from the dwelling-houses to the sea.

The first of these valleys is Dyer's hollow,  $\frac{1}{2}$  mile south of the light-house. It is a wide opening, being 200 rods broad, from summit to summit. In it stands a dwelling-house, a quarter of a mile from the beach.

A mile and a half south of Dyer's hollow, is a second valley, called Harding's hollow. At the entrance of this valley the sand has gathered, so that at present a little climbing is necessary. Passing over several fences, and taking heed not to enter the wood on the right hand, at the distance of three-quarters of a mile a house is to be found. This house stands on the south side of the road; and not far from it, on the south, is Pamet river, which runs from east to west through a body of salt marsh.

The third valley, half a mile south of Harding's hollow, is head of Pamet hollow. It may with ease be distinguished from the other hollows mentioned, as it is a wide opening, and leads immediately over a beach to the salt marsh at the head of Pamet river. In the midst of the hollow the sand has been raised by a brush fence, carried across it from north to south. This must be passed, and the shipwrecked mariner will soon come to a fence which separates what is called the road from the marsh. If he turns to the left hand, or south, at the distance of a quarter of a mile, he will discover a house. If he turns to the right hand, at the distance of half a mile, he will find the same house which is mentioned in the foregoing paragraph.

The fourth opening, three-quarters of a mile south of Head of Pamet, is Brush valley. This hollow is narrow, and climbing is necessary. Entering it, and inclining to the right, three-quarters of a mile will bring seamen to the house, which is situated at the head of Pamet. By proceeding straight forward, and passing over rising ground, another house may be discovered, but with more difficulty.

These three hollows, lying near together, serve to designate each other. Either of them may be used: but Head of Pamet hollow is the safest.

South of Brush valley, at the distance of 3 miles, there is a fifth opening, called Newcomb's hollow, east of the head of Herring river in Wellfleet. This valley is a quarter of a mile wide. On the north side of it, near the shore, stands a fishing hut.

Between the two last valleys the bank is very high and steep. From the edge of it, west, there is a strip of sand, 100 yards in breadth. Then succeeds low brush-wood, a quarter of a mile in width, and almost impassable. After which comes a thick, perplexing forest, in which not a house is to be discovered. Seamen, therefore, though the distance between these two valleys is great, must not attempt to enter the wood, as in a snow storm they would undoubtedly perish. This place, so formidable in description, will however lose somewhat of its terror, when it is observed, that no instance of a shipwreck on this part of the coast is recollected by the oldest inhabitants of Wellfleet.

Half a mile south of Newcomb's hollow, is the sixth valley, called Pearce's hollow. It is a small valley. A house stands at the distance of a little more than a quarter of a mile from the beach, W. by S.

The seventh valley is Cohoon's hollow, half a mile south of Pearce's hollow. It is not very wide. West from the entrance, several houses may be found at the distance of a mile. This hollow lies E. by N. from Wellfleet meeting-house.

Two miles south of Cohoon's hollow, the eighth valley is Snow's hollow. It is smaller than the last. West from the shore, at the distance of a quarter of a mile, is the county road, which goes round the head of Blackfish creek. Passing through this valley to the fence, which separates the road from the upland and marsh at the head of the creek, a house will immediately be found by turning to the right hand, or north. There are houses also on the left, but more remote.

The high land gradually subsides here, and  $1\frac{1}{2}$  mile south terminates at the ninth valley, called Fresh Brook hollow, in which a house is to be found a mile from the shore, west.

The tenth,  $2\frac{1}{2}$  miles south from fresh Brook hollow, is Plumb valley, about 300 yards wide. West is a house, three quarters of a mile distant. Between these two valleys is the table land. After this there is no hollow of importance to Cape Malebarre.

From Fresh Brook hollow to the commencement of Nauset beach, the bank next the ocean is about 60 feet high. There are houses scattered over the plain, open country; but none of them are nearer than a mile to the shore. In a storm of wind and rain they might be discerned by day-light; but in a snow storm, which rages here with excessive fury, it would be almost impossible to discover them, either by night or by day.

Not far from this shore, south, the Trustees have erected a third hut, on Nauset beach. Nauset beach begins in latitude  $41^{\circ} 51'$ , and extends south to latitude  $41^{\circ} 41'$ . It is divided into two parts by a breach which the ocean has made through it. This breach is the mouth of Nauset or Stage harbour; and from the opening, the beach extends north  $2\frac{1}{2}$  miles, till it joins the main land. It is about a furlong wide, and forms Nauset harbour, which is of little value, its entrance being obstructed by a bar. This northern part of the beach may be distinguished from the southern part by its being of a less regular form. Storms have made frequent irruptions through the ridge, on which beach grass grows. On an elevated part of the beach stands the hut, about  $\frac{1}{2}$  mile north of the mouth of Nauset harbour. Eastham meeting-house lies from it W. S. W. distant  $1\frac{1}{2}$  mile. The meeting-house is without a steeple; but it may be distinguished from the dwelling-houses near it by its situation, which is between two small groves of locusts, one on the south, and one on the north, that on the south being three times as long as the other. About  $1\frac{1}{2}$  mile from the hut, W. by N. appear the top and arms of a windmill. The Rev. Mr. Shaw, and Elisha Mayo, Esq. of Eastham, have engaged to inspect this building.

The southern part of Nauset beach, most commonly called Chatham beach, and by a few persons Potanumaquunt beach, begins at the mouth of Nauset harbour, and extends 8 or 9 miles south, to the mouth of Chatham harbour. It is about 50 rods wide. A regular well-formed ridge, which, in the most elevated part of it is 40 feet high, runs the whole length of it, and with the exception of a few spots, is covered with beach grass. This beach forms the barrier of Chatham harbour, which, from Strong Island, north, receives the name of Pleasant bay. A mile south of the entrance of Nauset harbour, it joins the main land of Orleans, except in very high tides, when the sea flows from the north-eastern arm of Pleasant bay into the harbour of Nauset, completely insulating the beach. By those who are acquainted with the shallow, it may be safely forded at any time; but strangers must not venture to pass it when covered with water, as below, the channel is 7 feet deep. On this beach, about half way between the entrances of Nauset and Chatham harbours, the Trustees have erected a fourth hut. The spot selected is a narrow part of the beach: on the west, the water adjoining it is called Bass Hole. Salt Marsh is north and south of it, next the beach, but is here interrupted. Orleans meeting-house lies from it N. W. The meeting-house is without a steeple, and is not seen; but it is very near a wind-mill placed on an elevated ground, a conspicuous object to seamen coming on the coast. It may be necessary to add, that there are three windmills in Orleans, forming a semicircle—that the mill referred to is on the right hand, or N. E. point—and that the mill in the middle point of the semicircle stands on still higher ground. The meeting-house of Chatham is situated from it S. W. This meeting-house is also without a steeple, and is concealed by Great Hill, a noted land-mark. The hill appears with two summits, which are a quarter of a mile apart. The hut lies east from Sampson's Island in Pleasant bay. Timothy Bascom, of Orleans, has undertaken to inspect this hut.

Least seamen should miss this hut, by striking to the leeward of it, the Trustees have erected another on the same beach. It stands a mile north of the mouth of Chatham harbour, east of the meeting-house, and opposite the town.

Another spot on the same beach would be a proper situation for a hut. It is north of the fourth hut, and east of the middle of Pochet Island. The highest part of the ridge is near it south. A break in the ridge, over which the sea appears sometimes to have flowed, divides this high part from the northern portion of the beach.

On the beach of Cape Malebarre, or the sandy point of Chatham, the Trustees have built a sixth hut. This beach stretches from Chatham 10 miles into the sea, towards Nantucket, and is from a quarter to three-quarters of a mile in breadth. It is continually gaining south: above three miles have been added to it during the past 50 years. On the east side of the beach is a curve in the shore, called Stewart's Bend, where vessels may anchor with safety, in 3 or 4 fathoms water, when the wind blows from north to S. W. North of the bend there are several bars and shoals. A little below the middle of the beach, on the west side, is Wreck cove, which is navigable for boats only. The hut stands 200 yards from the ocean, S. E. from the entrance of Wreck cove, half of a mile. Between the mouth of the cove and hut, is Stewart's knoll, an elevated part of the beach. The distance of the hut from the commencement of the beach is 6 miles, and from its termination 4 miles. Great hill, in Chatham, bears N. by W. distant 6 miles, and the south end of Morris' Island, which is on the west side of the beach, N. by E. distant 4 miles. *Richard Sears*, Esq. of Chatham, has engaged to visit the two last mentioned huts. Two miles below the sixth hut is a fishing-house, built of thatch, in the form of a wigwam. It stands on the west side of the beach, a quarter of a mile from the ocean. Annually, in September, it is renewed; and generally remains in tolerable preservation during the winter.

Another spot, a few rods from the sea, 4 miles south from the commencement of the beach, and half a mile north of the head of Wreck cove, would be a proper situation for a hut. A little south of this spot, in storms and very high tides, the sea breaks over from the ocean into Wreck cove. Cape Malebarre beach may be distinguished from the two beaches before described, not only by its greater breadth, but also by its being of a less regular form. It is not so well covered with grass as Chatham beach. From Stewart's knoll, south, to the extremity, it is lowest in the middle. In this valley, and in other low places, fresh water may be obtained by digging two feet into the sand. The same thing is true of Nauset and Chatham beaches.

The six huts, the situation of which has thus been pointed out, are all of one size and shape. Each hut stands on piles, is 8 feet long, 8 feet wide, and 7 feet high: a sliding door is on the south, a sliding shutter on the west, and a pole, rising 15 feet above the top of the building, on the east. Within it is supplied either with straw or hay, and is farther accommodated with a bench. The whole of the coast, from Cape Cod to Cape Malebarre, is sandy and free from rocks. Along the shore, at the distance of half a mile, is a bar, which is called the outer bar; because there are smaller bars within it perpetually varying. This outer bar is separated into many parts by guzzles, or small channels. It extends to Chatham; and as it proceeds southward, gradually approaches the shore, and grows more shallow. Its general depth at high water is two fathoms, and three fathoms over the guzzles; and its least distance from the shore is about a furlong. Off the mouth of Chatham harbour there are bars which reach three quarters of a mile, and off the entrance of Nauset harbour the bars extend half a mile. Large heavy ships strike on the outer bar, even at high water, and their fragments only reach the shore. But smaller vessels pass over it at full sea, and when they touch at low water, they beat over it as the tide rises, and soon come to land. If a vessel is cast away at low water, it ought to be left with as much expedition as possible; because the fury of the waves is then checked, in some measure by the bar, and because the vessel is generally broken to pieces with the rising flood. But seamen shipwrecked at full sea, ought to remain on board till near low water, for the vessel does not then break to pieces, and by attempting to reach the land before the tide ebbs away, they are in great danger of being drowned. On this subject there is one opinion only among judicious mariners. It may be necessary, however, to remind them of a truth, of which they have full conviction, but which, amidst the agitation and terror of a storm, they too frequently forget.

### *Directions for \*Point Gammon light, and †Hyannes Harbour.*

Vessels coming from the eastward, bound through the North Channel, must

\* Hyannes light is situated on Point Gammon, at the entrance of the harbour, south side of Cape Cod. The lantern is elevated 70 feet above the level of the sea and contains a *fixed light*.

† East from Hyannes lies Bass river, at the mouth of which, a BEACON is to be erected, between the towns of Dennis and Yarmouth, which will be particularly described in the APPENDIX, if completed before this work is published, to which the reader is referred. From the situation of the river, it is presumed the Beacon may be seen when passing through the North Channel. A BEACON or SPINDLE is also to be erected on the Bishop and Clerks.

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leave the Bishop and Clerks on the larboard hand, and not go nearer them than 4 fathoms; they are a dangerous ledge of rocks, bearing S. by E. from the light-house, 3 miles distant, and are always dry. When the light bears N. by W. steer W. N. W. keeping in 4 fathoms till the light bears N. N. E. then steer N. W. or N. W. by N. keeping in 3 fathoms, which will keep you clear of a dangerous reef running from the light to a great rock which you leave on your starboard hand; when abreast of this rock, the light will bear S. E.  $\frac{1}{4}$  E. then steer N. N. W. and anchor within one mile of the shore, in 3 fathoms, soft bottom. The brig Monroe, Capt. Bears, in coming through the Vineyard Sound, struck on a dangerous rock, which is in the direct track in passing the North Channel, and bears about W. S. W. from Point Gammon light-house, distant two or three miles. It is a large square rock, and it is supposed there are on it about three feet of water, at low water. Several vessels have struck on it at different times, and it is extremely important to the safety of people and property, that it *should have a buoy on it*. Vessels should not come nearer than three-quarters of a mile of the light, as there are sunken rocks that lie one-half a mile from the land.

Vessels bound to the westward from Hyannes, must run to the southward till the light bears E. by N. then steer W. by S. which course will carry them clear of the southwest rock, which bears W. from the light, 4 miles distant, with several sunken rocks near it; said rock is dry at low water. W.  $\frac{1}{4}$  S. 8 miles distant from the light, is a dangerous ledge called \*Culler's Ledge, 3 miles from the shore. There are 3 fathoms water round it, and the ledge is part dry at low water. In running this W. by S. course, (the light bearing E. by N.) you will have from 3 to 4 fathoms, and sometimes 5, as it is ridgy. If farther towards the Horse-shoe, to the southward, you will have 4, 5, 6, 7, 10, and close to the Horse-shoe, 13 fathoms; northern part of the Horse-shoe dry at low water. On the S. E. part of the Horse-shoe is a black buoy placed, in 16 feet water, bearing from Nantucket light N. W. by W.  $4\frac{1}{2}$  leagues, and from Tuckanuck island, N. by E.  $\frac{1}{4}$  E. 5 leagues. Tide rises about 5 feet; high water at full and change, at 12 o'clock; and runs from 2 to 3 knots east and west in the following manner, viz. it begins to run to the westward at half flood, and continues to half ebb; then runs to the eastward, the three last hours of ebb, and three first of flood.

In proceeding from the Horse-shoe towards Holmes' Hole, observe the following directions, viz. When to the northward of the Horse-shoe, in 12 fathoms water, one mile distant from the dry spots (at low water) steer S. W. for Holmes' Hole,  $3\frac{1}{2}$  leagues distant. If bound to the northward of the Hedge-Fence, (between that and Lemedue shoal,) get the point on which the wind-mill stands, (which is east of Wood's Hole) to bear W. by N. and run for it till within half a mile, then W. S. W. will carry you through the Vineyard Sound, leaving Tarpaulin Cove and Cutterhunk lights on your starboard hand, and Gay-Head light on your larboard hand. You will not see Cutterhunk light till 4 leagues to the westward of Tarpaulin Cove light, when it will open on the starboard hand; when it bears N. E. by E. distant  $3\frac{1}{2}$  miles, you may run west for Point Judith light (if bound up Sound) 10 leagues distant. [For description of Tarpaulin Cove light, see page 81, and of Cutterhunk light, see page 87.]

### *From the south end of Cape Cod to †Holmes' Hole.*

Bring Chatham lights to bear N. N. W. then by steering S. S. E.  $3\frac{1}{2}$  leagues, you will pass the Pollock Rip, in 3 or 4 fathoms water; and if the weather is

\* A Beacon is to be placed on this ledge. [See Appendix.]

† Holmes' Hole is a harbour to which vessels resort during the winter season, and as every master should embrace the first opportunity to advise his owner, we state there is a Post-Office and a regular mail made up twice a week for Boston, &c. which is taken in a passage boat to Falmouth, on the N. E. part of the Vineyard Sound, 9 miles distant; from thence by land carriage to Sandwich, &c. Passengers will find a speedy conveyance from Falmouth.

clear, you will make the \*light-house on Sandy Point (Nantucket Island)  $5\frac{1}{2}$  leagues distant, which bring to bear S. W.  $\frac{1}{2}$  W. then steer for the light-house, keeping it in this direction, and you will pass between the Great and Little Round Shoals, on the former of which is a †black buoy, and on the latter a white buoy, with a small pole in the end of it, bearing N. W. by N. and S. E. by S. from each other, distant  $2\frac{1}{2}$  miles. Great Round Shoal, partly dry at low water; on Little Round Shoal 7 feet.

On the east end of Pollock Rip is a red buoy, in 14 feet water, bearing from Chatham lights S.  $\frac{1}{2}$  E. 11 miles: from Monomoy point E.  $\frac{1}{2}$  N. 7 miles, and from Little Round Shoal buoy, N. E. by N. 4 miles. Shoalest water on this rip, 5 feet.

When you are within about three leagues of the light-house, steer W.  $\frac{1}{2}$  S. until you are past the Point Rip, on the N. E. end of which is a red buoy in 14 feet water, bearing from Saucoty Head, N. by W. 4 leagues; from Nantucket light N. E. by E.  $\frac{1}{2}$  E. 2 miles, and from the black buoy on the Horse-shoe, E. S. E. 6 leagues. Shoalest water on Point Rip 8 feet; or you may bring the light-house to bear E. by S.  $\frac{1}{2}$  S. and steer W. by N.  $\frac{1}{2}$  N. taking care to make your course good for Holmes' Hole light, 11 leagues distant, observing, while running from Nantucket light to Holmes' Hole, you leave on your larboard hand †Cape Poge light, which must bear W.  $\frac{1}{2}$  S. to clear the Cross Rip, on the north-east part of which is a white buoy, in 15 feet water, bearing from Cape Poge light E. by S. 5 leagues; from Tuckernuc island N. by W. 2 leagues: and from the red buoy on Squash meadow, E. by S.  $\frac{1}{2}$  S. 5 leagues. Shoalest water on this rip, 12 feet.

To go through the North Ship Channel, bring Chatham lights to bear N. N. W. and steer S. S. E.  $3\frac{1}{2}$  leagues, when you will pass the Pollock rip in 3 or 4 fathoms water, when you must steer W.  $\frac{1}{2}$  S. 5 miles for Butler's hole, in 15 fathoms water, when you will see a white buoy to the north of you, which lies in the S. S. W. passage, when you must run W. S. W. for the south part of the Handkerchief, which has a white buoy on the west end of it, bearing from ‡ Monomoy point light S. W. 2 miles, when you will be in 3 fathoms water, fine sand; from Nantucket light N. by E.  $\frac{1}{2}$  E. 4 leagues, and from the red buoy on Pollock rip W. by S.  $\frac{1}{2}$  S. 3 leagues.

Crossing the Handkerchief, on a W. S. W. course, in 3 or 4 fathoms water, you will run W. for the black buoy on the Horse-shoe,  $11\frac{1}{2}$  miles, leaving it on the starboard hand, when you will continue your course W. for Holmes' Hole light,  $4\frac{1}{2}$  leagues distant. As you enter the Swash, in the Horse-shoe, Hyannes light will bear N. N. E. Cape Poge light W. S. W. Holmes' Hole light W. Part of the Handkerchief dry at low water.

There is a channel of 9 feet, still north of the above, which may be found by bringing Chatham lights to bear N. W. when in 7 fathoms, and running S. S. W. for Sandy point of Monomoy light, till the light bears S. W. then run for it till you cross from 3 to 7 fathoms, when you will be within 3 cable's length of the light, where you may anchor, and continue till  $2\frac{1}{2}$  hours flood, when, if bound to the westward, continue the shore on board round the point, crossing a spit between Egg Island and Monomoy point, in 2 fathoms; then steer N. W. till the light bears E. when you must run W. N. W. for Hyannes light, or haul into Stage Harbour Bay and anchor, where you may lie safe from all winds except S. W. To go through the S. S. W. channel, get Monomoy point light to bear N. by E.  $\frac{1}{2}$  E. and run S. S. W.  $1\frac{1}{2}$  miles into Butler's Hole, in 7 fathoms, and a S. S. W. course continued will carry you to the westward of Nantucket Point light, 5 leagues. In the S. S. W. channel are 2 fathoms at full tide.

\* Nantucket light-house is on the north point of Nantucket Island, and shows a *fixed light*.

† The buoys on Nantucket Shoals and the Vineyard Sound, were placed by Capt. Trevett, in the Revenue Cutter, and Wm. Daggett, Branch Pilot for the Vineyard Shoals, and from their authority we publish them. To the former gentleman we tender our thanks for much important information.

‡ Cape Poge light is situated on the N. E. point of Martha's Vineyard. The lantern is elevated 55 feet above the level of the sea, and contains a *fixed light*.

§ On Monomoy point a light-house is erected, showing a *fixed light*.

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[NOTES.—While passing Chatham in thick weather, approach no nearer than 3 fathoms to cross the Pollock rip: edge off and on from 5 to 7 fathoms, which will carry you over the Pollock rip in 3 fathoms.]

Bring Chatham lights to bear N. by W. on which bearing keep them till you cross the Pollock rip in 3 fathoms water, and deepen into 7 fathoms; then steer S. W. by S. which carries you across Butler's Hole to 5 or 4 fathoms; then steer W. S. W. which will carry you to the northward of the Little Round Shoal up to Tuckernuck channel, when you will be up with the S. E. end of the Horse-shoe, where you have 9 fathoms, then steer W. by N. for Cape Poge light. From the Stone-horse to the S. E. end of the Horse-shoe, the distance is 5 or 6 leagues. To go through the Moskeekett channel, bring the light on Cape Poge to bear N. by W. and steer S. by E. which will carry you to the eastward of Skiff's Island, which you may go within half a mile of.

To go through the Swash of the Horse-shoe, bound to the westward, after passing the Stone-horse, and you deepen your water to 6 fathoms, steer W. till you bring Cape Poge light to bear W. S. W. then steer directly for it through the Swash of the Horse-shoe, till you deepen to 12 fathoms, then steer for the East chop of Holmes' Hole.

To go to the northward of the Horse-shoe, bring Point Gammon light to bear E. N. E.—Seconset point to bear W. N. W. when you will see the northernmost dry shoal of the Horse-shoe. Bring Cape Poge light to bear S. S. W. and run for it. In beating to windward, come no nearer the north shore than 3 fathoms; when past the dry spot of the Horse-shoe, steer S. W. by S. till you bring the East chop to bear W.

To go through the south ship channel, steer from Chatham lights S. S. E. until you pass the Pollock Rip in 3 or 4 fathoms water; if the weather be clear, you will make Nantucket Great Point light; continue your course S. S. E. S. by E. and S. until the light-house bears W. from you, then steer directly for it, until you are within three miles of it; you should then steer N. W. until the light-house bears S. W. by W. then steer W. by S. till the light-house bears E. by S.  $\frac{1}{4}$  S. and then run W. by N.  $\frac{1}{4}$  N. making your course good for Holmes' Hole light, as before directed, when, if you wish to anchor, run S. W. till the light bears N. W. by N. and anchor in 4 and 5 fathoms water, soft mud, and out of the tide.

### Directions for \*Chatham Harbour.

There are two light-houses built at the mouth of Chatham harbour, on a place called James' Head. The lanterns are elevated about 40 feet above the level of the sea, and contain *fixed lights*, which may be seen five or six leagues distant, and are very useful to vessels bound over Nantucket shoals. They bear from Nantucket light-house N. N. E. distant  $10\frac{1}{4}$  leagues, and from the shoals N. N. W. It is a barred harbour, and not to be described with safety.

### TIDES.

On the South Shoal the flood tide sets north about 3 hours; then E. S. E. when the ebb commences at south, and continues till low water. At Sancoty Head the flood sets N. E. and ebb S. W. In the middle (or E. N. E. channel) the flood sets N. E. by E. and ebb S. W. by W.

In Butler's Hole the ebb sets west, and flood east. From Chatham to Pollock Rip, the flood sets S. S. W. and ebb N. N. E.

\* Chatham is situated on the exterior extremity of Cape Cod, bounded E. by the Ocean, S. by Vineyard Sound, W. by Harwich, and N. by Pleasant Bay. Its situation is convenient for the fishery, in which they have usually about 40 vessels employed. Its harbour contains 20 feet water at low tide. The place is remarkable for many shipwrecks on its shores.

From Butler's Hole to the Horse-shoe, ebb W. S. W. then W. by N. to Holmes' Hole.

The depth of water on Nantucket Shoal and the Vineyard Sound, are taken at low tide. At Pollock Rip, Great Rip, Little Round Shoal, Point Rip and the Handkerchief, the tide rises and falls 5 to 6 feet. At the Horse-shoe, Cross Rip, Hedge Fence, Squash Meadow and Middle Ground, the tide rises and falls 3 to 4 feet. S.  $\frac{1}{2}$  E. moon makes full sea in the Sound.

### *Directions for sailing into Nantucket Harbour.*

If the \*Light-House on the south side of the harbour cannot be seen, bring the light on Brant Point, (which lies on the starboard hand) to bear S. by E. (none to the south of that) and run for it until within about a cable's length, then run to the eastward for the end of the point, and pass it as near as you please.

*Nantucket Bar.*—It is understood that a new channel over this dangerous shoal has been explored and buoyed out, by some of our enterprising master mariners, and pilots; and that the keeper of the light-house on the south side of the harbour, having been waited upon by them, and several of the principal merchants and ship owners, has caused the removal of the light-house under his care to a point designated. As this new channel is declared by the pilots to be considerably deeper than that formerly used, and has the advantage of being straight and easy of access, the public good is greatly subserved by an alteration which will facilitate its use; and which has been made, we understand, without any additional expense to the United States.

*Directions for ships bound over the Shoals of Nantucket, from the Bar.*—From Nantucket Bar, the course is about N. N. E. to the Great Point; if a west tide, run for the light-house, pass the Great Point, keeping it about two miles distance from you; an east tide may set you on the Point Rip. Keep the town open, clear of Great Point, until you are three miles to the N. N. E. of the point; then run S. E. keeping three miles from the land, until the light is west from you; then running east keeping the light-house bearing west, will carry you to sea. When you are in twenty-five fathoms, you are without the Great Rip. If a light wind, and a southern tide, there is danger of being set by the tide too near the Rip; therefore it is best, after being sure that you are without the Round Shoal, to run E. by N. or E. N. E. according to the wind and tide. When you have passed the Round Shoal, there is nothing to fear, from N. to E. until you come to the State of Maine on the one hand, or the shoal of George's on the other. Do not cross George's Bank north of lat.  $41^{\circ}$  N. The above is the old Channel way.

After you are three miles N. N. E. from the Great Point light, run S. E. keeping three miles from the land, until Sancoty Head bears S. W.; you may then run N. E. which will carry you channel way. The Round Shoal bears from the Great Point light E. N. E. eight miles off.

When you are three miles to the N. N. E. of the Great Point light, with the town open clear of the Point, run S. E. keeping three miles from the land, until the town is over the middle of the head of the harbour; keeping it so, will carry you out channel way.

When the town is shut in by the highland of Pocomo or Squam, you are in danger of the north end of the Bass Rip; also of the north end of the Great Rip.

The tide turns at the foot of the Shoals, three hours before it is high water at the Bar. Abreast of the Great Rip, the ebb tide sets to the S. S. W. and the flood to the N. N. E.; therefore it is necessary, in light winds, to be careful that you do not get set by the tides, on the Rip.

The Fishing Rip bears about E. S. E. from the Great Rip, from five to seven

\* Nantucket Harbour Light-House is on the south side of the harbour, on high ground, some distance from the shore, is a small pyramidal building, and contains a fixed light.

leagues distance. It has been said by many experienced men, that there are but two and a half fathoms on the shoalest part of said Rip. From the Great Point light to the Great Rip, is E. by S.  $\frac{1}{2}$  S. five leagues distance; the Fishing Rip is from ten to twelve leagues distance from the Great Point light; between those two rips the bottom is uneven, having from 12 to 22 fathoms. The two Rips lay nearly north and south, and are about twelve miles in length.

At the full and change of the moon, it is full sea at Nantucket at about twelve o'clock noon.

*Courses and distances from Nantucket Light-House.*

	<i>Courses.</i>	<i>Leagues.</i>
From light-house to the Handkerchief . . . .	N. by E.	4 $\frac{1}{2}$
do. to the Snow Drift . . . .	N. N. E.	5
do. to the Stone Horse . . . .	N. N. E. $\frac{1}{2}$ E.	3 $\frac{1}{2}$
do. to the sandy point of Monomoy . . . .	N. by E. $\frac{1}{2}$ E.	5 $\frac{1}{2}$
do. to the Little Round Shoal . . . .	N. E.	3 $\frac{1}{2}$
do. to the Pollock Rip buoy . . . .	N. E. $\frac{1}{2}$ N.	5
do. to the Great Round Shoal . . . .	E. N. E.	2 $\frac{3}{4}$
do. to the north end of Great Rip . . . .	E. by S. $\frac{1}{2}$ S.	5
do. to Nantucket Harbour . . . .	S. S. W.	2 $\frac{3}{4}$
do. to Tuckernuc Shoal . . . .	W.	3
do. to Eastchop of Holme's Hole . . . .	W. by N.	9
do. to Horse-shoe . . . .	N. W. by W.	4 $\frac{1}{2}$
do. to Hyannes . . . .	N. W. $\frac{1}{2}$ N.	7
do. to the west part of George's Bank . . . .	E. $\frac{1}{2}$ N.	32
From the East end of Nantucket (called Sancoty Head)		
to the South Shoal . . . .	S. by E.	4

(Variation 6° 30' W. 1921.)

*Directions for entering the Harbour.*—Bring the south light, and the light on Brant Point in one, at the outer buoy; and the south light should be opened to the westward on this range, one handspike's length, to run the channel from the bar or outer buoy, to the shoaling of the water on Brant Point.

*Directions for those running for Block Island Channel, to the southward of Martha's Vineyard, Vineyard Sound, Nantucket Island, and such as are bound into the Vineyard Sound, and intend going over the Shoals to the eastward.*

In approaching the south end of Block Island from the southward, the water shoals gradually. When the island bears from N. W. to N. by W. the bottom is mud; this is commonly called Block Island Channel. This island, if you come from the southward, appears round and high; and if you approach it from the S. E. it appears like a saddle, being high at both ends, but highest to the southward. Your course from the south-east head of Block Island to \*Gay-Head light-house is E. by N. 15 leagues. The current in Block Island Channel is N. N. E. and S. S. W. 2 knots. If you fall to the southward of Martha's Vineyard, and can see †Noman's-land Island, and intend going over the shoal to the eastward, bring Noman's-land Island to bear west, and steer E. by S. 8 leagues, which will bring you up with Nantucket Island, to which you must give a distance of two miles, until you have passed Micomic Reef, which extends one mile from the shore, has two fathoms water, and bears from the South Tower at Nantucket, S. by W. When you get to the eastward of this rip, you may nigh the shore to within one-quarter of a mile, until up with Tom Never's Head, which lies 1 $\frac{1}{2}$  of a mile to the southward and westward of a small village, called Sciasconset, where you may anchor, if necessary, in 4 or 5 fathoms.

If you wish to continue through the channel, which lies between Nantucket Island and the Old Man, you may run within three cable's length of the shore, which will carry you over Pochick Rip, on which there are but 2 fathoms, and

\* Gay Head light is situated on the S. W. point of Martha's Vineyard, at the entrance of the Vineyard Sound. The lantern is elevated 150 feet above the level of the sea, and contains a revolving light, to distinguish it from Cape Poge light, that can be seen at sea over the Vineyard, which is a fixed light.

† Noman's-land Island lies south from Gay Head, 8 miles distant, about three miles long, and one broad.

of course only fit for small vessels. When on this Rip, haul to within one cable's length of the shore, and continue in 5 fathoms till up with Sancoty Head, which is the highest eastern land of Nantucket. Bring Sancoty Head to bear S. W. when in 5 fathoms water, and run N. E. till you deepen to 15 fathoms, when the Round Shoal buoy will bear N. W. after which you shoal into 7 and 8 fathoms, fine ridges, which, having passed, and come into 10 fathoms, a north course will carry you to the High Land of Cape Cod, 17 leagues distant. If in a large ship, and you make the south side of Nantucket, bound over the shoals, you may proceed either within or without the Old Man, but the latter is preferable.

If you wish to go between the Old Man and Pochick Rip, bring Tom Never's Head to bear N. W. by W. and run S. E. by E. till Sancoty Head bears N. N. W.  $\frac{1}{2}$  W. where you will have 9 fathoms water, when you will run direct for Sancoty Head, till in 5 fathoms, which will be close on board, then continue your course N. E. as before mentioned, for the Round Shoal. In running the S. E. by E. course, you go through a swash half a mile wide, having 7 fathoms.

If you are coming from sea, and make the island of Nantucket to the northward of you, it may be known by two towers, and four wind-mills, which stand near each other, upon an eminence. You may then steer directly for the land, until you are within half a mile, and may, if bound to the eastward, run along the shore in 4, 5, and 6 fathoms water, to the S. E. part of the island, where there are shoals and rips, on which you will have only  $2\frac{1}{2}$  or 3 fathoms water. Sancoty Head is the easternmost head land of Nantucket.

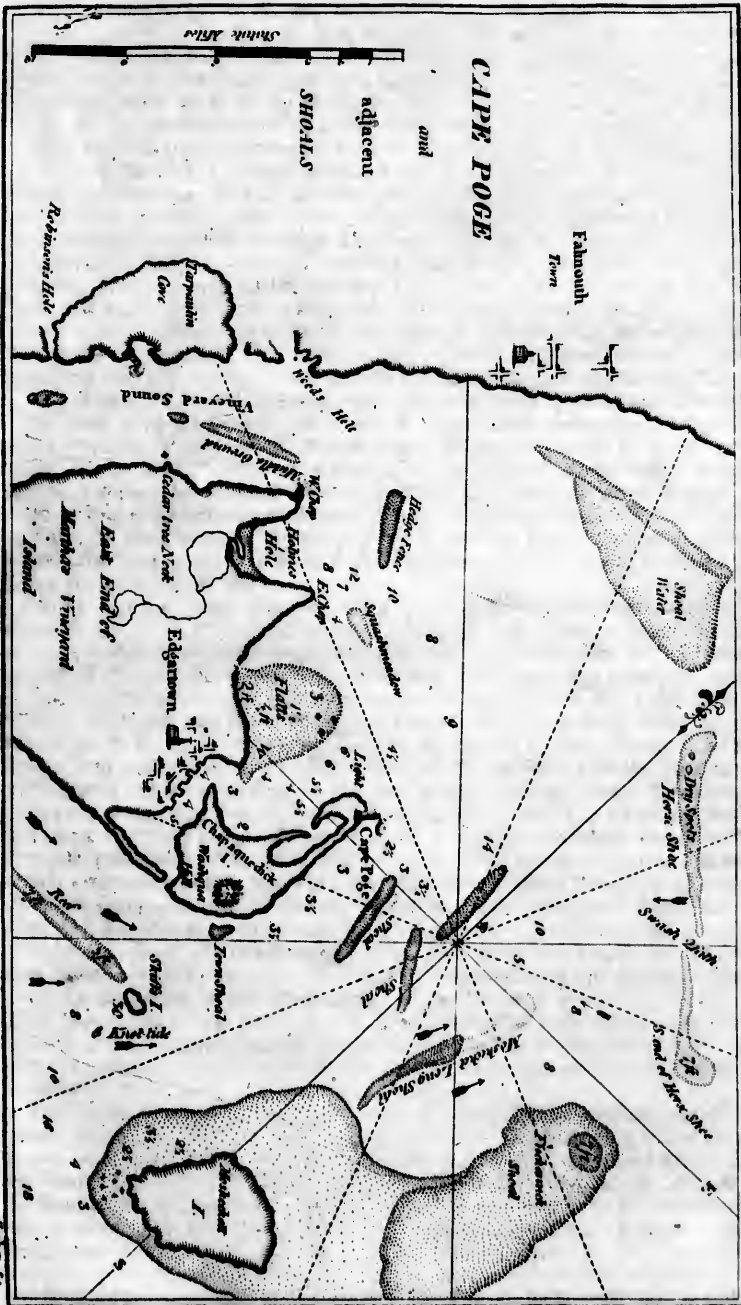
If, in coming from sea, you make the South Shoal, which lies in  $41^{\circ} 4' N.$  lat. give it a birth of a mile. If you intend to make Nantucket Island, steer N. by W. and when you come near the island, you may proceed along the shore, according to the former directions.

If, when you make the South Shoal, you are bound to Boston Bay, and choose to go to the eastward of all the shoals and rips, pass a mile or two to the southward of the shoal, then steer N. E. by E. about 7 leagues, when you will be up with the Fishing Rip. In running this N. E. by E. course, you will deepen to 25 fathoms, which is about midway of South Shoal and Fishing Rip. From the Fishing Rip, in 17 or 18 fathoms, steer N. N. W. for the High Land of Cape Cod, 18 leagues, on which is a light-house, containing a *fixed light*, as more fully described in page 68.

If you come from the eastward, and are bound for Long-Island or New-York, you should be careful not to go to the northward of  $41^{\circ} N.$  latitude, until you pass the South Shoal of Nantucket. If, by stress of weather, you should be driven so far to the northward as to be near the Vineyard, you may pass through the channel to the westward of Nantucket Island, by bringing Cape Poge light-house to bear N. by W. and steering right for it, will lead you through, in from 3 to 4 fathoms, clear of all shoals, leaving Skiff's Island, which is a dangerous shoal, on your larboard hand. Martha's Vineyard Island lies in much the same latitude as Nantucket Island, and may be known by a small round island, which lies at the southward of Gay Head light, called Noman's land Island, before mentioned, 8 miles distant. You may sail between this island and Martha's Vineyard; but you must take care to avoid a ledge of rocks, which bears from Gay Head light S. by E.  $5\frac{1}{2}$  miles distant, called the Old Man.

In bad weather, coming from the eastward, and you wish for a harbour, and the wind admitting, you may bring Nantucket light to bear E. S. E. and run W. N. W. making your course good, until Cape Poge light-house bears W. by S. if bound into Edgartown harbour, then steer for the light until you get in 3 fathoms water, then run W. N. W. if it shoalens, haul to the northward; if not, keep on until the light bears south, then run W. S. W. you will have 3 and 4 fathoms, hard bottom. As soon as you get  $5\frac{1}{2}$  or 6 fathoms, sucky bottom, then run S. S. W. until the light bears N. E.  $\frac{1}{2}$  E. then you may anchor in about 5 or 6 fathoms water with safety, in case your cables and anchors are sea-worthy; otherwise, if you wish to go into the harbour, when the light bears N. E.  $\frac{1}{2}$  E. you may run S. W. by W. until you get  $3\frac{1}{2}$  fathoms, hard bottom, then run west about half a mile, and you will be within the flats, which you leave on your starboard hand, coming in; you will find it smooth, and about 3 or 4 fathoms water, where you may anchor with safety, though your ground tackling is poor.





New York: Published by Edmund George W. Blunt 1827

Engraved for the American Coast Pilot, II. P. 82.

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If you wish to go to *Holme's Hole*, or through the Sound, bring Cape Poge light to bear S. E. by E  $\frac{1}{4}$  E. and run N. W. by W.  $\frac{1}{4}$  W. you will run for the East Chop, and leave *Squash Meadow* shoal on your starboard hand; get 3 fathoms water on the Chop, then haul to the N. N. W. until you deepen to 7, 8, or 9 fathoms; then run S. W. by W. for Holme's Hole roadstead, in 4 or  $3\frac{1}{2}$  fathoms; or N. W. for the Sound, to clear the West Chop and Middle Ground.

Gay Head is the westernmost land of Martha's Vineyard. When you come by Gay Head with a southerly wind, the south channel is best. From Gay Head to Nantucket Point, the tide sets directly through the Vineyard Sound with a little variation, after passing Cape Poge to the eastward, which is caused by a strong tide setting through Tuckernuck Channel. The land of Gay Head is high, and of divers colours, namely, red, yellow, and white, in streaks. In steering from \*Block Island for Gay Head, you must be careful to avoid the Sow and Pigs; they make a ledge of rocks, some of which are above, and others under water. These rocks lie  $2\frac{1}{2}$  miles S. W. by W. from the westernmost of Elizabeth Isles, and N. W. by W. from Gay Head,  $3\frac{1}{2}$  leagues distant: the first of the flood tide sets strong to the northward over them into Buzzard's Bay, which is very foul. Within Gay Head there is a fair sandy bay, called Nimshe Bite, with from 5 to 10 fathoms, in which is very good anchoring, with south and south-easterly winds. Your course along Elizabeth Isles is E. N. E. in 15, 14, 12, 8, 15, 16, and 17 fathoms water; give the isles a birth of about three-quarters of a mile. In running from Gay Head light into Vineyard Sound, if you wish to make a harbour on the north side, bring Gay Head light to bear S. W. and run N. E. 4 leagues, which will carry you up with †Tarpaulin Cove light, where you may anchor in from 4 to 18 fathoms, on fine sand, the light bearing from W. by N. to S. W.

When coming from sea, you may run for Gay Head light, when it bears from N. N. E. to E. S. E. giving it a birth of two miles, to clear the Devil's Bridge, which bears from the light N. W. by N.  $1\frac{1}{2}$  miles distant. As measuring the distance in the night would be uncertain, you must keep your lead going, and if you should have 7 or 8 fathoms when the light bears S. E. by E. or S. E. haul up north till you have 10 or 12 fathoms; then with flood, steer N. E. and with ebb, N. E. by E. 3 leagues; then E. N. E. will be the course of the Sound, which will carry you to the northward of the Middle Ground, which has a black buoy on the east end, in 16 feet water, bearing from Tarpaulin Cove light east, 4 leagues; from †West Chop light N. W. by W. half a mile; and from the black buoy on Hedge Fence W.  $\frac{1}{4}$  N. 3 leagues, (shoalest water on Middle Ground two feet) when you will see the West Chop of Holme's Hole light, which you may run for, but keep one mile distant from the shore till you open the East Chop one cable's length, and with a flood tide steer direct for it, and with ebb keep it one point open, till you open a wind-mill on the west side of the harbour about one cable's length, then run up in the middle of the river, till you come to 4 or 3 fathoms, where you may anchor on good ground. The usual mark for anchoring is the West Chop, bearing from N. N. W. to N. W. by N. but if you lie any time here, the best anchoring is well up the harbour, and close to the shore, mooring S. E. and N. W. in 4 or 5 fathoms water. In this harbour, which is about two miles deep, you will lie secure from all winds except a northerly one.

You must not keep further than two miles from the West Chop, as there is a shoal, called Hedge Fence, on the east end of which is a black buoy, in 16 feet water, bearing from West Chop east, 8 miles, and from the black buoy, on Middle Ground, E.  $\frac{1}{4}$  S. 3 leagues. The Hedge Fence lies about  $3\frac{1}{2}$  miles N. E. by N. from Holme's Hole light, and extends W. N. W. and E. S. E. 6 miles, is about half a mile broad, and has 4 feet water on the shoalest part. Between this shoal and Holme's Hole, there are from 8 to 12 fathoms water.

\* Block Island is about 9 miles in length, extending N. by E. and S. by W. and 5 miles in breadth.

† Tarpaulin Cove light lies on the larboard hand as you enter that harbour, and shows a fixed light. It bears about N. E. by N. from Gay Head light, which is a revolving light, 4 leagues distant.

‡ A light-house, showing a fixed light, is erected on the West Chop of Holmes' Hole.

If you make the Chop in the night, when it bears S. E. you are clear of the Middle Ground; steer for the east side of it till you strike in 4 or 5 fathoms on the flat ground near the chop, then steer S. E. by E. observing not to go nearer the land than 3 fathoms. If, in running S. E. by E. you fall into 6 or 7 fathoms, haul up S. by W. or S. S. W. and run into 2 or 3 fathoms, as before directed.

If bound into Vineyard Sound, with the wind at the eastward, and you are near the south side of Martha's Vineyard, to go between Squibnocket and the Old Man, run round Squibnocket in 3½ and 4 fathoms water, continuing N. N. W. along the beach till you come to Gay Head light, and if ebb tide, anchor in 5 fathoms, the light bearing from N. to N. E.

In coming into the Sound in the night, with a strong north-westerly wind, haul to the northward till you have smooth water under the \*Elizabeth Islands, where you may anchor in 14 or 10 fathoms. Should you have the wind to the southward, it will be best to run down through the South Channel, or Vineyard side. When Gay Head light bears S. S. E. your course is N. E. by E. ½ E. or E. N. E. observing not to come nearer the land than into 7 fathoms water, till you are abreast of Lambert's cove, in which is good anchoring, with southerly or easterly winds, and may be known by a high sand bank, called Necunkey cliff, on the east side of it, about midway the cove, opposite which you may come to in 5 or 3 fathoms, sandy bottom, where is the best anchoring. The Middle Ground lies about two miles without the cove, and has 12 feet water on it. If you intend running down for Holmes' Hole, your course, when opposite Necunkey point, is E. by N. keeping near the land to clear the Middle Ground, the east end of which bears east from Tarpaulin Cove light, 4 leagues distant. You may track the shore by the lead in from 7 to 4 fathoms, till you come near the light; but come no nearer than 3 fathoms, and you may track the Chop around, the same as running down to the northward of the Middle Ground, which bears from West Chop light N. W. by W. half a mile, and from the east end of the Hedge Fence W. ½ N. 3 leagues. There is good anchoring along this shore, in 6 or 4 fathoms, after you are to the eastward of Necunkey point, till you come near the West Chop. If you wish to make a harbour after entering the Vineyard Sound, bring Gay Head light to bear W. distant 3 miles, and run S. E. till you come into 7 fathoms water, which will be on the east side of the bay in Nimshe bite, near Clark's spring, where the best water may be had in great abundance, and lie in good anchorage, Gay Head light bearing W. by N. Your course from Gay Head light to Tarpaulin cove light, is N. E. by N. and the distance 4 leagues. In this harbour you may anchor in from 4 to 2½ fathoms, and lie safe, with the wind from N. E. by E. to south. It will be best to anchor in 3 fathoms, as with that water you will be out of the tide, where the ground is good for holding. The tide flows at change and full days of the moon, at 9 o'clock, but in the channel between Elizabeth islands and Martha's Vineyard, the flood runs till 11 o'clock. In this channel there is a Middle Ground, which is a narrow shoal of sand, the eastern end of which bears N. W. by N. from the light. There is not more than 3 or 4 feet water on the eastern end. N. W. from Necunkey cliff are 3 and 4 fathoms across the ground. Opposite Lambert's cove is 12 feet, and to the westward of that, is 3 or 4 fathoms. The shoal lies W. by S. and E. by N. is about 4 leagues in length, and has several swashes on it. When the East Chop of Holmes' Hole comes open of the West Chop, you are to the eastward of the Middle Ground. Your course from Tarpaulin Cove light to Holmes' Hole light, is E. ½ N. distance 3 leagues. In steering this course, you must have regard to the tide, as the ebb may set you too far to the southward, and the flood too far to the northward, and stand in for the harbour, when you have opened the East Chop as before directed. From Holmes' Hole light to Cape Poge light the course is E. S. E. and the distance about 3 leagues; in the channel between them there are 12 and 11 fathoms water. In going over the shoals through this channel, you must be careful to keep your lead going, in order to avoid a dangerous sand which lies on the north side of it, called the Horse-shoe, distant from Cape Poge 3 leagues. The channel between this sand and Cape Poge, and also between the former and Tuckernuc shoal, is narrow; in it there are from 12 to 4½ fathoms water, the latter of which is between the east end of the Horse-shoe and Tuckernuc shoal.

\* The largest of the Elizabeth Islands is called Cutterhunk, on which a light-house is built, as described in page 88.

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When Tuckernuc island bears S. S. W. you are to the eastward of the Horse-shoe. On the south side of the channel, also, there are several spots of shoal, to avoid which, you must keep your lead going.

The harbour of Edgartown lies between Martha's Vineyard and Cape Poge, in which you may anchor. In proceeding for this harbour, pass within a mile of Cape Poge, and then steer south along the low sandy beach on the west side, in 5 fathoms water, until you come to the southernmost part of it, then sail more easterly about a mile, until you bring the town, which is a bay to the westward, fairly open, and then steer directly S. S. W. into the harbour, until you get within half a mile of the town, leaving a black buoy on the starboard hand, where you may anchor in 4 or 3 fathoms water. This harbour is a gut between Martha's Vineyard and Cape Poge, and is formed by a shoal which lies on the N. W. and W. sides of the entrance, and the beach to the southward. The tide runs strong in this harbour, and affords excellent anchorage.

Or you may, if bound from Holmes' Hole to Edgartown, bring the East Chop to bear N. W. by W. and run S. E. by E.  $2\frac{1}{2}$  leagues, which will carry you over the flats in 3 fathoms water, on which lies a black buoy, which you leave on your starboard hand, when you will drop into 4 fathoms, and then steer S. S. W. 4 miles, which brings you up to the entrance of the harbour, from which to the wharf, is W. N. W. one mile.

In leaving Holme's Hole to pass over the shoals, keep the West Chop open to the northward of the East Chop, until you have passed Squash Meadow shoal, on the N. W. end of which is a red buoy, with a small pole in the end of it, placed in 16 feet water, bearing from Cape Poge light N. W.  $\frac{1}{2}$  W. 6 miles; from West Chop light S. E. by E.  $\frac{1}{4}$  E. 6 miles; and from the black buoy on Hedge Fence S. by E. 2 miles. Shoalest water 5 feet. The buoy lies about  $2\frac{1}{2}$  miles from the East Chop, must be left on the starboard hand, when your course will be E. by S. in 10 or 12 fathoms water, which course you must continue till you pass Cape Poge light. If it should be tide of flood, you must steer E. by S.  $\frac{1}{4}$  S. as the tide of flood sets very strong to the northward, between Cape Poge and Tuckernuc island, and the tide of ebb to the southward, so that you must govern your course by the tide. In clear weather you may see Nantucket light-house 18 miles, which you must bring to bear E. by S.  $\frac{1}{4}$  S. which course you are to steer till you pass it one league, when you must bring it to bear west, and steer east, taking care to make this course good, which will carry you over the shoals in ship channel; the ground is very uneven, and you will have from 4 to 8 fathoms water. When you have passed over the shoals, you will have from 10 to 14 fathoms water, and then, by steering north, you will make Cape Cod light-house (which contains a *fixed light*) distant 18 leagues.

To go to the northward of the Great Round shoal, on the northerly part of which is a black buoy, which you leave on your starboard hand, placed in 14 feet water, bearing from Sancoty head N. by E.  $\frac{1}{4}$  E. 5 leagues, from Nantucket light E. N. E.  $\frac{1}{4}$  N. 10 miles, and from the red buoy on Point Rip E. N. E. 3 leagues, shoalest water 5 feet, you must proceed according to the foregoing directions, until you pass the light-house, and bring it to bear S. W.  $\frac{1}{2}$  W. then by making a N. E.  $\frac{1}{4}$  E. course good, you will go between the Great and Little Round shoals, on the south part of which is a white buoy, with a small pole in the end of it, placed in 14 feet water, bearing from Chatham lights S. by W.  $\frac{1}{4}$  leagues; from Nantucket light N. E. 3 leagues; and from the black buoy on the Great Round shoal N. W. by N.  $2\frac{1}{2}$  miles: shoalest water 7 feet, in  $2\frac{1}{2}$ , 3, 4, and 5 fathoms water, until you have crossed the Pollock rip, where you will have about 3 or 4 fathoms water, on which is a red buoy, which you leave on your larboard hand. The Little Round shoal bears N. W. from the great one, distant about  $2\frac{1}{2}$  miles. Continue your N. E.  $\frac{1}{4}$  E. course, until you deepen your water to 12 or 13 fathoms, and then steer north for Cape Cod light-house before mentioned, and described in page 68.

As the South Shoal of Nantucket lies in lat.  $41^{\circ} 4' N.$  and the Gulf Stream, southward from this part, reaches as far to the northward as lat.  $38^{\circ} 30' N.$  you should pass Nantucket Shoals between these latitudes. The shoal on George's Bank (east end) lies in long.  $67^{\circ} 42' W.$  and the W. end in long.  $67^{\circ} 50' W.$  and the South Shoal of Nantucket in long.  $69^{\circ} 50' W.$

By observing the foregoing directions, and keeping between the Gulf Stream and the Shoals, you will shorten your passage to New-York, Delaware, Virginia, or other western ports: for you will have the advantage of the eddy cur-

rent, running contrary to the Gulf Stream; the latter would retard your progress at the rate of 60 or 70 miles a day. The Nantucket whalers, by their constant practice of whaling on the edge of the Gulf Stream, all the way from their island to the Bahamas, are well acquainted with its course, velocity, and extent. A stranger may know when he is in the Gulf Stream, by the warmth of the water, which is much greater than that on either side of it. If, when you are crossing the Gulf Stream, you are bound to the westward, you should get out of it as soon as possible. [For description of Gulf Stream, &c. see page 1.]

### AN ACT

For establishing the compensation for Piloting Vessels through the Vineyard Sound, and over Nantucket Shoals, in certain cases.

From and after the 24th of Feb. 1820, any person who shall faithfully and skillfully pilot any vessel through the Vineyard Sound, over Nantucket Shoals, to her port of destination in Boston Bay, or eastward thereof, shall be entitled to receive the following rates of Pilotage, viz. from the first day of November until the thirty-first day of March, inclusive, for a vessel not drawing more than eleven feet of water, three dollars and fifty cents per foot; if drawing over eleven feet and not more than fourteen feet, four dollars per foot; if drawing over fourteen feet, four dollars and fifty cents per foot; from the first day of April until the thirty-first day of October inclusive, for a vessel drawing not more than eleven feet of water, two dollars and fifty cents per foot; if drawing over eleven feet, and not more than fourteen feet, three dollars per foot; if drawing over fourteen feet, three dollars and fifty cents per foot; with an addition of five dollars if such person shall be landed at any place to the eastward of Cape Ann, and not eastward of Portsmouth; or of ten dollars, if landed eastward of Portsmouth.

The provisions of this act shall not extend to any case where an agreement in writing shall be made between the master or owner of a vessel, and the person who may undertake to act as pilot of such vessel, fixing any other rate of pilotage or compensation for such services. Nothing contained in this act, shall in any way affect any law respecting pilotage, now in force, in any part of this Commonwealth.

### NANTUCKET SOUTH SHOAL, &c.

This dangerous Shoal, which lies in lat.  $41^{\circ} 04'$  N. long.  $69^{\circ} 56'$  W. bears S. by E. from *Sancoty Head*, 4 leagues distant. It is composed of hard white sand, over which the sea breaks in the most tremendous manner, having on it in many parts, only 3 feet water, and the tide meeting it obliquely, passes over it in different directions. The course of the tide is N. E. and S. W. beginning to run S. W. at 10 o'clock on the day of full moon, and continues in that direction about 7 hours. It extends from east to west one mile, and is in breadth two cable's length. It often breaks in 5 fathoms, on the east and west of the Shoal. The rip which extends from the western end has about 7 fathoms water on it. The tides run round the compass in  $12\frac{1}{2}$  hours, but the southern tide has the greatest duration, and runs the strongest.

*Extract from the surveying sloop Orbit's Journal.*

"Sancoty head bearing N. W.	} Came to a large swash through the Bass
Siasconset town N. W. $\frac{1}{2}$ N.	
Southernmost land W.	
"Sancoty head bearing N. by W.	} On the south breaker of Bass Rip, in 9,
Siasconset N. N. W.	
Tom Never's head, N. W. by N.	
Southernmost land, W. N. W.	

"Kept standing on to the southward in a channel of from 6, 7, and 8 fathoms, *Sancoty head* bearing N. by W. 8 miles, crossed a dangerous Rip in  $2\frac{1}{2}$  fathoms, lying S. W. by S. From this Rip, E. S. E. 3 miles distant, is another Rip, between which are 9, 15, 17, 14, 8, and 4 fathoms, which is the shoalest water on the Rip; then standing east, had 7 and 8 fathoms; three cable's length from this

Rip, came to a third, and S. 4 fathoms of water with. When over 4, 11, 18, fathoms, we anchored 4, 6, 5 and when over  $2\frac{1}{2}$ ,  $2\frac{1}{2}$ , and way the breakers, which tire 7 fathom S.  $\frac{1}{2}$  W. sounding from the fathom point found  $28^{\circ} 56'$  W. when you come till o'clock.

NOTE. work to much in men in made in N. abreast W. 22 miles, 30 fathoms Mills, and PAUL P. fathoms.

Eight Stream, westward abreast to current.

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Rip, came to another with 4 fathoms water; from this, at equal distance, came to a third, then a fourth, all which were within the limits of 3 miles, and lay N. and S. Although they have the appearance of danger, there is not less than 4 fathoms on the shoalest part. After crossing the fourth Rip, came into deep water within one mile, viz. 12, 17, 22, and 25 fathoms, sand and red gravel. When over, had smooth water with 3 fathoms, and made a south course, having 4, 11, 18, and then 11 fathoms, and crossed the east end of the South Shoal in 2 fathoms, running down the south side in 13 fathoms, 30 fathoms distant, when we anchored in 10 fathoms. Got under way and stood to the westward; had 7, 4, 6, 6 and 7 fathoms; doubled round the west end in 3 fathoms, fine sand; when over had 7 fathoms, the tide setting N. N. W. Kept along the north side in 2½, 2½, and 2 fathoms, one cable's length from the breakers. When about mid-way the shoal, perceived a swash, through which we crossed between the breakers, in a S. S. E. direction, had 2½ and 2 fathoms, and one east 9 feet, at which time it was about half-tide. In a few moments, deepened to 4, 5, 6, and 7 fathoms, 2 cable's length from the shoal, hard white sand. From this steered S. ½ W. to make a south course good, kept the lead going, and increased the soundings gradually to 10 fathoms, fine black and white sand, then one mile from the Shoal. From this sounded every 3 miles, depth increasing about one fathom per mile, till at the distance of 7 leagues from the South Shoal, where we found 28 fathoms, fine black and white sand. This was in lat. 40° 42' N. long. 69° 56' W. The same quality of soundings continue till you get in lat. 40° 31' N. when you will have 40 fathoms, soft mud, from which it continues muddy bottom till off soundings, and in 40° 00' N. no bottom, with 120 fathoms."

NOTE.—The Orbit (Capt. J. COLESWORTHY) was sent by the author of this work to ascertain the exact situation of the South Shoal, which differing so much in latitude from what it had ever been laid down, induced several gentlemen in Nantucket again to engage in the enterprise, who confirm the surveys made in that vessel, and make the following report: "Observed in lat. 41° 4' 11" N. abreast of the Shoal, as laid down by Capt. COLESWORTHY; steered off S. by W. 22 miles, and regularly deepened the water to 35 fathoms; steered E. N. E. 12 miles, to 30 fathoms; N. W. 20 miles, to 18 fathoms; S. S. W. 10 miles, to 30 fathoms; and N. N. W. 14 miles, regularly shoaling until 6 A. M. made the Mills, and came in at 1 P. M. These several courses formed a track over where PAUL PINKHAM has laid the South Shoal of Nantucket, and on which there are 28 fathoms."

Eight or ten leagues S. E. from the south part of George's Bank, lies the Gulf Stream, where there is a strong E. N. E. current, and if you are bound to the westward, you had better go very near the Bank, quite on soundings, till you are abreast of the South Shoal of Nantucket, where you have 30 leagues from Bank to current, and by doing which you will certainly shorten your passage.

Seven leagues to the westward of the South Shoal, in 25 or 30 fathoms, you will have black mud of a shining smooth nature, when you will be in Tuckernuc channel.

To the westward of the South Shoal of Nantucket, you have no shoals, rips, nor tide to hurt you, until you come near the land; but clear sea, good navigation, and regular soundings. To the eastward and northward of the South Shoal, you will have a rapid tide.

A Shoal called POCHICK RIP, lies off the S. E. part of Nantucket Island. It commences a few rods south of Siasconset town, and then runs E. S. E. one mile, when you come to a corner on which are 6 feet at low water; between this corner and the island there are a few swashes from 2½ to 3 fathoms, through which vessels may pass. From the corner the Rip runs south 1½ mile, when you come to another swash, half a mile wide, with 7 fathoms; W. S. W. one-quarter of a mile from this channel is a very shoal spot, with 6 feet, which runs S. W. by W. one-quarter of a mile, when you fall into a swash 40 rods wide, Tom Never's Head bearing N. N. W. 3 miles distant. You then come to the east end of the OLD MAN, which runs W. S. W. about 4 miles, on which are from 9 feet to 3 fathoms; when over the Old Man, you will drop into 7 fathoms, fine sand, with black specks.

Between the Old Man, Tom Never's Head, and Pochick Rip, there is a very good roadstead or anchorage; Tom Never's Head bearing E. N. E. ½ N. the



southernmost land W. by N. you will have 5 fathoms, coarse sand; from which to the Old Man you will have 5, 6, 6½, 7, 8, 9, 10 to 14 fathoms, red sand, then half way between the two; from this you shoalen to 13, 11, 8, 7, 5, 4 and 3 fathoms, fine sand, with black specks.

The *Great Rip* is about 4½ leagues from Sancoty Head; on this Rip, about E. S. E. from Sancoty Head, there are 4 feet water, and east from Squam there are 5, but on many other parts of it there are 2½, 3 and 4 fathoms water.

*Fishing Rip* is about 11½ leagues from Sancoty Head, and has from 5 to 7 fathoms water on it. Between this and the *Great Rip*, the ground is uneven; there are 12, 22, and 15 fathoms water. These two Rips stretch nearly north and south, and are about 12 miles in length. Off the east part of Nantucket Island, lies the *Bass Rip*, about 3 miles from Sancoty Head.

Around the coast of Nantucket and the shoals, you will have sandy bottom, and in moderate weather had better anchor than be driven about by the tide, which is very rapid. The course of the tides at and over Nantucket Shoals, is nearly N. E. and S. W. and regular. The N. E. tide makes flood. S. S. E. moon makes high water. South moon makes full sea at Nantucket Harbour.

South of Noman's-land Island, in 20 or 25 fathoms, you will have coarse sand like gravel stones; and S. S. W. from it in 28 or 30 fathoms, coarse red sand. S. S. E. from Block Island, which is in Block Island Channel, in 40 or 50 fathoms, you will have oozy bottom, but as you shoal your water to 25 or 20 fathoms, you will have coarse sandy bottom.

S. S. E. and W. N. W. moon makes high water on the Shoals; the tide of flood sets N. E. by E. and ebb S. W. by W. from 2 to 3 knots an hour. It ebbs and flows about 5 or 6 feet.

If, when coming from sea, you fall into Block Island Channel, you will have soundings in lat. 40° N. 100 fathoms, mud and ooze, which quality of soundings continue decreasing gradually, till you get into 40 fathoms. In 38 fathoms, Block Island bearing N. by W. 4½ leagues distant, you will have fine red and black sand; two and one-half leagues distant, same bearing, you will have 28 fathoms, coarse sand. When Block Island bears N. distant 4 or 5 leagues, you cannot see any land to the northward or eastward; but as you approach the island, you will see Montock Point to the westward, making a long low point to the eastward. In sailing W. S. W. you will make no remarkable land on Long Island, from the eastward of said island to the westward, its broken land appearing at a distance like islands; but may discover Fire Island light-house, which shows a *revolving light*, bearing E. by N. from Sandy Hook light, 16 leagues distant. From Fire Islands light, a shoal extends south one mile, which is very dangerous, as it shoals suddenly from 8 to 6½ fathoms, then directly on the Shoal, on which the flood tide sets very strong. When Fire Islands light bears N. in 10 fathoms water, you may steer W. by S. which will carry you up with Sandy Hook light. The quality of the bottom is various, viz. yellow, red, brown, blue and grey sand, within short distances. About south from Fire Islands, 33 miles distant, and 40 miles S. E. by E. from the \*Highlands, lies a Bank, extending from N. E. by E. to S. W. by W. having on it from 10 to 14 fathoms, pebbles. Within this, a short distance, you will get 20 fathoms, when it shoals into 16 fathoms, grey sand, which depth you will carry till you get into what is called the †*Mud Hole*, where are from 20 to 36 fathoms water, marl or green ooze,

\* A law has passed the Congress of the United States, for building two light-houses on the Highlands of Neversink, one of which is to be a *revolving*, and the other a *fixed light*, and they will probably be completed by December, 1827, "and when completed, the light ship now anchored off Sandy Hook, is to be removed to Five Fathom Bank, off the Capes of the Delaware." As respects the removal of lights, when once placed, on the exact bearing of which the mariner depends, there can be but one opinion, which is, that NO CHANGE SHOULD EVER TAKE PLACE. Should this light ship be removed to the spot contemplated, and afterwards fallen in with by a commander, during the night, accustomed to the bearings from Sandy Hook light, he shapes his course accordingly, and shipwreck on the Jersey shore is the consequence. Five Fathoms Bank lies close in with Cape May, on which is a light-house, and the passage over the Bank is often safe.

† This *Mud Hole*, with the sounding off the Hook, are correctly laid down on a Chart of the Harbour of New-York, with the Coasts of Long Island and New-Jersey, from Fire Islands, to Barnegat Inlet, compiled and surveyed by EDMUND BLUNT, and published by EDMUND & GEO. W. BLUNT, No. 133, Maiden Lane, New-York.

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and sometimes pebbles, the deepest part of which bears east from the northernmost part of the Woodland, 10 miles; and S. E.  $\frac{1}{4}$  S. 15 miles from Sandy-Hook light. From the *Mud Hole* to the Bar of Sandy Hook, the water shoals gradually, as laid down on the Chart. On the Bank are plenty of fish.

You will have 20 or 22 fathoms water out-sight of the land, sandy bottom in some, and clay in other places. When you come in sight of Sandy Hook light-house, you will see the Highlands of Neversink, which lie W. S. W. from Sandy Hook, and is the most remarkable land on that shore.

### Directions for New-Bedford.

Bring Gay Head light-house, which contains a *revolving light*, to bear S. and run N. till you come to the passage through the islands, which forms Quick's Hole, which you must enter as near the middle as possible; but if you deviate, keep the starboard hand best on board, to avoid a spit or flat which runs off from the S. E. point of Nashawina, on the larboard hand, when you will have from 5 to 6 fathoms, then haul square into the Hole, keeping the larboard hand best on board, following somewhat the bend of the shore. You will keep Gay Head light open about a ship's length by the S. E. point of Nashawina, till you are at least one mile north of the Hole, which will carry you to the eastward of a ledge and rock that lie that distance from it, with only 5 to 12 feet water on them, to the westward of which is a good channel, and 5 fathoms all round. Then steer N.  $\frac{1}{4}$  W. till you strike hard bottom in 5 fathoms water, on the S. E. corner of the Great ledge, which is on the western side of the channel; then N. E. by N. about three-fourths of a mile, till in  $5\frac{1}{2}$  or 6 fathoms, sucky bottom, when the light will bear N. N. W. then steer N. by W. and run into the river.\* After passing †Clark's Point light, you will see a small island, called Outer Egg island, just above water, which you will leave on your starboard hand, giving it some birth, as there are rocks which lie south-westerly from it, say one-third of a mile distant, but still keeping nearer to it than to the main land, to avoid Butler's flat, which makes off from the west shore. To steer clear of this flat, keep the light-house open a ship's length to the westward of the Round Hills. As soon as you open the N. line of the woods with the clear land, about a mile N. of the light-house, you are to the northward of the flat, and may steer direct, either for the hollow, or the high part of Palmer's Island, hauling a little to the eastward as you approach it. The passage between this island and Fort point, on the starboard hand, is narrow. A flat, which extends out S. W. from the point, makes it necessary to keep nearest the island: As you draw towards the N. end of the island, give it a birth of two ship's lengths, as a small flat makes off E. from its N. E. point. As soon as you have passed the island one cable's length, the town will appear open on your larboard hand, when you may run for the end of the wharf which projects out farthest into the channel (Rotch's wharf); or to anchor in the deepest water, bring Clark's point light without Palmer's Island.

In coming into New-Bedford from the westward, the eastern channel is safest for strangers. Give the Sow and Pigs a birth of one mile, and run N. E. by N. till Pune Island bears S. E. then E. N. E. till Gay Head light bears S. and then N.  $\frac{1}{4}$  W. as before directed.

A rock lies off N. W. from the north end of Pune (or Puneguese, as it is sometimes called) about one mile distant, on which there is only 8 feet at low water. Between this and Wilkes' ledge (on which there is a black buoy) is an open ship channel, free from danger, and courses may be varied as circumstances require. By those who are acquainted with the bay, the western channel is most commonly used. Giving the Old Cock, Hen and Chickens a sufficient birth, the only

\* When running from Quick's Hole for the N. ledge, as soon as you find yourself in 7 fathoms water, you may be sure that you are abreast of the Great ledge, or have passed it.

† Clark's Point light is situated at the entrance of New-Bedford harbour. The lantern is elevated 100 feet above the level of the sea, and contains a *fixed light*.

danger to be avoided in approaching Mishom point, is a rock which lies about one mile S. W. by S. from it, on which there is only 6 feet water.\* Having passed Mishom point, you may steer directly for the Dumplin rocks, off the Round Hills, and which may be passed within two cable's length to the eastward. Hence to Clark's point light the course is N. N. E. but to avoid the Middle ledge (on which there is a red buoy) and which lies very near in a direct course from the outer Dumplin to the light, it is better to steer N. E. by N. about a mile, and then haul up N. N. E. when you will leave the ledge on your larboard hand. You may also carry in 4 fathoms to the westward of the ledge, but the channel between it and the Lone rock, which lies N. W. from it, is narrow.

From Seaconnet rocks (giving them a birth of one mile) to the entrance of Buzzard's Bay, the course is E.  $\frac{1}{4}$  S. By this course made good, all the dangers of the Hen and Chickens will be avoided. Soundings generally, from 9 to 7 fathoms, and mostly hard bottom, till deepens to 16 fathoms, sucky bottom, when  $\frac{1}{2}$  Cutterhunk Island light will be upwards of a mile distant, and Clark's Point light will bear N. N. E. and you may run directly for the light till up with the Dumplin Rocks, to which a sufficient birth must be given. Or you may stand on this N. N. E. course till in 7 fathoms, sucky bottom, which will be between Mishom Point and the Round Hills, and come to anchor; or otherwise, steer N. N. E. till Pune Island bears S. E. and then E. N. E. for Quick's Hole channel, as before directed. It may be well to observe, that if, when you have stood in from Seaconnet Point towards Cutterhunk Island light, and the light on Clark's Point is not to be seen, but you can see Gay Head light, you may stand on your course E.  $\frac{1}{4}$  S. till you shut it in behind the west end of Cutterhunk, but must then immediately change your course to N. N. E. If neither light is to be seen, the soundings are the only dependence, and must be very carefully attended to.

### ADDITIONAL REMARKS.

To the S. E. of the Dumplin Rocks, one-half to three-quarters of a mile distant, is a sand Spit with only 7 feet of water on it. Between this Spit and the rocks, there are 5 fathoms water.

Lone Rock, on which a black buoy lies, about 35 feet S. by E. from the rock; from which, Clark's Point light-house bears N. N. E.—Outer Dumplin Rock, S. by W.  $\frac{1}{4}$  W.—Round Hill S. W.  $\frac{1}{4}$  S.—White Buoy at Hussey's Rocks S. W. by W. distance by estimation 1 mile—the entrance of Apponeganset River N. W. and N. W. of the Middle Ledge, nearly half a mile distant, is nearly or quite dry at low water, when there are 2 $\frac{1}{2}$  fathoms round it. Between this rock and the Hussey Rock, is the entrance to Apponeganset River; depth of water, in the channel, 3 $\frac{1}{2}$  fathoms. There is also a channel between the Hussey Rock and White Rock. Course from Quick's Hole to entrance of Apponeganset River, N. N. W.

The White Rock, on which a white buoy lies, about 40 feet S. S. E. from the Hussey's Rocks, from which Round Hills bear S. S. W.—White Rock south, and distant by estimation 1 mile—Clark's Point light-house N. E. by N.—Buoy at the Lone Rock N. E. by E. and the entrance of Apponeganset River N. N. W. appears considerably high above water, and the two rocks to the westward of it, called the Rugged Rocks, are always to be seen.

\* There is also a ledge directly south of Mishom point, one mile distant, on which there is not more than 3 fathoms at low water, and, at very low tides, still less. When bound to sea, a S. W. by S. course from the Dumplin rocks will carry you just without this ledge, and in fair channel way between the Sow and Pigs, and Hen and Chickens.

† A light-house is erected on the west end of Cutterhunk Island, containing a *fixed light*, with nine lamps and reflectors. It cannot be mistaken for Gay Head light, which shows a *revolving light*, bearing from it S. 46° E. Cutterhunk is the largest of the Elizabeth Islands.

The following are the bearings and distances taken from the light-house (by the compass.) The dry part of the Sow and Pigs Reef, south 51 degrees west; distance by estimation 2 $\frac{1}{2}$  miles. Misshawen Point north 6 degrees east. Round Hills north 14 degrees east. Outer Rock, at the Round-hills, north 18 degrees east. Clark's Point light-house, north 20 degrees east. North west point of Pune Island N. E. by N.  $\frac{1}{4}$  N. high point of do. N. E.  $\frac{1}{4}$  N.

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A small rock to the S. W. of the North ledge, (about one mile distant from the buoy) with only 7 feet water on it, and another small rock to the N. E. of the same ledge (about half a mile distant from the buoy) with 10 feet water on it, were recently discovered by Capt. Mosher. On the former he struck with the brig Commodore Decatur, and on the latter with the brig Elizabeth.

Packet Rock, a small sunken rock, on which there are 4 feet water, lies half a mile or upwards W. by N. from Black Rock. The passage for coasting vessels bound from New-Bedford up the bay, is between Packet and Black Rocks.

The soundings across the western entrance of Buzzard's bay, between the Sow and Pigs, and Hen and Chickens, and some distance within them, are very irregular, varying from 5 to 10 and 15 fathoms, and bottom generally hard.

A south-east moon makes high water in the bay, and the average set of tide is  $1\frac{1}{2}$  knots.

*Bearings of Ledges from Clark's Point light.*

North ledge,	. . . . .	S. by E.
Middle ledge	. . . . .	S. by W. $\frac{1}{4}$ W.
Great ledge,	. . . . .	S. $\frac{1}{4}$ W.
Wilkes' ledge,	. . . . .	S. by W.
West's Island ledge (buoy)	. . . . .	S. E. by E.

*Other bearings from the light.*

Old Bartholemew rock,	. . . . .	E. $26^{\circ}$ N. one-sixth of a mile distant.
Quick's Hole,	. . . . .	S. $9^{\circ}$ E.
Dumplin rocks,	. . . . .	S. $21^{\circ}$ W. or S. S. W. nearly.
White rock,	. . . . .	S. $25^{\circ}$ W.
Round Hills,	. . . . .	S. $29^{\circ}$ W.

*From the North Ledge.*

The light-house bears	. . . . .	N. by W.
Black rock,	. . . . .	N. E. by E.
Dumplin rocks,	. . . . .	S. W.

*From Middle Ledge.*

Light-house	. . . . .	N. by E. $\frac{1}{4}$ E.
Dumplins,	. . . . .	S. W. by S. $\frac{1}{4}$ S.

*From Great Ledge.*

Light-house,	. . . . .	N. $\frac{1}{4}$ E.
Mishom Point,	. . . . .	W. S. W.
North ledge,	. . . . .	N. N. E. 2 miles distant
Dumplins,	. . . . .	W. $\frac{1}{2}$ N.

*From Wilkes' Ledge.*

Light-house,	. . . . .	N. by E.
Mishom Point,	. . . . .	W. by N. $\frac{1}{4}$ N. 2 miles dist.
Dumplins,	. . . . .	N. by W. $\frac{1}{4}$ W. about same distance.

*From West's Island Ledge.*

Light-house,	. . . . .	N. W. by W.
Mishom,	. . . . .	W. S. W.
Little Black rock,	. . . . .	N. by E.
Black rock,	. . . . .	N. W. $\frac{1}{4}$ W.



*Bearings and distances of sundry places from Gay Head light-house.*

Noman's Land Island, South, 8 miles distant.

Old Man, S. by E. This is a ledge of rocks which lies two-thirds of the distance from the Vineyard to Noman's-land Island, which has a passage on both sides that is but little used. Those who go through, must keep near Noman's Land Island till the light bears north. You will have 7 fathoms water in this passage.

Sow and Pigs, N. W. by W.  $3\frac{1}{2}$  leagues. This is a ledge of rocks which is very dangerous, and bears S. W.  $\frac{1}{4}$  W. from Cutterhunk light.

N. E. from the light,  $2\frac{1}{2}$  leagues distant, is a spot of shoal ground, with 3 fathoms water on it—Mananshaw bite,  $3\frac{1}{2}$  miles distant. In this harbour you will have good anchorage in from 8 to 6 fathoms, the light bearing W. by S. or W.  $\frac{1}{4}$  S. and lie sheltered with the wind from E. N. E. to W. S. W.—Block Island W. by S. distant 15 leagues.

Newport (Rhode Island) light-house W. by N.  $\frac{1}{4}$  N. distant 11 leagues.

*Bearings and distances from the light on Cape Poge, and depth of water of several most dangerous shoals in sight of Cape Poge light-house, and the bearings of the East Chop of Holmes' Hole.*

East Chop, . . . . .	N. W. by W. $\frac{1}{4}$ W. from said light, $7\frac{1}{2}$ miles distant.
Squash Meadow shoal, . . . . .	N. W. $\frac{1}{4}$ W. 5 feet at low water, $5\frac{1}{2}$ do.
Norton's shoal, . . . . .	E. $\frac{1}{4}$ S. 9 do. do. $7\frac{1}{2}$ do.
Moskeeket Long shoal, . . . . .	E. $\frac{1}{4}$ S. 6 do. do. 8 do.
Tuckernuc shoal, . . . . .	E. $\frac{1}{4}$ S. 7 do. do. 14 do.
South-end Horse-shoe, . . . . .	E. $\frac{1}{4}$ N. 7 do. do. $13\frac{1}{2}$ do.
Dry Spots Horse-shoe, . . . . .	N. E. $\frac{1}{4}$ N. dry 10 do.
Swash of Horse-shoe . . . . .	E. N. E. 12 do. do. 9 do.
Tuckernuc shoal from } Nantucket light, }	W. by N. 7 do.
Horse-shoe from do. . . . .	N. W. by W.
Coast from Nantucket } light bound westw'd }	W. by N. $\frac{1}{4}$ N.
From Cape Poge to Skiff's Island, . . . . .	S. $\frac{1}{4}$ W. dry 9 do.
Hawse's shoal, the shoalest part, . . . . .	S. E. $\frac{1}{4}$ E. 6 do. do. $3\frac{1}{2}$ do.

*Directions for those who fall in with Block Island, when they are bound for Rhode Island Harbour.*

From the S. E. part of Block Island to Rhode Island light-house, the course is N. by E.  $\frac{1}{4}$  E. and the distance 8 leagues; about midway between them, there are 24 fathoms water. If you are on the west side of Block Island, with the body of the island bearing E. N. E. in 8 or 10 fathoms water, your course to Point Judith light is N. E. by E. about 6 leagues. This point appears like a Nag's head, and is pretty bold; between Block Island and the Point, there are from 30 to 6 fathoms water, except a small shoal ground, which, in thick weather, is often a good departure, say 4 to 5 fathoms, bearing about W. by S. from Point Judith light, distant 8 miles. From Point Judith, when not more than a quarter of a mile from the point to Rhode Island Harbour, your course is N. E. and the distance is about 5 leagues. When in 13 fathoms water, Point Judith light bearing W. or W. by N. the course to Rhode Island Harbour is N. E. by N.  $\frac{1}{4}$  N. and the distance to the light-house 3 leagues. The light-house, together with the Dumplings, must be left on your larboard hand; it stands on

\* The light-house on Point Judith is a stone edifice, 40 feet high. the lamps are 60 feet above the level of the sea, and contain a revolving light, to distinguish it from Newport light, which stands on Conanicut island, and is a fixed light. The distance from the light-house to high water mark, is as follows; E. from the light-house to high water mark, 16 rods; S. E. 14 rods; S. 18 rods; S. S. W. 23 rods, which is the extreme part of the point, to which a good birth should be given. The light on Point Judith bears S. W.  $\frac{1}{4}$  S. 3 leagues distant from Newport (Rhode Island) light-house. Point Judith light may be distinguished from Watch Hill light, by the light not wholly disappearing when within three leagues of it.



the south part of †Conannicut Island, this point is called the Beaver's Tail, and is about 3 leagues distant from Point Judith.

After leaving the light-house on your larboard side, there is a sunken rock due south from the light-house, about 200 yards distant, called Newton Rock.

You must take care to avoid the rocks which lie off south from Castle Hill, some of which are above water. Castle Hill is on the east side of Rhode Island harbour. In coming from the eastward, to clear Brenton's reef, bring Newport light to bear W. N. W. run for it until you see off deck Goat Island light, which will then bear N. E.  $\frac{3}{4}$  E.; then run for Goat Island light until it bears E. (or continue your course until it bears E. S. E.) at the same time keeping Newport light bearing S. W. by W. and anchor in 7 to 9 fathoms, good bottom. In coming from the west, after passing Point Judith (the light-house whereon has a *revolving light*) steer N. E. by N. until you draw up with Newport light, to which, giving a birth, run for Goat Island light, and anchorage as above directed. Goat Island lies before the town of Newport, extends about N. and S. and has a fort on it; off the N. E. point lies a buoy in 16 feet water; the shore is hard and rocky.

A little within the light-house, and near to the shore on the west side, there is a cove called Mackerel Cove, the entrance to which is shoal and dangerous. As both ends of these islands are pretty bold, you may pass into the anchoring at either end, and ride nearer to Goat Island side, than to that of Rhode Island, as the other parts of the harbour are grassy, and would be apt to choke your anchors. Rhode Island is navigable all round, by keeping in the middle of the channel.

Narraganset bay lies between Conannicut island and the main. Your course in is about north, taking care to avoid Whale Rock; you may pass in on either side, and anchor where you please. From the light-house on Conannicut island to Gay Head, in Martha's Vineyard Island, the course is E. by S.  $\frac{1}{4}$  S. and the distance 11 leagues.

If, after passing Point Judith, as before directed, you wish to proceed toward Providence through the West Passage, your course is N. E. leaving Newport light (on Conannicut Island) on your starboard hand, half a mile distant, when your course will be N. by W.  $\frac{1}{4}$  league to Dutch Island light,† which you also leave on your starboard hand, one quarter of a mile distant, from which you steer N.  $\frac{1}{4}$  E. 14 miles, for the light on §Warwick Neck, leaving it on the larboard hand one-quarter of a mile, where you may anchor in 3 fathoms water, as it is not safe to proceed further without a pilot, unless you choose to depend on finding the channel, which is marked out by stakes.

In little wind you must take care that the flood tide does not carry you into Buzzard's Bay, or on the Sow and Pigs. Providence is situated about 30 miles N. by W.  $\frac{1}{4}$  W. from Newport, and 35 miles from the sea, being the head navigation of Narraganset Bay. Ships that draw from 15 to 18 feet water, may sail up and down the channel, which is marked out by stakes, erected at points of shoals, and beds lying in the river. [See the Plate.]

\* Conannicut Island lies about 3 miles west of Newport, the south end of which (called the Beaver's Tail, on which Newport light-house stands) extends about as far south as the south end of Rhode Island. The light-house on Goat Island bears N. 60° E. from the light on Conannicut Island, and Kettle-bottom Rock N. E. distant 23 miles. The east shore forms the west part of Newport harbour. The ground the light-house stands upon is about 12 feet above the surface of the sea at high water. From the ground to the top of the cornice is 50 feet, round which is a gallery, and within that stands the lantern, which is about 11 feet high, and 8 feet in diameter. It contains a *fixed light*.

† Goat Island lies before the town of Newport, about 5 miles N. E. from Newport light, and has a light-house on the north end, containing a *fixed light*, from which the following bearings have been taken: Newport light-house, bears S. 60 W. equal to S. W. by W.  $\frac{1}{4}$  W. distant 5 miles; west shore of Castle Hill S. 54 W. or S. W.  $\frac{3}{4}$  W. 2½; Brenton's Point, S. 51 W. or S. W. half W. 1; South Dimpling Rock, S. 70 W. or W. S. W.  $\frac{1}{4}$  W. 1½; Conannicut Ferry, N. 71 W. or W. N. W.  $\frac{1}{4}$  W. 2½; South Point of Rose Island, N. 58½ W. or N. W. by W.  $\frac{1}{4}$  W. ½; Gull Rock, N. 11½ W. or N. by W. ¾; West shore of Coster's Harbour Island, N. 1½; Buoy on north point of Goat Island, N. 50 E. or N. half E. ¼.

‡ Dutch Island light-house is erected on the south part of the island, and shows a *fixed light*.

§ Warwick Neck light-house is built on the south part of Warwick Neck, and shows a *fixed light*.

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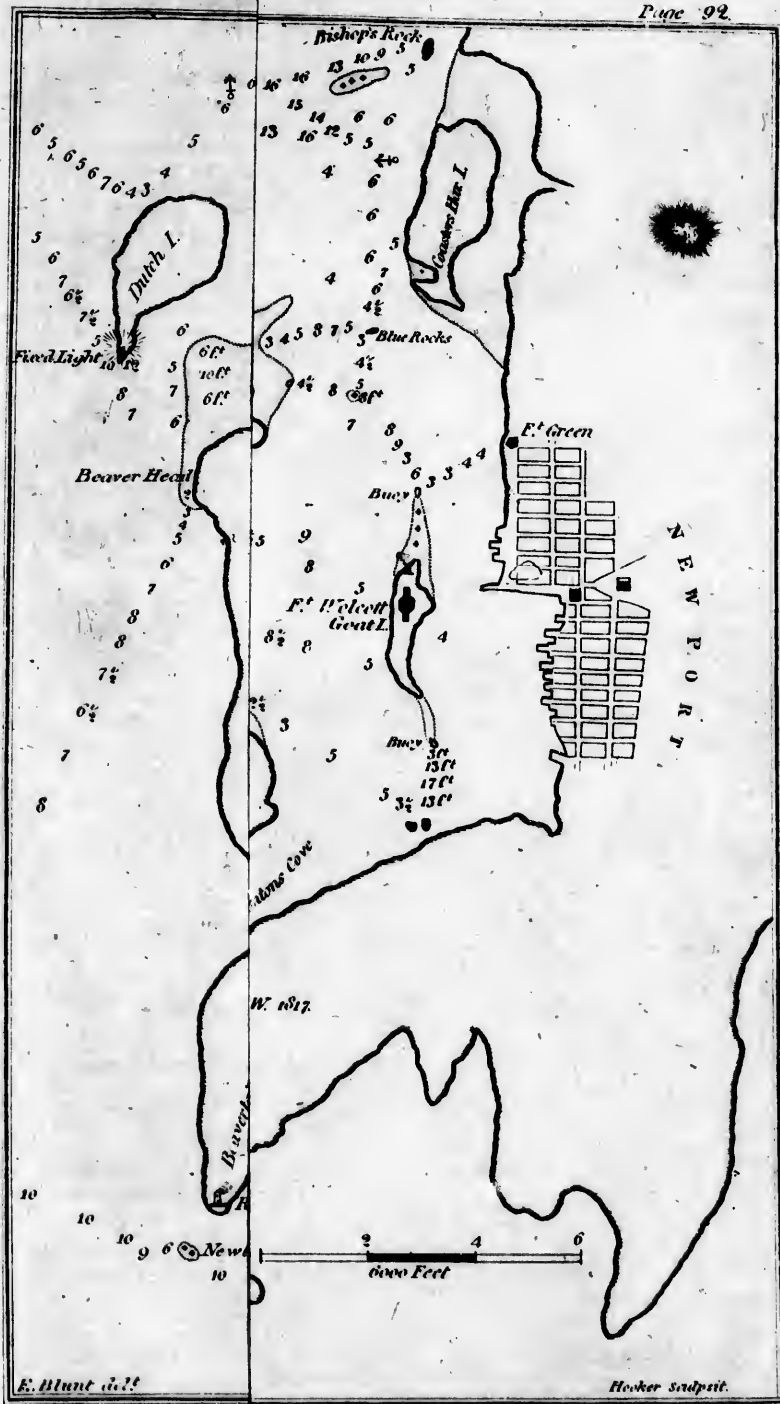
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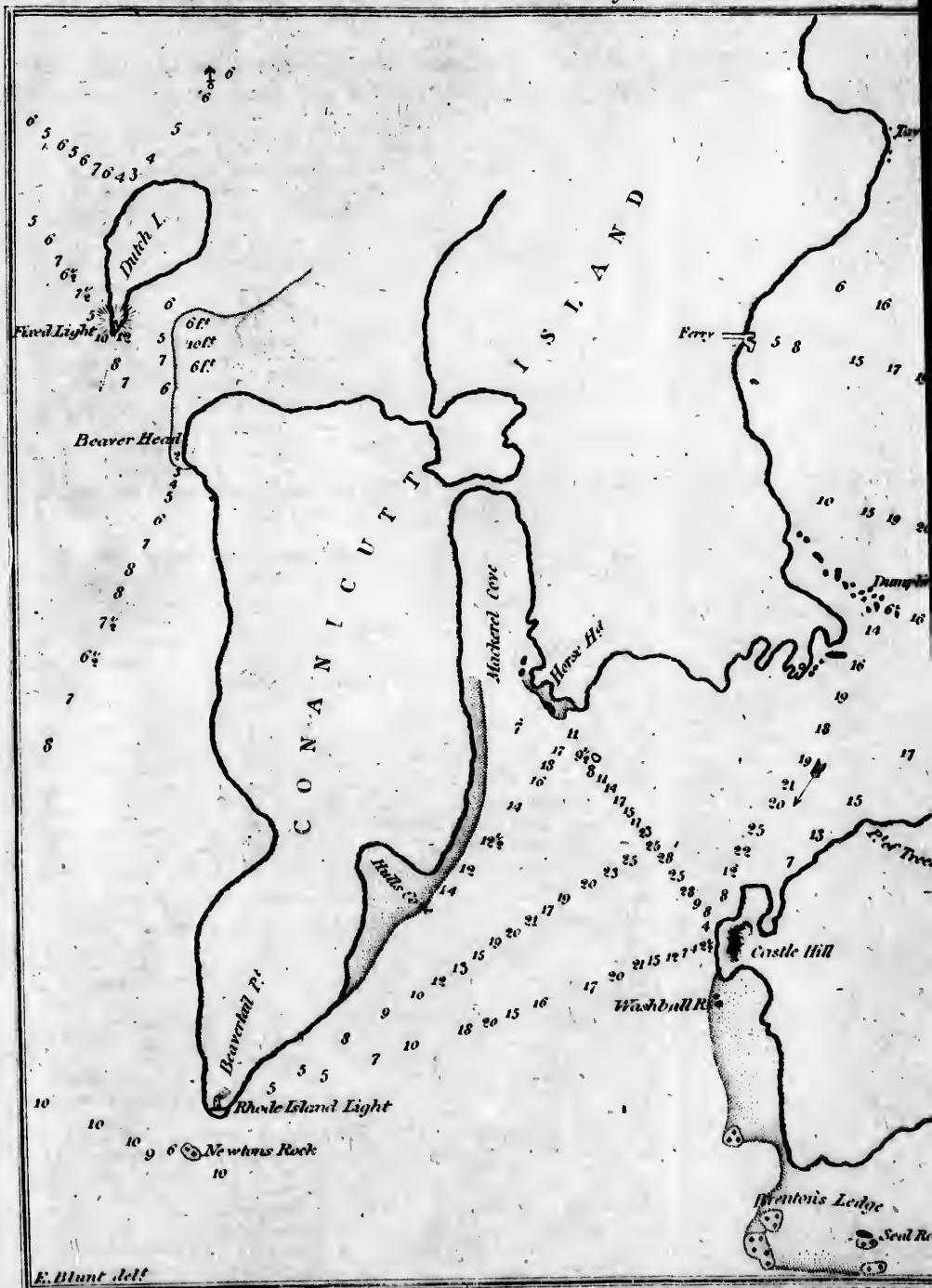
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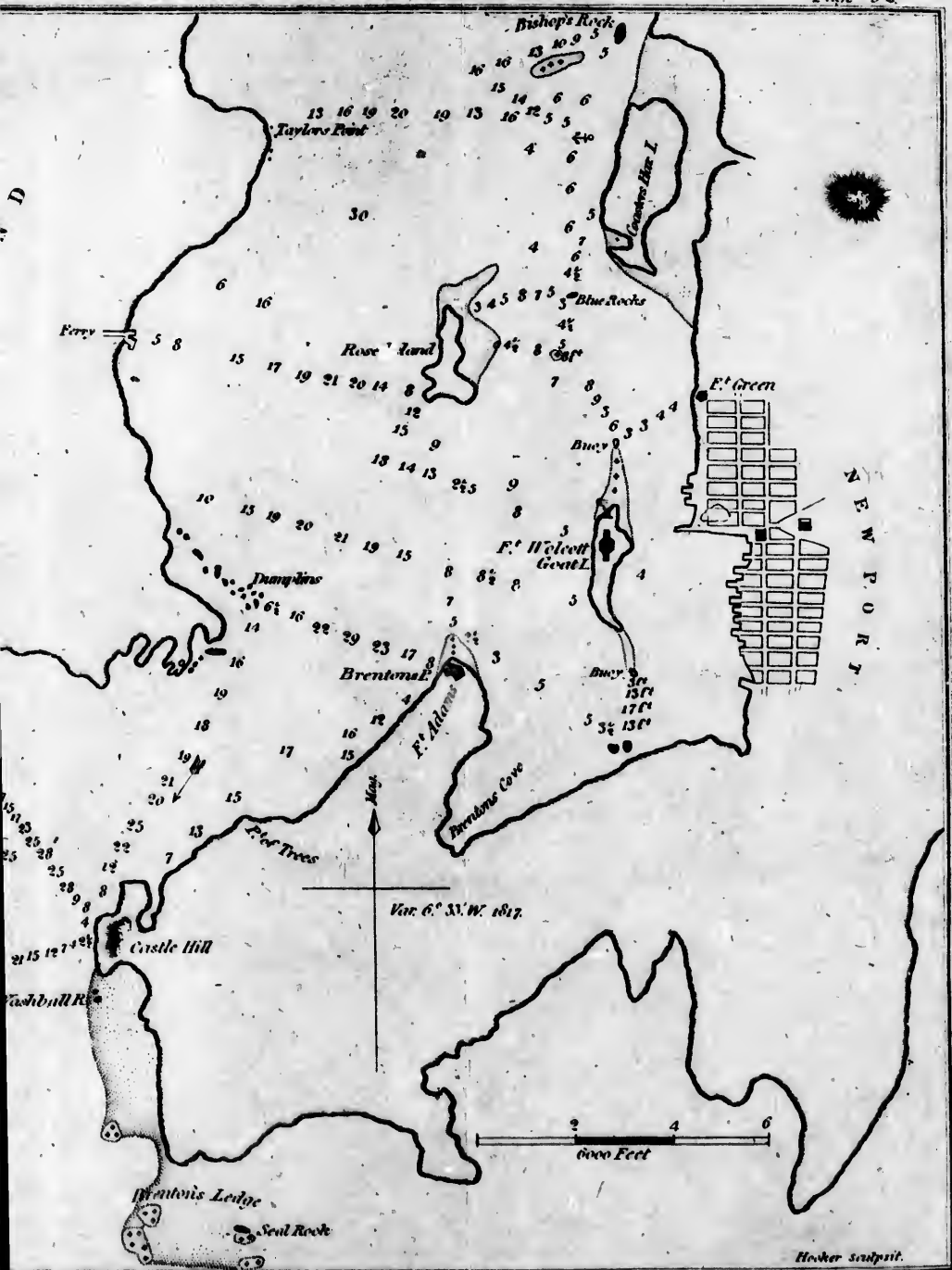
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*The following are the bearings, by compass, from Rhode Island light-house, of several remarkable places, together with the distances, viz.*

Block Island (S. E. point) S. W. by S.  $\frac{1}{2}$  S.  
 Point Judith light, S. W.  $\frac{1}{4}$  S. distant 3 leagues.  
 Block Island (S. E. point) S. W.  $\frac{3}{4}$  S. or S. W. by S. nearly.  
 Block Island (middle) S. W.  $\frac{1}{2}$  S. distant 3 leagues.  
 Block Island (S. E. end) S. W. by S.  $\frac{1}{2}$  S.  
 Whale Rock, W.  $\frac{3}{4}$  S.  
 Brenton's Reef, E. S. E.  $\frac{1}{4}$  E.  
 South point of Rhode Island, E.  $\frac{1}{2}$  S.  
 Highest part of Castle Hill, E. N. E.  $\frac{1}{4}$  E.  
 Brenton's Point, N. E. by E.  
 Fort on Goat Island, E. N. E.  $\frac{1}{2}$  N.  
 South-easternmost Dumplin, N. E.  $\frac{1}{4}$  E.  
 Kettle Bottom, N. E.  
 Newton's Rock, S. near 200 yards.

N. B. The anchoring place between the town of Rhode Island and Coster's Harbour, N. E. by E.

### *Directions for sailing from Newport, through the Sound, to Hunt's Harbour, near Hell-gate.*

The first course from Newport light-house is S. W. by S. distant three leagues, to Point Judith light; thence from Point Judith light, through the Race to the Little \*Gull Island light, the course is W. by S. 16 leagues distance, leaving †Watch Hill Point light, ‡Stonington light, and Fisher's Island on your starboard hand, from the W. point of which a dangerous reef runs off about one mile W. S. W. which, in passing, you must be careful to avoid, and the Little Gull light on your larboard hand, which bear from each other N. E.  $\frac{3}{4}$  E. and S. W.  $\frac{3}{4}$  W. distance 9 $\frac{1}{2}$  miles, or you may continue your W. by S. course till the Little Gull light bears W.  $\frac{1}{4}$  N. 3 miles distant, and then run N. W. 2 $\frac{1}{2}$  miles, when, with §New London light bearing N. distant 2 $\frac{1}{2}$  leagues, you steer W. 10 leagues, which will bring you within 2 leagues of ||Faulkland Island light, bearing about W. by N.  $\frac{1}{4}$  N. from you, when you must steer W. S. W. 12 leagues, which will carry you within 5 $\frac{1}{2}$  leagues of ¶Eaton's Neck light-house, bearing from you W.  $\frac{1}{4}$  S. when you must steer W. 9 leagues, then W. S. W. 4 leagues, after which S. W. 4 $\frac{1}{2}$  miles, which will carry you up with \*\*Sands' Point light-house on your larboard hand, and the Execution Rocks on your starboard hand, which have a

\* Little Gull light is situated on Little Gull Island, at the entrance of Long Island Sound, through the Race. This light may be considered as the key to the Sound. The lantern is elevated 50 feet above the level of the sea, and contains a *fixed light*.

† Watch Hill light is situated on Watch Hill, at the entrance of Fisher's Island Sound. The lantern is elevated 50 feet above the level of the sea, and contains a *revolving light*.

‡ Stonington light-house shows a *fixed light*, on the extreme point of land at Stonington, and bears from Watch Hill Point light-house, N. W.  $\frac{1}{4}$  W. 4 miles distant; from Napon Tree Point N. N. W.  $\frac{3}{4}$  W. 2 $\frac{1}{2}$  miles; from Cotomsett Rocks N. by W.  $\frac{1}{4}$  W. 3 $\frac{1}{2}$  miles; from Wicopesset, N. by E.  $\frac{1}{4}$  E. 3 $\frac{1}{2}$  miles; from Latimore's Reef, N. E.  $\frac{1}{4}$  E. 3 $\frac{1}{2}$  miles; from Wamphassrock Shoal E.  $\frac{1}{2}$  N.  $\frac{1}{2}$  of a mile; from North Hummock or Dumplin, E. by N.  $\frac{1}{4}$  N. 8 $\frac{1}{2}$  miles distant.

§ New-London light is situated at the entrance of the harbour, on the western side. The lantern is elevated 80 feet above the level of the sea, and contains a *fixed light*, and bears E. N. E. from Little Gull light, about 5 leagues.

|| There are two of the Faulkland islands, on the largest of which is a light-house; S. E. from the light, four miles distant. you will have 3 and 4 fathoms, and on the S. and E. sides it is very bold. The light-house contains a *fixed light*, elevated 75 feet above the level of the sea.

¶ Eaton's Neck light house stands on an eminence, about 73 feet high; the height of the walls is 50 feet more; the whole height from high water mark to the light is 126 feet. It stands about 300 feet from high water mark, is a single *fixed light*, and painted black and white in stripes, from the top to the bottom.

\*\* Sands' Point light-house is at the head of Long Island Sound, containing a lantern 40 feet above the level of the sea, showing a *fixed light*.

white spar buoy on them in 19 feet water. In case of a flood tide\* and a southerly wind, when you come through the Race, your course should be W. until you come up with Eaton's Neck light, taking care to make proper allowance for the tide, which runs very strong, and flows on the change and full days of the moon half past 11 o'clock, and the water rises 5 or 6 feet.

If you are compelled to make a harbour in Stonington, coming from the eastward, bring the light to bear N. by E. after getting within Watch Hill Point, and steer N. but the lead must be kept going, and the passage is not to be recommended.

If you are bound into New-London, after getting to the northward of the S. W. part of Fisher's Island, keep New London light bearing from N. N. W. to N. N. E. if you are beating to windward, but if the wind is fair, bring the light to bear N. when at the distance of 2 leagues, and run directly for it; leave it on your larboard hand in running in; when in, you may have good anchoring in 4 or 5 fathoms water, clayey bottom. In coming out of New-London, when you have left the harbour, bring the light to bear N. N. E. and steer directly S. S. W. till you come into 15 fathoms water, in order to clear a reef that lies on your starboard hand, when the N. part of Fisher's Island will bear E. distant 2 leagues. If a ship could have a fair departure from the middle of the Race, and was compelled to run in a dark night, or thick weather, the best course would be W. to \*Stratford Point, and would afford the largest run of any one course. If bound up Sound, steer W. by S. 23 leagues, which will carry you past †Old Field Point light, and up with Eaton's neck, on which also is a light-house, both which are on the larboard hand. If you happen to get on the N. shore, take particular care to keep at the distance of three leagues, in order to avoid the reefs and shoals that lie along the shore.

About 3 leagues E. by N.  $\frac{1}{2}$  N. from Eaton's Neck light, S. by W. from Stratford Point light, and N. by E. from Old Field Point light, lies a †Shoal or Middle Ground, called Stratford Shoal, on which there are but two feet of water at low water. On the south side of this shoal is a white spar buoy, and on the north side a black spar buoy, both in nineteen feet water. You may go on either side of the shoal you please; on the N. are from 3 to 7 fathoms; on the S. side from 12 to 17 fathoms water. A ledge lies off the N. E. part of Eaton's Neck, 1 mile distant. When up with Stratford Point, Old Field Point light-house (which contains a *fixed light*) will bear S. by W. and you must not approach Long Island shore when to the eastward of Old Field Point light, nigher than to have this light W. by S. If bound up Sound, from the middle of the Race, steer W. by S. 23 leagues, which will carry you past Old Field Point light, and up with Eaton's Neck light, both of which you leave on your larboard hand. In running this course, you will leave Falkland Islands on your starboard hand. You may go as near Long Island, generally, as 2 or 3 miles, without any danger, and in passing Crane Neck, (or Old Field Point light) Eaton's Neck light bearing W.  $\frac{1}{2}$  N. have 6 fathoms water; as soon as you have passed the Point, you deepen into 10 fathoms. Eaton's Neck light and Old Field Point light bear E. and W. from each other, 23 miles distant.

From Eaton's Neck to Lloyd's Neck, the course is W.  $\frac{1}{2}$  N. 5 miles; between which lies a deep bay, called Huntington's Bay, where a ship of any size may anchor with safety, keeping the eastern shore aboard. From Lloyd's Neck to

\* On Stratford Point is a light-house containing a *revolving light*. The revolution is such as to exhibit the light once in 90 seconds. It bears from Old Field Point light N. by E. from New Haven light W. S. W. distant about 14 miles; and from Black Rock light N. E. about 4 miles.

† A light-house is erected on Old Field Point (Long Island) showing a *fixed light*, bearing S. by W. from the light-house on Stratford Point and the shoal called Middle Ground, which is equi-distant from the two lights, and East from Eaton's Neck light, 23 miles distant.

‡ *Bearings of the Shoal.*—Stratford Point, N. N. W. Mount Misery S.  $\frac{1}{2}$  W. Grover's Hill, (near Black Rock harbour) N. W. The length of the shoal, 1 league, running N. by E. and S. by W. Light-house on Eaton's neck, W. by S.  $\frac{1}{2}$  S. The shallowest part is near the middle of the shoal, from whence the observations were taken, where there are 2 feet water in common tides. The centre of the shoal is near the middle of the Sound. A light-house is erected on Stratford Point, as above described.

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Matinecock Point, the course is W. by S. distant 10 miles, good soundings, borrowing on Long Island to 7 fathoms. The course from Matinecock Point to Sand's Point light is W. S. W. distant 2 leagues; between these two points is a bay called Hemstead's Bay, in which is excellent anchoring, keeping the eastern shore aboard. To the northward of Sand's Point light, distant one quarter of a league, lie the Execution Rocks, (as before mentioned, with a white spar buoy on them) with a board pointing to the S. W. which you must take care to avoid, leaving them on your starboard hand, about one-eighth of a mile. From Sand's Point light the course is S. W. 4 miles to Hart Island, to the west of which, between that and City Island, there is good anchorage for vessels of any size. If a vessel, in making this course good, is obliged to run to windward, they must be careful of two rocks, one called Gangway Rock, which bears W. 28° S. from Sand's Point light-house, distant about 1½ mile, with a black spar buoy floating perpendicular, in 19 feet water, which should be left on the larboard hand, and the other called Success Rock, bearing N. W. by N. from the east bluff of Cow Bay, half a mile distant, on which an iron spindle is erected. On Gangway Rock, which runs quite to a point, there are only 6 feet at low water, making it very dangerous. Success Rock is bare at low water; between the two there is a channel of about 2½ fathoms; they bear from each other N. 40° W. and S. 40° E. distant about one-third of a mile. The course from Hart Island to \*Throg's Point light is S. S. W. distant two leagues, taking care to avoid the *Stepping Stones* (on which is a black spar buoy in 19 feet water) which lie on your larboard hand, and are steep too; the soundings on your starboard hand are regular to 3 fathoms. In passing Throg's Point light, bound to the westward, you must not haul up until you have passed it one-eighth of a mile, and when the light bears N. W. steer W. which will carry you in mid-channel. A Shoal extends S. S. E. 15 rods from Throg's Point, which will be avoided by following the above directions. From Throg's Point to Hunt's Harbour, the course is W. keeping as near the middle of the Sound as you can conveniently.

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### Oyster Bay and Huntington,

Are principal harbours on the north shore of Long Island, about 10 leagues to the eastward of Hell-Gate. The channel into Oyster Bay lies over towards Lloyd's Neck, until you have passed the tail of the Middle (which is a sand-flat extending from Hog Island towards the neck, within the distance of 180 fathoms) thence the bay is clear with good anchorage throughout.

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### Huntington Bay,

Has a fair entrance and sound ground. There are from 3 to 4 fathoms of water, muddy bottom, within Lloyd's Harbour on the W. and Cow Harbour on the E. side of the Bay. Fresh N. E. winds will swell the tides, which commonly rise about 7 feet perpendicular to 10 or 11 feet.

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### Hell-Gate,

And the narrow pass leading into Long Island Sound, at the time of slack water, and a leading wind, may safely be attempted with frigates. Small ships and vessels, with a commanding breeze, pass at all times with the tide. On the flood, bound into the Sound, you pass to the southward of the Flood Rock, which is the southernmost of the three remarkable rocks in the passage. On the ebb, you go the northward of the Mill Rock, the stream of the tide setting that way, and forming eddies in the flood passage, which at that time is rendered unsafe. The *Pot*, on which there are 10 feet at low water, shows distinctly by the whirlpools, as also the *Pan*, which is a part of the *Hog's Back*.

\* A light-house, showing a *fixed light*, is on the eastern part of *Throg's Neck*. The height of the tower is 40 feet from the surface of the ground.

*Directions from Block Island to Gardner's Bay.*

Montock Point, the easternmost part of Long Island which has a light-house on it, is 7 leagues W. by S. from the S. W. point of Block Island; between the island and the point, there are 16 and 18 fathoms water. As you approach the point, you will quickly come into 9, 7, and 5 fathoms water. A flat runs off from the above point, on the outer part of which are 5 fathoms water, rocky bottom, and S. by W. from the light, 8 miles distant, lies Frisbie's Ledge, extending N. W. and S. E. 4 miles, with from 8 to 15 fathoms on it, hard rocky bottom, and deep water very near.

Between Montock Point and Block Island, there is a shoal with only 4½ fathoms on its shoalest part, on which the sea breaks in moderate gales from the southward. It lies nearly half way between the point of Montock, and the S. W. part of the island. W. by S. from the latter, and about E. ½ N. from the \*light-house on Montock, distant 8½ miles, you suddenly shoal your water from 13 to 6 fathoms on the N. W. side of the shoal, and before you get a second cast of the lead you are over the shoalest part, into 7, 8, 10, and 12, and then into 14 fathoms. The rippling of the tide is very conspicuous when approaching the shoal in fine weather, and the sea breaks on it so in bad weather that, even in small vessels, it is recommended to avoid coming near it, especially in southerly or S.W. gales. You will suddenly shoal from 13 to 9 fathoms, and Montock light bearing W. ½ S. 3 miles distant, you will have 5½ fathoms. The soundings from the shoal towards Montock are 6, 9, 14, 13, 11, 10 and 9 fathoms. Towards the light-house when it bears from W. to S. W. by W. the bottom is strong; towards the shoal the bottom is coarse sand, and a very strong tide. A shoal runs off from the north side of Block Island, 2 miles.

From Montock Point, a Reef runs off in a N. E. direction, 2 miles, having a bed of rocks on its outer end, with 10 and 8 feet on them, on which the sea constantly breaks or the tide causes a great rippling. They may be easily avoided by keeping a good lead going. In rounding Montock, come no nearer than 9 fathoms, or keep the two bluffs, or high parts of the land (to the westward of Montock) open one of the other, until Willis' Point comes open of Montock False Point. These marks will carry you clear of all the shoals in 3½ and 9 fathoms, and a N. by W. course will then carry you clear of the Shagwanganoc Reef, which lies N. W. ½ N. 5½ miles from Montock light-house, and has 6 feet on its shoalest part, 6 fathoms on the N. E. and N. W. side, 3 and 4 fathoms on the S. E. and S. W. side, and 3, 4, and 5 fathoms between the shoal and Montock False Point. The tides set strong round Montock Point: the flood N. E. and ebb to the contrary. At the Shagwanganoc the flood sets W. by S. and ebb to the contrary. When on the Shagwanganoc in 6 feet, anchored a boat, and took the following marks.

1. Willis' Point in a line with the westernmost point of Fort Pond Bay, or the bay closed by the points being brought in a line S. W. by W. ½ W.

2. Montock False Point S. about 3 miles.

3. The White Cliff, or high sand hills on the west end of Fisher's Island, called Mount Prospect. N. by W. ½ W.

4. The Gull Islands W. N. W. and the bluff sand cliff of Gardiner's Island. W. S. W. ½ W. Montock False Point is 3 miles N. W. from the light-house. Willis' Point is the easternmost point of Fort Pond Bay.

In rounding Montock in the night (when the land or light can be seen) with westerly gales, you may anchor when the light-house bears S. W. by S. in 8 or 9 fathoms, coarse sand. Having brought Montock to the southward of west, the weather thick, you cannot clearly ascertain the distance you are from the point; the lead must be your guide. Steer as high as W. N. W. until you have got into 9 fathoms. Steer off again into 13, and if you suddenly shoal from 10 to 6, steer off E. by N. until you are in 11 or 12, which suddenly deepens (as a bank

\* The light-house on Montock Point is on the east end of Long Island, bearing W. by S. from the S. W. point of Block Island, 7 leagues distant. From Montock light house to the west point of Fisher's Island, N. N. W. 9 leagues distant. The light-house contains a *fixed* ght, elevated 100 feet above the level of the sea, and may be seen 9 or 10 leagues.

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of not more than  $5\frac{1}{2}$  fathoms, extends from the N. E. Reef to the Shagesagonuc) and a good lead kept going will prevent you going too near these shoals, by steering off into 12 and 13 fathoms, before you attempt to steer to the westward, after having sounded in 6 or 7 fathoms. In the day-time, having rounded Montock, and bound to Gardner's Bay, steer N. by W. until you clearly discover that Fort Pond Bay, and the red cliff on the western Point, are open of Willis' Point; you may then steer W. by S. for the bluff point of Gardner's Island, and you will pass between the Shagwanganoc and Middle Ground (or Cerberus Shoals.)

The Middle Ground (or Cerberus) is a rocky shoal, having from  $2\frac{3}{4}$  to 5 fathoms on the shoalest part: the north and east sides are steep, having 10 and 15 fathoms within half a cable's length of the shoalest part. It extends N. by E. and S. by W. three-quarters of a mile. The south and west sides shoalen gradually from 13, 10, 9, 8, 7, to 5 fathoms, sandy bottom. It lies N. W. by N.  $9\frac{1}{4}$  miles from Montock light-house; E. S. E. 9 miles from the Gull light; S. W. by S.  $10\frac{1}{4}$  miles from the light-house on Watch hill point;  $6\frac{1}{4}$  miles S. by E.  $\frac{1}{4}$  E. from Mount Prospect, or the high sand hills on the west end of Fisher's Island. The tide in general makes a great rippling over the shoalest part. To avoid these rocks in the day time, observe a conspicuous hill with a notch in its centre, at the back of New-London, called Pole's hill. This kept a ship's length open, either to the eastward or westward of Mount Prospect, (or the sand hills of Fisher's Island) will keep clear of the rocky shoal, in 10 or 15 fathoms to the eastward, and in 8 or 9 fathoms to the westward. The tide sets strong over the shoal. In calm or little winds, ships should anchor before any of the marks or bearings are too near.

Being bound for New-London, and having brought the Gull light W. by N. or the light on Watch hill, N. E. steer so as to open New-London light-house of Fisher's Island; and when the spire of New-London church is in one with the gap on Pole's hill, steering with it in that direction will carry you between the Race rock (on which is a spindle or beacon) and the middle Race rock, on which are 17 feet at half flood, and lies about half way from the Race beacon and the Gull light, or you may bring New-London light-house a sail's breadth to the eastward of the church spire, bearing N.  $5^{\circ}$  E. will carry you to the westward of the middle Race rock, or between that and the Gull light-house. You may then steer direct for New-London light-house.

About 4 miles within Montock point,  $\frac{1}{2}$  mile from the shore, lies a reef, bearing N. W.  $\frac{1}{4}$  N. from the point, on which there are 6 feet water, which is very dangerous.

S. by W. about 9 miles from Montock light, is a small fishing bank, having 8, 10, 11, and 15 fathoms on it, before mentioned.

In the offing, between Montock and Block Island, it is high water at half past 10, full and change, but on the shore two hours sooner.

Montock False point is about 3 miles N. W. from the true point. The Shagwanganoc or Six Feet Rocky shoal, lies N. 3 miles from it, and has been previously described. Willis' point is on the east side of the entrance of Fort Pond bay. This bay is very convenient for wooding and watering; the ground is clear and good, and you may anchor in any depth you please. In a large ship you may bring Willis' point to bear N. E. and even N. E. by N. and then have in the middle about 7 fathoms water. Near the shore at the bottom of the bay there is a pond of fresh water.

The N. E. part of Gardner's island is  $5\frac{1}{2}$  leagues W. N. W. from Montock point. With westerly winds you may anchor off this part of the island, which is sandy: the marks for anchoring are the high lands of \*Plumb Island N. W. and the south part of Gardner's Island in sight, bearing S. by W. or S.; you will have 12 or 10 fathoms water. The bottom is sand and mud. About 4 miles within Montock point, one and a half mile from the shore, lies a reef bearing N. W.  $\frac{1}{4}$  N. from the point, on which there are 6 feet water, which is very dangerous.

The entrance of Gardner's bay is formed by the north end of Gardner's Island, and the south end of Plumb Island. If you are bound through the Sound toward New-York, your passage from Gardner's bay is between the west end of Plumb Island and Oyster Pond, through which channel you will have from 4

\* A light-house is to be built on the west end of this island. [See Appendix.]



to 20 fathoms water. When going into the bay, you may go within a cable's length of Gardner's Island, where you will have 10 fathoms water. You should be careful not to go too nigh Gull rock, as there is a rocky spot one and a half mile from it, on which there are three fathoms at low water. This shoal lies with the following marks and bearings, viz.—a house on Plumb Island, (standing about one-third of the way between the middle and the N. E. end) on with the northernmost of the two trees which appear beyond the house; the north end of Gull Island to bear N. N. W. or N. by W.  $\frac{1}{4}$  W.; and the southernmost end of Plumb Island, on with the northernmost point of Long Island. In order to avoid this rock, when going into, or coming out of Gardner's bay, you must be sure to keep the south point of Plumb Island open of the N. W. point of Long Island, whilst the house on Plumb Island is on with the northernmost of the two trees as before mentioned. There are several trees, but they appear, when viewed at a distance, to be only two trees. This shoal is called by some, the Bedford rock, because the English ship Bedford grounded on it, August 15, 1780. E. by N. one league from Plumb Island, lies a dangerous reef, which extends to the Gull Islands, and the passage between is not fit to be attempted; as there are several rocks, some of which may be seen. In Gardner's bay you may anchor in what depth of water you please, from 5 to 8 fathoms.

On the S. W. side of Gardner's Island there is very good riding. If you are to the eastward of this island, with an easterly wind, and wish to take shelter under the S. W. side, you must give the N. W. end of the island a large birth, as above directed, and as you open the west side of the island, you may haul round the N. W. point, and anchor where you please. The soundings are regular.

Ships, in turning up into Gardner's bay, and standing to the southward, will observe a single conspicuous tree on the S. E. part of Plumb Island, and tacking before it is brought to touch the south end of the wood on Plumb Island, will avoid the Superb's reef, which lies E. by N.  $\frac{1}{4}$  N. from the low point on Gardner's Island, one-third of a mile distant. It then extends S. E. by E. about two-thirds of a mile, and is about 200 yards broad: Three fathoms on the middle, 6 fathoms close to the N. W. end, 4,  $4\frac{1}{2}$ , and 5 fathoms close to the S. E. end, 5 and 6 fathoms close to the east side, lying parallel with the low point of the island. To avoid this shoal, the leading mark into Gardner's bay is to keep Plumb Gut a ship's breadth open. Stand to the northward until Plumb Gut is nearly closing on the N. E. bluff of Long Island, nearly touching the S. E. point of Plumb Island, and until New-London light-house is brought to the north and west of the Gull light-house, but tack before the points close, or stand into no less than 7 fathoms water, otherwise you may shoot over on the Bedford reef, which is a bed of rocks, about 30 yards wide and 400 long, lying S. E. and N. W. with 16 or 17 feet on its shoalest part. You may anchor in Gardner's bay in 5 or 6 fathoms. New-London light-house kept a ship's breadth open to the eastward of Plumb Island, will run you up into the middle of the bay, in the deepest water, and out of the tide. Ships going in through the Race, or going out of New-London, in order to avoid the Middle Race rock (which has only 17 feet on it at half flood, and lies about half way from the Race beacon and the Gull light-house) having from 30 to 32 fathoms on the north side, and from 10 to 30 on its south side, should observe the following marks:—Going out of the roads, and to the westward of the rock, which is the best channel, bring the spire of New-London church a sail's breadth open to the westward of the light-house; keep this mark until a grove of trees, standing on a high hill on Fisher's Island, comes on with the east side of Mount Prospect, or the white sand hills, on the S. W. side of Fisher's Island, N.  $60^{\circ}$  E. or the Gull light W. S. W. The tide flows at the Gull 11h. 30m. full and change.

To go to the northward of this rock, and to the southward of Race rock beacon, bring New-London church spire in one with the middle of the gap on Pole's hill at the back of New-London N.  $8^{\circ}$  W. Keep this mark until Watch-hill light-house comes a little open of the south side of Fisher's Island N.  $70^{\circ}$  E. and when the Gull light-house is in one with the middle of Great Gull Island S.  $75^{\circ}$  W. you are then to the eastward of the rock. Coming up the Sound through the Race, bring Watch-hill light-house just open of the south side of Fisher's Island, until the south Dumplin comes open to the northward of the north part

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of Fisher's Island, or until New-London light-house bears north; you are then to the westward of the Race rock, and may steer for the light-house of New-London, and anchor in the roads, with Montock light-house S. E. by S. then just open of the west point of Fisher's Island, Gull light-house S. W. by S. and New-London light-house N. by W. and the gap and spire of the church in one; you will have 12 fathoms, stiff clay bottom.

Going to the westward through the Race, and to the southward of the Race rock, steer for the Gull light-house, keeping it to the northward of west until New-London light-house bears N.  $\frac{1}{2}$  E. then steer for it, leaving the Gull light-house half a mile on the larboard hand.

The above to be observed in case the weather should be thick, and New-London church spire not to be seen, or when the Gull light-house bears S. by W. You may then steer N. N. E. for the roads, making allowances for tides, which are very strong in the Race. Flood runs to the westward till 11h. 30m. full and change days of the moon; but in New-London roads only 9h. 30m. It rises 5 or 6 feet spring tides. The flood sets through the roads, first half flood W. N. W. last half W. S. W. Ebb, first quarter, sets S. S. E. the last three quarters S. E. for the S. W. point of Fisher's Island.

To go through Plumb Gut to the westward, give Pine point, which is steep, a birth of  $2\frac{1}{2}$  cable's length, and steer so as to bring the north bluff of Plumb Island N. by W.  $\frac{1}{2}$  W. Keep it in that bearing until you have brought the poplar tree clear of the east end of Mr. Jerome's house, or until you have got Pine point to the southward of east; you will then observe a wood close inland of the high bluff of Long Island, which when bearing W.  $\frac{1}{2}$  S. will be in one with the rocky point, which is the next point to the Oyster Pond point. Steering with the wood and this point in one, will carry you clear of the reef, which lies off the north bluff.

In running through to the eastward, keep the point over the middle of the wood before-mentioned, until the poplar tree is to the west end of the house; then steer to the southward, giving Pine point a birth, as before. Pine point E.  $\frac{1}{2}$  S. will lead clear of the shoals coming to the eastward.

The tide runs 6 or 7 knots in the Gut. The flood sets about N. N. W. and the ebb S. S. E. It flows at 10 o'clock in the full and change days of the moon.

*Marks for the Valiant's or Middle Race rock, which has only 17 feet on it at half flood, and lies about half-way from the Race beacon, and the Gull light-house.*

1. New-London light-house in one with two conspicuous trees, which stand on the declivity of a hill, at the back of New-London, being remarkable for a gap on its summit, N.  $4^{\circ}$  W.

2. The west side of the south Dumplin just touching with the north hill or point of Fisher's Island N.  $41^{\circ}$  E.

3. The east bluff point of the Great Gull island in one with the west lower extreme of Little Gull island, or the Gull light-house, a small sail's breadth open to the eastward of the east part of Great Gull Island S.  $64^{\circ}$  W.

4. The north end of Long Island just shut in with the N. W. point of Plumb Island S.  $76^{\circ}$  W. Gull light-house S.  $63^{\circ}$  W. and Mount Prospect or High White sand hills on Fisher's Island N.  $60^{\circ}$  E.

*Marks for the New-Bedford reef, a bed of rocks about 30 yards broad, and 400 yards long, lying S. E. and N. W. with 16 or 17 feet on its shoalest part.*

1. The N. E. end of the northernmost grove of trees on Plumb Island, touching the south declining end of the southernmost of the White sand hills on Plumb Island. These sand hills are the two next south of the houses in the bay.

2. A large notch or gap in the wood on the main land, to the westward of Black point, a sail's breadth open to the northward of a single black rock, which is between the south end of Great Gull island, and the N. E. end of Plumb Island N. W. by N.

Thus appears the rock.

*Marks for a bed of rocks, about 40 yards square, lying three-quarters of a mile off shore, on the S. E. side of Plumb Island. At low water the shoalest part has not more than three feet on them, and about the size of a small boat's bottom. It may be seen at low water; three fathoms all round, not more than 3 feet from the rock. Other parts of the reef, 8 fathoms are around the shoal.*

1. The largest house with two chimneys in the bay, east side of Plumb Island, in one with a large stone or rock on a hill behind the house N. 33° W.
2. The Gull light-house touching the east end of Great Gull Island, N. 65° E.
3. The White sand hills on the south side of Fisher's Island, or Mount Prospect, half way open to the westward of Great Gull Island. S. E. part of Plumb Island, S. 74° W. and the N. E. end of same, N. 45° E.

*Marks for a shoal in the middle of Plumb Gut, which is a compound of rocks and large stones, with only 16 feet on it, having 16 and 17 fathoms on the N. E. side, 20 on the N. W. and 6 and 7 on the south side. When on the shoal, took the following marks.*

1. A small poplar tree in one with Mr. Jerome's door, N. N. E.
  2. A single conspicuous tree in one with the east side of a gray cliff on Gardner's Island, S. E. by E.
  3. Oyster Pond point W.  $\frac{1}{2}$  N. and the S. E. or Pine point of Plumb Island E. by N. and the rocky point or bluff point of Plumb Island, north. The passage through Plumb Gut is to the northward of this rock.
- There is another rock, with only 24 feet upon it, about 400 yards from the rocky or bluff point on Plumb Island.

#### *Marks for anchoring in Plumb Island Roads.*

Mount Prospect, or the high white sand hills of Fisher's Island, touching the Gull light-house, N. 62° E. and the N. E. part of Long Island in one with the S. E. end of Plumb Island, bearing W.; or the east bluff points of Gardner's Island in one with the low beach which extends from the north side of the island, S. 45° E. With these marks you will have from 7 to 8 fathoms, soft mud, and quite out of the tide, and not more than three-quarters of a mile from the shore of Plumb Island, where there is very convenient and good water.

From Block Island a reef of rocks lies one mile distant from the north end of the island.

South-west ledge lies W. S. W. from Block Island, 5 miles distant, having 4½ fathoms at low water, and breaks a heavy sea. As you open the passage between Montock and Block Island, you will deepen your water, and have soft bottom on an E. N. E. course, and when abreast of Block Island, you will shoalen your water to sandy bottom; when past it, you will again deepen to soft bottom.

[For more particular directions for passing Block Island, see page 79.]

#### *Bearings and distances of sundry places from the light-house on Montock Point, taken by the officers of the Revenue Cutter Argus.*

The S. part of Block Island bears E. by N. from the light-house on Montock Point, 20 miles distant.

The eastern rips lie E. by N. 1½ mile from the light-house. The northern rips lie N. E.  $\frac{1}{2}$  E. 3 miles from the light-house. (These rips, although they may appear to the mariner dangerous, may be crossed with any draft, in 6, 7, 8 and 9 fathoms.)

Shagwanganoc Reef, on which a spear is placed, bears N. W.  $\frac{1}{2}$  N. from the light-house on Montock Point, 5½ miles distant; the reef ranges N. by E. and S. by W. about  $\frac{1}{4}$  of a

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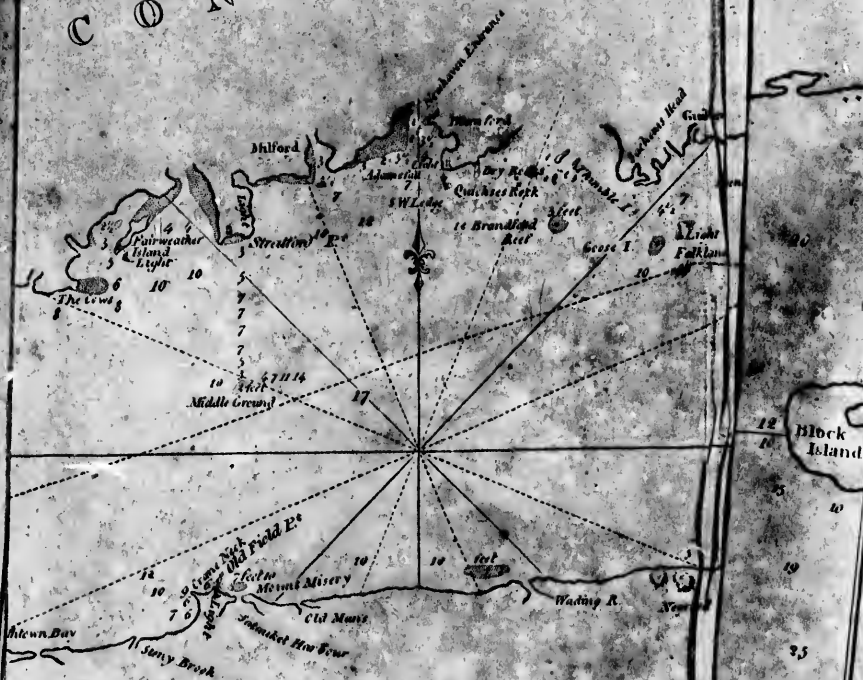
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mile in length. There is a good channel way between the reef and Long Island, about two miles wide, in 3, 4, and 5 fathoms water.

Frisbie's ledge is only a place of hard rocky bottom before you approach the light-house to the westward, from 8 to 15 fathoms, and no wise dangerous to any vessel. You may keep the shore on board from the Highlands (say three-quarters of a mile) and haul round Montock.

The east end of Fisher's Island bears N. by W. from the light-house on Montock Point, 17 miles.

Watch Hill Point light-house (which contains a *repeating light*) bears nearly N. from Montock Point light-house, distant 18 miles; there is a reef extending from Fisher's Island to Watch Hill Point, leaving a passage between the E. end of the reef and Watch Hill Point, half a mile.

The Race Rock, where there is an iron spear placed, bearing S. W. by W. three-quarters of a mile from the W. Point of Fisher's Island, bears from Montock light house, N. W. 16 miles distant.

The Gull Islands bear W. S. W. from the Race Rock, 6 miles distant. The light-house standing on the west chop of New London harbour, bears N. N. W. 9 miles from the spear on the Race Rock. On the Little Gull Island there is a light-house containing a *fixed light*, bearing W. S. W. from the west point of Fisher's Island, 6 miles distant.

Bartlett's Reef, on which a buoy is placed, bears N. W. by W.  $\frac{1}{4}$  W. 8 miles distant from the Race Rocks.

Little Goshen Reef, where a buoy is placed, bears N. E. by E. about 3 miles distant from the buoy on Bartlett's Reef.

The light-house at New-London harbour, bears from the buoy on Little Goshen Reef, N. N. E.  $\frac{1}{4}$  E. about 2 miles distant, and contains a *fixed light*.

The S. W. ledge, where a buoy is placed, bears N. by W. from the Race Rock,  $7\frac{1}{2}$  miles distant.

The east chop of New-London harbour bears N. by E.  $\frac{1}{4}$  E. from the S. W. ledge,  $1\frac{1}{2}$  mile distant.

The light-house bears from the buoy on S. W. ledge N. W. by N.  $1\frac{1}{2}$  mile distant.

### Description of \*Long Island.

Long Island, from Montock Point to Red Hook, extends W. by S. about 102 miles, and is at the broadest part about 25 miles across. The land is generally pretty low and level, excepting a few hills, which lie about 40 miles to the westward of Montock Point, and Hempstead Hill, which is 319 feet above the level of the sea. Along the south side of the Island a flat extends about a mile from the shore; in some places it runs out a mile and a half. Your course along this flat from Montock Point to Sandy Hook, is S. W. by W.  $\frac{1}{4}$  W. 14 leagues, and then W. by S. 22 leagues. The E. end of the flat is sand; the middle and west parts are sand and stones. About 4 leagues distant from the Island there are from 15 to 18 fathoms water, and from that distance to 20 leagues, the water deepens to 80 fathoms; in the latter depth you will have oozy ground, and sand, with blue specks on it. About 4 leagues off the E. end of the island, you will have coarse sand and small stones; and at the same distance from the middle and west end, there is small white sand and gravel, with black specks. From the S. W. end a shoal extends about 6 miles towards Sandy Hook, which forms the East Bank.

We have previously mentioned (page 86) respecting Fire Islands light-house, but think it advisable to repeat, it bears E. by N. from Sandy Hook light, 16 leagues distant, and exhibits a *revolving light*, from which a shoal extends south one mile, which is very dangerous, having 64 fathoms very near it, and then suddenly ashore, and on which the flood tide sets very rapid. From this to Sandy Hook the soundings are various, viz. yellow, red, brown, black and grey sand.

\* Long Island Sound is a kind of inland sea, commencing at Sand's Point, and extending to Gull Island light. It is from 3 to 25 miles broad, dividing it from Connecticut, and affords a safe and convenient inland navigation, having good anchoring places, and several fine light-houses to guide the mariner.

*Directions from Gardner's Island to Shelter Island.*

If you fall in with Gardner's Island, you must sail on the N. side of it till you come up with a low sandy point at the W. end, which puts off two miles from the Highland. You may bring the island to bear east, and anchor in 7 or 8 fathoms water, as soon as within the low sandy point.

*Directions from Gardner's Island to New London.*

Your course from Gardner's Island to New London is N.  $\frac{1}{2}$  E. about 5 leagues. In steering this course, you will leave Plumb Island and Gull Islands on your larboard, and Fisher's Island on your starboard hand. In this pass, you will go through the Horse Race, where you will have a strong tide. The flood sets W. N. W. and the ebb E. S. E. This place breaks when there is any wind, especially when it blows against the tide.

Your soundings will sometimes be 5 fathoms, at others 15 and 20. In passing the west end of Fisher's Island, you must give it a birth of  $3\frac{1}{4}$  miles, as there are several rocks to the westward of it; then your course to the light-house is N. N. W. distant two leagues; but in going in here you must not make long nitches: you will leave a sunken ledge on your larboard, and one on your starboard hand. When within one mile of the light-house, you may stand on to the eastward, till the light bears N. N. W. and then run up about N. N. E. till abreast of the light, where you may safely anchor, or run N. for the town. [See page 94, for sailing into New London Harbour.]

*Directions for vessels coming from sea, and bound to New London, or the Westward.*

Keep Gull Island light to bear W. N. W. until you judge yourself within about two miles of the light; your course then to New London light (after you pass Race Rock, which lies W. S. W. from the point of Fisher's Island, distance  $\frac{1}{2}$  of a mile) is N. N. W. In coming in, or going out of New-London, (when opposite the Gull light) bring the Gull light to bear S. S. W. and New-London light N. N. E. leave the light on your larboard hand in going into the harbour; keep well to the W. if it be winter season, and the wind at N. E. and stormy—your course to break off a N. E. gale, in good anchorage, is W. N. W. from the Gull, distance 5 miles, then haul up, if the wind be N. E. and steer N. W. until you get into 10 fathoms of water, muddy bottom; anchor as soon as possible—you will be between Hatchett's Reef and Black Point; this is the best place you can ride in, if you have a N. E. gale, and thick weather, and cannot get into New-London. † Saybrook light, which is a fixed light, elevated 35 feet above the level of the sea, will then bear W. by N. or W. N. W.

What makes me give these directions, is because Saybrook is no harbour for vessels either day or night, except for such as are well acquainted; it will be well to give Saybrook light a birth of three or four miles, and steer W. by S. 22 miles. You will make Faulkland Island light, which give a birth of  $3\frac{1}{4}$  miles, leaving it on your starboard hand; your Sound course then is W. S. W.  $\frac{1}{2}$  W. 45 miles distant, which will carry you up with Eaton's Neck light, leaving † Stratford shoal on the starboard hand. This shoal, which has a white spar buoy on the

\* New London light house stands on the west side of the harbour, and projects considerably into the Sound. It contains a fixed light, as before mentioned.

† Saybrook light-house is built on the western side of the harbour, and exhibits a fixed light. It bears W. N. W. from the Gull light, 6 leagues distant.

‡ For description of Stratford Shoal, see page 94.

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south, and a black spar buoy on the north, between which you cannot go, bears N. N. W. from Satauket (Long Island) and S. by W. from Stratford Point light. The buoys are placed in 19 feet water. In leaving Faulkland Island light three miles, steer W. until you get into 5 or 7 fathoms water, distance 25 miles to Stratford Point light, hard bottom, which leaves Stratford Shoal, that bears S. by W. from the light, on the larboard hand, then your course is W. S. W. to Tinacock Point. [For sailing through the Sound, see page 93.]

### *Directions for New-Haven.*

From Faulkland Island (E. S. E. from which is a hard ridge, on which the tide rips, and you have bold water all round) bound into New-Haven, give the island light a birth of 10 or 12 miles, then haul up N. W. giving New-Haven light a birth of two miles, on account of a ledge bearing S. W. from the east point of the harbour, on which is a black buoy, bearing S. W. by S. from the light-house, distant  $1\frac{1}{2}$  mile, and from the white buoy on Adams' Fall S. by W. distant three-quarters of a mile. There is a spindle on Quicksets Rock, which bears from the light S. by E. distant three-quarters of a mile. The buoy on Adam's Fall bears from the spindle N. W. by W. distant three-quarters of a mile. The buoy on S. W. ledge bears from the spindle W. S. W. distant half a mile.

Vessels bound in from the eastward, may pass between the buoy on South West Ledge and the Spindle, as there are three fathoms water in this channel, keeping about mid-way between them, and leaving the white buoy on Adam's Fall 20 rods, to the eastward of them, and then steer for the end of the wharf. On this shore, in channel way, you will have 3, 4, and 5 fathoms water, muddy bottom. Bringing the light to bear S. E. you may anchor in Morris' Cove, near the east shore, in two fathoms water, muddy bottom. Your course from this up the harbour, with a fair wind, is north. Give the Fort Rock, in running for the pier, a small birth.

Vessels bound in from the westward, will leave both buoys on the starboard hand, and they may pass with safety within 26 rods of either of them. If beating in, your soundings will be from 2 to 3 and 4 fathoms. Stand in no farther than 2 fathoms upon the west shore, on which you will have hard bottom. In beating up, after getting in muddy bottom, (which is channel soundings) it is best to keep the lead a going often, on account of bordering on the west shore, where you will have hard bottom, and soon aground.

### *Directions for sailing by the light-house on Fayerweather's Island, at the entrance of Black Rock harbour, on the north shore of Long Island Sound.*

The harbour of Black Rock, although safe and easy of access, is so situated, that no direct course can be given to steer for the light, that will carry you direct into the harbour, as that depends wholly on the distance you are from the

\* New-Haven light-house is situated on Five Mile Point, at the entrance of the harbour, and lies on the starboard hand. The lantern is elevated 35 feet above the sea, and contains a fixed light.

† Black Rock light, on Fayerweather's Island, at the entrance of Black Rock Harbour, regularly displays a strong and brilliant light, on the improved plan of Capt. Winslow Lewis. This edifice is of an octagon form, built of stone, in the most durable manner, 19 feet diameter at the base, where the walls, the exterior of which are handsomely faced with hewn free stone, are 5 feet in thickness, and rise to the height of 31 feet, surmounted with a platform of solid masonry, which supports the lantern 40 feet above high water mark. The building is painted white, defended from the sea by a strong circular fortification of massy rocks, and is in every respect faithfully built, and prepared to withstand the storms of ages, and reflects no little credit on the faithfulness and skill of its enterprising builders. Black-Rock harbour,

light, at the time you make for it; therefore, judgment is to be used in varying the bearing of the light as you draw near in, which is easily done by observing the following rules. In coming from the westward, if you mean to harbour, to avoid the reef called the Cows, you bring the light to bear N. by W. and run directly for it, until within three-quarters or half a mile distance, when, if occasion requires, you may stretch into the westward in a fine beating channel, having from 5 to 3 fathoms water, and good ground. As you approach the light, which stands on the east side of the harbour, the water gradually shoals to about two fathoms. The mouth of the harbour, although not very wide, is not difficult; the light bearing east brings you completely into the harbour. The island on which the light-house stands, and the reef called the Cows on the south and west side from the harbour of Black Rock. On the easternmost rock of this reef stands a spindle, distant from the light half a league, and from which the light bears N. The light stands 44 rods from the south point of said island, at low water. From this point puts off a single rock 50 rods distant, on which is 8 feet at high water, making in all about 74 rods distance. The light bears from this rock, N. by E. 1 E. As soon as you pass this point or rock, the harbour is fairly opened to the northward, in any point from N. to W. N. W. You can run for the light with safety, observing, as you draw nearly in, the above directions, and a due attention to the lead. The bottom for some distance from this rock southerly, is hard, but you may continue your course, and it will soon deepen. It is safe and good anchorage to the eastward of the light, for all winds from W. S. W. to N. N. E. quite down to the mouth of Bridgeport harbour, which is distant about two miles. The shore on the eastern side of the light is bold too, in 3 fathoms, close aboard the light, and so continues until you are quite down to the south point of the island. This Bay, to the leeward of the light, between that and Bridgeport, is one of the best Bays for anchorage on the north shore in Long-Island Sound, and affords from 4 to 3 fathoms water, the light bearing west. In coming from the eastward, crossing Stratford Point light close aboard, your course to Black Rock light is W. by N. and you keep sounding on the starboard hand not less than 4 fathoms, nor more than 8 fathoms, to the north of Bridgeport harbour, which is distant about two miles. The shore on the eastern side of the light is bold too, in 3 fathoms close aboard the light, and so continues till you are quite down to the south point of the island,

### *Directions for Vessels bound to New-York.*

If you fall into the southward, and make Cape May, on which is a light-house exhibiting a revolving triangular light, it would be prudent to keep about three leagues off, to avoid Herreford Bar, which lies from four to six leagues from the Cape to the northward, and 8 miles from the inlet of that name. This inlet is frequented by the Delaware Pilots, having no other harbour to the northward until they reach Egg Harbour. After passing Herreford Bar, you may then haul up N. E. in 9 fathoms water, which course continued will draw you into 5 fathoms; as you approach Egg Harbour, you will then have fine white and black sand intermixed with small broken shells; by continuing the same course, you will deepen your water to 8 or 9 fathoms, and so continue till you draw near Barnegat, which will alter your soundings materially, as there is a channel runs in a S. E. direction from Barnegat. The soundings off the shore is mud, shells,

from its central situation, is one of great importance to vessels, navigating the Sound, at all seasons of the year, especially in winter. Next to the harbour of New London, it is the most safe and convenient on the whole coast of Connecticut, admitting vessels of a large draft of water at all times of the tide. During the inclemencies of winter, when the communication with New-York is obstructed with ice, numerous vessels, and of all sizes, are not unfrequently compelled to seek a harbour here for weeks together, where they ride secure from the drifting ice, and the violence of every wind, in the immediate neighbourhood of a flourishing commercial village, capable of furnishing every necessary repair, stores, or refreshments that may be required, and on as good terms as in any of our larger sea-ports.

\* A Buoy is to be placed on Allen's Flat, in Bridgeport Harbour.

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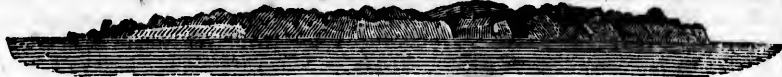
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and gravel, mixed together. The shoal off Barnegat does not extend beyond three miles from the beach, and is very steep too; you may turn this shoal in 6 fathoms water, within pistol shot of the outer breaker. It would always be prudent in night-time to keep in 9 or 10 fathoms water at least, in turning this shoal. The soundings are so much to be depended on, that the moment you lose the above soundings you are past the shoal, when you will have fine black and white sand, and very hard bottom; you may then haul in for the land N. by E. which course will bring you along shore in from 15 to 17 fathoms water; but if the wind and weather permit, I would recommend hauling in N. N. W. which will bring you in with the southernmost part of the Woodlands, which is very remarkable, having no other such land in the distance from Cape May up to the Highlands, and can be distinguished by its being very near the beach, and extends to Long Branch.



*Thus appears the south part of the Woodlands.*

By passing Barnegat in the day-time it may easily be known; should you be so far off as not to see the breakers, you may make the light-ship, which is anchored from 12 to 13 miles E. S. E. from Sandy Hook light, or perhaps see a grove of wood back in the country, apparently 3 or 4 miles long, known to the coasters by the name of Little Swamp, and lies directly in the rear of the inlet of Barnegat, so that by sailing to the northward, your having the north end of this land directly abreast, you are certainly to the northward of Barnegat; there is also another grove directly in the rear of Egg Harbour, known by the name of the Great Swamp, which has the same references as respects Egg Harbour—but that the one may not be taken for the other, it must be observed, the Great Swamp of Egg Harbour will appear much higher, and in length 3 or 10 miles: neither can they be seen at the same time, as Barnegat and Egg Harbour are 15 miles apart. Barnegat bears due S. by W. 45 miles from Sandy Hook. In hauling in for the Woodland before-mentioned, you may, if the wind is off the shore, keep within a cable's length of it all the way, until up with the Highlands, and should your vessel not draw more than 10 feet water, you may continue until you come up with the northernmost part of the cedars that stand on Sandy Hook; then you must steer N. N. E. to give the False Hook a birth (on the north-east part of which is a white spar buoy with a white flag on it, in 3½ fathoms water) keeping about half a mile from the beach until you bring the light-house to bear S. W. ½ S. at which time you will have from 5½ to 8 fathoms water, then steer W. by N. till you bring the light-house open with the east point of the Highlands, then steer N. by W. which will carry you through the Swash Channel, up with the Can Buoy of the Middle, leaving it on the starboard hand, passing four Black Spar buoys from the Spit to the Middle, all which you leave on the starboard hand. The Can Buoy of the S. W. Spit is black, which in coming up the Swash Channel, is left on the larboard hand.



*Highlands, N. 63° W.*

NOTE. S. ½ E. from Sandy Hook light, 12 miles distant, is a ledge, about 1 mile from the shore, with not less than 2½ fathoms on it.

\* *Floating light.*—A vessel having two masts, with Lanterns on each, has been moored E. S. E. from 12 to 13 miles from Sandy Hook light-house, in 14 fathoms water. Lights are placed in each lantern at sun-set, and kept burning until sun-rise. The vessel is provided with a large Bell and clock-work, which in stormy and foggy weather will be kept tolling at the rate of one stroke per minute. Vessels from sea making the light, and steering from it a course W. N. W. will make the White Buoy on the Bar.

† Notwithstanding every possible exertion is made to keep the Buoys and Flags in the places assigned them, still accidents occur, and remove them for a short time. We mention this, that Navigators should not be deceived, when it does happen.




*To enter \*Sandy-Hook Channel-way.*

When up with the Highlands, keep 3 miles from the shore to avoid the *Outward Middle*, steering to the northward until you bring the light-house to bear W. then steer in for it, as the flood outside sets to the northward, but when a little way in, it sets to the westward. Having passed between the two Can Buoys, (which is channel-way) the white on the larboard, and the black on the starboard hand, you also pass four white spar buoys on your larboard hand, between the white Can Buoy, and the point of Sandy Hook; and in approaching the light-house, you must not haul too nigh the shore, on account of the *False Hook*, on which the four white spar buoys before-mentioned are placed. By keeping a mile from the beach, you will avoid that shoal; when you have got in so far as the point of the Hook, where the beacon stands, you may then haul in the bay W. S. W. but if you mean to anchor in the bay, haul in S. W. giving the point the distance before-mentioned, until you bring the light-house to bear E. by N. or E. N. E. where you may anchor in from 5 to 7 fathoms water, soft muddy bottom. But, should you wish to proceed to New-York, when you have come in as before directed, and got abreast of the beacon, or the point of Sandy Hook, steer up W. by N. until you bring the light-house to bear S. E. and Brown's Hollow to bear S.  $\frac{1}{4}$  E. leaving five black Spar Buoys, and the black Can Buoy of the S. W. Spit, on your starboard hand, when you must steer up N. by E.  $\frac{1}{4}$  E. leaving the white Can Buoy of the Nole on your larboard hand, for the bluff of Staten Island, which will, at that time, bear exactly north from you.

The above-mentioned is intended for vessels coming up ship channel, but after the two lights on the Highlands of Neversink are completed, you will observe, when the two lights are brought in range, you will be up with the Can Buoy of the S. W. Spit, and may then alter your course to N. by E.  $\frac{1}{4}$  E. for the bluff of Staten Island, where a light-house is to be built by December, 1827, showing a *fixed light*.

[That you may not be deceived with respect to Brown's Hollow, it is the hollow which makes the termination of the Highlands to the westward.] Having turned the S. W. Spit, continue steering N. by E.  $\frac{1}{4}$  E. until you shoal your water, which you soon will do if it is young flood, as it sets from 2 $\frac{1}{2}$  to 3 knots, to the westward; here you will observe, at the time you turn the Spit before mentioned, on the Jersey shore, above the Narrows, two hummocks of land, each forming as

It were a saddle, thus;  The easternmost of the two is the mark for coming up the channel so as to avoid the *Upper Middle*, on which is a black Can Buoy, on the starboard hand, by keeping it just open with the bluff on Staten Island, which will be the case if you turn the Spit as before directed; this will bring you up channel-way, when you have sailed 5 or 6 miles the course described, and with this mark open; then you haul more to the eastward, until you open the other hummock, which is called the Westernmost Hummock; by keeping both easterly and westerly hummocks open to your view, you avoid the *Middle* and *West Banks*, on the latter of which is a black Can Buoy, and on the former a white Can Buoy, and come up Channel-way through the Narrows. Between the Can Buoy of the West Bank and the bluff of Staten Island, are four white Spar Buoys, which you leave on your larboard hand. When thus far, you must, to pass Fort Diamond, keep Staten Island shore aboard. The mark to pass Fort Diamond is to keep Bedlow's Island open with the point of Long Island; for if you can see Bedlow's Island in coming through the Narrows, there is no danger from the Narrows to come up to New-York; you will steer up for Bedlow's Island to avoid the Mud Flat, on which four black buoys are placed, which you leave on your starboard hand; this flat is a kind of oyster bed, or bank of mud and shells, and has not more than 11 feet on it at low water; but to avoid this flat do not stand too far to the westward, on account of

\* The light-house on Sandy Hook contains a *fixed light*. It is lighted with 18 patent lamps, to each of which is fixed an eighteen-inch metallic reflector. The strength of light in this lantern is greater than any other on the coast, and if properly attended, may be seen at the distance of 10 leagues.

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Robbin's Reef, (between which and Bedlow's Island are three white Spar Buoys) which, to avoid running on the west side of the channel, the mark is to keep the point of land up the North River (on which Fort Lee stands) open with the east side of Bedlow's Island, after which, there is nothing material to obstruct the navigation to New-York, it being very steep near the point of Governor's Island, and the rocks near the Battery do not exceed 100 yards from the shore. There are three reefs of rocks in the East River, viz. one off the north side of Governor's Island, with 15 feet water on it; one off the Battery, having 9 feet over it, and one off Corlaer's Hook, which is very dangerous; they may generally be distinguished at all times by the rip of tide going over them, both flood and ebb.

*Other Directions.*—Or you may, after making the Highlands of Neversink, run boldly in within 3 miles of the beach, and in steering along to the northward, observe to keep in about 3 fathoms water, until you get the light-house to bear W.  $\frac{1}{2}$  N. then, if you have a round hill, called Mount Pleasant, some distance in Jersey, in one view with the land about one-quarter of a mile to the southward of the light-house, you are in a situation to pass the bar; steer in W. by N. until you are over it; you will have on it at low water, 3 fathoms: when over, you will be in 4 $\frac{1}{2}$  fathoms—pass the Hook and light-house about half a mile, at which distance you will have 5 and 6 fathoms. When you have the point of the Hook, on which the beacon stands, bearing S. S. E. you may then haul to the southward, and round the Hook, and come to, from one to two miles distant, the Hook bearing from E. to N. E. in good holding ground, 5 fathoms water. When you make Long Island, it is necessary to keep somewhat in the offing, on account of the East Bank, and observe the same marks running in as before-mentioned.

#### SETTING OF THE FLOOD FROM SANDY-HOOK.

First quarter, - - -	S. W.	Third quarter, - - -	N. W.
Second do. - - -	West.	Last do. - - -	North.

*Directions for sailing in by Sandy-Hook, corresponding with the Chart referred to in page 88, published by EDMUND and GEORGE W. BLUNT.*

In coming up with the Bar, when midway between the Buoys, steer W. by N. till the light on Sandy-Hook ranges with the easternmost of five trees on the Highlands; you may then steer W. till you get the west Beacon on the point and the light-house in range, and so keep them till you make the black buoy of the S. W. Spit: After hauling round the Spit, steer N. by E.  $\frac{1}{2}$  E. until you make the buoy of the Upper Middle, but be careful of the flood-tide, which sets directly over to the West Bank; you then steer N. until up with the Narrows. The mark to show that you are clear of the West Bank, is to keep Snake Hill well open with the bluff of Staten Island, on which the Telegraph stands, and where a light-house will be erected, to exhibit a *fixed light*, by December, 1827.

*The following are the bearings, courses and distances, of the Buoys placed in the harbour of New-York.*

#### CAN BUOYS.

The black buoy on the bar, bearing E. by N. from the light-house, distant  $3\frac{1}{2}$  miles—ranges with the light-house, and Mount Pleasant in Jersey.

The white buoy on the bar, bearing E.  $\frac{1}{2}$  S. from the light-house,  $1\frac{1}{2}$  miles distant, and S. from the black buoy,  $1\frac{1}{2}$  miles distant; between these buoys is the channel. This buoy ranges with the West Beacon and Block House.

The black buoy on S. W. Spit  $2\frac{1}{2}$  miles from the light-house, bearing N. W. by W. ranges with the West Beacon and light-house.

The white buoy on the Nole, bearing N. W.  $\frac{1}{2}$  N. from the light-house, distant 4 1-10 miles.

The black buoy of the Middle, distant 5 miles from the light-house, bearing N.  $15^{\circ}$  W. ranges with the East Beacon and light-house.

The white buoy of the West bank N.  $16^{\circ}$  W. from the light-house,  $6\frac{1}{2}$  miles distant—ranges with Snake Hill in New Jersey and the bluff of Staten Island, where the light-house is to be placed, as before-mentioned, and where the Telegraph now stands.

## BLUNT'S AMERICAN COAST PILOT.

## SPAR BUOYS.

*Between the Ocean and the City of New-York, in conformity to Act of Congress.*

- Five black spar buoys between the outer bar and the black can buoy of the Spit.
- Four black spar buoys between the can buoy of the Spit, and the can buoy of the Middle.
- Three black spar buoys between the can buoy of the Middle and Coney Island.
- Four black spar buoys on the shoal opposite Gowanes bay.

*On the west side of the Main Channel.*

- One black spar buoy on the north side of the Round or Middle shoal, opposite Prince's bay.
- Four white spar buoys between the white can buoy of the bar, and the point of Sandy Hook.
- Six white spar buoys between the can buoy of the Knoll, and the can buoy of the West Bank.
- Four white spar buoys between the can buoy of the West Bank and Staten Island.
- Three white spar buoys between the point of Robbins' Reef and Bedlow's Island.

N. B. As you pass the Can Buoy of the Nole, you make the light-house which is to be erected previous to December, 1827, in Prince's Bay, bearing west from the Nole Buoy.

*In the East River and Long-Island Sound.*

- One white spar buoy on the Middle Ground, opposite Bushwick Creek, where the Dry-Dock is located.
- One black spar buoy on the Governor's Table, Blackwell's Island.
- One black spar buoy on Lawrence's Reef, south from West Chester Creek, near Long-Island.

[NOTE.—In sailing Ship Channel, the *White Buoys* are to be left on the larboard, and the *Black Buoys* on the starboard hand. None of the buoys are in less than 19 feet water.]

NOTICE.—Harbour Master's Office, for the port of New-York, is kept at the Nautical Store of EDMUND and GEORGE W. BLUNT, 154 Water-street, corner of Maiden-Lane. July, 1827.

### *Description of the Coast to the eastward and westward of Sandy Hook.*

If you come in near Cape Hatteras, be very careful of its shoals, and make your way to the N. N. E. which will carry you on the soundings of the Jersey shore. When you get 20 fathoms water in lat.  $40^{\circ}$  N. then haul in to make the land, by which you will avoid the difficulties of the coast, and the shoals nearer in shore: but if you cannot follow this direction, see the following.

When you are up with Chingoteague Shoals, in 15 fathoms water, it is near enough to approach them; from this station, steer N. by E. which will bring you up nearly with Great Egg Harbour on the Jersey shore, but you must use your lead on approaching this shore, and come no nearer to it than 10 fathoms water; from Great Egg Harbour to New Inlet, (or Little Egg Harbour) the Jersey shore tends nearly N. E. and from Little Egg Harbour to lat.  $40^{\circ} 10'$ , about N. by E. then N. to the Highlands of Neversink; in all this route 10 fathoms water must be kept, or near it.

Off Absecum, 2 $\frac{1}{2}$  miles distant, bearing E. S. E. from the entrance, lies a shoal with 2 $\frac{1}{2}$  fathoms on it, having 5 fathoms within and without, gradually increasing to 10 fathoms, 6 miles from land. On this shoal the ship Citizen was lost in 1822.

When you are up with the Highlands of Neversink, if you see nothing of a pilot, you may stand on, but keep 3 miles off the bare part of Sandy Hook land, till you are up with the southern cedar trees on the Hook, then near the Hook, till you get 3 fathoms water on the Outer Middle Ground, at which time you will be 2 or 2 $\frac{1}{2}$  miles from the Hook. On this Bank you must edge off and on, in 3 or 3 $\frac{1}{2}$  fathoms, for the Bank lies rounding as the Hook does, and stops a little short of its north point: but long before you reach that, you will bring the light-house to bear W.  $\frac{1}{2}$  S. or W. by S. when you must immediately steer in W. which will bring the light-house a little on the larboard bow, and if you see the Beacon light, near the extreme point of the Hook, you must take it on the same bow also, but pass it about two cable's length, when you must edge away to W. W. about two miles, and anchor with the light bearing from E. to E. N. E. See description of the buoys, page 107.]

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If you should fall in with the east end of Long Island, where there is a light-house, which does not differ much in latitude from Sandy Hook light, (but differs very considerably in soundings) and bound to the westward for the light-house, or the Highlands of Neversink, you must come no nearer to Long-Island than 15 fathoms water; in this route, which is about 103 miles from Montock light to Sandy Hook light (and the courses between W. by S. and S. W. by W.  $\frac{1}{2}$  W.) it is necessary to use the lead after you run 80 miles, at which time you will come up with Fire Islands light, which is *revolving*, and know how you approach the Jersey shore; 15 fathoms water is near enough at night.

If you should pass Nantucket Shoals in  $38^{\circ}$  N. lat. or  $38^{\circ} 30'$  or  $39^{\circ} 00'$  or  $39^{\circ} 30'$ , you will, if possible, observe when you leave the Gulf Stream, from which about 10 leagues, you may begin to expect soundings, and a S. W. current, as soon as you get soundings; then the observation by lead and line, is to aid the navigator.

If you are on soundings, and running in for the land to the northward of both the Egg Harbours, the northern one (which is often called the burning hole) lies in lat.  $39^{\circ} 30'$  north; being near the land, and steering the above-mentioned course, and you find you have suddenly deepened your water from less to 15 fathoms, heave about immediately, for many vessels have been deceived by a hole in these soundings, of the dimensions of about four acres of ground, and have been totally lost. [See Chart of New-York harbour, published by EDMUND & GEORGE W. BLUNT, 154 Water-street, corner of Maiden-lane, New-York.]

If you are beating to windward, off the Hook, waiting for a pilot, or for a wind (night or day) in standing to the northward, when you suppose the light-house of the Hook bears W. by S. it is near enough. When you approach Long Island, the soundings are fine white sand and small pebbles; but on the Jersey shore the soundings are coarser and darker. There is what is called a Hook channel in this channel; the soundings are mud and sand.

W. S. W. and E. N. E. moon makes full sea at the Hook. Variation half point W.

### Description of New-York Bay.

New-York Bay is 9 miles long, and 4 broad, and spreads to the southward before the city. It is formed by the confluence of East and Hudson's rivers, and embosoms several small islands, of which Governor's Island (on which are Castle Williams and Fort Columbus) is the principal. It communicates with the ocean through the Narrows, between Staten and Long Islands, which are scarcely two miles wide. The passage up to New-York from Sandy Hook (the point that extends farthest into the sea) is safe, and not above 18 miles in length.

### Directions for sailing from Sandy Hook light to Cape May light, or light-house on Cape \*Henlopen.

When sailing from Sandy Hook light-house, soon as to the eastward of the bar, steer S. if night, till you pass Barnegat; if day-time, when passing, you may go nigh the breaker, say  $5\frac{1}{2}$  fathoms. In sailing between the Highlands and Barnegat in the day-time, you may go within one-quarter of a mile of the land, if the wind is off shore. When you have passed Barnegat, steer S. W. by S. 10 or 11 leagues, which will carry you up with Great Egg Harbour, which has a shoal bank one league from the shore, that has not more than 6 feet water on it.

This land may be known by its appearing like broken islands, with the Highlands of †Neversink to the westward of Sandy Hook, which has a singular ap-

\* Cape Henlopen forms the S. W. point of Delaware Bay, and is 20 miles from Cape May. † Neversink Hills, on which the two light-houses, mentioned in page 86, are to be built, extend N. W. and S. E. about S. W. from Sand Hook, on the Atlantic Ocean, to Rariton Bay, and is frequently the first land discovered by mariners, when they arrive.

pearance from any land on that coast. In the day-time you may go within two leagues of the shore, but in the night it will be prudent to keep further off. When you have passed Great Egg Harbour, steer S. W. by W. 10 leagues, which will bring you up with \*Cape May light.

Between Barnegat and Cape May there are two inlets, one of which is fit at high water, for vessels drawing 15 feet, viz. Little Egg Harbour. Great Egg Harbour may be run for in time of danger, and will give 12 feet at high water. The navigation is not so safe as other places.

In running for Cape May, while steering your S. W. by W. course, you will pass five inlets, before you come up with Cape May light, viz. Coston's, Towns- end's, Herreford, Turtle Gut, and Cold Spring, all which have bars lying off their entrances; when abreast of Herreford Inlet, you may, if bound to Cape May, steer W. by S. but if bound to Cape Henlopen, steer S. S. W. till the light- house bears W. when you may run for it till within two miles.

E.  $\frac{1}{4}$  S. from Cape May light, 15 or 18 miles distant, lies Five Fathom Bank, with not more than 12 feet water on it. The south point bears E.  $\frac{1}{4}$  S. from Cape May, and from Cape Henlopen it bears E. by N. 30 to 32 miles distant, and ranges N. N. E. and S. S. W. It is dangerous for large vessels.

### Little Egg Harbour.

During the winter season it frequently occurs that vessels are prevented entering the Delaware or Sandy Hook, by violent north-west winds, and often driven off the coast into the Gulf: to remedy, so far as possible, this inconvenience, the Author inserts a Plan of Little Egg Harbour, which, with the directions, will enable them to make a safe harbour, viz.

Running through the Sod channel, keep within 30 or 40 yards of Small Point, and you will have 2 $\frac{1}{2}$  fathoms; pass the point, then gradually haul round, giving the breakers a small birth; or steer in for the beach, when you are opposite Tucker's house, until you are in 4 fathoms, then steer W. S. W. which course will carry you through the same channel.

[See the Plate.]

### Directions for †Cape May light.

In running for Cape May light, keep about two miles to the northward and eastward of it, till about three-quarters of a mile from the shore, where is a windmill and several houses, occupied by †pilots principally. From this you must keep the shore close on board (when you will be in 5 fathoms water) till you double round the Cape, when you will leave the Great Shoal on your larboard and, over which it continually breaks, when covered, and bearing S. E. by E. from the light, distant 1 $\frac{1}{2}$  mile, bare at low water. After you have doubled the Cape, steer N. till the light bears S. E.  $\frac{1}{4}$  S. when you must steer N. W. till you deepen into 7 and 8 fathoms. In running the above course, you will have from 2 $\frac{1}{2}$  fathoms, before you come into 8 fathoms, which is three leagues distant from the light. After you have got into 8 fathoms, you will immediately come to 3 fathoms, when you must steer N. W. by W. 5 leagues, which will carry you

the coast. To the politeness of SAMUEL L. MITCHELL, F. R. S. &c. we are indebted for the correct altitudes of the following places, which present themselves to mariners as they approach them:

Mount Mitchell, the highest point of Neversink, Monmouth county; (N. J.)	282 feet
Tompkin's Hill, on Staten Island,	307 do
Hempstead Hill, Queen's County, Long Island,	319 do

This Cape forms the N. E. point of the mouth of Delaware Bay, and has a light-house, erected in 1923, containing a revolving triangular light, previously mentioned. As soon as you are in sight of the light, and in want of a pilot, you had better hoist some signal, as those who do not, are considered not in want of one.

South Channel  
3/2 3/4 3/8



Middle Channel



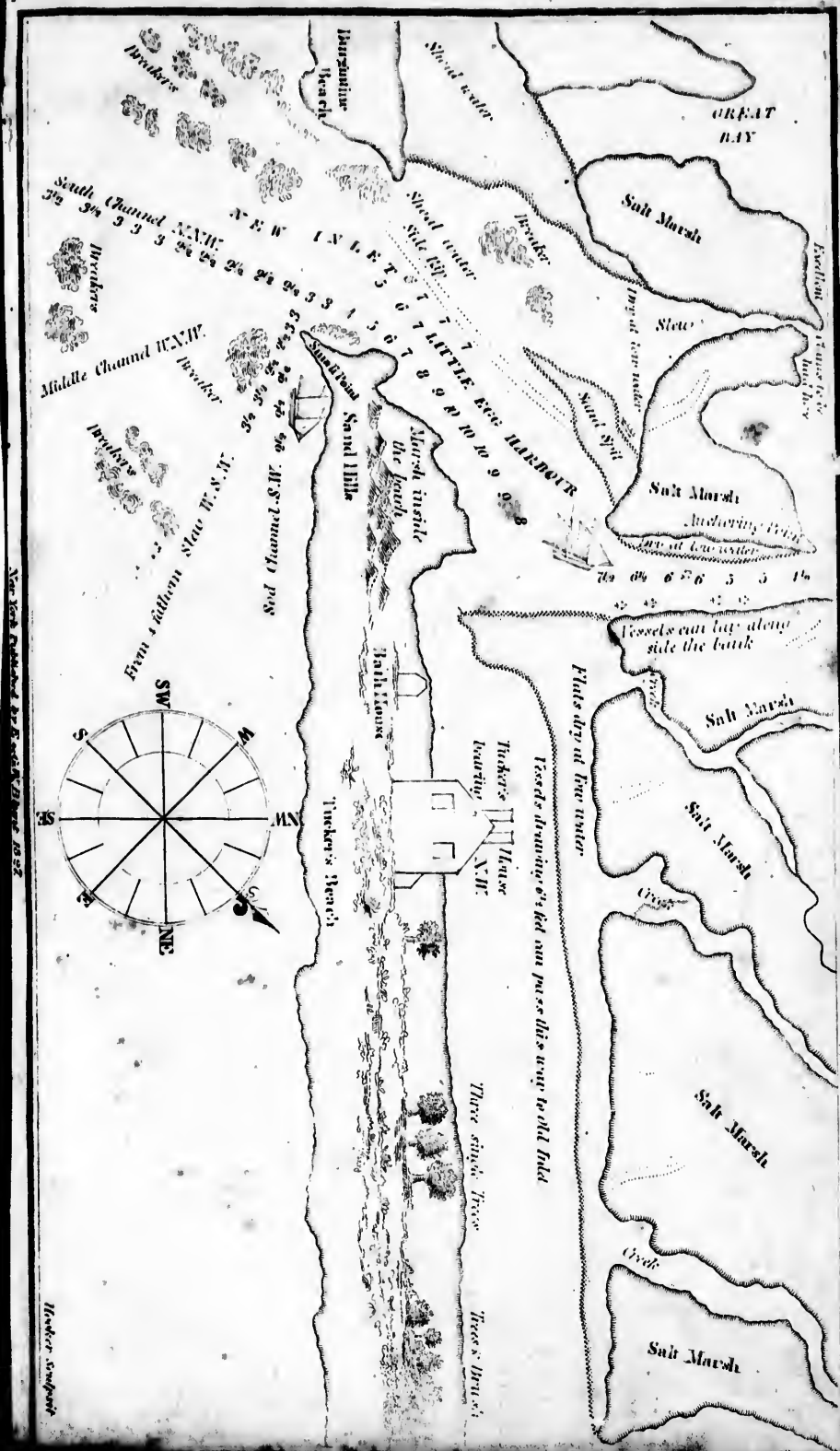
East Channel



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into the main channel, between the Brandywine light-house on your larboard, and Cross Ledge on your starboard hand, bearing N. N. W. and S. S. E. from each other, distant 3 leagues. Cross Ledge has a Beacon Boat with one mast, moored on it in summer; and in winter, a Buoy.

In running the above course, you will have 3, 3½, and 2½ fathoms, till you come near the main channel, when you will deepen into 5 fathoms, which is a swash that runs up to the eastward of the Cross ledge; still keep your N. W. by W. course till you have crossed this swash, when you will shoal your soundings into 2½ fathoms, and then deepen into 7 fathoms, which is the main ship channel, when you must steer N. W. till you have only 5 fathoms, which is on the Fourteen Feet Bank, (which has a buoy on the S. S. E. end) and then alter your course to N. N. W. for Cross Ledge. One league distant from this ledge lies a shoal, called Joe Flogger, bearing W. S. W. from the buoy.

### *Directions for sailing in by \*Cape Henlopen †lights.*

Bring Cape Henlopen light to bear W. and run for it till within two miles; when abreast of it, you will have 15 or 16 fathoms water. After you have passed it, steer W. S. W. till you bring it to bear E. S. E. where you may anchor in 3 or 4 fathoms. Vessels bound into the Delaware, coming from the northward, or having fallen to the northward of Cape Henlopen, should be careful not to approach nearer than 12 fathoms water, until they have got into the latitude of said Cape, to avoid the Shoal called the †Five Fathom Bank, the south point of which bears E. ½ S. from Cape May, distance 16 or 18 miles, and from Cape Henlopen E. by N. 30 to 32 miles. The extent of this shoal is not well defined at present.—Fifty years ago it had 5 fathoms water on it, now not more than 12 feet, in a N. N. E. or S. S. W. direction. This shoal is peculiarly dangerous, as you have 9 or 10 fathoms water close to it on the inside, and the same on the outside. There is a passage inside of this Shoal, by taking your soundings from the land in 6 or 7 fathoms, but strangers in large vessels should not attempt it.

In running up the Bay, keep the old light-house to bear S. ½ E. until you pass the Beacon Boat with one mast, on the Brown, distant 12 miles, then steer N. by W. for the light-house on the Brandywine Shoal until you come within half a mile, then steer N. N. W. for the upper part of the Brandywine, on which there is a Beacon Boat with two masts; then steer N. W. by N. for the lower part of the Fourteen Feet Bank, on which there is a small Buoy. When in 5 fathoms water, steer more northerly, until you deepen your water into 6 and 6½ fathoms; then steer a point more westerly, until you shoal again to 5 fathoms on said bank. By keeping off and on this bank you will be certain you are on the western side of the channel, until you come up abreast of the Cross Ledge, which is on the eastern side of the channel, and has on it a Beacon Boat, with one

\* Cape Henlopen lies in lat. 38° 47' N. and in long. 75° 07' W. There is a light-house here, a few miles below the town of Lewis, of an octagon form, handsomely built of stone, 115 feet high, and its foundation nearly as much above the level of the sea, containing a fixed light. The lantern is between 7 and 8 feet square, lighted with 8 lamps, and may be seen in the night, 10 leagues at sea. Vessels off the Delaware, upon hoisting a jack at the fore-top-mast head, will be immediately furnished with a pilot. None, however, are to be depended on, unless they have branches, and a certificate from the Board of Wardens of Philadelphia.

†NOTICE TO MARINERS.—A Beacon light-house has been erected, and is now lighted with a brilliant light, that can be seen six leagues. It stands on the extreme north end of Cape Henlopen, very near the beach. It bears N. ½ W. ½ of a mile from the Old light-house. Ships running in for Old Kiln Roads, may, when the Beacon light and the light-house are in one, approach the Beacon light within a cable's length; then steer W. N. W. until the Old light-house bears S. E. and anchor in 4 fathoms, good holding ground.

‡ The ship China and her cargo, worth half a million of dollars, were lost on this Shoal, and many more vessels would have shared the same fate, was it not for the vigilance of the Delaware Pilots. Government contemplates placing a floating light vessel on or near the south point.

mast, in summer; and in winter, a Buoy. The channel here is very narrow, not more than  $1\frac{1}{4}$  mile wide. You will then be nearly up to the upper end of the Fourteen Feet Bank, where there is placed from March to December a *floating Light Vessel*, with one light, which you leave on your larboard hand. From thence to Upper Middle is four miles, on which there is a Buoy; it has 3 or  $3\frac{1}{4}$  fathoms at low water on it. You may go to the westward of the Middle in 4 or  $4\frac{1}{2}$  fathoms soft bottom; to the eastward there is 6 or 7 fathoms, hard bottom. This is the main ship channel: The course from the Middle to Bombay Hook bar is N. W. twelve miles—you must not approach this bar nearer than  $5\frac{1}{2}$  fathoms, as it is steep too. From Bombay Hook to Reedy Island, the course is N. W. distant eighteen miles. [See Appendix.]

### Directions from Reedy Island to Philadelphia.

Being up with Reedy Island, (which you leave on your larboard hand, to the north of which lies a shoal) you have also, on the starboard hand, *Fort Delaware*, in which is a lantern erected to guide the mariner in his passage, and which you leave on the starboard hand. This Fort is built on the Pea Patch, and while passing it, keep your larboard hand best on board till you bring the river to bear N. E. or N. E. by N. when you may stand up for New-Castle. This place is 40 miles from Philadelphia. When you have passed it about a mile, you give the larboard hand a birth, as there is a flat shoal near half a mile off. If you have a fair wind, you may keep in the middle of the river. This river winds from New-Castle to Marcus Hook, from N. E. to E. N. E. distant 20 miles. Your course from this to Chester Island is N. E. by E. 4 miles, leaving said island on your starboard hand, and Tinicum and Maiden Islands on your larboard hand, keeping your starboard hand best on board, till you come up with *Billing's port*, (which is 12 miles from Philadelphia) when you will haul up for Mud Fort; but before you come up with this fort, you will see a black buoy in channel way, which you may go close to. Run direct for this fort, which is an E. N. E. course, till you are abreast of it, when you will see a small island on your larboard, and another on your starboard hand, which you must go between. When you have passed between these islands, steer E. by N. two miles, when you must haul up N. E. by N. for Gloucester point, distant one mile, from which you must keep your larboard hand best on board, and steer N. three miles, which will carry you opposite Philadelphia.

### TIDE TABLE.

MOON	S. E. by E.	} make full sea at	Cape May.
	S. E.		Cape Henlopen.
	S. E.		Brown and Brandywine.
	S. S. E.		Bombay hook.
	S. by E.		Reedy Island.
	S.		New-Castle.
	S. S. W.		Chester,
	S. W.		Philadelphia.

### SETTING OF THE TIDES WITHIN THE BAY OF THE CAPES.

First quarter flood,	.	.	.	.	.	W. N. W.
Second to last quarter,	.	.	.	.	.	N. N. W.
First quarter ebb,	.	.	.	.	.	E. S. E.
Second to last quarter,	.	.	.	.	.	S. S. E.

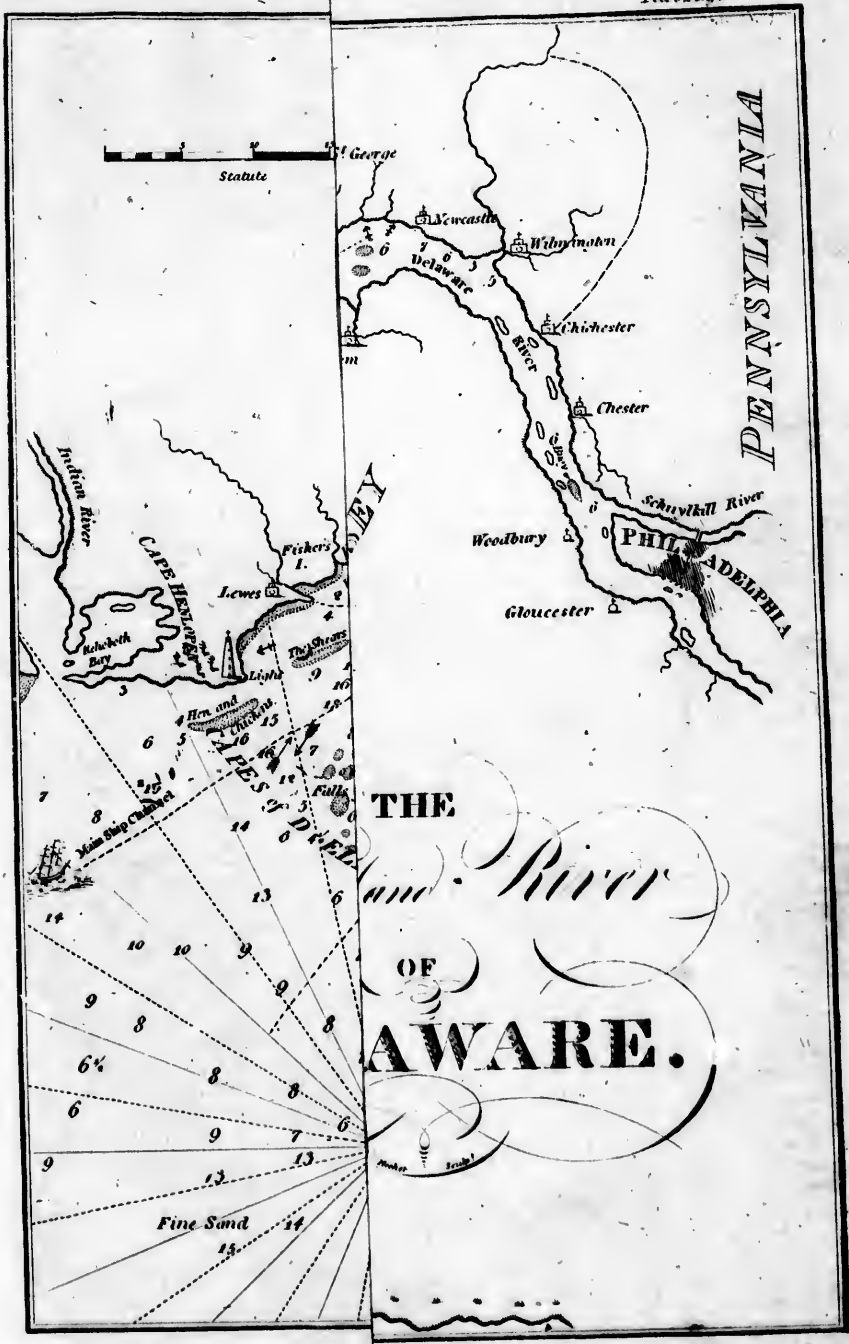
\* This is a high sandy point and bluff.



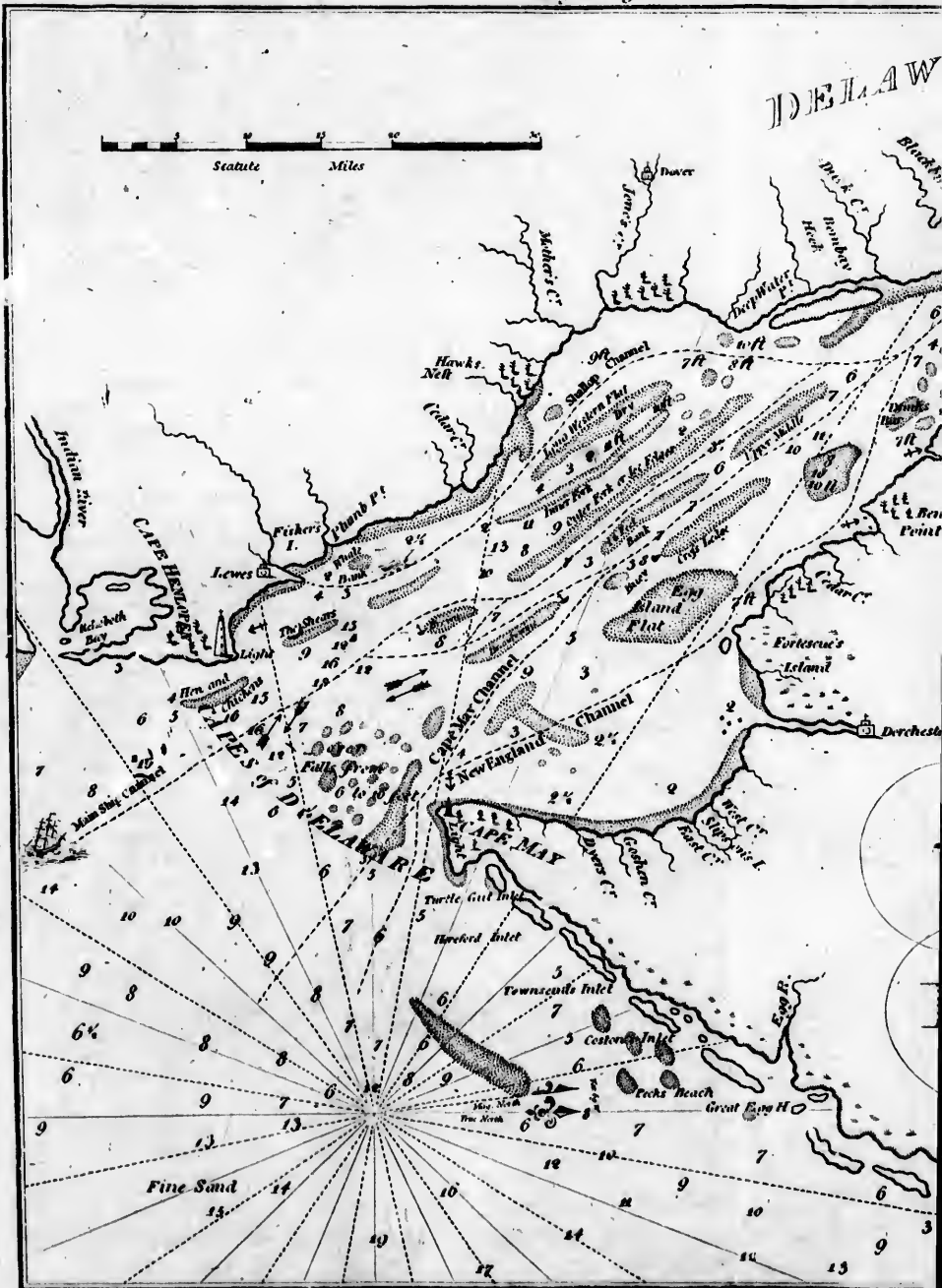
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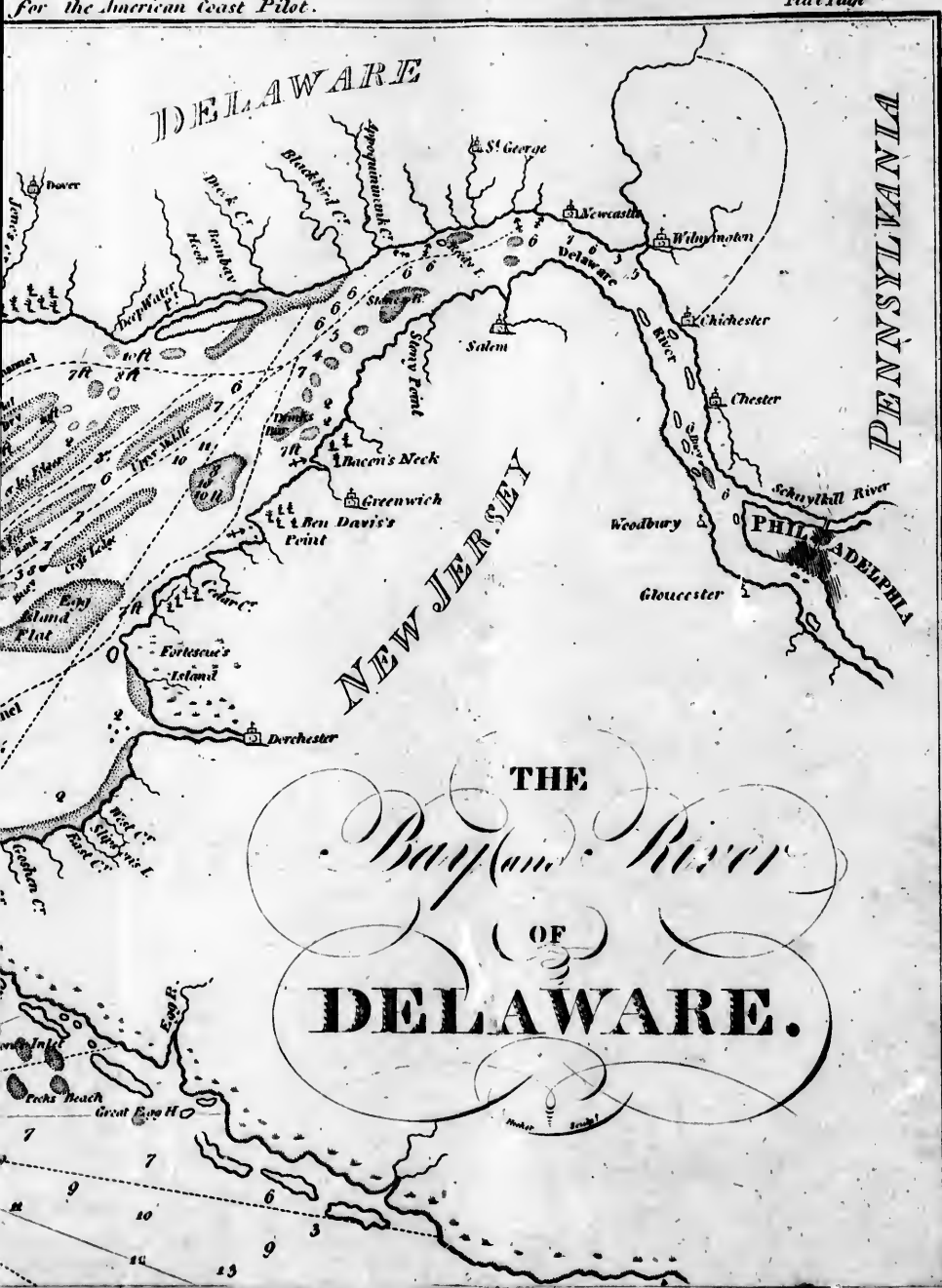
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*Directions from Cape Henlopen to \*Cape Henry.*

When you leave Cape Henlopen, bound to Cape Henry, give it a birth of 3 or 4 miles, and steer S. S. E. 11½ leagues, as there is a shoal bank that lies S. by E. ¼ E. from Cape Henlopen, 11 leagues distant, called Finwick's Island shoal, and 3 leagues from Finwick's shoal, S. by E. lies Winter Quarter shoal: the former has 10 feet water, and the latter 13 feet on it. They lie about 5 leagues from land. If you turn in or out by Cape Henlopen, be careful of the Hen and Chickens, which lie S. E. by E. from said Cape, two leagues distant. When you judge yourself to the southward of Winter Quarter shoal, then you may steer S. by W. 5 or 6 leagues, which will bring you to the length of Chincoteague shoals, which lie in lat. 37° 58' N. bearing due south from Cape Henlopen, 17½ leagues distant, and two leagues from land: between it and the shore are 10 and 12 feet water.

*Remarks on the land from Cape Henlopen to Chincoteague Shoals.*

Rehoboth bay lies 9 miles to the southward of the light-house. This bay is only for small vessels that draw not more than 6 feet water. The north end of Finwick's Island lies 15 miles to the southward of the light-house, and separates Delaware from Maryland. It has a grove of trees on it, and you will have 6 or 7 fathoms water, within a league of the land, and a strong current setting to the southward. When you are within half a mile of Finwick and Chincoteague shoals, you will have 12 fathoms water. The land from Chincoteague to Cape Charles makes broken land, with islands, and several small inlets. There is a good harbour within Chincoteague shoals, which goes by the same name. You leave Chincoteague shoals on your larboard hand, and Matomkin harbour about 3 leagues W. S. W. from Chincoteague. Matomkin harbour has 12 feet water on the bar at spring tides. In running in for the bar, you will have gradual soundings from 7 fathoms. One cable's length from the bar you will have 2½ to 2 fathoms.

In running over the bar, keep the north shore on board, and steer S. W. On the larboard hand, one mile from the bar, give the point a small birth, and round in to the N. W. and anchor in 4 fathoms water.

To the northward of the bar, one-quarter of a mile, lies the wreck of a vessel. From the bar up the inlet, the navigation is very dangerous, being filled with oyster beds.

These are very dangerous harbours in a gale of wind, but you may ride along shore with the wind from N. W. to S. W. When the wind blows hard at N. E. or E. N. E. and you are in sight of Chincoteague shoals, your only chance for safety is to stand to the southward; for you cannot clear the land to the northward or go into the harbour of Chincoteague, which lies about N. W. 6 miles from the south end of the shoals. When the wind is to the eastward, it is generally thick weather on the coast. After you pass the southward of Chincoteague, steer S. S. W. for the light-house on Cape Henry; for the northern part of Machapungo shoals lies 4 or 5 leagues to the northward of Smith's Island, and the southern part of them comes near abreast of said island. In steering to the S. W. westward, 5 or 6 leagues S. E. of Smith's Island, you will have 12 or 13 fathoms, and in some places 3 and 4 fathoms. When you are 20 leagues from the land, in the latitude of 37° 30', you will have from 30 to 35 fathoms: but when to the southward of Cape Henry, you will have from 7 to 8 fathoms, within a league of the land, and a strong southerly current, which in general runs from 2 to 2½ knots an hour.

*Directions for vessels bound to the Capes of Virginia.*

In coming from sea and falling into the northward, you may make an island called Hog Island, which has a shoal on the N. E. side, 5 miles from the island, and also Machapungo Island; the latter is a smaller island. Hog Island and Smith's

\* This Cape lies 12 miles S. by W. of Cape Charles, both of which form the entrance of Chesapeake bay. On it is a light-house whose lantern is elevated 120 feet above the sea, containing a fixed light.

Island, are about 6 or 7 leagues from each other, and a stranger may take the one for the other. Hog Island is longer than Smith's, and the trees stand more open, and are not so thick as on Smith's Island, and in going on to the southward from off Hog Island, you will make Sand Hills which lie between Hog Island and Smith's Island, being a sure mark you have not passed Smith's Island. Be careful not to come nearer than 7 fathoms when off the sand hills, as nearer than that depth the ground is broken.

Smith's Island is the first island after passing the sand hills above mentioned; on the northern end of it there are some straggling trees which appear like a grove, but which join on to the island. As you draw up with Smith's Island, you may haul into 6 and 5 fathoms, till you get near abreast of it.

Smith's Island is a good place to anchor under, with the winds from N. N. W. to W. N. W. and vessels often come too there if the wind is coming out from N. and westward.

If you intend to anchor there, bring it to bear W. S. W. and run for it, and you may go in as near as your draft of water will admit, into three fathoms or less, if you choose; you will have blue mud and sand, and when you get under way from thence, steer S. by W. till you cross the North channel in 7½ fathoms; keep on until you raise your ground into 5 fathoms on the Middle Ground, then steer S. W. which will cross the Middle in 4 fathoms; keep on S. W. until you deepen into 6 or 7 fathoms, ship channel; then with a strong breeze steer W. by N. which will carry you across in deep water until you raise your ground on the Horse-Shoe. When at anchor under Smith's Island, Cape Henry light bears about S. S. W.

In coming in from the southward, bound to Cape Henry, keep in 7 fathoms until you begin to draw up with False Cape, which lies about 7 leagues from Cape Henry towards Currituck; then 9 to 10 fathoms, is full near enough to False Cape. After you have got to the northward of False Cape, you may then keep again in 7, 8, and 9 fathoms (ship channel) till you get up with Cape Henry. From off Roanoke the soundings along shore is hard sand all along until nearly up with Cape Henry, when it is sticky bottom, and you will be in channel way.

The shore between False Cape and Cape Henry makes in like a bay, something like Lynhaven Bay, and in thick weather a stranger might mistake it for Lynhaven Bay, and False Cape for Cape Henry, if it is so thick that the light-house on the latter cannot be seen; but in round False Cape it is all hard bottom, and in Lynhaven Bay it is soft or sticky bottom, and in some places very tough bottom.

The passage between Cape Charles and Outer Middle is little known, and not frequented by large vessels. It is only used by small vessels of 8 or 10 feet water.

### *Directions for Hampton Roads.*

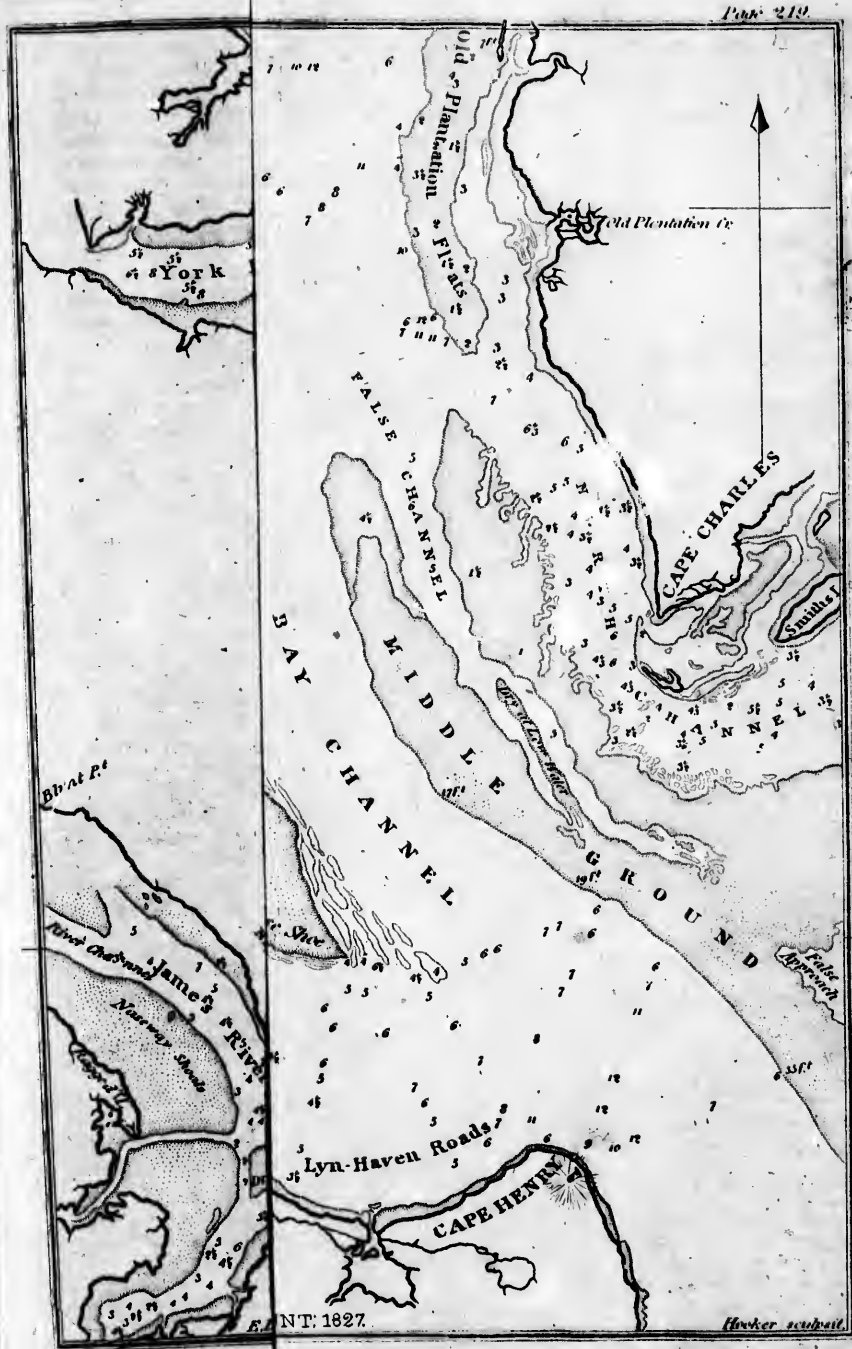
When abreast of \*Cape Henry light steer W. by N. or W. ½ N. till you get on the Horse-Shoe, in 5 fathoms, sandy bottom. There are no soundings at 5 fathoms on those courses between Cape Henry and the Shoe. The first soundings on the Shoe, on those courses, are 6 or 7 fathoms, a sticky or tough bottom, and the distance about 4 miles from Cape Henry light, but the 5 fathoms sandy is about a mile farther on the Shoe (say about 5 miles from Cape Henry light) where vessels can anchor. Then steer west until you get on the south side of the channel, for an ebb tide; but tide aflood, steer W. ½ N. or W. by N. Those courses will carry you into 5 fathoms on the south side, then you may steer W. N. W. which will carry you into 6 or 7 fathoms, sticky bottom, until nearly up

\* Cape Henry light-house is situated on the larboard hand going in, is about 120 feet from the surface of the water, containing a fixed light, and cannot be seen a great distance. There is a house erected near the light-house, for the accommodation of pilots.



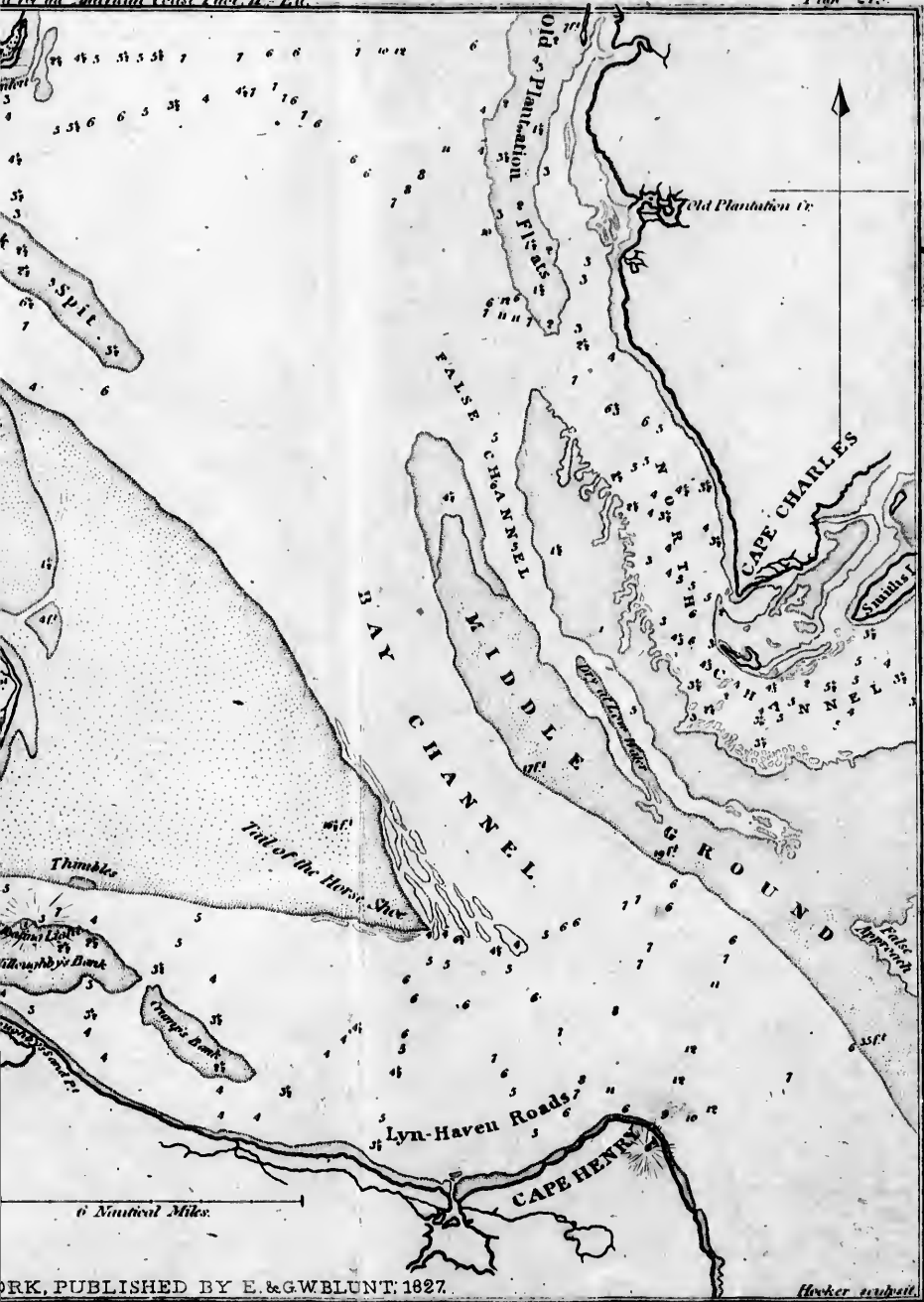


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with \*Willoughby's Point: then bring Old Point Comfort light to bear west, or W. by S. and run for it until nearly up with it (say within half a mile) but take care and go no nearer to Hampton Bar on the north side, than 10 fathoms, it being steep too; then haul up S. W. by W. till you bring Old Point Comfort light to bear about N. W. then steer S. W. for the Roads, 5, 6, or 7 fathoms, good anchoring, but go no nearer to the south shore than 9 fathoms, lest the bar off Sowell's Point hooks you in. Should you, after passing Willoughby's Point, fall in 14 or 15 fathoms, †Old Point Comfort light-house bearing W. N. W. steer up S. W. by W. but go no nearer to Hampton bar on the north side than 10 fathoms, it being steep too, until you pass Sowell's Point, when Old Point Comfort bearing N. E. you will fall into 7, 8, and 9 fathoms, good anchoring.

If requisite, when entering the Capes, and advisable to anchor in Lynhaven bay, you may run in with the light-house bearing W. by S. as this course will lead to the channel way, in from 7 to 10 fathoms, sticky bottom. It is then proper to take soundings towards the southern shore; and, in order to this, steer west until you have advanced to a short distance from the light-house, then rounding the point you may haul in the bay, and drop an anchor as most convenient, in from 7 to 4 fathoms.

**REMARKS.**—In steering W. N. W. as before-mentioned, should you deepen your water to 9 or 10 fathoms, or more, you may know you have passed the bar off Willoughby's point.

If going along on the south side you shoalen your water from 5 fathoms, haul off to the northward and keep in about 6 or 7 fathoms, till you judge yourself nearly up with Willoughby's point: go no nearer to it than 7 fathoms. By hauling to the northward you will deepen the water.

On the Horse-Shoe side, the bottom is hard sand, and on the south side it is soft bottom, until drawing on to Willoughby's point, where it is hard: therefore, being on the south side, where the ground is soft, you may always know drawing up with Willoughby's point as soon as you get hard sandy bottom. Then haul off as before directed, for Old Point Comfort light.

**Of the Thimble.**—It is a small lump S. W. from the Horse-shoe, with about 2 fathoms water on it. It is steep, too, say 7 fathoms, but, being small, it is quickly passed. It lies a little below Willoughby's point, on the opposite side, to avoid which is the reason why it is necessary to get soundings first on the Horse-Shoe. The Thimble is about  $\frac{1}{4}$  or 2 miles off the shore. Near the Thimble you will have sticky bottom, and on the Horse-Shoe hard sand.

Back river point bearing N. N. W. you are abreast of the Thimble.

There is good anchoring all over the Shoe, from  $\frac{3}{4}$  to 4 miles from land to the tail or outer part of it, and nigher in shore for small vessels.

As the setting of the tide varies much at different stages thereof, attention should be paid as well to the bearing of the light as to the soundings, when running up from the cape to Willoughby's point, for fear you cross the channel.

From Hampton Road to Norfolk the channel is too intricate for strangers to approach without a pilot, and they must anchor in the Road.

A vessel having a light at her mast-head has been placed at the extremity of Craney island flats, in Elizabeth river, in  $\frac{1}{4}$  fathoms water.

### *Directions for sailing in by Cape Henry light-house.*

When coming from sea in the latitude of Cape Henry, you meet with soundings about 25 leagues off, which you may observe by the colour of the water.

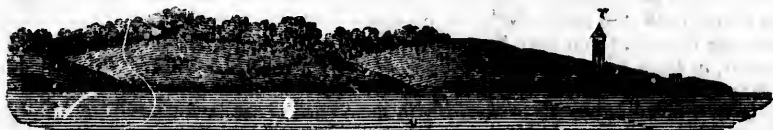
* A floating light vessel has been stationed off Willoughby's Spit, in $3\frac{1}{4}$ fathoms water:—	
Old Point Comfort light bearing W. $\frac{1}{4}$ N. distant . . . . .	2 miles.
Back River Point, N. $\frac{1}{4}$ W. . . . .	$3\frac{1}{4}$ do.
Cape Henry light, E. S. E. . . . .	13 do.
Willoughby's Bluff, S. S. E. . . . .	9 do.
The Rip Raps, W. S. W. . . . .	3 do.

Vessels going out or coming into Hampton Roads, should not pass to the southward of the light vessel: she may be distinguished from the light at Old Point, by having two lanterns—one more elevated than the other. A bell will be rung in foggy weather.

† Old Point Comfort light-house lies on the starboard hand, bears W. N. W. from Cape Henry light, 5 leagues distant, and is the guide to vessels bound to Norfolk or James River. It contains a fixed light.



In the south edge of the bank you will have 40 fathoms water, which will shoal to 20, and still decrease as you approach the shore, generally sandy bottom. In clear weather, you may see the land when in about 10 or 11 fathoms, regular soundings, at which time you will be about 5 leagues to the southward of it. To the northward of the land, in 6 fathoms, the soundings are irregular and the ground coarser. In coming in, with the wind northwardly, you must be careful of the outer part of the Middle Ground, which lies 9 miles E. N. E. from Cape Henry, and 7 miles S. E. by E. from Cape Charles. You may go so near it as to bring Cape Henry to bear W.  $\frac{1}{2}$  S. which will carry you round the tail of it, in  $4\frac{1}{2}$  or 5 fathoms water, when you will deepen into 11, 12, or 13 fathoms, and then haul away for the bay, the Cape being steep to. The channel between the Cape and Middle Ground, is about 4 miles wide, and 5 and 6 fathoms water close to the latter. When Cape Henry light-house bears W. N. W.  $\frac{1}{2}$  W. distant about 3 leagues, it appears thus:



With a fair wind you may bring the light-house to bear west; but if you have the wind ahead, and are obliged to turn in, you may stand to the southward till the light-house bears N. W. by N. and to the northward till it bears W. by S. You will have 9 or 10 fathoms within a mile of the light-house, and from 6 to 5 fathoms close to the Middle Ground.

#### *General Directions for the Horse-Shoe.*

In coming in by Cape Henry, and no pilot, with a free wind and commanding breeze, tide either ebb or flood, bring Cape Henry light to bear E. S. E. and steer W. N. W. and you will get soundings on the Shoe, 7, 6, to 5 fathoms, as after described; after that, make towards the south side, and follow directions given for Hampton Roads, page 114.

**TIDE.**—The flood-tide runs in round Cape Henry and Lynhaven Bay, until 11 o'clock, on the full and change, and out of the way of the Chesapeake stream, it flows at 10; in Hampton Roads, at 10 $\frac{1}{2}$ . The tide varies considerably in its direction, according to the time from ebb to flood. The ebb from James and York rivers sets over the Middle Ground to the eastward, which renders navigation thereabout dangerous in the night.

#### *Directions for \*New Point Comfort.*

When you bring Cape Henry to bear S. S. E. you may steer N. N. W. 8 leagues, which course and distance will carry you to New Point Comfort. There is a Shoal which lies east from the Point, distant two miles, and four rivers that empty into this bay, or harbour, viz. Severn River, Way River, North River, and East River. These rivers are all navigable for vessels of 50 or 60 tons, and considerable places of trade.

Vessels at anchor in New Point Comfort are exposed to the wind from E. S. E. to S. E. and I would therefore recommend in that case to go into Severn River, where they will lie safe from all winds. Your directions for this port are to bring the south point of New Point Comfort to bear E. by S. and steer W. by N. 2 leagues, which course you will continue till Severn River bears W. S. W. when you must steer into the river W. S. W. or S. W. by W. which will carry you safe, where you may lie land-locked from all winds. In running for this river you will make two bunches of trees on your larboard hand, which at a distance appear like two islands, but as you approach them you will find they

\* On New Point Comfort, which forms the eastern side of Mockjack Bay, is a light-house containing a fixed light.

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are on the main land. In going into this river, you must keep your lead going, keep in the middle, and go between two points of marsh, and you will have no more than 3 fathoms between New Point Comfort and Severn River, muddy bottom. You may go to sea from this river with the wind from S. W. to N. W.

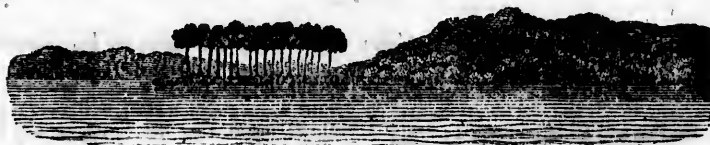
### *Directions for running from Cape Henry up the Bay to Baltimore.*

When you come in from sea, and are bound up the bay, bring Cape Henry light to bear S. S. E. and steer N. N. W. about 4 leagues, which will carry you to the northward and westward of the Middle Ground, that lies between the two capes, and when you have Smith's Island (off Cape Charles) to bear E. by S. you will be to the northward of the shoal part. If you have the wind ahead, and are obliged to turn to windward, you must not stand further to the eastward after the light-house (or the cape) bears S. S. E. as the western part of the Middle Ground is steep. In standing to the westward, you may go into 3½ and 4 fathoms without danger; but in standing to the eastward, you must not go into less than 3 fathoms, as you will be near the Middle Ground. If you wish to anchor at New Point Comfort, which bears from the cape about N. W. by N. distant 3 leagues, you must take care of the spit that runs off the point about S. E. 2 miles. Keep to the westward of this point of sand, and you may run in under the point and anchor in 4 or 5 fathoms water, fine bottom, where you will be secure from northerly or N. E. winds. In running from York river, when you open Iron point east of New Point light and bound up the bay, you will pass York Spit, in 3 fathoms water. After you are clear of the Middle Ground, as before directed, and have the cape to bear S. S. E. and a fair wind, you may steer up the bay north: come not to the westward of north till you have Gwin's Island, which lies off Hill's Bay, 3 leagues north from New Point Comfort, to bear west, to avoid a dangerous shoal, called the Wolf Trap, which lies N. N. E. 2½ leagues from New Point Comfort light, and S. E. by E. 1½ league from Gwin's Island, which is small. From the Wolf Trap steer north about 15 leagues, which will carry you to the mouth of the Potomac. When you have New Point Comfort to bear west, you are within 10 leagues of Watt's Island. In running the above course and distance, you will have from 10 to 4 fathoms before you come up with the islands. If you should come into 3 fathoms as you approach these islands, you may haul a little to the westward, when you will deepen your water. Off Watt's and Tangier's Islands the soundings shoalen gradually. If you want to go into Rappahannock River, (at the north entrance of which is Windmill Point, off which lies a light-vessel, showing two lights, bearing E. S. E. from the point, 5 miles distant, which is about 6 leagues to the northward and westward of New Point Comfort, and 1½ league from Gwin's Island,) you must, when it bears about N. W. run for it, leaving Piahitank on your larboard hand, where you will have from 7 to 3 fathoms. The spit of sand S. E. from New Point Comfort extends nearly 5 miles out, at which distance is 3 and 4 fathoms.

If you wish to go into Tangier Sound, bring Windmill Point to bear S. W. by W. steer in N. E. by E. and you will get soundings on the Tangier bar in 5 fathoms; the cluster of trees at the Fort on the southern Tangier Island will be then seen bearing N. E. You may then edge off and on the southern side of the bar in what water you please, from 3 to 15 fathoms, hard sandy bottom; but it is not advisable to come nearer the Tangier bar than 6 fathoms, as it shoalens from 6 fathoms to 2, in 300 yards. It is proper to take soundings on the Watt's Island Spit side, as it is very gradual. Should you wish to anchor, there is good holding ground of sand and clay, Z. Crockett's house bearing N. W. and you will here have good anchorage for small vessels, secure from all winds except those from the southward and westward. In proceeding farther up the Sound, keep mid-channel until you bring the house on Kedge Island to bear West; then steer immediately for the clump of trees on it, until you shoalen your water into 2 fathoms, then steer W. N. W. through the straits, and when you bring Frog point to bear S. by E. you are clear of the end of the Middle Ground, which lies in the straits, forming two channels: Being then in 3 fathoms water, you will

steer S. S. W. to clear a bar, making off from Holland's Island until you get sufficient water to stand up the bay; this bar is between 4 and 5 miles in length, the bottom is irregular, and of hard sand.

*Windmill point* is remarkable, and it appears, when bearing W.  $\frac{1}{2}$  S. 7 miles distant, as represented beneath.



*View of Windmill Point, at the North Entrance of the Rappahannock.*

This point is just half-way between New Point Comfort and Smith's point. The Windmill reef now extends 5 miles from the point to the S. E. by E. and forms a broad shelf of  $2\frac{1}{2}$ , 2, and  $1\frac{1}{2}$  fathoms, thence shoaling to the dry shore.

As you come up with the larboard head of the river, keep your soundings on the larboard hand from 3 to 7 fathoms, and not deepen your water more than 7 fathoms to the northward, to avoid a long spit of sand that runs off 2 miles S. E. from the northern head of the river, which is very steep, but keep round the southern head, in the above depth of water, where you may anchor in 7 or 8 fathoms, good bottom, and lie safe from all winds.

After you are up the bay, as far as Watts' Island, and have it to bear about E. S. E. you will deepen your water from 5 fathoms to 10 and 12, muddy bottom. Continue your course north, until Watts' Island bears S. E. and \*Smith's point light (which is the southern head going into Potomac river) bears W. southerly, when you will be in 10 or 12 fathoms water.

If you deepen your water to 15 or 20 fathoms, you will be very near the bad spit or shoal that runs off from Smith's point into the bay  $1\frac{1}{2}$  league.

When Smith's point light bears nearly N. by W.  $\frac{1}{2}$  W. 9 miles, and appears as represented in the annexed figure, with a house on its west side open, it leads in a fair way up the channel, equally clear of the shoals to the east and west.

*Smith's Point Light-house.*



Keep your soundings into 10 or 12 fathoms on the Tangier's side, as before directed; you may then haul up N. W. by N. for Point Lookout, which is the northern point of Potomac river, and come to within one mile of the point on the western side of the bay, and have 4 or 5 fathoms water, muddy bottom. When you are up with Potomac river, and would wish to harbour, having the wind down the bay, you may run in round Point Lookout, giving it a small birth, and anchor in Cornfield harbour, so called, where you will be sheltered from all northerly winds.

When you are up as far as Point Lookout, and have the wind ahead, you have a good channel to beat in, up as far as Patuxent river. You may stand on each tack to 4 or 5 fathoms, but in standing to the eastward, when you have 9 or 10 fathoms, it is best to tack, as the ground rises suddenly to 4 or 5 fathoms, and then lessens into two, hard sand; the western side is more regular. Your course from Point Lookout to Patuxent river, with a fair wind, is N. by W.  $\frac{1}{2}$  W.

\* A light house is erected on Smith's point, at the entrance of the Potomac, containing a *fixed light*. From this point a long shoal or bar extends out into the bay, on the end of which a floating light-vessel has been stationed, in  $4\frac{1}{2}$  fathoms water, showing but one light. It bears from Smith's point light E.  $\frac{1}{2}$  N.  $4\frac{1}{2}$  miles.

Vessels passing up or down the bay, should avoid going between the light-vessel and Smith's point. A light-house will, in all probability, be erected on Fog's point, which is the northern end of Smith's Island, during the year 1827. From the spot where the light-house is to be placed, Smith's point light bears S.  $38^{\circ}$  W.—Windmill point bears S.  $16^{\circ}$  W.—Stingray point bears S.  $15^{\circ} 45'$  W.—Point Lookout bears S.  $85^{\circ} 20'$  W. [See Appendix.]

and the distance 5 leagues, in 6, 7, and 10 fathoms water, which will carry you up with Cedar point, which is pretty bold and makes the south point of Patuxent river. If the wind is to the northward, and you cannot get into Patuxent (which is often the case) you may run in under Cedar point, and anchor in 3 or 4 fathoms good bottom, and secure from the wind down the bay.

Patuxent is as remarkable a river as any in the bay, having very high land on the north side of the river, with red banks or cliffs. If you go into this river, give Cedar point a small birth, and stand to the northward till you have the river open, when you may run in for Drum point, which is on your starboard hand. This is a low sandy bold point, with some small bushes on it. Double this point, and come to in  $2\frac{1}{2}$  and 3 fathoms water, where you will be secure from all winds. In beating into this place, you may stand on the north side for the high red cliffs to 3 fathoms, and to the south side to 5 fathoms water, and in the channel you will have 7 fathoms water. When standing to the south side of the river, you will see some buildings on the north side of the river, above Drum Point; as soon as these buildings come on with Drum Point, you must tack to avoid a spit that runs off from the south side of the mouth of the river.

If you cannot get up the bay, you may anchor under the high cliffs, and lie safe from northerly winds, in 4 or 5 fathoms water.

If you should harbour in Patuxent, when you come out, bound up the bay, give the high land on the northern side of the river something of a birth, and not haul to the northward until you have got into 9 or 10 fathoms water, as a large spit runs off from the Patuxent Cliffs about S. E. extending from Drum Point to \*Cove Point, which should be avoided. When in 9 or 10 fathoms, you will be in mid channel, and your course is then N. by W.  $\frac{1}{4}$  W. to Poplar island, distant 8 or 9 leagues, which you leave on your starboard hand. In running this course, you will have from 10 to 15 fathoms. When Sharp's Island bears E. you may find 13 fathoms muddy bottom. After leaving Patuxent river, if you intend going into Great Choptank river, you must leave James' island (or point) on your starboard, and Sharp's island on your larboard hand, giving both a good birth, as there are long spits off from both these places. After you have passed James' point, steer away about N. N. E. in 7 and 8 fathoms, which will carry you in under Sharp's island, where you may anchor within half a mile of the island, and lie secure from northerly and N. W. winds, and, if you wish it, take a pilot at this place. After you are up with Poplar island, and it bears E. you may then steer away about N. distant  $5\frac{1}{2}$  leagues, which will carry you up to Annapolis roads, which affords fine anchorage, and protection from N. and N. W. winds. The channel into Annapolis is difficult and narrow; few vessels ever attempt it. The State House at Annapolis is remarkable for having a large steeple, by which it may be known, and may be seen when abreast of the head of Poplar Island.

In running N. and N. W. from Poplar Island, for Annapolis Roads, you pass Thomas' Point light-house, showing a *fixed light*, on your larboard hand, off which, in a S. E. direction, lies a shoal, which should be avoided, as it is bold too, making it more dangerous. The dwelling house of the keeper stands between two large walnut trees, near the light house; you will also pass in this distance, on your larboard hand, three small islands, called the Sisters, lying below South River.

After leaving Poplar island, the next you come to is Kent island; you may run in under it opposite Poplar island, and anchor in 6 or 7 fathoms water, and lie secure from all winds, except S. W.

NOTE.—The land on the western side of the bay, from Patuxent to Annapolis river, is something high, with several bays, such as Herring and West river bays, where the soundings are gradual on both sides, near which there are shoals which should be avoided.

You also have, in running from Poplar Island to Annapolis or Talley's Point, (which is the southern point of Annapolis river) from 7 to 15 fathoms. If you

\* A light-house will probably be erected on Cove Point the present year, (1827.) [See Appendix.]



go into Annapolis River, give Talley's Point a good birth, and haul into the westward of the mouth of the river, taking your soundings off the south side in 3 and 4 fathoms water, and pass in between Talley's and Greenberry Points, which you leave on your starboard hand, giving said points a birth of an equal width, and run just above them, where you may anchor in 3 or 4 fathoms, and lie secure from all winds.

After you are up with Annapolis, and bound to Baltimore, when in the middle of the channel, your course is N. by E.  $\frac{1}{2}$  E. which will give the best water, until you get the Bodkin light-house to bear W. N. W. then due N. till the Bodkin light-house bears W.  $\frac{1}{4}$  S. and the two light-houses at \*North Point in one, or nearly so, keeping the east a little open with each other, until the Bodkin light-house bears S. W. by W. when you will steer W. by N. until you get the eastern light-house at North Point to bear N. when, if at night, you can anchor in the best water; or you may bring the North Point lights a little open with a gap of woods on Sparrow Point, which will carry you in 3 fathoms water, being the most you will have in this channel, common tides, soft bottom. Keep these marks till Bodkin Point light bears S. S. W. then steer W. or W. by N. into the river, giving North Point lights a birth of about one mile, by which you avoid a shoal off the point, of 12 feet, hard bottom, near which, in 18 feet, soft bottom, is a black spar buoy, which you leave on your starboard hand. When abreast of North Point light, steer away for the White Rocks, which you will see on the south side of the river, until you are abreast of them, when you must haul to the southward till you bring Leading Point, (which is high bluff woods) within two sails' breadth of Hawkins Point, and keep it till you are almost abreast of the rocks, when you must again haul to the southward, till you bring the said points within a small sail's breadth of each other, which must lead you up to Hawkin's Point, to which give a birth of one-quarter of a mile.

There are several small shoals of about two fathoms, on each side of the channel, which are steep, and the channel between them not more than a quarter of a mile wide. When you come up with Hawkin's Point, you may steer away for the Narrows (on which the fort stands) about N. W. by N. which course has nothing to obstruct you; you will have from  $2\frac{1}{2}$  to 5 fathoms. When you are up with the Narrows, pass between the two points, and give the larboard side a good birth, to keep clear of a shoal just above the Narrows; then haul to the S. W. up for the wharves, or the point which is on the starboard hand, and there anchor, or proceed to Baltimore. If you leave the point, keep your larboard hand on board, when you will find good bottom, from which you may proceed to the wharves, or come to with safety. (See Chart of Chesapeake.)

#### Rates of Pilotage.

American vessels pay	\$3 00	down, and	\$4 00	up, per foot.
Foreign do. do.	4 00	do.	4 33	up do.

**BUOYS IN SHIP-CHANNEL.**—(No. 1) A mast buoy, painted white, to the westward of which you should not go. Another white buoy (No. 2) to range with it, and No. 4, which last will be red, and placed exactly on the Ship-Channel range, so that, by observing it, you will, without farther notice, know when to run in for the river, as it will range precisely with the two light-houses on North Point. No. 3, a white buoy, upon or near a small knoll of 16 feet hard, on the larboard side of the Ship Channel. No. 5, a black and white buoy on a hard knoll of 15 feet, which lies in the Ship Channel, with the marks nearly on. It is best to leave it on the starboard hand going up. Nos. 9 and 10, two black mast buoys, mark the southern extremity of the Mau of War Shoals: Vessels beating through, must not pass this range. No. 6, and No. 7, two white buoys, designate the southern or larboard side of the Ship Channel, and will range with No. 3, before mentioned. No. 8, a white buoy, on the end of the Bodkin bar.

\* There are two light-houses on North Point, which exhibit white lights, bearing N. by W.  $\frac{1}{2}$  W. from the Bodkin.



## NAVIGATION OF THE PATAPSCO.

*Directions for Mariners, Bay Craftsmen, &c. for sailing up or down the Patapsco, and for passing through the Swash Channel.*

The Can and Log Buoys heretofore used to buoy off the Swash Channel and River Patapsco, having been removed, and spar or mast buoys adopted in lieu thereof, as being more conspicuous from their erect position, and shewing a mast of from nine to twenty feet above the water, it is conceived necessary to give due notice of the changes, viz.

The Buoys now moored are numbers 5, and from 11 to 20, and are painted, some of them entirely white, others entirely black, and others again black at the surface of the water, and at the head, with white between. The white buoys designate the south or larboard side of the channel, coming up—the black buoys the north or starboard side—and the white and black buoy denote the knolls that lie in the channel way, or elsewhere, and to be avoided. Their particular position are as follows :

No. 5.—A buoy painted black and white alternately on the edge of a hard knoll of 15 feet, immediately on the Ship Channel range, abreast of the easternmost Man of War Shoal, in 3 fathoms, sticky bottom.

No. 12.—A white buoy is placed on the larboard side of the channel to mark the south-east bar.

No. 13.—Shows the starboard side of the channel, and is placed just at the edge of the 7 feet knoll.

No. 11.—A white buoy in 13 feet soft, on the outer edge of the Rock Point Shoal.

No. 14.—A white and black striped buoy, in 18 feet soft, on the edge of a hard knoll of 14 feet, between North Point and Rock Point.

No. 15.—A black buoy, in 13 feet soft, denotes the shoal off North Point.

No. 16.—A white and black striped buoy, in 18 feet, just outside of the Rock knolls.

No. 17.—A black buoy, in 18 feet soft, on the outer edge of the Sparrow's Point knolls, of 12 feet hard.

No. 18.—A white buoy, in 4 fathoms soft, on the outer edge of the shoal, extending from Hawkin's Point bar.

No. 19.—A black buoy, in 20 feet soft, on the outer edge of a shoal of 12 feet hard, extending from Soller's Point bar.

No. 20.—A black buoy, in 18 feet soft, on the eastern extremity of the shoal, extending from the Lazaretto.

No. 22.—There is a buoy painted black and white alternately, on the sunken rock between North Point and Sparrow's Point.

NOTE.—No. 5 shows 12 feet above the surface of the water ; all the others show from 12 to 14 feet, except No. 19, which does not show as high.

A good birth should be given to the stripe buoys, as they are expressly placed to mark the shoals.

The black buoys indicate the northern extremity of the channel.

The white buoys indicate the southern extremity of the channel, so that it is dangerous to attempt to pass to the northward of the first, or to the southward of the latter.

Besides the above enumerated buoys, there will be placed a black and white buoy at the old wharf, abreast of Fort McHenry, which will be No. 21.

Spar or mast buoys will also be placed as soon as they can be completed, to buoy off the Ship Channel, leading from the Chesapeake Bay into the river Patapsco, of which due notice will be given. [See Appendix.]

*Directions from New Point Comfort to Potomac River.*

From this point a Spit extends S. E. 2 miles, which you will avoid by not going into less than 4 fathoms water. About  $2\frac{1}{2}$  leagues N. N. E. from New Point Comfort, and two leagues E. from Iron Point, lies the Wolf-trap rock, on which there are 12 feet at common tides; between this rock and Point Comfort, there are 8 and 9 fathoms. From the Spit, which runs off from New Point Comfort, to the entrance of Rappahannock River, the course is N. by W. and the distance 6 leagues. You may keep in 5 or 6 fathoms water. Near the Wolf-trap rock, there are 7 fathoms.

From the entrance of Rappahannock, off which is a light vessel showing two lights, to the flat which runs off from \*Smith's Point light (which is the south side of Potomac River) the course is N. and the distance 6 leagues. You may run in 5, 6, or 7 fathoms water. When you draw near the shoal which runs off from Smith's Point, you should not go into less than 7 fathoms. This shoal extends about  $2\frac{1}{2}$  miles E. S. E. from Smith's Island; on its extremity there are only 2 fathoms water, and very near to it eastward, there are 10 or 12 fathoms. The mark for the shoalest part of this sand, is a house with a white chimney, standing among the trees on the shore within Smith's Island, open to the northward of the island, and bearing west. When this house bears W. by N. you are to the southward of the extremity of the shoal; and when it bears W. by S. you are to the northward of it. That which adds considerably to the danger of this shoal, in going either up or down the Chesapeake, is the broken islands which lie on the east side of the channel, and the flats of sand which extend from 5 to 8 miles to the westward from them.

The Tangier Islands lie to the southward of Cooper's Island, and the Tangier Islands and Watts' Island make the entrance of Pocomoke Bay, which bay separates Virginia from Maryland on the eastern shore.

Potomac River separates Virginia from Maryland; its entrance is formed by Smith's Point on the south side, and Point Lookout on the north side; the distance between these two points is about  $3\frac{1}{2}$  leagues. On Smith's Point is a light-house, as described in page 118, to which the reader is referred.

If you are bound to St. Mary's River, you must give Point Lookout, and also the shore about it, a good birth; and when you approach St. George's Island, you must keep nearer to the main than to the shoal, which extends from the island. Your course into the river is N. W. and as it is all open to your view, you may anchor when you please in 5 or 6 fathoms water.

If you are bound to Wicomack, in Potomac River, your course from the east end of St. George's Island to Ragged Point is N. W.  $\frac{1}{2}$  W. and the distance 4 leagues. On the south or larboard side, there are flats lying off from the shore, which in some places extend one mile; come no nearer to them than 7 fathoms: in the middle of the channel, you will have 11, 10, 13, 10, and 8 fathoms. You must give Ragged Point a good birth, to avoid the shoal, which extends from it nearly one mile. From Ragged Point to Clement's Island your course is W.  $\frac{1}{2}$  N. and the distance 2 leagues. In the middle of the channel you will have 6, 5,  $4\frac{1}{2}$ , and 7 fathoms water. On the south side, a little below Clement's Island, is No-mine Bay. From abreast of Clement's Island steer W. N. W. in 6, 5, and 4 fathoms water, until you have Wicomack River open, then pass pretty near to the island, which is on the east side of the entrance, in order to avoid the shoal which runs off from the point the west side. Steer about north into the river, and anchor on the south side of Newton's Point, in 5, or  $4\frac{1}{2}$  fathoms water.

*Directions from Potomac River to Patuxent River.*

From Point Lookout a flat runs off a considerable way, which you must be careful to avoid, by not coming any nearer to it than 7 or 8 fathoms water. Op-

\* See note to page 118.

posite this point, the flat of Tangier Islands extends so far to the westward as to narrow the channel of the Chesapeake to about  $4\frac{1}{2}$  miles. This part of the flat is steep, and has 13 fathoms close to it. About two leagues to the northward of Point Lookout is Point Again, off which, above two miles, there lies a shoal. About 3 leagues to the northward of Point Again, is Cedar Point. Between them, 7 or 8 fathoms is a good depth to keep in; nearer to the flat on the east side, there are 10, 16, 9, and 11 fathoms.

Cedar Point is on the south side of the entrance of Patuxent River: the ground is low and sandy, and has some straggling trees standing on it. From this point, a flat extends to the eastward, and also to the northward. On the north side of this river there are high hills, called Clifts, with trees on them; and from this side also a flat extends, but the shoalings on each side of the channel are gradual and the ground soft. In the middle of the channel there are 8 fathoms water. Higher up is Ronsly's Point on the south side, and Drum Point on the north side; the latter is a low sandy point. You may anchor without these points, or you may go further up the river, always observing the following general rule in all the deep bays throughout Virginia and Maryland, viz. to every point, more especially where the land is low, give a good birth in passing, because Spits, or flats of sand, extend from them, and consequently the water is shoal in such places.

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*Directions for going from Cape Henry or Lynhaven Bay, to  
York River.*

As Cape Henry S. S. E. would lead you near the tail of the Middle Ground, and as the proceeding with it at S. E. would carry you on the tail and north edge of the Horse-Shoe, your keeping the Cape on any bearing between S. S. E. and S. E. will carry you through between the two shoals. On the tail, and along the north side of the Horse-shoe, the shoalings are gradual. With Cape Henry bearing S. S. E. or S. E. by S. steer N. N. W. or N. W. by N. until you bring Cape Charles to bear E. by N. you are then to the northward of the Horse-shoe, and may steer N. W. or N. W. by W. according as you have the wind and tide. As the ebb sets strong out of the Chesapeake over the Horse-shoe, you must not, with a northerly wind and ebb tide, approach any nearer to the shoal than 5 or 6 fathoms water. When you have brought New Point Comfort to bear north, and Back River Point to bear S. by W. you are then on the tail of York Spit, in 3 fathoms water. When you are a little above Long Isle, you must not come any nearer to the shore than 5 fathoms, until you enter the river above the marsh, then keep in 9 or 10 fathoms, and run up and anchor between York and Gloucester, in what depth you please.

With a contrary wind, stand towards the Horse-shoe in  $4\frac{1}{2}$  or 5 fathoms, and from it into 6 $\frac{1}{2}$  or 7 fathoms, until you are abreast of the entrance of Pocasin, where there is a gut of 7 fathoms, which runs close to the entrance; you should therefore be careful to avoid going too far in, and thereby getting on the tail that extends from Toes Marsh. When you have got thus far up, you should go no nearer to the shore on this side, than 7 or 6 $\frac{1}{2}$  fathoms, all the way up to York Town. On the other side, you should not stand any nearer to the small isles on York Spit, than 10 or 11 fathoms: close to the tail of this spit there are 6 fathoms: close to the middle of it there are 10 fathoms; and close to it, abreast of the islands, you will have 13 fathoms, and before you can get another cast of the lead, you will be ashore. When you have entered the river, you must not come any nearer to the flat than 8 or 9 fathoms water. This flat extends from the north shore, almost one-third over the river.

## \*Cape Hatteras.

This Cape lies about S. S. E. 37 leagues from Cape Henry; between them lie the inlets of Currituck, which are shoal, and New Inlet, on which are 5 feet water. About six leagues N. by E. from the Cape lie the Wimble Shoals, on which are 3 and  $4\frac{1}{2}$  fathoms water, extending N. by W. and S. by E. about 3 miles, and is about 3 miles wide. The inner edge of this shoal is about 3 miles from the shore, and the soundings between them 8, 10, and 7 fathoms. About 5 miles N. by W. from the north end of this shoal, and 3 miles S. E. from the north end of Hatteras Island, there lie some small knowls, on which are only 9 feet at low water.

Cape Hatteras shoals extend 8 miles in a south-easterly direction, with 5 and 6 fathoms on the extreme parts. The most dangerous shoal lies in lat.  $35^{\circ} 10' N.$  the middle of which is 4 miles distant from the Cape, and has barely 9 feet water. This is called the Diamond shoal, between which and the Cape there is a good passage for small vessels, in moderate weather, or when the wind is off the land, but it would be always safest to go round the shoal in 10, 12, and 15 fathoms.

The light-house at Cape Hatteras exhibits a fine light when in order, and can be seen very plainly in 9 and 10 fathoms water on the outer part of the shoals, when only 10 feet above the level of the sea; but when on board a large vessel, it might be seen in 20 or 25 fathoms. The soundings from the Cape are 2, 3, 4,  $4\frac{1}{2}$ , 5, 6, and 7 fathoms, and then deepens to 9, on the S. S. E. part.

Off Cape Hatteras is a floating light, showing two lights, one of which is 60 feet high, and the other 45 feet, moored in 20 fathoms water, with soundings of blue sand, shell and clay. The vessel containing these lights is upwards of 300 tons, and bears E. S. E. from the light-house on Cape Hatteras, 13 miles distant, and from the South Shoal N.  $78^{\circ} 45' E.$  distant  $4\frac{1}{2}$  miles. The light-boat is sufficiently far from the shoals that vessels can pass without risk between them and the boat. The distance from the boat to the Gulf Stream is not above 7 miles. There is a current with a south wind which runs N. N. E. 2 miles per hour, and with a north wind S. S. W. 2 miles per hour. W. S. W. from Cape Hatteras, eight leagues distant, lies †Ocracock Inlet, on which are 12 feet water.

From Cape Hatteras to Cape Henry the ground is fine sand, and to the northward of Cape Henry, coarse sand with some shells among it.

It is high water at Cape Hatteras shoals, on full and change of the moon, at 3 o'clock and 45 minutes, and the tide flows from 4 to 5 feet, being governed by the winds in the offing, and in easterly gales it runs several feet higher.

\* On the pitch of this Cape (which is low sandy land) a light-house is erected, which is painted white, 97 feet above the level of the sea, containing a *fixed light*: there is a good channel, 3 miles from the light, keeping the land on board. The light bears from the S. W. part of the outer shoals, N. by W.  $\frac{1}{2}$  W. and from the S. E. part N. W. distant 3 leagues; from the S. W. part of the middle shoals, within which vessels bound along the coast generally pass, the light bears N. N. W.

The light at Cape Hatteras, being 95 feet above the level of the sea, will be seen from a considerable distance without the outer shoals, and to a vessel steering from Ocracock, W. by N.—W. N. W. or even N. W. by W. the light on the Cape will first show, and will continue to be seen till the light appears within the bar.

The point of Cape Hatteras having made out into the sea since the light-house was built, the light now stands  $1\frac{1}{2}$  mile back from the point of land that makes out from it.

Though the bearings of the Brown at Shell Castle Island from Ocracock bar, has been stated, yet it is not expected that any vessel will attempt to cross in the night; it has been mentioned merely that the master, in coming up with the bar in the night, may be enabled thereby to take that situation which may be most favourable for receiving a pilot and crossing in the morning.

† At the entrance of Ocracock Inlet, a light-house is erected, exhibiting a *revolving light*, which you leave on your starboard hand entering the Inlet.

## \*Cape Lookout.

Cape Lookout lies in  $34^{\circ} 37'$  N. lat. and  $76^{\circ} 33'$  W. long. and the Cape woods (where the light-house is) in lat.  $34^{\circ} 39'$  N. and long.  $76^{\circ} 32'$  W. The shoals extend from the Cape 10 miles, in a S. S. E. direction, being broken ground as far as lat.  $34^{\circ} 28'$  N. In that latitude there are 14 fathoms water, and from thence to the Gulf Stream, the soundings are gradual, 95 fathoms; the tracks are faithfully laid down in the chart, (published by the author) together with all the soundings from the outer part of the shoal to the edge of the Gulf Stream.

The outer part of Cape Lookout shoals lies S. W.  $\frac{1}{4}$  W. 22 leagues from Cape Hatteras, and 22 leagues S. W.  $\frac{1}{4}$  W. from the outer part of Cape Hatteras shoals. Seven miles from Cape Lookout light lies a shoal which is dry at low water, bearing S.  $\frac{1}{4}$  E. from the light, the sea breaks constantly S. E. from this shoal for the distance of two miles, which is the S. E. point of breakers. Between this shoal and the shore, there are numerous spots, on which are  $1\frac{1}{2}$  and  $1\frac{1}{4}$  fathoms; south of this shoal the least water is  $2\frac{1}{2}$  fathoms. On the eastern part of Cape Lookout shoals there are  $2\frac{1}{2}$  fathoms, near them, on the northern and southern sides, are 4, 5, and 9 fathoms. On the N. and E. of Cape Lookout shoals you will have 7 and 8 fathoms, dead, dark, broken shells, with sand.

Old Topsail inlet, or entrance to Beaufort, lies about 3 leagues W. N. W. from Cape Lookout. It has  $2\frac{1}{2}$  fathoms water, but the eastern side of the entrance is formed by a long spit, extending westward. The channel in lies first N. E. by E. and then alters gradually round the flat, which extends from the larboard or western side to the N. N. W. In proceeding up to Beaufort, you will have 3, 4, and 5 fathoms in the channel, and may anchor in 3 fathoms at low water.

If you wish to come within the shoals of Cape Lookout, after making Beaufort, keep along the shore at the distance of two miles, until you come up with the point of sand forming a pretty good harbour, with the wind from the N. W. to E. for small vessels. If bound to the northward, keep as near as you can judge the same distance, or a little less from the beach, until you bring the light-house to bear N. W. by N. you will at that distance have not less than a quarter less three; then keep N. E. and you will deepen to 5 and 6 fathoms in a few minutes.

West, 10 leagues from Cape Lookout, lies Bougue Inlet, on which are 8 feet water: W. by S.  $\frac{1}{4}$  S.  $4\frac{1}{2}$  leagues from Bougue Inlet, lies New River, on which you have 8 feet water: S. W.  $\frac{1}{4}$  W. 6 leagues from New River light, lies New Topsail Inlet, on which are 10 feet water. S. W.  $\frac{1}{4}$  W. from New Topsail Inlet, 3 leagues distant, you make Deep Inlet, on which are 7 feet water. S. S. W. from Deep Inlet, 6 leagues, lies New Inlet, on which are 7 feet water. This Inlet is between the sea coast, and N. E. end of Smith's Island. It will admit vessels drawing 6 feet, and is about two miles wide at its entrance, having 7 feet water at low tide over the bar. It continues its breadth to the flat, and is navigable for large vessels 21 miles from its mouth, and 20 miles to Wilmington, to which town vessels drawing 10 or 12 feet can reach without any risk. S. by E. 8 leagues from the New Inlet, will carry you into 15 fathoms, south from the Frying-pan Shoals.

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### Directions for Cape Fear light-house.

Bald Head, a noted bluff at the mouth of Cape Fear River, on which a light-house is erected, after described, is at the S. W. end of Smith's Island, which.

\* Cape Lookout light-house contains a *fixed light*, 100 feet above the level of the sea; the tower is wood, painted in stripes horizontal, alternately red and white. At a distance it has the appearance of a ship of war, with her sails clewed up. The light may be seen from the outer end of Cape Lookout shoals, but vessels, passing it, ought rather to trust to the lead than to making the light.

† On Federal Point, which forms the starboard entrance to New Inlet, a light-house is erected, exhibiting a *fixed light*. (The light-house is on the spot where the Beacon formerly stood.)



with Oak Island, form the main entrance into the river, on the most eastern part of which (Federal point) is the light-house. Oak Island is long and narrow. On the bar, at high tide, you have 14½ feet, and its rise is 5 feet.

The light-house on Bald Head is painted black, in order to distinguish it from the light-house on Federal Point, from which it bears about S.S.W. It stands one mile from the sea, is 90 feet high, and contains a *fixed light*. The lamps are 100 feet above the level of the sea, and 50 feet above the tops of the trees which stand on the hills between the light and the sea. The iron lamp is 10 feet 9 inches in diameter, and about 15 feet 9 inches in height from the floor to the top of the roof.

From the point of the Cape, the light-house bears N. W. distant four miles; and from the extremity of the Frying-pan Shoal, N. W. by N. ½ N. 5 leagues.

It may be necessary to observe to strangers, that, in passing the shoals, especially in a dark night, it is most prudent to steer W. in lat.  $33^{\circ} 20'$  or  $25'$  at most, until they shoal their water to 7 or 8 fathoms: by doing this they may be sure of being to the westward of the bar.

Your course from Cape Fear bar when in 9 fathoms water, to clear Cape Roman shoal, is S. W. and distance 7½ miles. When sailing towards these coasts, it is prudent to keep nearly a degree to the southward of the latitude of the place you intend to make, until you reckon yourself on the edge of the Gulf Stream, when you must be directed by judgment, according to circumstances. Do not, if possible to avoid it, sail to the northward of  $33^{\circ} 20'$ ; or at highest  $33^{\circ} 25'$ , until you obtain 10 fathoms water. In this depth you will be within the south or outer end of the Frying-pan Shoal, which lies in latitude  $33^{\circ} 36'$ . In approaching the coast, in  $33^{\circ} 20'$ , your first soundings will be from 30 to 35 fathoms; in this depth you will be very near to the edge of the Gulf Stream; you will have fine gray sand, with black spots, when you will get into 17 fathoms, there is a long flat in this depth of water. In steering west you will, for the first 5 or 6 leagues, shoalen the water very little. When you come in 14 fathoms, you shoalen your water quicker but gradually. You will see the land from 10 fathoms water, if the weather be clear, and may then be sure that you are within the Frying Pan, from the out side of this shoal. To the westward of north west no land can be seen, when without the shoals.

The currents on the coast of North Carolina are governed mostly by the wind—during the summer months, the prevailing winds are south-westerly, and the currents then set the direction of the coast to the eastward, and when the southerly winds cease blowing, it changes suddenly to the contrary direction, which is a sure precursor of a north-east wind.

The land on Cape Lookout is very low, and cannot be seen more than a league in the clearest weather from on board a small vessel.

[We decline giving directions for sailing into many ports in North Carolina, as all the harbours are barred, and always subject to alteration by every gale, particularly in the equinoctial storms; but the bars create only a part of the danger in sailing into those ports; it is the vast bed of shoals that lie within the bars, with their innumerable small channels which give to tide so many different directions that even the pilots who live on the spot, find it difficult to carry a vessel in without some accident. Here also the *westerly* variation appears to cease, and at Savannah becomes easterly.]

### *The North Bar of the New Inlet.*

To enter, the marks are, to bring the west end of Buzzard's Bay point of sand, on H. Helly's large white house in Smithville, and the bearings will be S. W. by W. keeping the point of Smithville with these bearings until over the bar, then keep the spit of sand or beach that makes off from Federal Point light close on board, which will carry you into the river channel, where there is good anchorage all along this sand, in three and four fathoms water. On this bar there are 10 feet at low, and 12 at high water.

*The Old Bar at New Inlet, or as now called, the South Bar.*

In running in, when the light-house on Federal Point bears W. or W. by S. you will make a thick and high hummock of woods, called Merryck's wood bluff, before you make the light; but should it bear to the north of west, you will make the light-house and bluff at the same time, the former of which may be seen in clear weather, about 15 miles from a ship's deck, in about 10 or 11 fathoms water, and when first discovered, has the appearance of a distant sail. As you approach the light, the water becomes gradually shoal. In 4 to 5 fathoms water, one mile and a half from the light-house, bearing W. S. W. to W. there is good anchorage, soft bottom.

In running in, bring the light-house on with the south end of the barracks, which you will continue till over the bar, and near the beach, and so along the beach, until you are in the river. On the bar, at high water, 11 to 12 feet; at low water, 8 feet only. The depth of water, and channel, however, are subject to variation, so that it is not advisable for strangers, except in cases of necessity, to run in without a pilot.

The light-house on Federal Point is 40 feet high, painted white, and stands on the main land, the north side of the entrance of Cape Fear River, on the spot where the beacon formerly stood.

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*The Main Bar of Cape Fear River.*

Vessels running down from the westward, should not approach nearer the Middle Ground, than to bring the Cape (which is the most eastern part of the Bald Head Woods) to bear E. by N. When you bring the light-house to bear N.  $\frac{1}{2}$  E. in about 4 fathoms water, steer immediately for it, which will be a little open to the eastward of a Pole Beacon, with a cask on the top, painted black. A continuation of this course will carry you clear of the Fingers, when you will see a buoy ahead, or a little on the larboard bow, which you will pass, leaving it on the larboard hand; as soon as you leave the buoy steer N. W. or keep the breakers close on board the larboard side, when you will luff or bear away, as the water may deepen or become more shoal, to be ascertained by heaving the lead. This will carry you clear of a long sand shoal, that makes off the point of Bald Head, which is dangerous to ground upon, as the flood tide sets directly over, and breaks upon it with the wind from the S. W. In approaching Bald Head, caution is necessary, as the shoals on both sides are very steep, frequently from 6 to 8 fathoms at one cast of the lead. Keep close to this shoal by sounding as above directed, until you reach Oak Island, when you may steer direct for Smithville. Outside of the bar, in 5 or 6 fathoms water, the light-house bearing N. there is good anchorage in soft bottom. There is on the bar, at low water, 10 feet, and at high water 14  $\frac{1}{2}$  feet; and the sea is scarcely ever so rough as to prevent a pilot's boarding a vessel at the buoy.

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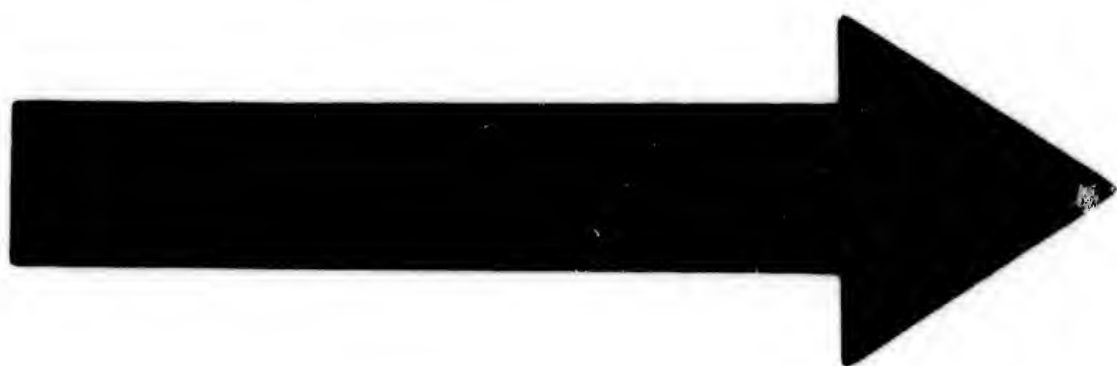
*The Western or Oak Island Channel,*

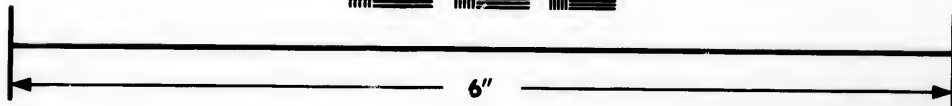
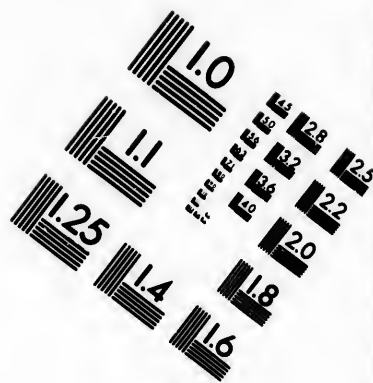
Is to bring the point of Oak Island to bear N. E. by E. keeping this course until you get close in with the beach, thence along the beach until you pass Oak Island. There are 7 feet at low, and 11 feet at high water on this bar.

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*Other directions for Oak Island Channel.*

Vessels drawing not more than 9 feet water, running into Wilmington through Oak Island Channel, may bring the easternmost part of the lump of trees on the east end of Oak Island to bear N. E. by E. and run for it, which will carry





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them over in the best of the water,  $7\frac{1}{2}$  feet at low water, and 11 feet at high water; as soon as you deepen your water over the bar, steer for the end of the sandy point of Oak Island, till close up with it, then steer E. S. E. for opening Cape Creek, till you deepen into 4 fathoms, then haul up N. or N. N. W. along the beach, till you get up with Fort Johnson, where you may anchor.

NOTE.—A law has passed the Congress of the United States, and appropriations made for building a light-house on the *Point of Marsh*, near the mouth of Neause River, and for placing a *light-vessel* of 140 tons on the S. W. point of *Royal Shoal* in Pamlico Sound. [See Appendix.]

[The only correct survey of the coast of North Carolina, by authority of an act of Congress, under the direction of Jesse D. Elliot, U. S. Navy, is published by EDMUND & GEORGE W. BLUNT, to whom permission was given to copy, in a Chart of the Coast, on a square scale.]

### RATES OF PILOTAGE for Cape Fear Bars and River.

#### BARS.

For vessels drawing	6 feet, and under	7 feet,	Open Boat.	Decked.
7	.	8	\$5 60	\$8 58
8	.	9	6 25	9 37
9	.	10	7 25	10 87
10	.	11	8 37	12 55
11	.	12	10 00	15 00
12	.	12 $\frac{1}{2}$	12 00	18 00
12 $\frac{1}{2}$	.	13	13 33	19 99
13	.	13 $\frac{1}{2}$	14 27	21 40
13 $\frac{1}{2}$	.	14	15 33	22 99
14	.	14 $\frac{1}{2}$	16 53	24 89
14 $\frac{1}{2}$	.	15	17 73	26 59
15	.	15 $\frac{1}{2}$	21 80	32 70
15 $\frac{1}{2}$	.	16	23 10	34 66
16	.	16 $\frac{1}{2}$	25 5	37 57
16 $\frac{1}{2}$	.	17	26 70	
17	.	17 $\frac{1}{2}$	28 60	
17 $\frac{1}{2}$	.	18	32 70	
18	.	18 $\frac{1}{2}$	39 20	
18 $\frac{1}{2}$	.	19	42 00	
19	.	19 $\frac{1}{2}$	44 80	
19 $\frac{1}{2}$	.	20	48 65	
			52 50	

That 30 per cent. upon the present established rates of pilotage, as above, be allowed to decked boats, piloting vessels into this port and out to sea, (which is comprised in the last column.)

#### For the RIVER, from Fort Johnson to Wilmington.

For vessels drawing	6 feet, and under	7 feet,	
7	.	8	\$7 00
8	.	9	8 00
9	.	10	9 00
10	.	10 $\frac{1}{2}$	10 00
10 $\frac{1}{2}$	.	11	11 00
11	.	11 $\frac{1}{2}$	12 00
11 $\frac{1}{2}$	.	12	13 00
12	.	12 $\frac{1}{2}$	15 00
12 $\frac{1}{2}$	.	13	16 00
13	.	13 $\frac{1}{2}$	18 00
13 $\frac{1}{2}$	.	14	20 00
14	.	14 $\frac{1}{2}$	22 00
14 $\frac{1}{2}$	.	15	24 50
			25 00

From Fort Johnson to Brunswick, or from Brunswick to Wilmington, or vice versa, one half the pilotage from Fort Johnson to Wilmington.

From Fort Johnson to Five Fathoms Hole, from Five Fathoms Hole to Brunswick, from Brunswick to Campbell's Island, and from Campbell's Island to Wilmington, or vice versa, one fourth of the pilotage from Fort Johnson to Wilmington.

*From Cape Fear to Georgetown.*

Georgetown entrance is 18 leagues S. W.  $\frac{1}{4}$  W. from Cape Fear; between lies a bank, on which there are 5 fathoms water. The north end of this bank lies about  $5\frac{1}{2}$  leagues S. W. by W. from Cape Fear; it thence extends S. W.  $\frac{1}{4}$  S.  $3\frac{1}{2}$  leagues. The inner or N. W. side of this bank is about 4 leagues from the shore; near to this edge there are 10, 9, and 8 fathoms water: it shoals gradually as you advance towards the shore; this is called Long Bay. Near to the north end of this bank, there are 10 fathoms; along its S. E. side there are 8, 7, and 6 fathoms: to the southward of this bank there are several shoals.

In sailing to Little River inlet, which divides North from South Carolina, you pass Lockwood's Folly Inlet, which lies W. from Cape Fear light  $3\frac{1}{2}$  leagues distant. The land appears broken, and contains no safe harbour.

In continuing your course towards Georgetown, several other inlets may be discovered in clear weather, and at length you pass North Inlet, about 3 leagues from Georgetown light-house: this inlet is the northern boundary of North Island, on which island the light-house is situated. The entrance into this inlet is from the northward, the south breaker forming nearly a crescent, runs apparently across the mouth of the inlet: there is generally not less than six feet water on the bar at low water, but the depth varies with the direction and violence of the prevailing winds. The direction of this channel has been within a few years considerably, though gradually changed by the elongation and curve of the south breaker, throwing the channel more to the northward. In entering it in its present situation, Georgetown light-house will bear about S. by W. distant 3 leagues: a small, but distinct sand hill, (the most northern on the north end of the North Island) S. W.  $\frac{1}{4}$  S. the most southern building on the south end of the opposite island W. by S.; you may then run in between the heads of the two breakers, rounding along the edge of the south breaker, and thus passing between the breakers into the harbour. The flood tide comes in from the S. E. and sets across the south breaker towards the north breaker. On the north end of North Island, about 3 leagues from the light, there is a village of about 20 or 30 dwelling houses, (a summer residence) which is distinctly seen from sea, and often mistaken for Sullivan's Island near Charleston; there are several houses on the north point of the opposite island. To small vessels this inlet affords a safe harbour; there are two passages leading from it up to Georgetown, but from the shoalness of the water, they cannot be conveniently navigated, except by boats: in cases of necessity, however, vessels of 6 or 7 feet draught may be navigated with some delay through the most southern, which is the deepest passage into the bay, or river, leading to the town.

*Directions for sailing into Georgetown Harbour.*

Georgetown light-house is a lofty, circular, white tower, erected on North Island, which is on the northern and eastern sides of the harbour, at the entrance of Winyaw bay, on a low sandy spot, and exhibits a *fixed light*, 90 feet above the level of the sea at high water, bearing N.  $\frac{1}{2}$  W. from the entrance of the bar, 6 miles distant. From the easternmost part of Cape Roman shoal, to the entrance of the bar, the course is N. N. E. and the distance 15 miles, and from the southernmost part of Cape Roman shoal, it bears N. by E.  $\frac{1}{4}$  E. 20 miles distant. On the out Cape shoal is 5 feet at low, and 9 feet at high water, and a channel within, at high water, of  $2\frac{1}{2}$  fathoms, from  $1\frac{1}{2}$  to 2 miles wide, and 5 fathoms outside, close on board the shoal.

In approaching Georgetown bar from the northward, the harbour is shut out from view by North Island, and the light-house appears to be situated in a low wood.

In passing the light, either northerly or southerly, vessels will find 5 fathoms water within 5 miles of the land: on this shoal there are about 7  $\frac{1}{2}$  feet at low

water, about 12 feet at high water, and 5 fathoms all round it. The principal entrance into the harbour lies to the southward of the light-house.

There are several spar buoys placed in the best water on the bar, and in the channel, in sailing by which, the following directions must be observed, viz. The first buoy on the bar lies directly in the channel, which, of course, may be passed on either side, close to; from this to the second (channel) buoy, the course is about N. W. one mile distant, and when up with it, immediately steer N. E.  $1\frac{1}{2}$  miles distant, which is also in the channel, to the third buoy, when you will immediately steer N. by W. for the light-house, 4 miles distant, keeping that course until within 100 fathoms of the light, leaving it on the starboard hand, when you will be in good anchorage.

The North Inlet channel into Georgetown, cannot be recommended, under any circumstances.

Vessels at sea will find deep water, and when the wind is to the southward and westward, convenient and safe anchorage near the land, about  $1\frac{1}{2}$  or 2 miles to the northward of the light-house. A common flood tide rises nearly 4 feet: it is high water on the bar at the full and change of the moon, about 7 o'clock.

### Cape Roman.

Cape Roman is very low land; it has neither tree nor bush, and appears, when seen at a distance, to be a sand left dry by the tide.\* From the south entrance of Santee river, to about two miles S. W. of Cape Roman, there is a shoal, which extends to a considerable distance from the land: the S. E. point of it lies about 5 leagues S. by E. from Georgetown light-house, and the S. W. point lies about  $2\frac{1}{2}$  leagues S. E. from Cape Roman. Close to this dangerous sand, there are 4 and 3 fathoms; the land is so low that you cannot see it from the deck of a ship, at the extremity of the shoal.

The outer shoal of Cape Roman bears (as described in page 129) from Georgetown bar. The entrance of Santee river lies between the shoal and the light-house. The south entrance is  $2\frac{1}{2}$  leagues from the entrance of Georgetown river, and 3 leagues from Cape Roman. Ships that fall in with the shoals of Georgetown entrance, should not come into less than 4 fathoms water; and although the mudiness of the water is apt to frighten strangers, there is no real danger to be apprehended. The land here is low, and appears, when viewed at a distance, in hummocks, like a range of islands.

By steering W. N. W. from the S. W. part of Cape Roman shoal, you will soon see the island called Racoon Keys; it is a long narrow island, and lies about W. by S. from Cape Roman. When you see Racoon Keys, steer W. S. W. or S. W. by W. in about 5 fathoms water. As there is a shoal runs off about 5 miles S. E. by E. from the N. E. end of Bull's Island, you should take care to avoid it in passing. Senee Bay, or Bull's Harbour, lies between Racoon Keys and Bull's Island. There are shoals lying off the west end of Racoon Keys, and you should anchor near to Bull's Island, in 6 fathoms water.

From the shoal off the N. E. end of Bull's Island to Charleston bar, the course, to go clear of the Rattle Snake, is S. W. by W. and the distance 7 leagues.

\* A wind-mill is erected on the point of Cape Roman, which at a distance, having the appearance of a light-house, especially in hazy weather, will easily deceive strangers, who, from want of exact latitude in approaching the coast, may mistake it for Charleston light-house. In sailing in with this wind-mill, you must not come into less than 7 fathoms water, bringing it to bear W. N. W. Then you are abreast of the Cape Shoals, and Charleston light-house will bear W. S. W. about 15 leagues. In consequence of its resemblance to Charleston light-house, it has engaged the notice of the legislature of South Carolina, who have passed a resolution appointing certain persons to fix a mark of distinction upon the building, to prevent the repetition of accidents to vessels on that coast. This law was passed in 1821, and to this time (Feb. 1827) no alteration has been made. [See Appendix.]

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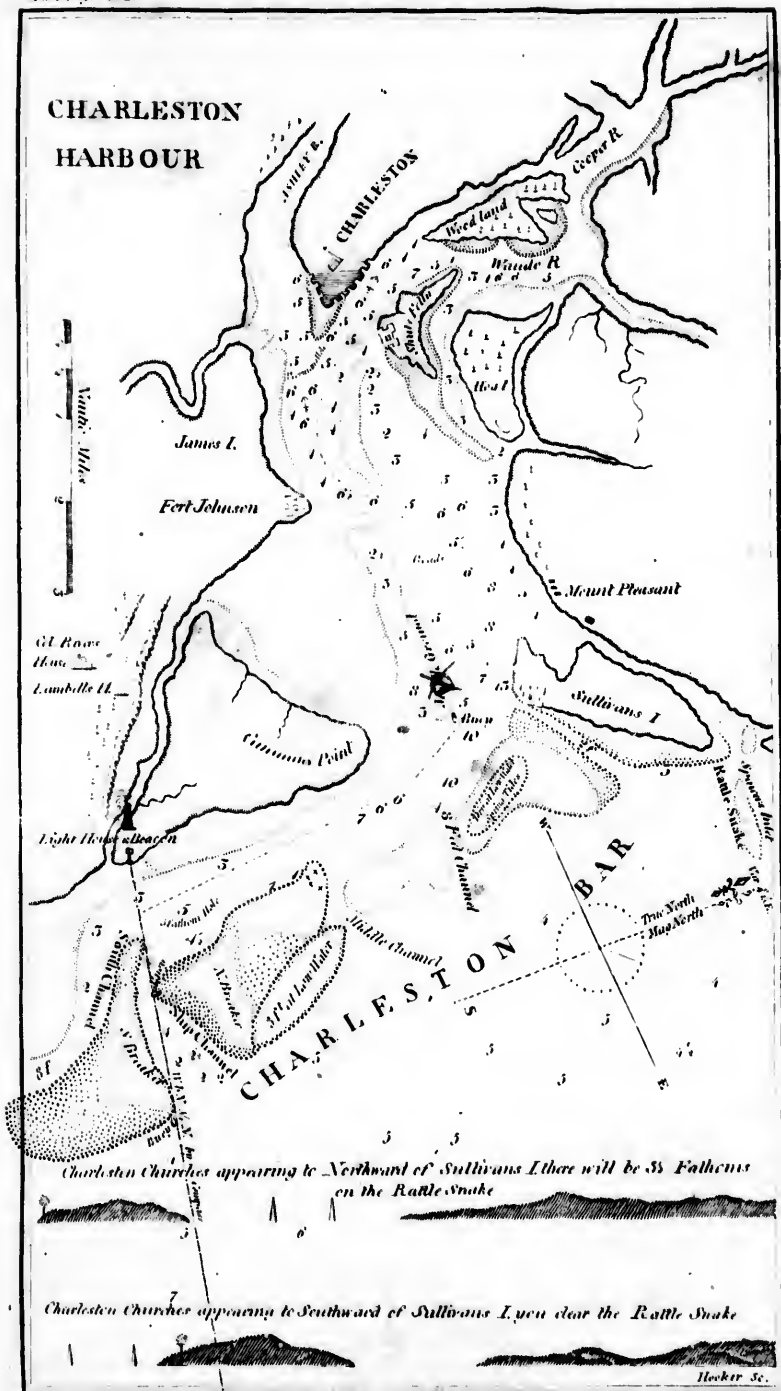
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There are four islands between Senec Bay and Charleston bar, viz. Bull's, Cooper's, Devies, and Long Island. Flats extend from all the islands, along which the soundings are regular. With Charleston churches northward of Sullivan's island, you will be in 5½ fathoms water, on the edge of the Rattle Snake; and when the churches are open to the southward of Sullivan's Island, you are clear of that shoal. You should approach no nearer to this bank than 5 fathoms water.

### ***Directions for sailing into Charleston, (S. C.)***

The entrance of Charleston bar lies in lat.  $32^{\circ} 44' N$ . In running in for Charleston light-house, which may be seen some distance at sea, you will have gradual soundings. When you come near the bar, you may see the north and south breakers, between which is the entrance over the bar. In running over the bar, you bring the light-house to bear N. W. by W. and stand for it, and when you make the Beacon, bring it to bear about two handspikes length north of the light; this will bring you up with the South Breaker Buoy; give this buoy a birth to the southward of you, of about a cable's length, and the middle buoy a birth to the northward of you, of about half that distance. After passing the latter, stand more to the northward for the North Breaker Buoy, giving it a birth of half a cable's length to the northward of you—in passing which the Beacon should be nearly touching the north side of the light. You may then stand up for Sullivan's Island. The Beacon on with the light carries you on the North Breakers; care should therefore be taken to keep it open to the northward.

In crossing the bar, care should be taken that the flood tide does not set you on the north breaker, till you come within half a mile of the light-house, when you may anchor in 3 fathoms water. Buoys are in general placed on the bar, in 12 feet water at low tide. The buoys are black.

There is another ship channel to the southward of this, called Lawford's channel, where you will have from 10 to 12 feet, according as the tide may be. In going into this channel, the course is N. N. W. There is a buoy here also. This anchorage is called Five-fathom hole, but it has no more than  $3\frac{1}{2}$  fathoms. From thence your course is about N. by E.  $3\frac{1}{2}$  miles, in 6 or 8 fathoms water, which will carry you abreast of Cumming's point; when this point bears W. half a mile distant, steer N. N. W. for the S. W. part of Sullivan's Island; you will have from 7 to 10 fathoms water. You may go within a quarter of a mile of Sullivan's Island, as it is bold. Your course from thence to Charleston is about W.  $\frac{1}{2}$  N. and the distance  $4\frac{1}{2}$  or 5 miles. When you bring Hog Island to bear N. and Fort Johnson to bear S. by W. you are up with the eastern end of the Middle Ground, which you must not go nearer to than 3 fathoms. You may then steer nearly W. keeping in 4 or 5 fathoms water, which will carry you between the Marsh or Shut's Folly, and the Middle Ground. This channel is narrow, not being more than a quarter of a mile broad, as the flats lie off from Shut's folly one-quarter of a mile. Continue your west course till you come up to the town, where you may anchor in 5 or 6 fathoms water. In running up from Sullivan's Island, stand no nearer to the southward than till you come into 3 fathoms, for fear of the spit (a Middle Ground that lies off to the N. E. and

\* Charleston light-house contains a *revolving light*, which may be seen at the distance of 8 or 9 leagues. The time of darkness will be twice to that of light ; as you approach it, the time of darkness will decrease, and that of light increase until you get within three leagues, when the light will not wholly disappear, but the greatest strength of the light will be as 1 to 44, to the least.

† The south breaker has a buoy on the east end, in 12 feet water, and in the middle of this channel is a buoy with a small white flag upon it, in 10 feet water, low tide—on either side of which you may go when running in.



E. from Fort Johnson's Point) as far as Cumming's Point, nor to the northward nearer than 3 or 4 fathoms.

After sailing from Sullivan's Island, as before directed, you must, if bound through the S. W. channel, or by Fort Johnson's Point, bring the point of land on which the fort is, to bear S. S. W. and run directly for it, where you will have from 4 to 6 fathoms. When abreast of this point, direct your course about N. W. by W. in 6 or 7 fathoms, about one mile, or till you bring a point of woodland to the northward of the town, of Cooper's River to bear N. N. W. when you may run N. W. by N. about one mile, which will carry you up to the town, and anchor as above directed.

You may see Charleston light-house, in clear weather, in 10 fathoms water. The winds on the soundings govern the current. Var. 4° E. 1810.

[[See the Plate.]]

[NOTE.—As St. Michael's church steeple has been newly painted a very brilliant white, and can be seen 20 miles at sea, mariners are informed of the circumstance, to prevent any mistake.]

#### RATES OF PILOTAGE, for the Bar and Harbour of Charleston.

For 6 feet water, or under, .	\$8 00	For 13½ feet water, . . .	\$23 00
7 do . . . . .	9 00	14 do . . . . .	25 00
8 do . . . . .	10 00	14½ do . . . . .	29 00
9 do . . . . .	11 00	15 do . . . . .	31 00
10 do . . . . .	14 00	15½ do . . . . .	35 00
11 do . . . . .	16 00	16 do . . . . .	42 00
12 do . . . . .	19 00	16½ do . . . . .	50 00
12½ do . . . . .	20 00	17 do . . . . .	60 00
13 do . . . . .	21 00		

#### From Charleston Bar to \*Port Royal.

From 5 fathoms water, off Charleston Bar, to North Eddisto inlet, the course is S. W. by W. ¼ W. and the distance 5½ leagues; this course will carry you clear of the shoals, which lie off Stono inlet, which lie further off than any that are in your way to Eddisto. Stono inlet is about two leagues from the south channel of Charleston; between them lie two islands, viz. Morris Island, on which the light-house stands, and the island called the Coffin Island. With the light-house open of the Coffin Island, you will go clear of the Stono shoals, in 6 fathoms water; but if you shut the light-house in with Coffin Island, you will not have more than 5½ fathoms off Stono Shoals; you will pass close to the breakers, and consequently be in danger: the breakers, unless the sea be smooth, show where the shoal is. In Stono inlet there are 9 or 10 feet of water, at low water, but it was not much frequented until Charleston was blockaded, in the year 1775.

From Stono inlet to North Eddisto inlet, the course is S. W. by W. ¼ W. and the distance 11 miles; between them the soundings are regular, and the shoalings, when you are coming from the offing towards the shore, are very gradual; the bar of North Eddisto, and the shoals which are contiguous to it, lie off about 4 or 5 miles from the land. Close to the bar and shoals there are 3 and 4 fathoms water; on the bar, there are 9 and 10 feet at low water. South Eddisto is 3 leagues W. S. W. from North Eddisto. The shore of the islands which lie

\* Port Royal is 6 leagues N. E. ¼ E. from Tybee light-house, at the entrance of Savannah river, and has a harbour sufficient to contain the largest fleet in the world.

between them may be approached with your lead without danger. The shoalings towards it are gradual.

If bound to the southward or northward, and obliged through stress of weather, to make a harbour in North Eddisto, you must, when within about 5 miles of the land, open a tree (which resembles an umbrella) with the south point of the harbour, and then steer in N. W. without any danger, and anchor in 6 fathoms water on the northern side of the harbour. [*The tide here is very rapid.*] In the harbour, 4 miles west from anchorage, you may get good water.

When you are coming from sea, for Port Royal harbour, you should get into the latitude of St. Michael's head, which is  $32^{\circ} 6'$  N. then steer W. for the head, and when you come within 15 leagues of it, you will have from 20 to 25 fathoms water. Continue your west course until you make the land, which you will do, if the weather be clear, at a distance of 6 leagues, in 12 fathoms water. The land hereabouts is generally low, but the trees are high. Port Royal entrance is known by a small grove of trees, which stand on the north side of it, and tower above all the other trees, like a high crowned hat; hence this grove is called the Hat of Port Royal. Continue to steer as before, keeping your lead going until you get into 8 fathoms water, when you will be about 3 leagues from St. Michael's head. You may then steer a point to the southward of west, until you get into 7 fathoms water; then steer more southerly taking care not to bring St. Michael's head to the northward of N. W. by N. until you see the great north breaker, called Cole's Care, close to which there are 4 fathoms water: this shoal must be left on the starboard side. As you approach this breaker from the northward, you will see another breaker to the southward, called Martin's Industry: between these two breakers lies the entrance of the channel into Port Royal Harbour, which is about a mile wide. The mark to go clear of the north breaker, is a parcel of high trees, which stand near the mouth of the river May, and appear like an island, kept just open of Elizabeth point. Your course through between the two shoals, is W.  $\frac{1}{2}$  N. or W. by N. In this channel there are not less than 3  $\frac{1}{2}$  or 4 fathoms, at low water. Continue to steer as aforesaid, between the two breakers, until you bring Phillip's point to bear N. N. W. then steer directly for it, and you will have as you proceed, 9, 8 and 7 fathoms water. When you are abreast of Phillip's Point, give it a small birth, and steer up in a N. by W.  $\frac{1}{2}$  W. in 6 and 5 fathoms water; in the latter depth you may anchor very safe harbour.

There is also a channel between Martin's Industry and Gaskin bank, called the South channel, in which there are not less than 12 feet at low water. In order to go in through this channel, you must, when in 7 fathoms water, bring Hilton's head to bear N. W. by N. and then steer, with an ebb tide, N. W. and with a flood tide N. W. by N. until Phillip's Point bears N. by W.  $\frac{1}{2}$  W. You may then steer for the Point, and proceed as before directed.

About  $3\frac{1}{2}$  miles S. E. from Hilton's head, and 4 miles S. by E. from Phillip's point, lies the east end of the Joiner's bank; it thence extends W. N. W. about  $2\frac{1}{2}$  miles, and has  $3\frac{1}{2}$  fathoms on it at low water. Hilton's head is on the south side of the harbour, and is a higher bluff point of land than any thereabouts.

Tybee inlet lies 6 leagues S. W.  $\frac{1}{2}$  W. from the entrance of Port Royal south channel; between them is Hilton's head island; it is large, fertile and well inhabited. From this island the Gaskin bank extends about 8 miles on the broadest part. You may proceed along this bank, in 5 fathoms water. Some, when bound to Port Royal, reckon it best to make the land about Tybee, because the light-house makes that part of the coast distinguishable from any other part. Tybee inlet is the entrance of Savannah river. Ships which draw 14 or 15 feet water, may go in at Tybee, and proceed through land to Beaufort in Port Royal Islands, and from Beaufort, vessels of 8 or 9 feet water, may go through land to Charleston. From Charleston, vessels drawing 7 or 8 feet water, may go through land to the river Medway, in Georgia, which lies 30 miles south of Savannah.

On this coast it is observed, that N. E. easterly, and S. E. winds cause higher tides than other winds, and also, somewhat alter their course. At Port Royal entrance the tide flows on the change and full days of the moon,  $\frac{1}{4}$  past 8

o'clock. About 6 leagues from the land, in 12 fathoms water, the flood sets strongly to the southward, and the ebb to the northward, further off from the shore there is no tide at all. Near to the entrance of the harbour there is a strong indraught during the flood tide, and an outset with an ebb tide.

### *Winds and weather on the coast of South Carolina.*

When the wind blows hard, in the N. E. quarter, without rain, it commonly continues to blow violent for some time, perhaps 3 or 4 days; but if such winds are attended with rain, they generally shift to the E.—E. S. E. and S. E.

S. E. winds blow right in on the coast, but they seldom blow dry, or continue long; in 8, 9, or 10 hours after their commencement, the sky begins to look dirty, which soon produces rain. When it comes to blow and rain very hard, you may be sure that the wind will fly round to the N. W. quarter, and blow very hard for 20 or 30 hours, with a clear sky.

N. W. winds are always attended with clear weather. They sometimes blow very hard, but seldom do so longer than 30 hours.

Gales on the coast of South Carolina frequently increase much in violence toward their conclusion, and then break off at once, leaving a cross sea, with almost no wind.

The most lasting winds are those which blow from the S. S. W. and W. N. W. and from the N. to the E. N. E. When the wind is in any of these quarters, the weather is the most settled.

Thunder gusts are very common on this coast in the summer time; they always come from the N. W. quarter, and are sometimes so heavy that no canvass can withstand their fury; they come on so suddenly, that the greatest precautions are necessary to guard against the effects of their violence.

### *St. Helena Sound.*

The entrance of this Sound lies between South Eddisto Island, and the northernmost Hunting Island; it is about 2 leagues wide. This place is navigable by vessels of 7 or 8 feet water only; it is full of sand banks, many of which are dry at low water. Six rivers empty themselves into this Sound, viz. South Eddisto, Ashappo, Cumbahaw, Cbuhaw, True Blue, and Corsaw. These rivers are all navigable; some of them come 200 miles down the country, but few of them can be navigated by vessels of 6 feet water, for more than 30 or 40 miles from the Sound. From the entrance of St. Helena Sound, along the Hunting Islands to the entrance of Port Royal, the course is S. W.  $\frac{1}{4}$  S. and the distance about  $5\frac{1}{2}$  leagues. The soundings are regular: you will have 5 or 6 fathoms water.

### *From Charleston Bar to Tybee.*

When over the bar, in 3 fathoms water, the course is S. W. distance 22 leagues. As you come near the latitude of Port Royal entrance, which is  $32^{\circ} 8' N.$  be careful to avoid a very dangerous shoal, called Martin's Industry; it lies 4 leagues from the south side of the entrance of Port Royal, which is the north side of Hilton Head, the highest land in sight: come no nearer than 7 fathoms, keeping your lead going; and in the night or thick weather, do not approach nearer than 10 fathoms: the tide of flood sets boldly in. When you get to the south-

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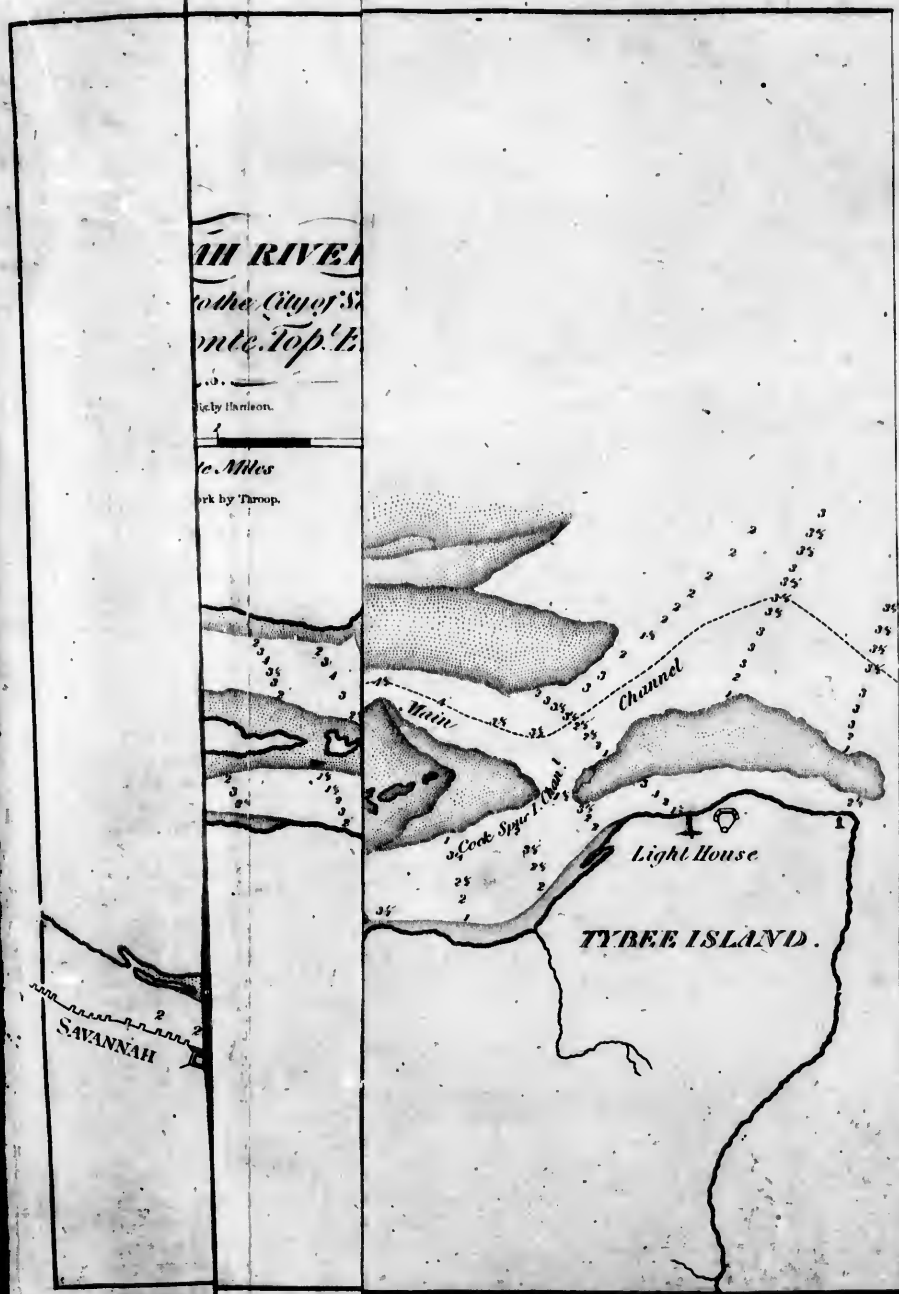
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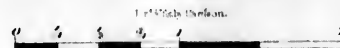
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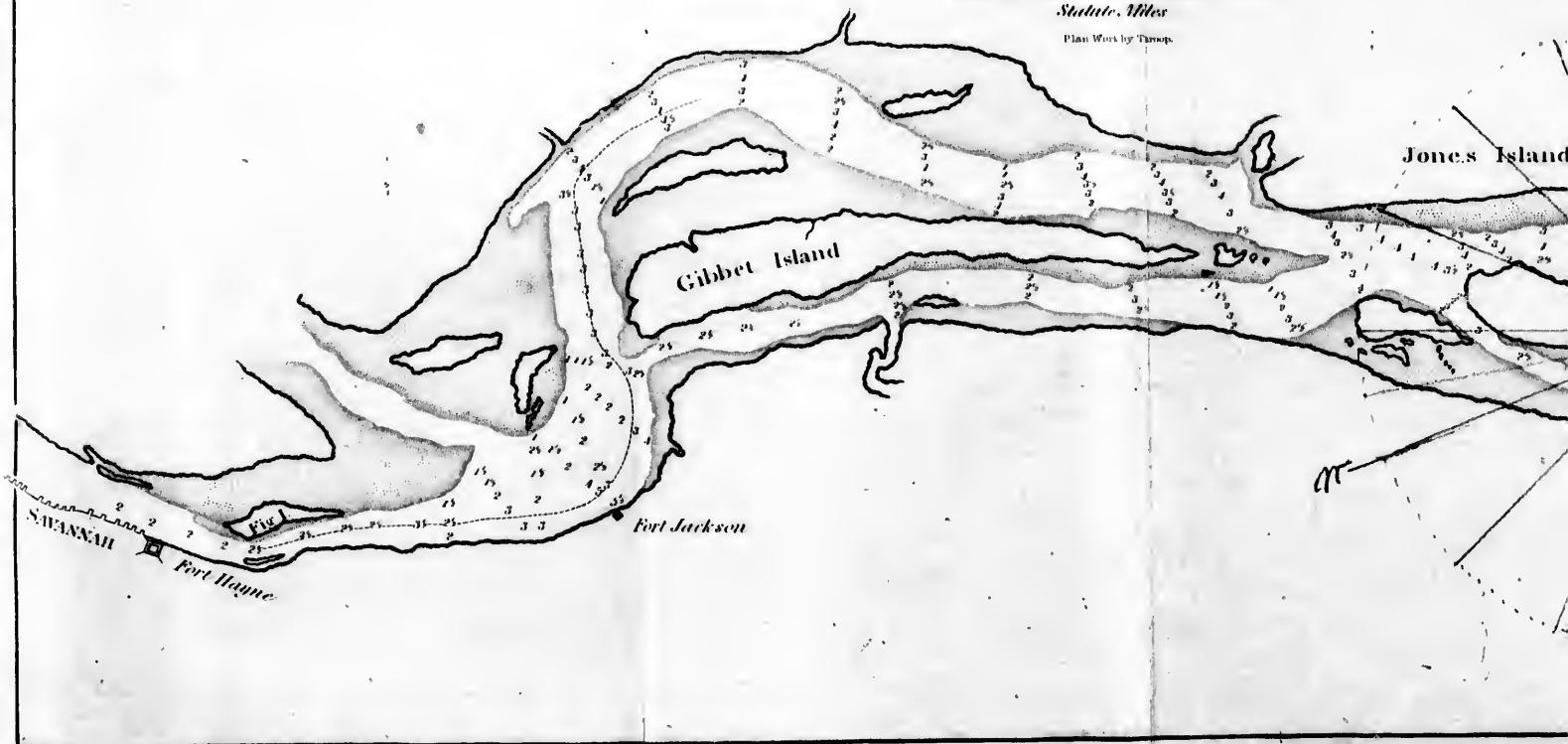
# SAVANNAH RIVER

From its mouth to the City of Savannah  
By John Le Conte, Top. Eng. 1831.



Statute Miles

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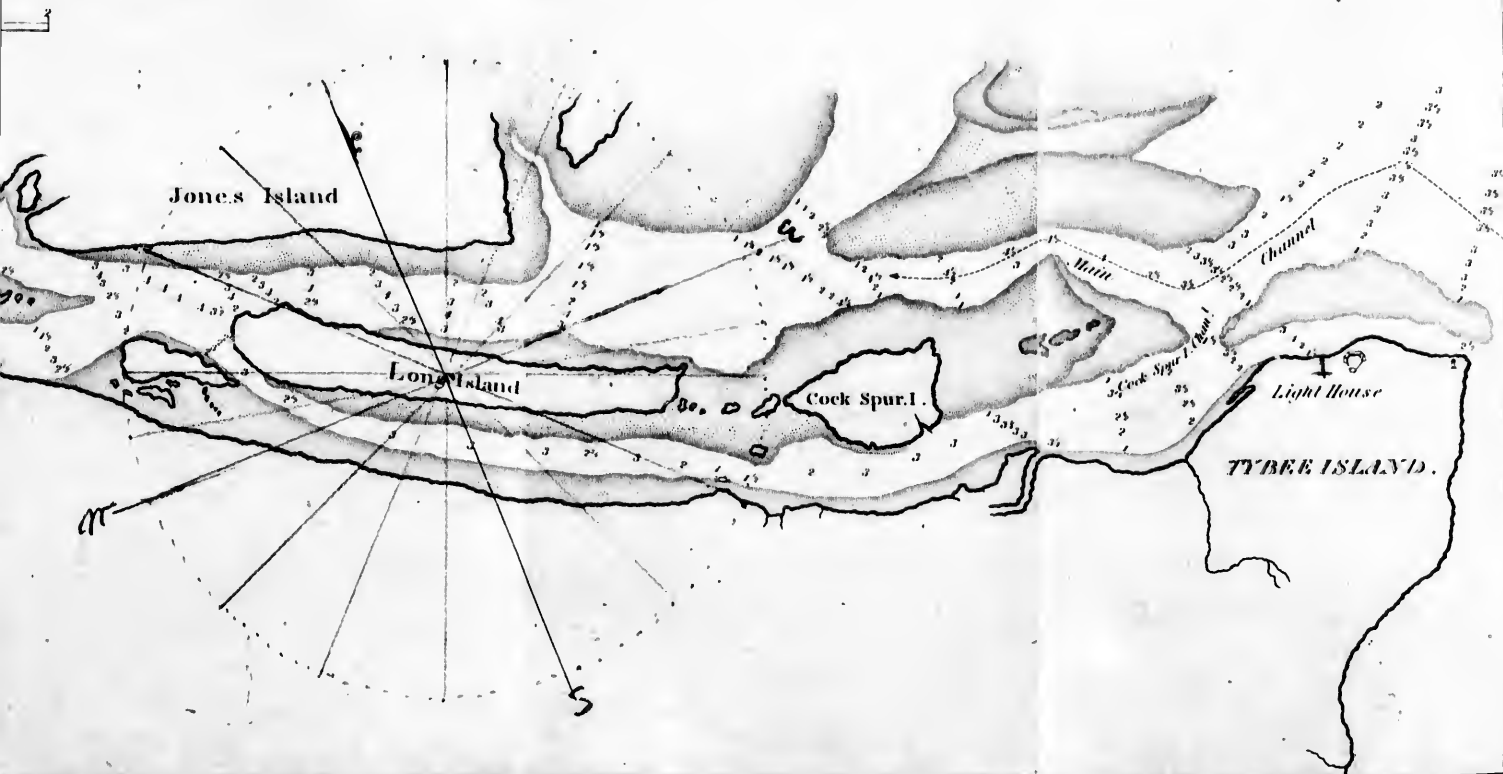
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ward of Hilton Head, you will see the light-house which stands on the island of Tybee.

If in the night, and you are to the northward of Tybee, be careful of going nearer the Gaskin Bank than 5 fathoms. In fresh winds you take a pilot abreast of the light-house—in moderate weather, without the bar. In clear weather you may see the light-house at the distance of 12 miles.

Near the Gaskin bank and Martin's Industry, the flood runs strong into Port Royal, to which may be attributed the loss of so many vessels on these banks.

Off Tybee there are two large coppered buoys, one on the tail of the knoll in 2 fathoms water, bearing from the light-house N. N. W. the other in 4½ bearing N. E. by N. from the light-house, in mid-channel, where large vessels may anchor with safety, when wind and tide will not permit to proceed higher up.

A Beacon is erected on Tybee Island, which is lighted, and bears E. ½ S. from the light-house.

The Beacon light on with Tybee light, is the direct course over the bar. The best anchoring ground is with Tybee light bearing from S. S. W. to S. the former to be preferred, and distant about one cable's length from the beach. On the bar is a buoy with a white top, in 4½ fathoms water, distant 4½ miles from the light-house. The deepest water is between the buoy and the south breaker head.

On Savannah bar there are 18 or 19 feet at low water. On the south breaker there are not more than 7 or 8 feet water; and 1½ mile from the light, it is bare at low tide. On the north breaker there is not less than 12 feet for the distance of a mile.

After getting into 4 fathoms water you will be over the bar, when you must haul up W. N. W. until the light-house bears S. S. W. then anchor.

The point of shoal which runs down from Cockspur Island, and separates that channel from the ship channel, bears N. ½ W. from the light, and has not more than 5 feet on it at low tide. When to the northward of this point, the light bearing S. S. E. you may anchor in 4 or 5 fathoms.

Vessels drawing not more than 8 or 9 feet may keep the light or island side on board, and run into Cockspur and anchor, as they cannot pass the upper end of the island until half flood, there being only 7 or 8 feet at low tide.

There are three bars, having from two to 3 fathoms, on the back of Tybee and Cabbage Islands; but they are never to be attempted but in absolute necessity.

NOTE.—Sailing into Savannah you will observe the following marks and buoys, viz. a large buoy lies on the outer edge of the bar in the deepest water, having all the leading marks on the beacon and light-house in one, bearing W. ½ N. distant 4 miles. Another buoy lies in the same direction, one mile within the bar; a third buoy lies one mile farther W. by N. from the second, a fourth buoy lies N. W. by W. from the third; after passing which there is safe anchorage for a large fleet, in 4 or five fathoms, at low water, the light-house bearing S. S. W.

The buoys lie and lead in the deepest water, having a channel half a mile to the northward, and one-quarter of a mile to the southward of them, (in the narrowest place) nearly the same depth of water, and there are 20 feet on the bar at lowest tides: you may sail either side of the buoys. [See the Plate.]

Tybee creek has 11 feet through it, at low water. Forty miles south of Savannah lies Sunbury, a port of entry, at the head of St. Catharine's Sound, between Medway and Newport rivers, about 15 miles south of Ogeechee river. There is a bar here, but the harbour is capacious and safe, and has water sufficient for ships of great burthen.

Warsaw has 10 feet on the bar, but it is too intricate for strangers.

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\* Tybee Island lies at the mouth of Savannah River, to the southward of the bar. It is very pleasant, with a beautiful creek to the west of it, where a ship of any burthen may lie in safety at anchor. A light-house stands on the island, 80 feet high, containing a fixed light, is 17 miles E. S. E. ½ E. from Savannah, and 6 leagues S. W. ½ W. from Port Royal. Warsaw Sound is formed by the southern end of this island.

*Directions for Hogochee River.*

Hosaba bar, at the mouth of the river Hogochee, has 18 feet water on it, to cross which, bring Green Island to bear N. W. by W. steer in W. by N. till you deepen your water, then haul up N. W. by N. and you will soon get in 8 or 9 fathoms, when your eye and lead will be your best directions; at the extremity of the channel you will keep Hosaba nearest on board, until nearly up with the lower part of Buzzard Island, when the channel will be close under the star-board shore.

Green Island (the seat of hospitality) is much higher land, has taller timber than the surrounding forests, containing several hundred acres, covered with pine, which generally has a greenish appearance.

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*St. Catharine's Bar,*

Which is difficult for strangers, lies one mile south of the north point of the island, has but 8½ feet at low tide; channel not more than 200 yards wide, the shoals generally dry each side of the bar. It is better for vessels bound to Newport, Sunbury, or up these streams, to enter at Sapelo or Hosaba, and go the inland passage, which is not difficult.

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*Directions for Darien.*

Doboy bar lies in lat. 31° 21' N. long. 81° 26' W. Vessels making the land, when in 5 or 6 fathoms water, will, during clear weather, see the beacon on Wolf Island, which must be brought to bear W. ¼ S. Run exactly in this course till the buoy on the outer edge of the bar is made, which may be passed on either side. Continue this W. ¼ S. course till near the inner buoy, opposite the north breaker, by which you will pass the 8 feet Knowl on your starboard hand. In passing them, the north breaker is to be kept on the starboard, and the buoy on the larboard hand, taking care at the same time that the flood tide does not set the vessel on the north-breaker. In running this course, the bar is crossed with not less than 12 feet at low water. When abreast of the inner buoy, run from it 1½ mile in a direction exactly N. W. by W. where the anchorage is excellent in 4 fathoms at low water, which will bring the vessel in the vicinity of the light-house. The neap tide ebbs 7 feet.

The following are the depths of water, bearings, and distances to two buoys, placed in Doboy Inlet, leading to Darien, Georgia—

Buoy No. 1, sunk in 18 feet water, at low water, on the outer edge of the bar, bearing E. ¼ N. from the beacon on Wolf Island, 3½ miles distant, and 4½ miles from the south point of Sapelo, in an E. S. E. direction.

Buoy No. 2, sunk in 21 feet water at low water, off the north breaker head, bearing E. ¼ N. from the beacon aforesaid, about 2½ miles, and in a S. E. by E. direction, 3½ miles from the south point of Sapelo. This buoy is S. E. by E. ¼ E. 5½ miles from Doboy Island, and from the most southern part of the north breaker, one-third of a mile W. by S. ¼ S.

\* The light-house is erected on the south point of Sapelo Island. The lantern is elevated 74 feet above the level of the sea, and contains a revolving light, which revolves once in every five minutes, during which period the greatest power of light and a total darkness will be produced three times, each alternately, at any distance between 10 miles and 3 leagues: when you approach the light within 3 leagues, it will not totally disappear, but the greatest strength of light is to that of the least as 40 to 1.

To distinguish this light-house from any other on the neighbouring coasts in the day, the tower is painted with stripes horizontally, red and white, which gives it the appearance of a ship with the sails clewed up.

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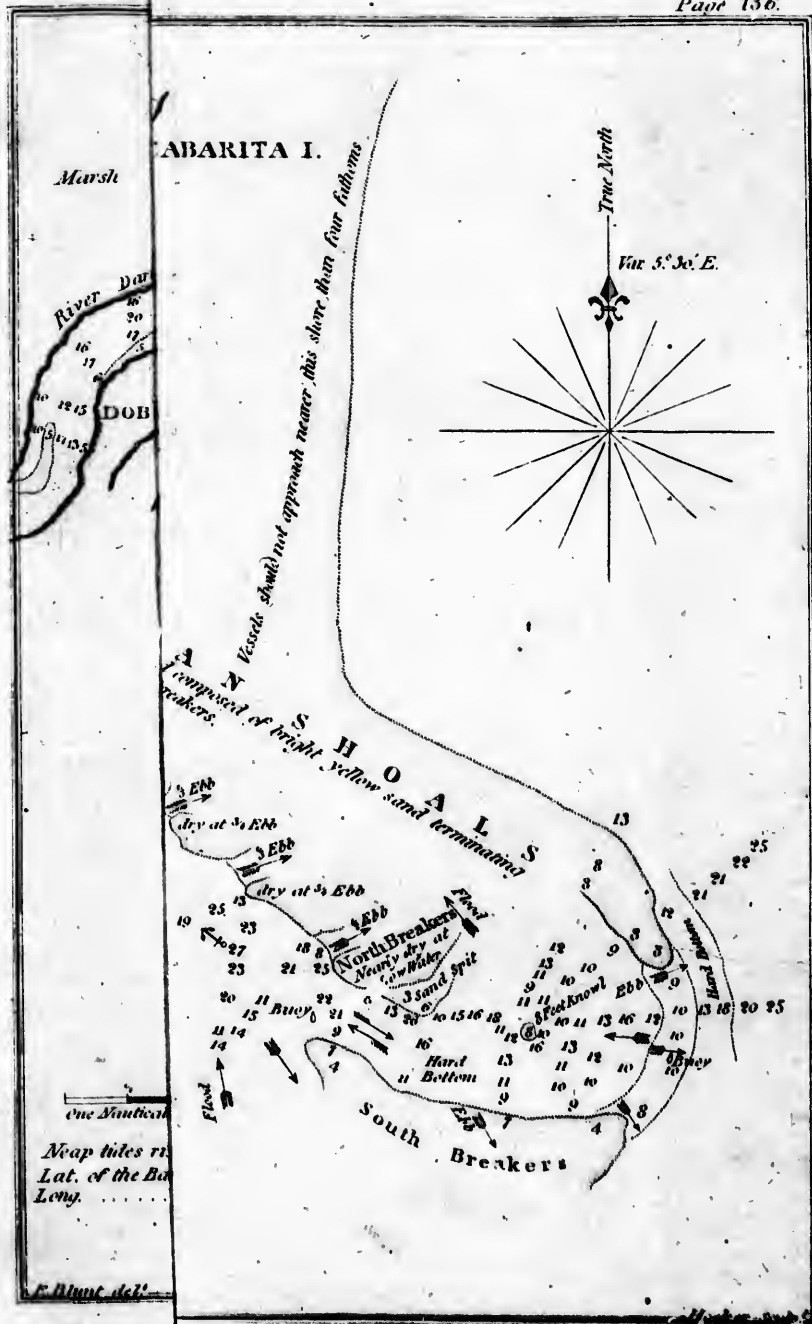
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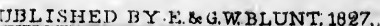
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*Tybee to St. Simons.*

Bring Tybee light-house to bear N. W. when in 10 fathoms water, and steer S. W. by S. distance 24 leagues, to go clear of the shoal of \*St. Simons, which lies off St. Simons E. S. E. 4 leagues. There are 4 and 5 fathoms close to this shoal, to avoid which come no nearer than 8 or 9 fathoms. The Island of St. Simons is on the north side of the sound or harbour of the same name, which lies in lat.  $31^{\circ} 1' N.$  and may be known by four trees standing thus,  $\dagger\dagger \dagger\dagger$ . On the south side of that harbour lies Jekyl Island, on which are remarkable trees, appearing like umbrellas, and thence called the umbrella trees. St. Simons and Jekyl Island beaches are remarkably white. The bar at the entrance of St. Simon's Sound lies 9 miles from the light.

*Other Directions.*

Bring the light-house on St. Simons to bear W. N. W. northerly, and steer right for it, until you get within the bar, which will be known by the southern extremity of Jekyl Island bearing S. W. by S.—you will give the point of the light-house a birth of about a cable's length.

The tide of flood sets S. S. W. and the ebb N. N. E. It flows at full and change, at St. Simons bar, E. S. E. and W. N. W. 7h. 30m.

From St. Simons to St. John's the flood sets S. by W. and ebb N. by E.

The tide flows on the change and full days of the moon, as follows, viz. in the Sound 9 o'clock; on the bar, half past 7 o'clock; and in the offing, three-quarters past 6 o'clock.

*Directions for St. Mary's and Amelia Bar.*

Vessels from the northward, after passing Jekyl Island, which lies in lat.  $31^{\circ}$ , ought to keep in 7, 8, or 5 fathoms water, as weather and size of the vessel may permit. As you proceed towards the southern part of Cumberland, you will open Dungeness House, which is about  $1\frac{1}{2}$  miles distant from the south point of said island, and is the only conspicuous large building on this coast, and is hid by the trees when you are to the northward. Southward of this house there is a space of about two miles, with no trees on it, which makes the south point of the island appear, at a distance, like an island of about two miles in length.

There are placed on Amelia Island, two Beacons for crossing what is termed the Old Channel; they must be brought in one, when they will face W.  $\frac{1}{2}$  N. and a buoy on the inside of the bar will be in range. There are  $6\frac{1}{2}$  feet water at low water—tide rises 6 feet; high water about 8 o'clock full and change of the moon. In crossing the bar, bring the beacons in one, until up with the buoy—then steer for the north point of Amelia Island, giving the shore a good birth; when between the points of Amelia and Cumberland, there is good anchorage near to Cumberland. This bar lies  $2\frac{1}{2}$  miles north of the main bar, where there are  $12\frac{1}{2}$  feet at low water, and a buoy on the inside of the north breaker head. The course over that bar is W. N. W. leaving the buoy on the starboard hand; but strangers should bring the buoy to bear N. W. by W. when they may run with safety, allowing for tide and the draft of water of the vessel. After passing the buoy, steer N. W. by N.  $2\frac{1}{2}$  miles, which will bring you to the upper buoy for Old Channel; this may be run for from one buoy to the other, and can be passed on either side, when the course will be as directions for Old Bar before mentioned.

\* A light-house is erected on the S. W. end of St. Simons Island, containing a fixed light. It is a stone edifice, 50 feet high, the lamps 60 feet above the level of the sea.

In running southwardly for the bar, keep in 6 or 7 fathoms water, until the light-house\* bears N. W.  $\frac{1}{2}$  W. then steer for it; when on the bar there will be 12 feet at low water; within the bar, where a buoy is placed, 8 fathoms. Leaving the buoy on your starboard hand, steer N. W. by N. 5 miles, which will bring you on the tail of the Middle Ground, lying on the larboard hand, keeping in 5 fathoms water. When the south point of Cumberland bears N. E. distant half a mile, there is good anchorage.

Full sea at St. Mary's bar on full and change at half past 7 o'clock—slack water at 8. Average tides 7 feet.

### St. Mary's to St. Johns.

The course is S.  $\frac{1}{2}$  E. distance 8 leagues to St. John's: in making this place when bound into St. Augustine, there is a round high bluff, at the south side of the river, known by the name of the General's Mount; the small craft running in from Amelia to St. Augustine generally make it, and take their departure. On the north side of the harbour is Talbot's Island, full of trees, lying north and south, and about the same height with the General's Mount; there are 11 feet water on the bar at high water. In running in, the Mount should bear about W. S. W. and when on that bearing, in 4 or 5 fathoms water, you will see a small hut bearing about W. N. W. and back of that a cluster of trees, which appear like one tall tree; bringing this over the hut, and running for it, will carry you over the bar—the western shore is bold. The latitude is  $30^{\circ} 32' N.$  The St. John's is a long and broad bay, which receives the impressions of the tide at more than 150 miles from its mouth, running parallel with the ocean. This bay affords the finest navigation that I am acquainted with: you will find in all parts of it, after passing the bar, up to the entrance of Lake George, 20 feet water; this lake, to its south-east extremity, is upwards of 10 feet in depth.

Lake George is a little sea, of nearly sixty miles in circumference, at the extremity of which is found a bank of shells, on which you have only about 5 feet water; but at two or three miles above this, the branches of the St. John's reunite, and a broad and deep channel conducts you to a lake. At full and change it flows S. E. by S. and N. W. by N. 9h. 45m.

NOTE.—The brig Young Maria struck several times on a sunken rock, and immediately after had 5 fathoms water, while running between St. Augustine and Amelia Island, but the particular situation of the rock we are ignorant of.

### St. John's to the Bay of St. Augustine.

Should a vessel be obliged, in consequence of some accident, or any particular reason, to stand in for a harbour, the port of St. Augustine is the nearest and most advantageous place.

St. Augustine is situated on the Main, about two miles within the bar, immediately opposite the inlet: it is not passable for vessels drawing over 15 feet of water. The island of Matanzas runs parallel with the ocean, and forms a point of the south end of St. Augustine inlet. When in 9 fathoms water, off the bar of St. John's, the course is S. S. E. distance 10 leagues. The northernmost land of the bay is called Point Cartel. When you are as far to the southward as this point, you will see the island Anastasia, in length 18 miles, and on the south side of the bay, on the north end of which is a light-house, showing a fixed light.

\* The light-house is on the south point of Cumberland island.

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The pilots who attend the \*bar, board vessels outside, when the weather will permit, but if not, they bring them in by signal, which they wave as they wish the vessel to steer. Rate of pilotage two dollars per foot. The bar of St. Augustine has no more than 8 or 9 feet water on it at high water, spring tides, and at low water 5 feet, which at times makes it impossible for boats to pass. There is a swash to the northward of the bar, with 11 and 12 feet water; but the sand shifting often, and the passage being so narrow and crooked, the pilots seldom attempt it. It flows, at full and change S. E. by S. and N. W. by N. 9h. 45m. The variation off St. Augustine 7° E. 1819.

### *Directions for St. Augustine Light.*

Vessels bound to this port, if running down from the north, must not bring the light farther to the westward than S. W. by W. If the wind be to the south, bring the light to bear west; if moderate, come to and anchor in from 7 to 9 fathoms water, muddy bottom.

All vessels bound to this port will show, when off the bar, how much water they draw, by signal, hauling down the flag and hoisting it again equal to the number of feet they draw.

### REMARKS OFF ST. AUGUSTINE.

From the first of November to the last of February, the hardest gales prevail that blow on this coast, and in general from N. N. E. to S. S. E. the wind any way easterly comes on very suddenly to a gale during the season above-mentioned; and these gales give but very little warning. An experienced navigator says, "In the year 1777 I was at anchor in St. Augustine Bay, when it came on to blow at E. N. E. and in fifteen minutes time I was obliged to slip, and had we not carried sail to the utmost, we should not have cleared the land to the southward." When the wind backs against the sun, with a small rain, you will perceive the sea to rise before the wind comes; then prepare for a gale which in general will last 50 or 60 hours. If you should be obliged to cut or slip, carry all the sail you possibly can, to get an offing before it increases, so as to put you past carrying any sail, which is always the case, and observe, that the flood tide setting to the southward will be of no service to you farther out than 12 fathoms water, when you will be in the southern current until you get into 48 fathoms, which is about 15 leagues from the land, and in the Gulf Stream, where the current runs strong N. N. E. as far to the northward as latitude 35° 15' N. when it sets more easterly, or about N. E. by N. as far as latitude 37° N. from thence as far as the Capes of Delaware, its direction is about E. N. E. and from latitude 38° 57' N. it sets nearly east. [See Gulf Stream, page 1.]

\* An appropriation is made for placing three buoys on the bar, at the entrance of St. Augustine harbour, which will be described in the Appendix, if done before this work is published.

† St. Augustine light-house is built on the north end of St. Anastasia island, lat. 29° 53' N. long. 81° 30' W. and shows a *fixed light*. It is a square tower, built of shell stone, and painted white. The tower is 70 feet high from the ground, exclusive of the lantern, which is 7 feet; the top of the building is arched, with a stone cornice and a granite stone deck, 13 feet diameter. The lantern is of iron, and contains six patent lamps.

*Directions for making a speedy passage through the Gulf to New-York.*

When in sight of Memory Rock, (described hereafter) steer N. N. W. to lat.  $29^{\circ}$ , then N. to lat.  $30^{\circ}$ , (allowing, however, for the effects of strong breezes any way to clear dangers on both sides) which will keep you in the whole force of the stream, then N. E. till in the lat. of  $32^{\circ}$ , then steer N. E. by N. until you get into the latitude of Cape Hatteras, which is in  $35^{\circ} 14'$  N. then you may haul up more by half a point, till you get on soundings in or near the latitude of the *Capes* of Virginia. When in 18 or 20 fathoms, and near that latitude, steer N. by E. 78 leagues, and look out for the *Highlands of Neversink*, which lie in lat.  $40^{\circ} 23'$  N. and very remarkable, being 282 feet above the level of the sea, and lie S. W. from the entrance of the harbour of New-York, as described in note to page 108. When you have nearly made the distance before-mentioned, be careful not to run in the night or thick weather; come no nearer than 12 or 14 fathoms. To come into the Bay of New-York, bring Sandy Hook light-house W. by N. or W. N. W. in 10 fathoms, and the southernmost part of the Highlands of Neversink S. W. by S.

**NOTE.**—Along the southern coast of America you will find no tide farther out from the shore than 10 or 12 fathoms water; from that depth until the edge of soundings, you will have a current setting to the southward, at the rate of one mile per hour: when out of soundings, you will have the Gulf Stream setting to the N. E. quarter, and the farther you get to the northward, it sets more easterly, but not so strong as before-mentioned; and when you get to the northward of  $39^{\circ}$ , it sets about east. [See page 1 for Gulf Stream.]

*The setting of the tide along the shore from New-York to St. Augustine.*

	<i>Flood.</i>	<i>Ebb.</i>
From the west end of Long Island to Cape May, . . . . .	W. by S.	E. by N.
From Cape Henlopen to Cape Charles, . . . . .	S. by W.	N. by E.
From Cape Charles to Cape Hatteras, . . . . .	S. S. W.	N. N. E.
From Cape Hatteras to Cape Lookout, . . . . .	S. W. by W.	N. E. by E.
From Cape Lookout to Cape Fear, . . . . .	S. W. by W.	N. E. by E.
From Cape Fear to Cape Roman, . . . . .	W. S. W.	E. N. E.
From Cape Roman to Charleston, . . . . .	W. S. W.	E. N. E.
From Charleston to Tybee, . . . . .	W. S. W.	E. N. E.
From Tybee to St. Simon's, . . . . .	S. S. W.	N. N. E.
From St. Simon's to St. John's, . . . . .	S. by W.	N. by E.
From St. John's to the Bay of St. Augustine, . . . . .	South.	North.

**GENERAL REMARKS.**

Bound from the Atlantic, over the bank, for New-Orleans, you may shorten your distance very much by running down the Florida Reef, keeping in coloured water in day-time, and off into the Stream by night, as a strong eddy or counter current, sets westwardly along outside of the reef, between it and the regular set of the Gulf. To do this with advantage, you must calculate to fall in with the Florida coast as early in the forenoon as possible, that you may take advantage of the eddy through the remainder of the day. Your best way, therefore, will be, on leaving the bank in lat.  $24^{\circ} 40'$  with a good breeze, to steer W. S. W. 25 leagues, and if at day light †Florida Reef is not in sight, steer west, W. by N. or W. N. W. and make them at once; you will fall in with them be-

\* Two light-houses are to be built on the Highlands of Neversink, previous to December, 1827. See Appendix.

† A light-house, containing a *fixed light*, is built on Key Biscayne, which lies a little to the southward of Cape Florida. The lantern is 70 feet above the level of the sea, and exhibits a *fixed light*.



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tween \*Key Largo and Old Matacumbe, which has high trees on its north end, the tops of which are quite level, and at first sight appear like table land; keep down in coloured water by daylight, and at night haul out at a respectful distance, until fairly daylight again, when you may haul into the northward, and again make the land. Or, should you be so far to the westward as between the Marquis keys and the †Tortugas light, where you cannot see the land unless within 4 leagues of the one or the other, you must keep a lookout for coloured water, and when fairly into it, keep down to the westward and make the Tortugas, which you may pass at a respectful distance either to windward or leeward, as best suits your fancy, and as the winds will admit of. Between Sombrero Key and Sand Key light, you may see the Beacon on Looe Key, which is 30 feet high, and on which is a large ball painted red; and between Looe Key and the west end of Florida Reef you may make the light-house on Sandy Key, which exhibits a *revolving light*, bearing about S. by W. from Key West, 9 miles distant.

Should the wind be far southerly, or light, it would be most advisable, on leaving the bank, to keep to the southward and get under Double-headed Shot Bank, out of the force of the Stream; and with light and westerly winds (which sometimes continue for several days during the summer) it is usual to get on the Double-headed Shot Bank, and lay on its western edge for a breeze, or cross over into St. Nicholas channel, and take advantage of the land breeze from the Island of Cuba, to get to the westward.

### Description of the †Tortugas Islands.

Upon the southern edge of the soundings, which runs off from the western coast of the promontory or peninsula of East Florida, there lie ten keys or islands, called Tortugas, which is the westernmost land, and which announces the proximity of the Great Florida Reef, that borders the whole southern part of these soundings, and which in uneven, but nearly parallel lines, continues to the eastward, doubling with the before-mentioned promontory, as far as Cape Florida, showing the different lights previously described.

On Bush Key, (one of the Dry Tortugas,) is a light-house, elevated 70 feet above the level of the sea, showing a *fixed light*.

The Tortugas occupy a space E. and W. of 9 miles, and N. and S. 6 miles; the land is low, but being covered with mangroves, makes them visible at the distance of 12 miles. You should never get within two miles of them, as they have some rocky spits, which, in places, extend that distance from them. There is a bank of white sand and gravel, which is spotted with coral rocks, lying to the westward of the west Tortuga, the soundings on which is very irregular, but as the bottom shows itself plainly, there can be no danger. The least water on this bank is said to be 6 fathoms, but "I found less than 9 on the coral rocks, and

\* On the reef off Key Largo is a *Floating Light Vessel*, showing two *fixed lights*, one about 50 feet high, the other 40 feet, bearing from the highest land on Key Largo E. by S. 7 miles distant; from the elbow of Carysfort Reef N.  $\frac{1}{2}$  E. distant 3 or 4 miles: the outer reef (say 14 fathoms water) bearing east  $2\frac{1}{2}$  miles distant, lat.  $25^{\circ} 6' N.$  long.  $80^{\circ} 28' W.$  In hazy weather, a bell will be struck frequently, to warn vessels to keep off.

† A spar buoy, painted white, in 15 or 18 feet water, showing 3 feet above the water, is placed at the west end of the quicksands; (Dry Tortugas) 15 miles E.  $\frac{1}{2}$  S. from East Key, which is the most easternmost Key, and where there is a shoal of not more than 7 or 8 feet water.

‡ In August, 1776, Mr. Romans, (before quoted in our description of the Gulf Stream) on his route from the Havana, was becalmed, in foggy weather, near the Tortugas, and was drifted by the flood tide over a coral bank, soon after which the ship struck. He says, "the two following days we were employed in looking for a passage out, through which, on the morning of the third day, we warped out to the east. It was on the following day, the full moon in August, when we struck; we observed the tide to rise and fall 6 feet, and the place where we struck at first, to have between 6 and 7 feet of water on it, when the tide was out, it being nine o'clock, when it began to ebb. I thence fixed the full sea at about eight o'clock on the full or change, or a S. E. by E.  $\frac{1}{2}$  E. moon.

usually heave to in passing over it, for 15 or 30 minutes, to fish, in which time I get as many as I can dispose of, principally groupers."

Between this bank and the Tortugas there is a clean channel of 3 miles wide, with water from 15 to 17 fathoms.

Eighteen miles to the eastward of the eastern Tortuga, the General Florida Reef begins, between which there is a good channel of 9 fathoms water, but you must take care of a coral shoal of 12 feet, which lies 11 miles from the Tortugas, on which the ship Rebecca, of New-York, lost part of her cargo in 1820. To go through this channel, you must keep the eastern Tortuga in sight off deck, so as to pass at two or three leagues from them.

The proximity of the Florida Reef is shown clearly in day-time by the whiteness of the water, so that there can be no danger in drawing in with it; but if safe by day, it is not so by night, nor in bad weather, when you should carefully avoid it, and be sure to keep the lead going, by which means you can avoid danger at the distance of two miles from the edges of the keys or reefs.

In passing the promontory, of Florida, it is not the reef alone which you see, but an innumerable quantity of keys and islands raised upon a bank north of it.

Var. 6° 35' E.

### Chandelier Islands.

From Passe a l'Outre, (one of the entrances of the Mississippi) the coast doubles to the westward, and soon to the northward, to the parallel of 29° 27' in which latitude lies Isle au Breton, which is a group of small keys, whose western limits are 5 miles distant from the coast, so that it forms a bay, called Poza Bay, in which there are 4 or 5 fathoms, with some shoals of less water. East of Isle au Breton is the isle of Grand Grosier, from which a ledge runs N. N. E. and breaks to the isle of Palos, which is the southernmost of the Chandeliers. There is a good passage inside the Chandeliers with 8 to 11 feet water, but a good pilot is requisite. From Isle au Breton a shoal stretches two miles S. W. bold at the very point. Shelter can be had from a N. E. wind inside this island, but the navigation is difficult for strangers, and requires much survey to describe it properly.

The whole of the Chandelier Islands are very low, with some myrtle bushes upon them, and form a chain of coast very injurious, and to be dreaded by navigators, not only that you cannot see them at a regular distance, but because the winds at S. E. (which blow hard in winter) are right on the coast; nevertheless, there is good shelter for all ships to the westward of the north extreme of the Chandeliers, called the Road of Naso, where the heavy English men of war lay during the siege of New-Orleans. This is the only good shelter for large men of war in the whole coast of Florida (Tampa Bay and Pensacola for small sized frigates excepted) not only because it is defended from winds on shore, but because there is no bar, breakers, nor impediment whatever, to your entering it in all weathers. To enter the *Road of Naso*, you have only to run so as to double the north point in 5 or 6 fathoms water, which will be one mile from the land, and then navigate from west round to south, keeping in 4, 5 or 6 fathoms, according to the draft of the ship, and you may anchor in 4 fathoms, when the north point bears N. N. E. distant 2 miles; but if you wish deeper water, you must not run so far south, but anchor when the north point bears E. N. E. in 5 to 6 fathoms water. In the Chandeliers, and almost the whole coast of the Mexican Gulf, you can get water by digging wells in the beach, but there is no other wood on the Chandeliers than the drift logs left in abundance on the beach. Its lands produce nothing but the myrtle, from which the green wax is produced.

Northwesterly of the north extremity of the Chandeliers, 14 miles distant, is Ship Island, west of which, 8 miles, is Cat Island, and to the southward of these, various keys, called St. Miguel, run and extend out from the coast of the islands; between these and Cat Island is the pass into Blind Lake, and Lake Ponchartrain, in both of which there is very little water, especially in Blind Lake. Between Cat and Ship Islands there is a large shoal running out from the east

point of the first, which leaves a channel of less than half a mile wide to enter to the northward of them; this channel has good 12 feet water; the anchorage is N. and S. with the west end of Ship Island  $\frac{1}{2}$  of a mile distant, in 4 and 5 fathoms. Ship Island is long E. and W. and very narrow, and widest in the middle, which is partly covered with pines, but barren at both ends. The hurricane of 1819 cut a small channel through Ship Island  $\frac{1}{2}$  miles from its west end; in it is a well of good water, which is on its north coast, and about midway the island. East from Ship Island, 5 miles distant, lies the west end of Horn Island, and between the two lies Dog Island; from the first a shoal runs out to the east, which not only embraces the Dogs, but leaves a channel of only 150 fathoms wide; the bar has 24 fathoms, when you immediately drop into 5 fathoms. East of Horn island lies Massacre Island, then Dauphin Island, which is on the W. side of the entrance into Mobile.

### *Directions for the river Mississippi, and to prevent falling to the westward.*

Should you take your departure from the Tortugas, on one of which (Gorden Key) is a light-house, (see page 141,) on leaving them make a N. W. course good, and you will fall into the latitude of the Balize, 20 leagues to the eastward; keep on to lat.  $29^{\circ} 20'$ , when you may steer W. or W.  $\frac{1}{2}$  S. to 25 fathoms, then haul to S. W. for the Balize, taking care not to pass its latitude in the night time, and you may make sure of seeing Frank's Island light. Should the weather be thick, keep in 16 fathoms, and you will fall in off Passe a l'Outre, where Pilots are always stationed; but should you see the land, or vessels at anchor, if the wind will permit, haul to S. S. W. or more southwardly, and lead along in 12 fathoms, until you see the two masts of a sunken brig, lying half a mile to the northward of the channel; bring her to bear W. N. W. and anchor; by this time you will have a pilot.

Should it be very foggy, as it sometimes is in summer and fall, either anchor in 12 or 15 fathoms water, or stretch to the northward, as the currents to the southward of the bar set strong along the land to the southward, and by keeping to the southward you will be liable to be driven to the southward of the south point, in the latitude of which you will have 35 fathoms, within three miles of the land. A large bell has been provided, which will be kept tolling by night and by day, whenever from fog, or any other cause, the light or light-house cannot be seen at least four miles, at which distance it is calculated the bell may be heard in moderate weather.

In coming from sea, the S. W. Pass is said to have advantages, there being but few shoals. The water is very deep close to the bar, and the softness of the mud such as to do little harm to a vessel, even should she ground. Vessels, after making the light, are often blown to the southward of the Balize, where they have been known to lie embayed for days and weeks together. Profiting of this Pass, these delays may, in a great measure, be avoided.

A light-house has been erected on Frank's Island, at the mouth of the N. E. Pass of the Mississippi; the lantern is at an elevation of 80 feet above the water, contains 30 patent lamps and reflectors, and gives a bright and clear light, which may be seen in good weather at the distance of between six and seven leagues. It exhibits a *fixed light*.

The following bearings from Frank's Island light-house, are the mean of a number of experiments by compass.

Passe a l'Outre, N. N. W. distance two leagues; S. E. Pass, or main Ship Channel, S. S. W. one and a half league. The best anchorage is off the bar, or S. E. Pass, in 8 or 12 fathoms water.

From the entrance of the channel on the bar, the Block House at the Balize, bears N. W. by W.  $\frac{1}{2}$  W. distant 5 miles.

The principal entrance of the river Mississippi is in lat.  $29^{\circ} 5' N.$  but vessels bound there, should always run down 2 or 3 leagues to the northward, by so doing you will have good soundings to guide you. When you have struck sound-

ings, you may run in the parallel above directed into 18 or even 16 fathoms, and you will then see the light-house on Frank's Island, and have the Block House (or Balize) bearing south-westerly; the anchorage is good every where, and should it fall calm, a light kedge will prevent being drifted by the current, which is sometimes pretty strong on the coast, but it is much stronger in the latitude of the river's mouth than elsewhere, and no soundings until you come close in with the land. In running from Passe a l'Outre for the main bar at the S. E. Pass, in the night, it is not safe to keep in less than 15 fathoms water; in the day-time vessels may approach within 8 or 10 fathoms, observing to keep the lead going. Being off Passe a l'Outre in 15 fathoms, in order to go around the N. E. Pass in 10 fathoms, the course is S. S. E. distant 2 leagues; from thence to the anchorage off the bar S. S. W.  $1\frac{1}{2}$  leagues. The Block House at the Balize bears from the best anchorage to wait for a fair wind to come over the bar W. by N.  $\frac{1}{2}$  N. distant 2 leagues, where will be found 8 to 11 fathoms. At the entrance of the S. E. channel on the bar, the Block House bears N. W. by W.  $\frac{1}{2}$  W. distant 5 miles.

#### *Common error of strangers.*

Captains not acquainted on the coast, are frequently alarmed, when they come near the river, by the appearance of the water, particularly during the first summer months, when the river is high, for at that time the fresh water of the river rushes out with great force, and being lighter than the ocean water, floats on the top, making an appearance altogether singular and alarming, for where the fresh water has not entirely covered the salt water, but leaving spots, it has the appearance of rocks, the river water being of a milky colour, while the other is quite dark, and changes suddenly. When the river is low, the white muddy water extends about 3 leagues off, and when high about 5. On coming into it, it ripples like shoal breakers, but your soundings are regular.

#### *On the setting of the Current.*

The current sets with very little variation to the east; and when any variation is experienced, it is either to the N. or S. of the river's mouth. It is very evident to every man of reflection, that so large a column of water, rushing into the ocean, must spread when it is no longer confined, and produce different currents, until it has found its level, and will be found to vary from the original course in proportion as you approach the edges: allowing the current to set due east, I have known two ships to come into the river at the same time, and the one complain of a southerly, and the other of a northerly current, and that because the one had been to the south and the other to the north of the river's mouth; however, as every stranger should get into the proper latitude before he comes within the influence of its current, I do not think it necessary to say any thing more on that subject.

#### *Directions for the entrance of the River.*

The land at the entrance of the Mississippi river is nothing more than mud banks; continually increasing with reeds and rushes growing upon it, to the height of 10 or 12 feet above the water. The light-house on Frank's Island, or vessels at anchor, are generally the first you discover. The general winds are from the N. E. and you should avoid getting to the southward. The winds make a difference over the bar, at the entrance of the Mississippi, and the general depth of water is from 11 feet 6 inches, to 14 feet.

In lat.  $29^{\circ} 18'$  N. you will strike soundings in 45 or 50 fathoms, small gray sand, with black specks. The Balize bearing W. by S.  $\frac{1}{2}$  S. 40 miles distance, when in 15 or 18 fathoms, soft sticky mud, you will see the Balize bearing S. W. (if clear weather). With the Balize bearing S. W. run not into less than 12



fathoms, on account of some small mud banks, scarcely discernible above the surface, until the Balize bears W. N. W. and N. N. W. in 10 fathoms. The Balize bearing N. W. and an old sunken brig's mast bearing N. is good ground to anchor, and advantageous for getting under way to go over the bar. In foggy weather run no further in for the land than 15 fathoms, and it is preferable anchoring in light breezes to being drifted about by the currents, which are uncertain. From the bar (or entrance of the Mississippi river) to New-Orleans, is 120 miles.

### *To sail up the River.*

In sailing up the river, if you have a fair wind, run from point to point, carefully avoiding the bends, and by doing so, you will shorten the distance, have less current, and what is of more consequence, you will avoid the danger of having your vessel sunk by the trees which frequently lie under water. As you are coming up to and passing a point, it will be well to heave a cast of the lead; with light winds, or when the wind is scant, always keep on the leeward side of the river.

### *On coming to or bringing up.*

Every vessel, while in the river, should have their boat along side, with a good hawser in it, according to the size of the ship, ready to run out to a tree, which method of bringing up is always preferable to letting go an anchor, for you are sooner under way, and avoid the danger of losing your anchors.

Every vessel, while in the river, should have a haulabout-block lashed under the bowsprit to reeve a rope through, which rope should be bent to the crown of the anchor, in the same way as a buoy-rope, and be strong enough to weigh it; the crown line should be of length sufficient, that when the anchor is let go, you may veer it away with the cable and always have the end on board, as by this means, if you should get foul of any thing with your anchor (which frequently happens) you will get it again; otherwise you will be obliged to cut your cable and lose your anchor. If you are obliged to let go anchor, it should be, if possible, at a point, for you will be more likely to find clear bottom. In the bends the bottom is always foul, being full of sunken trees, and there are few instances where an anchor need be let go in the bends, because you may always run a fast to a tree.

### *Shoals in the River.*

About three miles above the Look-out house, and opposite what is called the Pas Aux Cautres (one of the outlets of the river) there is a flat makes out full half way over the river; this should be avoided by keeping near the pass, into which you must take care not to get drifted; this is what may be called the first shoal; the next is about seven miles above the fort at Plaquemine, on the larboard side of the river as you are coming up; to avoid it you must keep nearer to the marsh on the starboard side; the marsh is the first land you come to without trees after leaving Plaquemine; here the land is very narrow, and by going a few steps up the shrouds, you may see the sea at not more than a musket shot distance; by these marks you may know when you are coming up with the shoal. The fort lies opposite the marsh, and runs full one-third of the way over; these are the only shoals that may be called dangerous, but as I have before observed, the lead should be cast whenever you are approaching a point.

### *Directions for vessels bound down the River.*

Vessels going down the river, should always have sufficient sail on them to be able to keep clear of the shore; without great care you will be driven into the

bends and lose your rudder, and this has frequently happened with experienced seamen. I would observe also, that every vessel, unless the wind is fair, and settled weather, should bring to at sunset.

We are confident that the great depth of water at the South West Pass will have more important bearings upon the commerce of New-Orleans than all may imagine.

Going down the river, a slight inflexion to the right takes you to the head of the pass, which runs S. W. almost as straight as an arrow. The shores on each side are very bold, there being 7 fathoms water, in many places, almost touching the bank. A vessel can often proceed this way, when it would be dangerous or impracticable to drop down the bend at the most frequented channel, past the Middle Ground.

About the same distance has to be gone over in order to reach the bar at the N. E. or Old Ship Channel (via the Balize) or to go down the S. W. Pass; but the course to the latter is direct, and there is no such dangerous shoals as the Middle Ground in going to it. The latter bar has 4 or 5 feet more water than the other, and the bottom is soft mud; whereas that of the N. E. Pass is rather hard and gravelly in many places. During flood tide there are never less than 20 feet water in the S. W. Pass, about 18 at low water. Var. 64° E.

### *Rates of the New-Orleans Steam Tow Boats.*

The undersigned, masters of the tow boats established for the purpose of towing vessels to and from the Balize, have agreed to the following rates:

<i>From the Levee to Sea.</i>		<i>From the English Turn to the City.</i>	
Vessels of 300 tons and upwards, each	\$150	Vessels of 300 tons and upwards, each,	\$100
do. do. to the Balize,	125	do. 100 to 200 tons,	80
do. of 150 tons, or less than 300, to sea,	125	do. under 100 tons,	50
do. do. to the Balize,	100	<i>For towing through the English Turn.</i>	
do. under 150 tons, to sea,	100	Vessels of 300 tons and upwards, each,	\$75
do. under 150 tons, to the Balize,	75	do. 100 to 200 tons,	60
All vessels taken astern will be charged at the same rate, and in proportion to the distance they may be towed, in case they are dropped in consequence of bad weather.		do. under 100 tons,	40
<i>From the Balize to Sea.</i>		For towing vessels of all sizes on or off the Levee,	
Vessels of 200 tons and upwards, each	\$75	For towing vessels with anchors down,	15
All vessels under 200,	50	For towing vessels up to the Point,	25
<i>From the Bar to the City.</i>		do. do. any distance above the Point, per mile,	5
Vessels of 200 tons and upwards, each	\$300	Cabin passage from the Balize to the City,	15
do. 100 to 200 tons,	200	do. from Fort Jackson,	10
do. under 100 tons,	150	do. from the City, half price.	
<i>From the S. W. Pass to the City.</i>		For services rendered to any vessel in distress, such charges will be made as circumstances at the time may require.	
Vessels of 200 tons and upwards, each,	\$250	Each master binds himself to the other, to adhere strictly to the foregoing rates, under the penalty of two hundred dollars, for each deviation, to be divided between the other two.	
do. of 100 to 200 tons,	175		
do. under 100 tons,	125		
<i>From Fort Jackson and Grand Prairie to the City.</i>			
Vessels of 200 tons and upwards, each,	\$200		
do. 100 to 200 tons,	150		
do. under 100 tons,	100		
<i>From *Poverty Point to the City.</i>			
Vessels of 200 tons and upwards, each	\$150		
do. 100 to 200 tons,	80		
do. under 100 tons,	50		

BENJAMIN STARK,  
*Master of the Post Boy.*

SAMUEL MORRISON,  
*Master of the Olive Branch.*

JOHN J. NARTIGUE,  
*Master of the Hercules.*

\* A dangerous shoal is said to have grown up off this point, in consequence of some vessels having grounded there, and been obliged to heave out stone-ballast.



## Banks and Coast of Florida.

Twenty miles to the eastward of the easternmost Tortuga, is placed the W. edge of a bank, called the Marques Bank, and 13 miles farther E. are placed, on this bank, the key called Marques Key, which is the westernmost of a group, of which the northernmost is called Boca Grande Key; this key is the largest of the group, and is near six miles E. and W. About one mile to the eastward of this key the first bank ends, whose eastern edge runs about N. and S. The first bank is separated from the following by a channel of two miles wide, with 10 or 12 feet water, sandy bottom. This channel is called Boca Grande, but no man who is not well acquainted, should ever attempt to take the channel, as there are some shoals in it.

The second bank, called the Mangrove Islands, is like the first, upon which is raised a portion of islands, of which the three southernmost have white sandy beaches. This second bank may be viewed as distinct from the following, although they are united on their northern part by an isthmus of half a mile wide, otherwise they are separated by a channel of one mile in breadth, which contains from 10 feet to 12 fathoms water, low tide.

The third bank is called Key West and Pine Islands, on the former of which is a \*light-house, showing a *fixed light*, as after described; the western part is called by the first name, and the eastern by the second.

The first island, on its western edge, is Key West, which lies E. by N. and W. by S. 6 miles in length, N. and S. 2 miles in breadth, and about 56 miles from the main land of Florida, and its southern coast is very sandy. This island is covered with trees, especially on its western part, in which there is a secure anchorage, with a channel of 4½ fathoms to enter it, and 2½ fathoms within, well sheltered. To enter this channel, you must observe the following directions, viz. In running along the Gulf Stream, you must not attempt to pass the reef, which is about six miles from the island, until you bring Whitehead Point light-house, which is on the S. W. point of the island, and which exhibits a *fixed light*, to bear N. N. W. then steer for the harbour, which lies at the N. W. point, leaving Sandy Key light-house, which exhibits a *revolving light*, on your larboard hand, as you cross the reef, and taking care to give Whitehead Point a birth of one mile on account of a reef that makes off from it. The light-house on Sandy Key bears from Key West light-house S. by W. nine miles distant. After you pass the reef (at the inner edge of which a buoy has been placed, as before-mentioned) haul up for the flag-staff. You will have 3½ to 4 fathoms water crossing the reef, and then from 6 to 7 fathoms until you enter the harbour, where you may anchor with perfect safety. There is a powerful tide here, rising and falling about 4 to 5 feet, and setting alternately N. E. and S. W. [A Collector of the Custom has been appointed at Key West, warehouses erected for the convenience of commerce, the harbour large and commodious, admitting vessels of the largest class, where they are protected from all winds within 200 yards of the N. W. point of the island, and several ponds of fresh water, which for nine months in the year produce excellent water. There are also several large and some smaller salt water ponds.]

From Key West to eastward for 24 miles, there are nothing but low mangrove islands, in whose channels nothing but canoes can pass. This third bank terminates at Bahia Honda, and the islands to the eastward are somewhat larger, and covered with pine trees, but are low and drowned like the others, and their channels are navigable only for boats. Of the whole of these islands there is but one, which is 13 miles from Key West, which, although small, is of tolerable

\* A light-house is built on Key West, containing a *fixed light*, and a number of buoys are placed, viz.

A White Buoy, showing 3 feet above the water, on the Reef, in 26 feet water, bearing from the light-house on Whitehead Point, S. S. E. and from the light-house on Sandy Key, E. by N. ½ N.

A White Buoy, showing 3 feet above water, moored in 27 or 29 feet, and bearing S. S. W. ½ W. from the light-house on Whitehead Point, (Key West) near the dry rocks which lie to the W. of Sandy Key, to show the west channel into Key West.

height, is rough and covered with trees, and in whatever direction you see it, appears in the form of a saddle.

The next bank is called Bahia Honda, separated from the last by a channel of half a mile wide, which channel is called Bahia Honda, and in which there is anchorage in 3 and 3½ fathoms. This channel is easily known, because on its western part, and on the very eastern part of the last bank of Key West and Pine Islands, there are three small islands, and on its eastern part, upon this fourth bank of Bahia Honda, there is one called Palm Island, which is large, and has a sandy beach, and is remarkable by the many high palm trees with which it is covered, and are the first you see coming from the westward. This bank of Bahia Honda has but few keys, and extends E. about four leagues.

From the fourth the fifth follows, called Key Vaca, or Cow Keys, extending to the eastward about 5 leagues, upon which bank a group called by the same name, are raised, the easternmost of which is called Duck Key, or Cayo Holandes; between this Key and Key Bivoras is one league. This Key is remarkable by its white sandy beach, and by a tolerable high hill covered with trees, which is on its western part.

Concerning the whole of the channel to the westward of the Cow Keys, it may be necessary to state the following remarks, namely, that you will have three fathoms water all the way within a mile of the keys, and will always find the deepest water nearest to the reef. That the usual method of navigating between the reef and the keys, is, to proceed in the day, and lie at anchor in the night; and that should you be obliged to anchor where there is any coral, it will sometimes be necessary to buoy up your cable to prevent its being rubbed.

From the eastern extreme of Key Bivoras to the westernmost part of Old Matecumbe, is 3½ miles. Old Matecumbe is 4 miles long in the direction of N. E. and S. W. and its N. E. point is covered by some very high trees, appearing like table-land. On the north end of Old Matecumbe is a natural well, in a rock containing excellent water.

One mile east of Old Matecumbe, lies Indian Key, to the eastward of which there is a channel running to the northward, with 10 and 12 feet water, where, by doubling the N. E. point of Old Matecumbe, you may anchor, sheltered from all winds. This channel is easily discovered by the white shoals of only 2 or 3 feet, bordering both sides of it, which serve as an excellent beacon.

Two miles N. E. of Old Matecumbe, you will find Little Matecumbe, which in this same direction has 4 miles in length: this key is covered with high trees. Off its N. E. part there is a small mangrove island, separated by a channel of half a mile wide, and N. E. of the last, there is another of tolerable size, separated by another channel of the same breadth. This is also separated by another channel, like the others, from Long Island.

N. E. from Long Island lies \*Key Largo, separated like the others by a small narrow channel. Nearly east from this channel, 1½ mile, lies Key Tavernier, to the northward of which there is excellent anchorage for vessels drawing not over 8 feet water, and is one of the anchorages much frequented by the fishermen. About N. E. by N. from Key Tavernier lies the Key Melchor Rodrigues, which is an island of tolerable extension, and the land so spongy that the roots of the trees are discovered.

The coast runs from Melchor Rodrigues to Key Largo (which appears like main land) N. N. E.—N. by E. and N. on which last course there are various keys for some distance, of which the last is called †Key Biscayno; a little to the northward of this key there is an island of moderate size, off the main land, the eastern point of which is called ‡Cape Florida; from this cape to the north-

\* A Floating Light is placed off Key Largo, bearing from the highest land on the Key E. by S. distant 7 miles, from the elbow of Carysfort Reef N. ½ E. distant 3 to 4 miles. The outer Reef (say 14 fathoms water) bears E. distant 2½ miles. Lat. 25° 6' N. long. 80° 28' W.

† Key Biscayno lies a little to the southward of Cape Florida. On it is a light-house, the lantern elevated 70 feet above the level of the sea, and exhibits a fixed light.

‡ A White Buoy, showing three feet above water, is placed on a reef near Cape Florida; Soldier's Key bears from it W. by N. and Saunder's Hat bears S. S. W.

ward, it is clear of keys and reefs, and is all low and drowned. The shores of this coast are lined with a bank of regular soundings, which run off a good distance; this regularity of soundings extends from Cape Florida to Cape Canaveral, and is of great benefit to navigators, except in about the lat. of  $26^{\circ} 30'$  N. where the soundings narrow, and scarcely extend two miles from the coast. From  $26^{\circ} 30'$  the soundings widen from the coast, and the whole is very clean, with the exception of Cape Canaveral, from which, at a long distance, you will find upon the same soundings various shoals; but as the soundings run further out to sea than these shoals, he who navigates here must run with care, and have his lead at hand.

From Cape Canaveral the coast runs N. W. by N. 26 leagues, to the entrance of New Smyrna, which is barred and only fit for boats and launches; the coast is very clean, and you may, without danger, keep within two miles of it.

Seven leagues N.  $25^{\circ}$  W. from New Smyrna, is the entrance of Matanzas, but only vessels of very light draft can enter it: this bar has 8 feet, at high water. From this entrance there is an inland navigation to St. Augustine, formed by the island of St. Anastasia and the main: the tide rises 4 feet at spring tides, and it is high water at full and change at 7h. 15m. The whole of this piece of coast is equally clean with the anterior. You have 8 fathoms one league from the land.

From Matanzas to St. Augustine is 12 miles, and the island of St. Anastasia extends the whole length; you may keep along it at two miles distance, in 5 and 6 fathoms. You can see this island from 15 fathoms, as it is pretty high, and also distinguished by the light-house, showing a *fixed light*; the coast to the northward is very low, and you can see it but at a short distance, so that it makes a good mark to know if you are N. or S. of St. Augustine.

From the foregoing observations it clearly appears that there can be no great difficulty in getting fresh water on most of the islands; and except the Tortugas, there is plenty of firewood upon the whole of them. With respect to water, it may be observed that just within the sandy beach, the islands are generally bordered with mangrove swamps, of about 100 yards broad; beyond these swamps the ground rises higher, and is generally of a rocky bottom, where you will often find fresh water ponds or natural tanks, which receive and retain the rain water.

## SOUNDINGS OFF FLORIDA.

The whole of the coast from Cape St. Blass, sends off a bank of soundings which stretches a long distance from the land, and these soundings are generally known by the name of Tortugas soundings, and are so clean that other danger is not known in the whole of it than a spot or knoll of sand in lat.  $28^{\circ} 35'$  and lies about 12 miles east of the meridian of St. Blass. This knoll has but 3 feet on it, and so steep, that from 100 fathoms you will be upon it, and is probably what was called in ancient charts, Providence Island. The whole of these soundings are very equal, diminishing gradually towards the shore.

When you enter on these soundings, without a sure knowledge of the latitude, and in parallels near the Tortugas, it is necessary to run carefully to get soundings on its edge, and not get into less than 40 or 35 fathoms, which is a depth to keep clear of the Tortugas, which lie in 30 fathoms, that is, if they did not exist the regular soundings of the bank would be 30 fathoms where they are placed; on the western part of these keys, the soundings are steep.

You should take the same precaution when entering on soundings in parallels north of the Tortugas. You should take this same precaution when navigating to the southward, that you may leave soundings with safety off its southern edge; so that what is said, is sufficient to liberate you from all danger offered by the Tortugas.

On the edges of this bank the waters run lively to the southward, so that when navigating from the westward, with intention of sounding on its edge, the ship will be retarded by the wind, which fixes itself at E. N. E. or east; but when for two days you experience a difference of latitude to the southward, of 20 miles more than account, you may be sure that you are in the vicinity of soundings, in which case you may suppose yourself in the meridian of the edge, and calculate an error if not exceeding 30 miles, and thence take your route with security. [For Tortugas see page 141.]

## FLORIDA REEF.

The Reef begins in the meridian of the first bank, that is, at the same distance from the Tortugas; its breadth is about 3 miles, and it preserves the same, or nearly the same breadth, as far as the eastern meridian of Boca Grande, and thus far has, at least, 3 fathoms water over it, and you may cross this portion of the reef with any ship of 16 feet draught: but you should ever remember, that over white shoals you always endanger the ship if she is large, especially if the weather is thick, when the bottom does not show itself clearly. You may, in such weather, soon encounter a coral shoal of only one fathom, or even less; so that when we say, that the least water is 3 fathoms on this portion of the reef, it is because it is so generally, and that the inequalities found on the other parts of the same reef to the eastward, is not found here on this portion of it.

From the eastern meridian of Boca Grande the navigation is safe, till within  $4\frac{1}{2}$  miles of Sandy Key, on which is a light-house, showing a *revolving light*, bearing S. by W. from Key West light, distant, as before mentioned, nine miles. From Sandy Key W.  $\frac{1}{2}$  S. on the outer edge of the reef, lies a group of dry rocks, and N. E. by E. from these rocks is another group of dry rocks, and between them in the same direction, are two or three shoals with only 9 feet on them. One and a half mile east from Sandy Key is another group of dry rocks, on a bank which extends four miles east from Sandy Key, on which there are from 2 to  $3\frac{1}{2}$  fathoms water. Six miles E. by N.  $\frac{1}{2}$  N. from Sandy Key, is a coral shoal, with 3 fathoms on it, between which and Sandy Key lies the Eastern Channel into Key West (see page 147.) From this shoal the reef leads E. N. E. and is very dangerous, being full of coral rocks, on which there is as little as two feet water, till you come up with Looe Key, on which is a Beacon with a red ball on the top. Off Looe Key the bank is very steep. Sixteen miles from Looe Key lies Sombrero, which is the easternmost Key on the reef. To the eastward of this Key is very dangerous, being cut up by coral rocks, with channels which should only be attempted through necessity, and in day-light, as nothing is so useful in the navigation of this reef, as a *good lookout*. S. S. W. to S. by W.  $5\frac{1}{2}$  miles distant from Duck Key (the easternmost of Cow Keys) are two groups of dry rocks. South  $4\frac{1}{2}$  miles from the west end of Old Matacumbe is a coral bank, with only 8 feet on it. S. E. by E.  $4\frac{1}{2}$  miles from the eastern end of Old Matacumbe is another shoal, with only 2 feet, called Alligator Shoal. from the circumstance of the U. S. schooner Alligator being lost on it, and on which the ship Spermo was lately lost. Between lat.  $24^{\circ} 51'$  and Key Tavernier, which is in lat.  $24^{\circ} 56'$  lies the great inlet of the Florida Reef. From this Inlet the reef takes a sudden bend, and makes what is called Carysfort Reef, on which the current sets very strong. From this the reef tends N. N. E. till up with Cape Florida, passing Key Biscayno, on which is a light-house showing a *fixed light*. (See page 140.)

Having observed, in the course of long experience, that several masters of vessels, who had the misfortune to be cast away on the Martyrs, and the coast of Florida, ignorant of the existence of any settlement at Cape Florida, have attempted to proceed to the northward in their boats, deprived of every assistance, I feel it incumbent upon me to inform such as may hereafter experience a like misfortune, that if they pass to the north side of Key Biscayno, on which

a light-house is erected, as before-mentioned, they will find the entrance of Boca Ratones, through which they can safely go with their boats, and they will see the houses in front, on the main land.

In case of shipwreck to the northward of Boca Ratones, at the distance of two miles therefrom, they will perceive mangroves thinly scattered, from whence the houses may be seen, and in that situation, on making a signal with fire, or otherwise, they will obtain assistance.

If it should happen to the southward of New River, they may proceed southwardly along the beach, where they will meet, every four miles, with posts fixed in the ground, on which is an inscription in English, French and Spanish, informing where wells of fresh water have been purposely dug for relief.

### *Channel of Florida, between the Reef and Keys.*

The western part of this channel begins with a breadth of 3½ or 4 miles, and you will find in it from 6½ to 10 fathoms water, sand and mud or ooze, as far as Boca Grande, from which to Key West light, it is generally about three miles wide, and its depth 6 and 7 fathoms, fine sand and mud; in this last piece of the channel there are two shoals; the one nearly north and south with the easternmost part of Key Boca Grande, and the other S. S. W. from the westernmost part of Key West, and both in the middle of the channel.

From these shoals, the channel continues with a breadth of four miles as far as Samboes Keys, from which, to the eastward, its breadth diminishes, and the reef increases in the same proportion, so that the channel is only 1½ mile wide at the distance of 5 miles west of Looe Key Beacon, and this is the narrowest part of the channel, but drawing up with Looe Key Beacon, the channel begins to widen, so that north and south of Bahia Honda, it is three miles wide. The depth in these narrows is three fathoms, and continuing to the eastward, you augment your depth to 6 fathoms.

From Looe Key the channel continues to its end with a breadth of two to three miles, but its depth varies remarkably, so that as far as Cow Keys, you have 4 to 6 fathoms, and from thence to the eastward it goes on diminishing, and when abreast of Old Matecumbe, you have but 3 fathoms, and abreast of Key Tobago only 2 and 2½; besides which, from Looe Key, the channel has many coral shoals, which although by day they offer no risk (as the dark colour shows their place) yet by night they are very dangerous; and it is absolutely necessary to anchor, and lie by for the night, throughout all parts of this channel.

In Bahia Honda you get excellent water by digging wells, and on the south side of Cow Keys, about 8 miles from its western end, you again have a fine spring.

These are the only places among the keys, where you can find water from natural springs, but there are many natural tanks, where rain-water is preserved till evaporated.

On the north side of Cow Keys, and about 6 miles east of the west end, you will find a natural pond, that never wants water, which is in a valley, distant from the beach about one hundred yards, and the landing is something to the westward of three small mangrove islands, called Stirrup's Keys. You may, also, at times, find water on the western extreme of Key Vacas (Cow Keys)—also, in some of the keys in its vicinity, and on Dutch Key, and generally in all those places where the earth is rocky, you will find water, especially after rains.

### *Description of the coast from the Bay of Santa Rosa to Cape St. Blas.*

Santa Rosa Island being described in the following page, we proceed to observe, that from the bay the coast runs S. S. E. and S. E. by E. 48 miles, to the entrance of the Bay of St. Andrews. On this coast the trees are very thick, and near the beach there are also many red and white sand hillocks.



The entrance to the Bay of St. Andrews is formed to the westward by a long narrow neck of land, which runs off from the main land, and to the eastward by a small island called St. Andrews, off which is a sand shoal of 4 feet water, extending S. S. E. 14 mile, lying 6 miles from the coast. From the neck or tongue of land, a shoal stretches more than two-thirds of the distance between it and the island, leaving a channel in which there is a bar of 10 feet only. You must also take care of another shoal, which runs off the island, which having passed, and between the two points, you must haul round N. W. to get sheltered by the tongue in 4 or 5 fathoms. This bay is very large, but as yet there can be no motive for ships to call here; but should you do it for shelter in bad weather, you have only to run in as far as the place mentioned above.

From Bay St. Andrews the coast runs S. S. E. 29 miles, to Cape St. Blass, which is the southernmost point of a very long neck of land that stretches from the coast five or six miles, and forms the Bay of St. Joseph.

The shoal which lies off this bay (before described) may be easily discovered by the whiteness of the water. The S. E. extreme of this shoal, and the above tongue, form the entrance of the Bay of St. Joseph, which has a bar of 9 feet water; the tongue of land, which is fourteen miles in length, is so narrow that in places it is only two cables length wide: there are various breaches in it, by which (in time of rains) the water of the bay unites with the ocean. This piece of coast presents good anchorage, sheltered from easterly winds, in 6 or 7 fathoms, which depth you will have at  $1\frac{1}{2}$  mile from the beach.

To enter this bay, you must coast along the tongue of land in 4 or 5 fathoms, until you pass a tongue of sand, a little before you come to the mouth, from whence you steer N. E. and E. N. E. till within, always coasting the tongue which is the deepest water. The bay of St. Joseph is entirely without shelter, especially in winter, by the prevailing winds from S. to W. and from W. to N. that make a heavy swell, which always exists on the bar.

### Description of Cape St. Blass.

Cape St. Blass is a low point, which runs to the southward two miles: from that part where trees end on this point, a shoal of sand runs S. S. E. four miles, bearing from S. S. E. to S. S. W. from the point. Various shoals and small spots of sand, having less than 3 fathoms water on them, also lie off the same point, the southernmost of which is 14 miles distant; between these shoals there are 7, 8, and 9 fathoms water.

The whole coast, from the Mississippi to Cape St. Blass, sends off a bank of soundings, whose edge runs out to lat.  $28^{\circ} 50'$  but the depth is very unequal; this inequality is very clean. If you except the spots of sand that are in the vicinity of Cape St. Blass, you will find no danger in the whole of it that cannot be prevented by care and the use of the lead, and as the whole of the coast is very low, having few visible marks to distinguish it in its whole extension, and besides is often cloudy and foggy, exposed by the continuation of winds from S. to W. and from W. to N. which blow with great force in winter, and by hurricanes in August and September, all which create the necessity of saying something on the method of making the land, and navigating its coast.

If your destination is Mobile or Pensacola, you should run in for the land to the eastward of them respectively, not only to avoid passing the port, but because land-marks are so wanting, and the coast so low, that a stranger has nothing to guide himself by except the light-houses, the former of which shows a *fixed*, and the latter a *revolving light*, which may be some guide to the Navigator, nevertheless, the soundings indicate sufficiently well the meridian in which the ship is found; a little more or less, if you attend to the quality of coarse sand and coral found outside of land, which is a sure indication that you are off the east end of Santa Rosa Island, where you find the same quality of soundings as off Tampa Bay and other parts of East Florida, but can cause no equivocation, because the points are so distant from the one now treated of.



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The Island of Santa Rosa extends along the coast 40 miles, and in its greatest breadth is not more than half a mile. There are many lumps of white sand upon it, and some scattering trees. The eastern extreme of this Island is the western point of Santa Rosa Bay, very sandy and low. The east point of this bay is known by some bright reddish coloured bluffs, which are upon it. The channel, or mouth of the bay, is very narrow, and a bar of only 5 or 6 feet impedes its entrance. To enter, steer N. till you pass the east extreme of the island, whence steer N. W. and anchor as soon as you have shelter. This bay is of extraordinary length, extending 24 miles to the eastward, with a breadth of 4 to 6 miles. The best water in it is three fathoms, which is only found when you are E. and W. with the red cliffs at the entrance, about two miles from the bar. The other part of the bay is full of shoals and palisadoes, navigable only for boats.

From Cape St. Blass the coast runs east to St. George's Island, and from St. Blass to point Josef, which is the south point of the island, is 17 miles; from which point the coast and islands double round to N. E. in which direction you find three other isles; about E. N. E. from the last, lies Point Minnessess on the main, and is distant from St. Blass about 18 leagues; from point Minnessess the coast bends to the northward, and after to the eastward, and forms a large bay, in which the river Apalache is emptied.

This river is shoal, and obstructed at its entrance, and for a long distance off, by many oyster banks, which are dry at low water; the tide rises  $4\frac{1}{2}$  feet.

St. Joseph's Bay, north of Cape St. Blass, and to the eastward of Pensacola, is very extensive, and affords secure anchorage to vessels drawing not more than 17 feet: it is formed by a low narrow neck of sand extending in a northerly direction from Cape St. Blass to St. Joseph's Point, the distance from which to the nearest part of the main land is more than three miles. About eight miles up the river from the bar is the fort of St. Marks, situated on a point which forms the confluence of the river, of which the east branch is called St. Marks, and the other Warcaller. The shoal water which is found in this river is also found all over this large bay, and 8 feet is the best water in the channels.

From Apalache Bay, the coast bends off to the southward and eastward to the river St. Johns, which is 23 leagues distant from the river of Apalache. St. John's river is navigable for large merchantmen a great distance; for vessels of 30 ton to Lake George and for steam-boats as far south as  $29^{\circ} 30'$ . For the first hundred miles from its mouth it is two miles wide on an average, and frequently expands into lakes four miles across. The River flows, almost the whole length of its course, through public lands. From the river St. Johns to the southward, you lose sight of the land, as only canoes can get high enough to discover the keys called Sabinas. Fifty miles south of the Sabinas lies the key Ancloote, or Anchor Island, and before you come to it, you may discover the coast. The whole of the coast, from Point Minnessess to this Key, is shoal, that at ten leagues from land you have but 5 and 6 fathoms, and twelve leagues you will have from 6 to 7 feet. Key Ancloote is distant across from the main land five miles, and in length about eight miles north and south: it is divided into 3 parts, and its south part has good anchorage in 3 fathoms water.

From Key Ancloote the coast runs S. E. by E. thirty miles to the entrance Tampa Bay, or Baye del Espirituo Santo. The coast between is clear and deeper than the anterior. At three leagues from the land you will have 6 fathoms water and no impediment to your keeping in with it by the lead. Off this coast there are various keys, which lie, at most, only five miles from the main.

The entrance of Tampa Bay is obstructed by various sand shoals, upon which are raised some islands. Between these shoals there are three channels to enter, called the West, South West and South East; the two first have plenty of water on their bars: on the first (at low water) there are 23 feet, and in the second 18 feet. The best entrance is said to be by the southern pass of Egmont Islands, on the bar of which there is never less than 16 feet water; the channel is a mile in width, and very plain. The channels are frank, and to take them there is no necessity of advice, as at high water, the shoals show themselves, and at low water, are dry.

From Tampa the coast continues S. E. by S. 22 leagues, to the bay of St.

Carlos; all this piece of coast is bordered with keys which lie about four miles off from the main land; the whole is clear with the exception of a sand bar, which runs off from what is called Boca Quarazote, which is an opening formed by two of the above-mentioned keys, and is distant from Tampa 21 miles. On this bar there are 2 fathoms water, and all along the coast you will have 6 fathoms at five or six miles from it, so that there is no danger in keeping in with it by the lead.

Carlos Bay is a large entrance made in the coast in which are emptied various rivers, whose mouths are covered by many keys and shoals, which leave between them channels more or less wide; the northernmost is called Friar Gaspar, and has 6 feet water; the next called Boca Grande, is the deepest, having 14 feet water. This bay is only good for vessels of 8 feet draught, by the little shelter which it affords in gales in winter; and although the holding ground is good, you are obliged to look for the bends of the bay to shelter you from the wind which blows. The tide rises two feet, and when the wind is off shore, it runs with great velocity.

The key, whose north extreme forms Boca Cautivo, is the same whose southern extreme forms what is called Boca Ciega, which is the opening which said key forms to the northward, and Sanibal to the southward. This opening extends to shoal Lagoon, which communicates by various shoal channels with Bay St. Carlos.

Key Sanibal has good anchorage on its south part in 2 fathoms, sheltered from all winds. This anchorage of Sanibal is known by a palm tree, two leagues to the southward of it, and is the only one you see on the whole coast. To anchor in Sanibal, it is necessary to run with care, and the lead in hand, that you may avoid the shoal bottoms which run off four miles from Sanibal, and the keys S. E. of it.

From Sanibal the coast runs S. E. by E. eleven leagues to Point Largo, or Key Roman. This piece of coast is clean, having 3 fathoms at two miles from the land. Point Largo sends out S. and S. E. of it a Shoal, which runs from it seven miles, and the coast bending to the eastward forms a bay of 12 feet water, in which vessels of light draft may enter and find shelter from winds any way on the northern board.

The coast from hence runs S. S. E. twenty-five leagues to Point Tancha, which is the southernmost promontory of the Peninsula of East Florida.

The whole of the coast has regular and clean soundings, whence the lead is the best guide.

#### *Vessels bound to New-Orleans, Mobile, and Pensacola.*

The only three points of destination on this part of the Gulf of Mexico; to go to either of which it is best to make well to the eastward of them respectively, when coming from any place S. E. of them, that is when you have the winds easterly which is the wind which predominates here; but if you come from the westward of them, you have no other resource but to beat to windward from that point of the coast which you have made, and the greater or less distance of it, according as you are best accommodated, with respect to the season, the quality and size of your ship, &c.

The making to the eastward of your destination is necessary to be more or less distant, according to the confidence and security you have in the situation of the ship, so that bound into the Balize, you will look for soundings in the meridian of  $29^{\circ} 30'$ , or thereabouts: and if bound to Pensacola or Mobile, in the meridian of Cape St. Blass.

Should you strike soundings in lat.  $29^{\circ}$ , steer N. W. by W. a while, so as to make it E. northerly of it, that is, to make its bearing W. southerly, to prevent falling in to the southward of its parallels, especially in winter, when it is best to run, heading for the middle of the Chandeliers: in this route you find no regu-

larity in soundings, as whatever the parallel may be, you will as often get more water as less; nevertheless, from 20 fathoms down, the soundings are very regular; and from the meridian of Pensacola westward, to the southern limits of the Chandeliers, you will get 10 fathoms, ten miles from the coast; from Pensacola eastward, you have ten fathoms at four miles from the coast, and 25 fathoms at ten or twelve miles.

But as navigating for the Balize you may want an observed latitude, and have it so cloudy and foggy as to impede making the land, in such circumstances, or to run for it in the night, the soundings will serve as a secure guide, for which you must recollect that navigating to the westward, if you find 40 to 50 fathoms, loose mud, sticking to the touch, mixed at times with small black and white sand, it is a certain signal that you are in the parallel of the Balize, and from that depth to less water you will always find the same quality of soundings: but if from 40 to 50 fathoms to less water, you get bottom of fine sand, with very little mud or without it, you will be in the parallel of between the Balize and Breton Key or Island: if you get small white sand, you are in the parallel of said key, and if coarse sand and snail shells, you will be in a parallel between said key and Chandeliers; and if you get coarse sand, with gravel, small stones, and large shells, you will be in front of the Chandeliers. From the Balize to the westward, the bottom is of sand alone, so that those from the southward who look for the Balize, sand alone will be a signal that they are west of it.

When navigating N. W. and north, from the getting 40 or 50 fathoms sand, and in diminishing the bottom or depth, the quality of soundings does not vary till in 10 or 12 fathoms you are to the southward of the Balize: but if in this N. or N. W. route, you have crossed mud or ooze, and entered in 10 or 12 fathoms, you find sand, then it is a signal that you have crossed the mouth of the Balize, and drawing in with Breton Island, and the Chandeliers. The better to explain these soundings, we shall place them in form of a table.

In the parallel of the Balize. Crossing these soundings, you cross this parallel.	} Loose mud, sticky to the touch, mixed at times with small fine black and white sand.
In parallel of between the Balize and Breton Island or Key.	} Fine sand with very little mud, or sand alone.
In the parallel of Breton Island.	} Fine white sand.
In the parallel of between Breton Island and the Chandeliers.	} Coarse sand and snail shells.
In the parallels of the Chandeliers.	} Coarse sand with gravel, small stones, and large shells.
West of the Balize, the bottom is sand alone.	

When you come in, looking for the Balize, either in its parallel, or that of the Chandeliers, you must take care not to get foul of the land at night, but maintain your position, in 15 or 20 fathoms, at anchor or underweigh, but if you do not wish to delay for more safety, you may stretch in towards the Balize, to anchor in 10 or 12 fathoms outside the bar.

If the running in for the land has been in the parallel of the Chandeliers, as soon as you get 10 or 12 fathoms, you will steer or underweigh S. S. W. trying to maintain this depth without danger of running aground, or among shoals, as is shown by the following breakage in the soundings:—

In this S. S. W. route there is, in the middle of soundings, a good mark to

know the place of the ship, which is as soon as as you arrive in a parallel with the S. end of the Chandeliers, which is as far up as Alcatrazes, the depth begins to augment to 12, 14, and 18 fathoms, which is athwart with the Poza. This augmentation ceases as soon as you arrive abreast of Passe l'Outre, where you find anew the 10 fathoms; this knowledge is of importance in looking for the Balize with security, so as not to pass to the southward of it.

In running as above, be careful not to get into less than ten fathoms, when stretching from E. or S. or from S. to W. because from this depth to less, you cannot weather the Balize with the wind at east, and you have no opportunity for running for the road of Naso as follows:

Placed in 10 fathoms water, in a S. E. gale (and no appearance of the wind's ceasing) and getting into less water, you have the resource of navigating to the northward, sounding continually to maintain 9 or 10 fathoms, so as to coast the Chandeliers, and you will know you have passed the northernmost point; if you loose the oozy soundings, sometimes mixed with white shells, which is found off the Chandeliers, and finding fine white and black sand, you may steer W. and run in 10, 8 and 6 fathoms to anchor, under shelter in the road of Naso, as the atmosphere is cloudy; in such weather you can discover nothing, and to get to this anchorage, there is no other guide than the lead; but if you can see the land, you will easier get to the anchorage, as you have only to double the spit of sand which runs off the N. E. end of the Chandeliers, and on which the sea breaks, with easterly or southeasterly winds.

This convenient resource will be better, if embraced as soon as you consider the passing or weathering the Balize doubtful; as here you have your choice of water from 3 to 7 fathoms, sheltered from winds in 3 fathoms from N. E. and in 7 fathoms from winds from E. round to the southern board to S. W. It is also necessary to advise, that as soon as the winds haul round to between W. and N. you should lose no time in getting out of this roadstead, as the water will fall from 4 to 6 feet.

It is a good rule in running for the Balize to get soundings in any parallel between  $29^{\circ} 10'$  and  $29^{\circ} 30'$  or  $35'$ , to get into 25 fathoms, from whence the Balize will bear S. W.—from 25 fathoms, in any parallel between  $29^{\circ} 10'$  and  $29^{\circ} 35'$ , the Balize bears S. W. and by steering that course you will hit the Balize, about the N. E. Pass.

I am suspicious of a shoal or shoals near the edge of soundings, in about lat.  $26^{\circ}$  N. having once passed quickly through two coloured patches, in about that latitude, and was clear of the appearance before I had time to sound. They looked like shoal coral reefs, and I passed between them with a ship drawing 17 1-2 feet. I had sounded in 45 fathoms water shortly before, and had no bottom shortly after.

#### *Directions for vessels bound from the Mississippi through the Gulf.*

On leaving the Balize, your best way is, in winter, between the months of October and March, to keep well to the eastward, say E. by S. (as in this time the trades blow mostly from E. N. E. and N. E.) until on soundings on the coast of East Florida, by which you may make a free wind all the way to the Tortugas; but in the other parts of the year, you will do quite as well to make a direct course, as you may make sure of some beating to get to them, and by keeping along near the edge of soundings, you will have a set in your favour of 15 or 18 miles per day. You may double the Tortugas within 3 miles, by which you will as soon as you leave soundings, strike into an E. by S. current of 1½ knots, from September to March, and 2 knots from March to September. I have doubled the Tortugas in very dark nights, by sounding every hour, and taking care not to get less than forty fathoms.

Every vessel bound through the Gulf, on leaving the river, should avoid getting too fast to the southward, for you will meet with the trade wind, and by that

means lengthen your passages. If the wind will permit, you should steer E. S. E. which course will carry you soon enough into the trade wind. If you can get soundings to the northward of the Tortugas, so much the better, but you should come no nearer in than 50 fathoms, and should then steer south, and if you should find the water shoaler in this course you should keep a little to the westward until you find it deeper. On leaving the Tortugas, the current sets rapidly over towards the Colorados; to this the greatest attention must be paid, to avoid danger.

On leaving soundings off the Tortugas, with the wind to the northward of N. E. by E. keep on your larboard tack, and make the Island of Cuba; stand no higher in than to raise it so distinctly as to know it, by which you will keep in the whole force of the current, which allow in the low stage one and a half, and in the high two knots per hour, due east, as far as 12 leagues west of Double-headed Shot Keys. [A light house is erected on Bush Key (one of the Dry Tortugas) for description of which see page 141.]

After making the land which will probably be in sight of the Pan of Matanzas, should the N. E. wind continue, beat along the Cuba shore, and make the Double-headed Shot Keys, taking care not to fall in with them in the right-time, as they are very low, and the soundings do not run more than a hundred fathoms off them on this side or point.

On approaching the Florida side, the eddy currents and tides setting through the different channels in the reef and inlets, are very variable, and frequently extends a greater distance into the Gulf than mariners are aware of, insomuch that the most expert of the Bahama pilots are often deceived in the night. Generally a strong S. W. eddy prevails, and the transition from the stream to the eddy is sometimes very visible, by causing what those pilots call *rip raps*; at other times it is not to be discovered; a strict look out is, about this part, particularly recommended; and if beating on that shore in the night, stand four hours off and two on, and when you can come up with the S. E. corner of the Florida shore, and an E. N. E. wind, stand off until you have day-light. [See page 140, which explains the propriety of this remark.]

From these observations it certainly appears most advisable to incline to the Cuba shore, and from the Pan of Matanzas, if the wind be favorable, to make the Double-headed Shot Keys, or if scant, to beat up towards Point Jacko; there is no danger hereabouts, before you stretch across to Double-headed Shot, and from thence shape your course.

A corroboration of these facts will appear manifest, when there are an average of eight vessels lost annually on the Florida shore, and the captains have reckoned themselves on the Bahama side, and only three, for several years, lost on the latter. I would also recommend, when passing through the Gulf, to have the anchor clear for letting go at a moment's warning, should they find themselves in soundings, and not perfectly satisfied with their reckoning, to anchor immediately, which can only be attended with loss of the anchor and cable, and is no consideration when the vessel might thereby be saved.

After getting as far as 12 leagues to the westward of Double-headed Shot Keys, the current hauls to the northward, and abreast of the Shots, it runs N. E. in the low  $1\frac{1}{2}$ , and in the high stage  $2\frac{1}{2}$  knots.

After leaving Double-headed Shot Keys, make a N. E. course to latitude  $24^{\circ} 36'$ , when you may try to make the islands and keys on the Great Bahama Bank, for a fresh departure; from the sight of which steer N. by W. to lat.  $27^{\circ} 50'$  then N. by E. to  $29^{\circ}$  when you will be clear of every thing. But in doubling the Tortugas with the wind easterly, beat along the Florida shore, standing no higher than to raise the land as far as Old Matacumbe. From thence make a good stretch off so as to fetch clear of every thing on the next tack. The east part of the reef off the Florida coast lies in longitude  $80^{\circ} 6' W$ . When in the narrows from between Orange keys and Carysford reef to between Maranilla and Hillsborough inlet, the current runs nearly north, in the low

\* Good water may be found on Hillsborough, about 10 miles north of the inlet, just back of the ridge, by digging from 10 to 12 feet. Fish are to be found in great abundance inside of the inlet, along side of the mangroves; and plenty of shell bait on the beach in the river.



2½ knots, and in the high stage of the water 4 knots. From about 10 or 12 leagues to the westward of Double-headed Shot Keys to lat. 25° the current bends from east to north, and when in this space you must allow its natural bend, which is in a parallel line with the Florida coast. Marinilla reef lies in lat. 27° 48', longitude 79° 10', and Canaveral Shoals, on the coast of Florida, lie in lat. 28° 20', longitude 80° 19', the latter of which is dangerous, and the former is only a tide race, but still to be avoided.

The Gulf stream acts in the same manner as a river, only on a larger scale: and the old channel of Bahama and Santaren channel, when running to leeward, has a proportionable effect upon the stream in the same manner as a small river emptying into a large one has upon the current of the larger river, by driving it to the other side. The wind also has a great effect to drive the current to the lee-shore. This may be seen every day in the Mississippi: on the lee-side the current runs stronger than in a calm, and on the weather-side weaker, yet you will find the lee-side to have the strongest eddy, though very narrow, and near in shore; and the Gulf Stream acts in the same manner, for which proper allowances should be made.

From the current frequently varying in course as well as rapidity, and the eddy currents likewise, various and uncertain, the ablest navigators and pilots are often deceived, after passing the Havanna, and getting up as high as the Pan of Matanzas, from which a departure is generally taken.

In the winter, you are liable to have very heavy gales from about N. when it will be best to keep the Florida shore on board, when you will have smooth water, as far as Carysford reef; but should you be caught on the Cuba shore, with one of these gales blowing dead on shore, you will hardly be able to clear the land on your larboard tack, when if you tack ship and take the current two points on your lee-bow, and can carry as much sail as to go through the water 3 knots, you may make sure of gaining off the land, although you may make 2½ or 3 points lee-way, and lie but two points off the land.

The Salt Key Bank and coast of Cuba, from Point Ycacos to Double-headed Shots makes a deep bay, and the Cuba shore is very foul for 3 or 4 leagues off the land; in case you are caught here in a heavy norther, your only chance is to run up the old channel of Bahama, or on the Salt Key Bank.

After being sure of getting to the northward of the N. W. point of Little Bahama Bank reef, if you fear you are far to the westward, you will do well to haul more easterly to clear the shoals of Canaveral; but if you are not in sight of the Florida shore, in lat. 26° 30', you can have no danger from Canaveral shoals, in steering N. by E. after passing the N. W. part of the bank, you must (if you wish to keep in the force of the stream) steer N. to latitude 30°. [See page 140.]

Point Ycacos is low, and the whole coast of Cuba to the eastward is bordered by reefs and keys, consequently dangerous.

There is sometimes a strong current, or set from the Tortugas, or rather the S. W. point of soundings, which sets right over to the Colorados.

"I once, in 1812, found a set S. S. W. of near 2½ knots, but when once as far to the eastward as the Tortugas, you will be sure of the regular set of the Gulf."

### Directions for \*Mobile Point.

Those off Mobile should recollect the necessity of getting an offing as soon as there are appearances of a gale on shore, either to weather the Balize, or which is better to take in time the road of Naso, as destruction is inevitable if you come to anchor outside Mobile bar during the gale.

\* A light-house is erected on Mobile Point. The lantern is 55 feet above the ocean level, and shows a *fixed light*, which may be seen 13 or 14 miles off in good weather, S. 5° E. from the light, five miles distant, you have 3 fathoms on the bar. The east end of Dauphin Island will then bear N. N. W. 3-4 W. and Sand Island (just above water) will be on the middle of Dauphin Island.

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# Pensacola Harbour.

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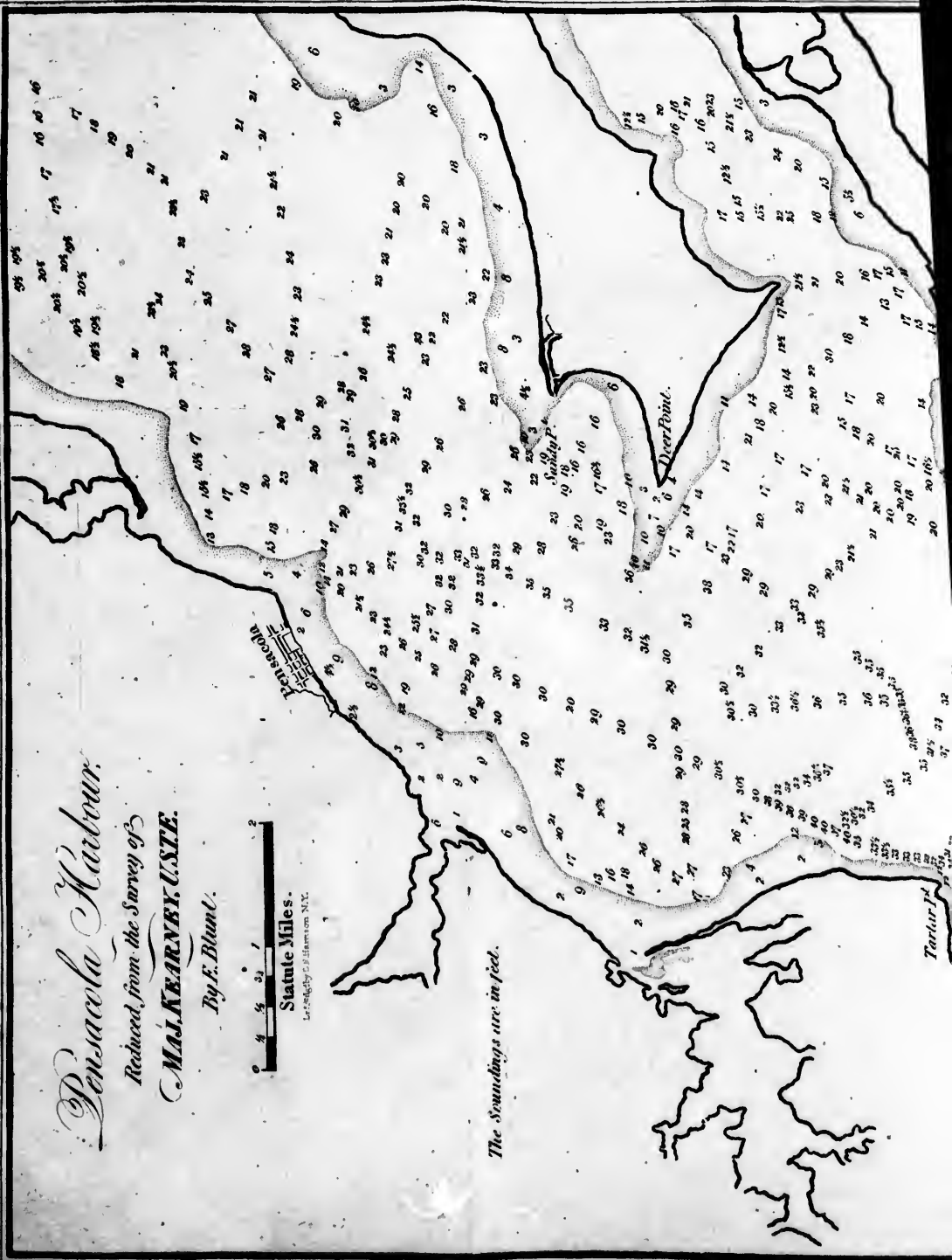
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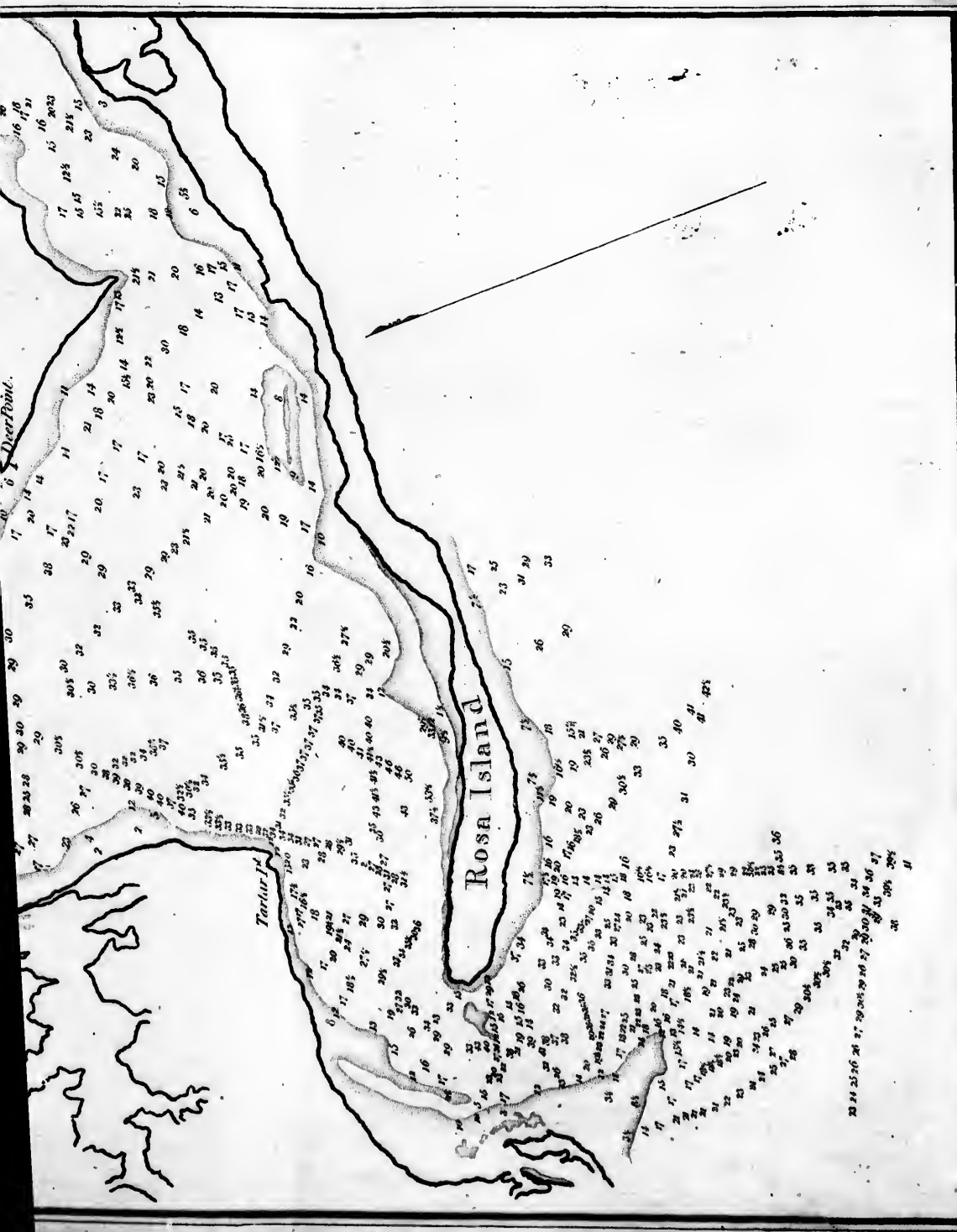
By **F. Blunt.**



Statute Miles.  
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The Soundings are in feet.





Plan by J. H. Hooker.

Published by E. C. W. Blunt, New York.

Printed by W. Hooker 305 Water Street.

# Pensacola Harbor.

Reduced from the Survey of

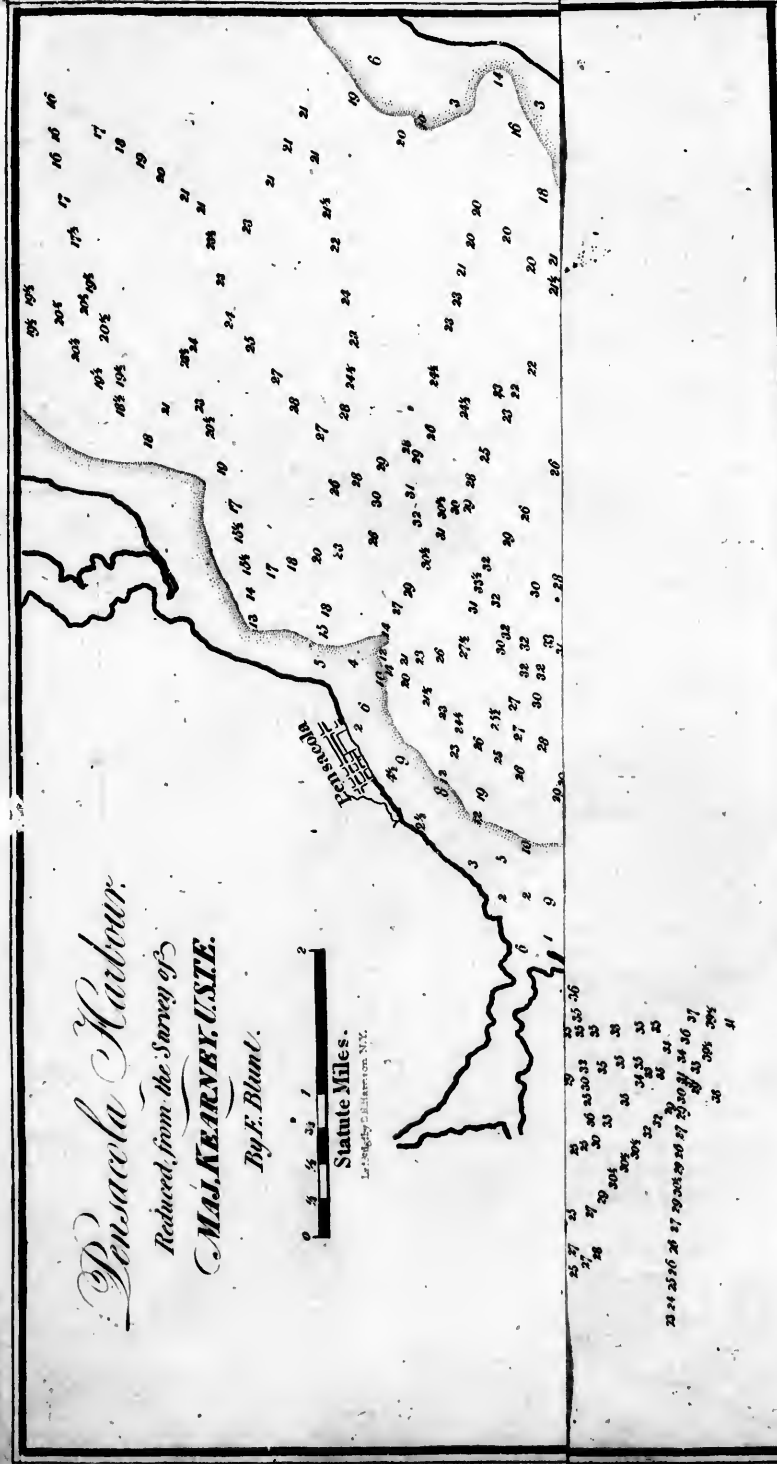
**MAJ. KEARNEY, U.S.T.E.**

By F. Blunt.



Statute Miles.

Letting by Callahan, N.Y.



Printed by Hook.

Published by E. & G. W. Blunt, New York.

Printed by W. Hooker, 202 Water Street.



Strangers bound to Mobile Bay, or approaching the Point, should keep in 10 fathoms water, until the light-house bears north, to avoid the dangerous sands lying to the eastward, and the shoals off Pelican and Sand Islands to the westward of the Bar.

In running in for the land, should you make it to the westward of the bar, it will appear broken, as it consists of small islands, which occasion several openings. More to the westward the land is very level. *Dauphin Island*, on the western point of the bay, appears high and bluff; *Mobile Point*, low and sandy, with a single tree on the extremity.

On steering in with the light house northwesterly, you will suddenly shoal your water from 7 or 8 fathoms to 3 fathoms. Then having the bearing, &c. as before stated, should necessity compel, steer N. N. W. until abreast of Sand Island on your larboard hand, two cables distant. On the last course, after crossing the bar, you will have 6, 7 and 8 fathoms, the deep water being close to the east breakers. From the last position the point will bear nearly due north—steer up, keeping it a little open on your starboard bow, and pass it at a cable and a half's distance.

After leaving Mobile Point, to run up the bay, steer N. by W. night and day, as there is no danger in the way. When you have run about 25 miles, you will then be in 10 feet water. Here, as there are stakes in the channel, you had better come too for a river pilot, which you will have to send your boat on shore for, to the distance of about four miles, the town being in sight.

In running for the land during night, your soundings will be mud till you approach, when you will find sand and mud mixed, then sand in 8 fathoms.

[Pelican and Sandy Islands are only one, but in very high tides they are separated, appearing like two islands, as laid down on the chart.] High water, 8 o'clock, A. M. daily.

## SAILING DIRECTIONS,

### *For Vessels bound to Pensacola.*

Vessels coming from the eastward, should keep in 7 fathoms water until the light-house bears by compass N. by W. when they can stand in for the bar, until in 3½ fathoms, which is the shoalest water on the bar at low water, with the light bearing N. by W. After arriving on the bar, agreeably to the above directions, you must then steer N. W. until the S. W. end of St. Rosa Island bears E. by S. and the light-house N. + W. when they can steer for the light until within the Island. and haul up into the passage and steer for the bay, free of danger.

The above directions are applicable for large vessels coming from the westward; with the exception that they need not keep in more than 5 fathoms, water.

Small vessels drawing not more than 14 feet, can bring the light to bear N. ½ W. and steer for it in the night: until within half a mile of it, where they can anchor with an off-shore wind. But if they have a fair wind, they can steer E. by N. until sheltered by St. Rosa Island, where they can anchor in a good harbour until day-light, as it is every where excellent.

The ebb tide sets S. W. and the flood N. E. which should be carefully observed by all vessels coming in, as the ebb will carry you on the Caucus shoal, and the flood sets directly in over the Middle Ground.

On the appearance of a gale on shore, when off Pensacola, you must try for

\* The light-house is built on a bluff which you leave on the larboard hand, entering the harbour. The bluff is 49 feet from the surface of the water, and the lantern elevated 30 feet, containing ten lamps, and shows a revolving light, completing a revolution in three minutes.

an offing, as you are greatly exposed outside the bar. A S. W. course made good will weather the Balize.

The bay of Pensacola is a good port, having at low water, on the bar, 21 feet water. The eastern point of its entrance is called Point Siguenza, and is the western point of the island of Santa Rosa, which extends E. by N. and W. by S. 14 leagues, and completely fronts the whole Bay of Pensacola; it is so low that the seas, in gales, wash its top, and is no where more than one-fourth or one-third of a mile wide. There are some red bluffs on the main coast, which are higher than the rest of it, and one of which, and the largest of all, is on the eastern side of Pensacola bay; and in or near the front of the entrance, are three red bluffs, adjoining each other, and called the Barancas. On the beach under these bluffs, lies, or did lie, a half-moon battery, called also Barancas; and the pilots reside in a few small houses right over, and a little east of the fort. After passing the bar, the entrance to the bay is between these Barancas and Point Siguenza, and runs nearly E. and W. This port would be difficult to recognize, were it not for the light-house and bluffs, which consisting of three adjoining each other, cannot be easily mistaken.

A shoal, called the Angel, runs off to the W. of Point Siguenza, and has two small sand keys on it, level with the water's edge; this shoal stretches to the southward about  $1\frac{1}{2}$  mile, and a bank of only 12 feet, hard sand, runs out one mile farther south, and runs to the eastward, traversing the whole coast as far as the isle of St. Rosa; and the western part of this shoal forms the bar of Pensacola, which is one mile wide; and after crossing it, you soon fall into 5, 6 and 7 fathoms water. The bar is not the only difficulty in entering Pensacola, as there is on the inner part, and as high up as Point Siguenza, a shoal only 10 feet, very steep and distant from the point near one mile, and consequently runs out to mid-channel of the entrance.

To enter this port, you must do it to the westward of the shoal, and observe what follows, which, with a plan of the port, will give you a correct idea of its configuration.

The bar runs out to the southward of Point Siguenza about two miles; whence in coming from the eastward it is necessary to keep as much as 7 fathoms till you bring the light-house to bear N. by W. when you may stand in for the bar until in  $3\frac{1}{2}$  fathoms, as before directed. Pensacola is decidedly the best harbour in the Gulf of Mexico, and has local advantages over every other place.

### *Directions for Apalache Bay.*

When the south point of St. George's Island (which lies to the westward of Apalache Bay) bears north, two leagues distant, you will be in 2 $\frac{1}{2}$  fathoms. From these bearing and depth of water, steer N. N. W. or N. by W. until you make Flag Island, which is low and sandy, and cannot be discovered from the deck to be an island at a greater distance than two miles. Bring the east point of that island to bear N. N. W. and steer directly for it until you get within 20 yards of it, which course will carry you over the bar, where there are 11 feet water at high tide, close to the north breaker. The entrance then being fairly open, steer for the point of St. George's Island, or between the point of that island and St. Vincent, you will have 3 fathoms when over the bar, deepening gradually, and between the islands of St. George's and St. Vincent, you have 8 fathoms when fairly in. When past the point of St. George, haul to the eastward, and keep from one-half to three-quarters of a mile distant from St. George's Island. The water will shoal in this course to 2 fathoms, soft bottom, when you had better come to anchor and wait for a pilot, which you will obtain by hoisting the usual signal.

When off the entrance in 6 fathoms, no inlet can be discovered between the two islands, but the place may be known by the bearings of the land, and the following marks: from the south point of St. George's Island to Flag Island the shore runs N. N. W. It is a low sand beach, having a hummock of bushes about one mile from the west point of St. George's Island, to the westward of

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which are four umbrella trees, the two easternmost standing 6 or 8 feet apart, the top connected, and at a distance having the appearance of one tree. To the west of these trees is a hummock of Palmetto trees, which stand nearly on the extreme west end of St. George's, which are considerably larger than the hummock of bushes before mentioned, and these when distant so far that you cannot see the beach that bearing N. E. appears as separated from the other land, and to form an island by itself, but when bearing N. W. appears connected with the island of St. Vincent, which is thickly wooded on the eastern end. This hummock is however on St. George's.

The south point of the island of St. George's is thickly wooded, and can be discerned when in 10 fathoms bearing N. E.

When Flag Island bears N. N. W. 3 to 4 miles distant, there are 5 fathoms which continue with these bearings until you are within two miles of that island, then it shoals gradually. Should you have a foul wind, and be obliged to turn to the windward, keep the island of St. George's on board, when fairly to the westward of the south point, the water is good near the beach, and soundings regular.

Directly off the south point of St. Georges, there is a dangerous shoal of 2 or 3 leagues extent.

## CHAP. II.

## BERMUDAS OR SUMMERS' ISLANDS.

*General instructions for making the Bermuda Islands.*

	Latitude.	Longitude.
Saint George's town at the eastern end, . . . . .	32° 22' N.	64° 33' W.
Wreck Hill, at the western end, . . . . .	32 18½	64 50
S. W. Breakers, . . . . .	32 10	64 45

Variation 3° W.

High water full and change at St. George's, one quarter past 2. Common tides rise about 4 feet: but on the springs, or in gales of wind, frequently to 6 and 7 feet. The floods in the offing set to the N. E. and ebb to the S. W.; but near the shore they run in various directions. These islands being surrounded with innumerable shoals, much precaution is necessary in approaching them. The principal dangers lie to the westward and northward, and extend, from the land, between 3 and 5 leagues, in a due west line, from their south-western point (round northerly) to a N. N. E. one, from David's head, their eastern extreme. The remainder of the coast, forming their southern and eastern boundary, may be approached in every part within a mile, and in several places to less than half that distance.

On account of the prevalence of westerly winds in the Atlantic, it has become the general practice for all vessels bound to the Bermudas to make the land from the westward, by getting into their latitude about the 68th degree of longitude, and then steering an east course till they become visible.

When running down a parallel for Bermudas, with a large wind, and not making the land towards night, but expecting to be near it, no vessel in this situation ought to lie to, but should rather turn to windward under an easy sail until daylight, because of a probable current which is variable, and it is known that vessels have been carried by it out of their reckoning to the distance of many leagues, and brought them unexpectedly among the rocks. The land not being high (for Gib's Hill, the highest land in the islands, is but little more than 180 feet above the level of the sea) it cannot be seen at any great distance from a small vessel; add to this, the thick haze that frequently prevails here, particularly in fine weather, renders making the land somewhat difficult, and, at times, precarious, unless the latitude be accurately ascertained, for instances have happened of vessels missing the islands; and, after a fruitless search, steered for the American Coast, in order to take a fresh departure for running down the latitude again.

The rocks and islands of Bermudas lie N. E. by E. and S. W. by W. about 9 leagues, and in breadth about 5. Wreck Hill forms the West Point, and St. David's Head the East. Round the West, N. W. and North sides, it is a continued and very dangerous ledge of rocks, beginning at the *Long Bar*, the south part of which lies 6 miles W. S. W. from Gib's Hill: tending then N. E. it is called the *Chub-Heads*, which, off Wreck Hill, lies 9 miles from the shore: the ledge hence rounds to E. N. E. and joins the North rock, which is always above water, and lies N. N. W. 12 miles from Catharine Point. From the North Rock the reef rounds E. and E. S. E. and ends in *Mill's Breaker*, which dries at low water, and lies at N. E. 6 miles from Catharine Point, and N. N. E. from St. David's Head. The

outer edge of this ledge is close and compact, leaving no passage through it for ships, excepting a small one near Wreck Hill, another by the North Rock, and one round Catherine Point. Round the outer edge of this ledge is a margin of soundings, of from one to two miles broad, having from 9 to 14 fathoms on it; there are, likewise, soundings for two miles from the shore round the N. E. East and S. E. sides of the island; but, as the water here is deeper, it would be prudent for those who suspect themselves near the longitude of Bermudas in the night, or in thick weather, while between the latitudes of  $32^{\circ}$  and  $32^{\circ} 40'$ , to keep a lead constantly going; being assured, that, at 14 fathoms, they will strike the ground in time to avoid danger. The lead might be incased with tallow, for the greater certainty of striking ground: this precaution, I am persuaded, would prevent many of the wrecks that constantly happen here.

There is a rocky bank lying from S. S. W. to S. W. from Gib's Hill, or (S. W. part of Bermudas) from 3 to 5 leagues distant: various depths from 17 to 45 fathoms are on it, and on others large ships have grounded.

The latitude of  $32^{\circ} 8' N.$  being two miles to the southward of every danger, seems best adapted in fine clear weather for this purpose, and will bring you in sight of Wreck Hill, which being of a conic form, and having a volcanic appearance, is the more remarkable. The moment this hill becomes shut in with the other lands, or is no longer distinguishable, you will pass the only danger to be apprehended off the southern part of these islands, called the S. W. breakers, (which do not, however, lie more than  $1\frac{1}{2}$  mile from the land) and may then immediately close in with and steer along the south-eastern shore, within a mile, till you have got the length of Castle Harbour, or brought David's Head to bear about N. by E. where you must wait to receive your pilot, taking care, during that time, not to be drifted to leeward, as the currents generally set to the eastward.

Should you meet with a contrary wind, or the weather be extremely hazy, before you have got sight of land, it will be prudent in the night not to stand to the northward of  $32^{\circ} 4'$  or  $5'$ ; and if the wind should be inclining to the southward, I would recommend not beyond  $32^{\circ}$ .

If bound to Bermudas from England or from any part of Europe, I should recommend a direct course to be steered as long as the winds permit; but the moment they become contrary, to get to the southward into the trades, and then run down the remaining longitude, taking care to haul to the northward in sufficient time to reach the latitude of  $32^{\circ} 8'$ , about the  $68^{\circ}$  of longitude, and then proceed as above described; but should fair winds continue the whole passage, the land may be made with equal safety from the eastward, by steering for them in the latitude of  $32^{\circ} 18' N.$  which is two miles to the southward of David's Head, their south-eastern extreme; and off which Head there is no danger beyond half a mile, care being taken not to come to the northward of that latitude until you have brought the Head to bear W. S. W. on which bearing it may be approached with safety till within one mile thereof, or till you receive your pilot.

In the course of making the land from the eastward, should the wind become contrary, or the weather prove dark, hazy and tempestuous, come not during the night to the northward of  $32^{\circ}$  or  $32^{\circ} 8'$ , in which latitude, if you should be found to have run past the islands, you must proceed as before described, in making them from the westward.

Ships bound from the southern ports of America, within the Gulf Stream, should steer well to the southward, perhaps as much as S. S. E. until they get within 3 or 4 miles of the latitude of Cape Hatteras, and then steer S. E. by E. until they get into the latitude of  $32^{\circ} 5'$ . Thus you will avoid crossing the Gulf Stream where it is very broad, and its direction far to the eastward, and pass it where it affects your latitude more than your longitude; and, of course, be of less consequence to the ship's reckoning; and, by steering thence so far to the southward as S. E. by E. you will fall into the latitude of Bermudas, at 4 or 5 degrees of longitude to the westward.

You should by no means run for these islands unless sure of your latitude; and always make them from the S. W. if possible, looking out in time for the

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land ; as, owing to the set of the Gulf Stream, and the general tendency of the currents to the eastward, ships from the coast of America will almost always be far ahead of their reckoning.

Having ascertained your latitude, and being well to the westward, get into the parallel of  $32^{\circ} 5'$ , and steer due East; this course will bring you to the island, passing about 4 miles clear of the south end of *Chub-heads*, a very dangerous shoal, lying across the west end, about eight miles from the land, with not more than 12 feet on it at low water, as well as the S. W. breakers, which lie about one mile and a half S. S. W. from the southernmost land, being the shoalest part of a ledge of rocks of considerable length, lying parallel with the shore. Should the wind in the night incline to the northward, keep in  $32^{\circ} 7' N.$  but, if to the southward, in  $32^{\circ} 2'$ .

You must avoid, by all means, running in the night, without having a good observation the preceding day, and being pretty sure of your longitude. Follow these directions, and you will first make Wreck Hill (which is high land on the western extreme of the islands) and the land trenching from it to the S. E. Having passed the S. W. breakers, the land lies about E. N. E. and W. S. W. having danger no more than half a mile off, and that generally visible ; you may run safely along shore at a mile, until you pass Castle Harbour, which is easily known by the castle on an island on the starboard hand. You should bring too off the eastern point of this harbour, and wait for a pilot, who will soon come off, and carry you into St. George's Harbour. But, should you be pressed for time, or the pilot not come off, you may haul round by the breakers, after having passed the islands which form the south part of Castle Harbour, into St. George's Road, bringing on the following marks:

A high island, next to the N. E. part of the small ones off Castle Harbour, has, at its eastern extreme, a bluff rocky point, called St. David's Head, having breakers off it about half a mile : the northernmost land in sight after you haul round St. David's Head, is called St. Catharine's Point ; bring this point to bear W. N. W. and St. David's Head S.  $\frac{1}{2}$  W. and you will be in as good a birth as any in the road, with 7 or 8 fathoms water ; but, in every part of these roads you must be guided by the eye where to drop your anchor, clear of foul ground, which is every where easily seen, owing to the clearness of the water, and the whiteness of the sand, where the anchorage is safe.

In case you have been driven to the eastward of the islands (a situation, however, which you are to avoid with the utmost care) you may run for them in latitude  $32^{\circ} 14' N.$  which will bring you to them 5 or 6 miles to the southward of St. David's Head, for which you may haul up upon making the land ; but you are not to run in till you are far enough to the S. W. to follow the directions before given for coming from the westward, should you make sail for Bermudas from any part of the Gulf Stream, or without it.

Great allowance is recommended for being to the eastward of your reckoning, and try to fall into the parallel of latitude above mentioned, in longitude  $70^{\circ}$  or  $71^{\circ} W.$

As the soundings do not extend more than a mile and a half from the land, on the southern side of the islands, a correct latitude, and a good look-out, together with a strict attention to these instructions, is absolutely necessary.

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### *Other directions in coming from the westward.*

On coming from the westward, the S. W. points of the land ought to bear E. N. E. before you come within four leagues of the land, when you may steer directly for it without danger. The breakers, on the south side, always show themselves, so that a ship may safely approach within gun-shot from the S. W. end to the S. E. and, when getting to the eastward of the castle, round into St. George's. Do not go farther to the northward than to keep Cooper's Island open within St. David's Head till you take a pilot, and the subscriber engages no ship will ever strike, if this be attended to.

THOMAS LEAN.

## CHAP. III.

## DESCRIPTION OF THE

## BAHAMA BANKS, ISLANDS, AND CHANNELS.

Under the general denomination of the Bahamas, are included all those groups which appear on the banks between the *Matanilla Bank* on the N. W. and the *Square Handkerchief* on the S. E. The principal islands are situated on those remarkable flats called the GREAT and LITTLE BANKS of BAHAMAS, which are divided by the channel of Providence, and of so much importance did we consider a correct description of its navigation, being the passage for vessels from the ports of the United States to those of the Mexican sea, as to induce the author, in 1820, to send the sloop ORBIT, under the direction of E. C. WARD, U. S. Navy, to make surveys.

The banks are generally of sand, with coral. The islands are low, flat, and interspersed with porous rocks, of fresh water, but the supply is, however, scanty, it being obtainable only from pools, formed during the rains, or from wells dug in the sand, into which the sea-water filters. In the woods are found the wild hog and the Agouti.

Within the jurisdiction of the Bahamas are therefore included the Great Bahamas and Abaco Isles, New Providence, Andros, the Berry Isles, \*Eleuthera or Ethera, Guanahani, otherwise St. Salvador or Cat Island, Watland's Island, Exuma, †Yuma or Long Islands, the Crooked Islands, Mayuana, the Caycos, the Inagues, and many smaller groups.

*Description of Little Bahama Bank, with its Islands.*

The *Hole-in-the-Wall*, which is the southernmost extreme of the Island of Abaco, bears N. N. W. from Egg Island,  $7\frac{1}{2}$  leagues distant, and the two form the mouth of what is called the *Northeast Channel of Providence*; and the *Hole-in-the-Wall*, with Stirrup's Key, forms the eastern mouth of what is called the

\* Eleuthera or Ethera, to the northward of the Exuma Keys, is one of the largest islands on the bank. It is, as shown on the Chart, of very irregular shape, and being on the edge of the Grand Bank, its eastern shore is washed by the blue and fathomless ocean, while on the west, is the white, shallow and smooth water of the bank. "The force of the Atlantic waves has pierced a magnificent arch through the rock of the island, which is the greatest curiosity of the archipelago. The island is moderately high, and the east side is very foul, having a reef called the *Alabaster Rocks*, and other dangers.

Harbour Island is close to the north end of Eleuthera, and has a settlement on the south side of the Island.

The current isles to the westward of Harbour Island, are *Russell Island*, *Royal Island*, and *Egg Island*. They are low, and between them and Ethera is a channel through which small vessels may pass. On the north a bank extends about two miles out, with 9, 11, 12, and 13 fathoms on it. From Egg Island, (the most western) the anchorage off New Providence bears S. 30° W. true, 7 leagues distant.

† Yuma or Long Island is about 17 leagues in length, from S. E. to N. W.

*Northwest Channel of Providence*; and this N. W. Channel's mouth is formed by the Great Isaac, and the western extremity of the Island of Great or Grand Bahama. About one mile west of the N. E. point of Abaco, is a fine bay, called Hurricane Bay, with water enough for small vessels.

After passing the Hole-in-the-Wall, the land is indented, both on its surface and beach, and tends nearly east and west, forming a slope, the highest land to the eastward. Two miles W. by S. from it, lies the southernmost point of the Island of Abaco, and Little Bahama Bank.

From the south point of Great Abaco to Rock Point, the bearing and distance are N. W. by W. 16 miles; the latitude of the latter is exactly  $26^{\circ}$ , from Rock Point to Key Gorda, on which fresh water may be found, is N. W. by W.  $\frac{1}{2}$  W. 9 miles. Along the edge of the Bank, N. W.  $\frac{1}{4}$  N. from Key Gorda, in an extent of 6 leagues, is a continued series of keys and reefs, and within these on the bank is Moose Island. In this distance you will have a dangerous rocky shore, on the west end of the bank. About half way between Moose Island and the S. E. end of Great Bahama Island, are Burrow's Keys.

The Island of Abaco is divided into two parts by a small shoal channel, and when it is seen to the eastward, it forms two pretty high lumps. There are commodious anchorages on the western and southern edges, well sheltered from the sea, one of which is on the western part of Abaco, which from the Hole-in-the-Wall bears N. W. and terminates in a bay, 9 miles from the point.

This bay, with winds at N. W.—N. N. E.—E. and even S. E. affords a good shelter with a depth of 7 $\frac{1}{2}$ , 8, and 9 fathoms water, and although the wind at S. E. is along shore, it makes no sea, and it is excellent holding ground.

In the bottom of this bay is the channel which divides the Island of Abaco into two parts, and a number of houses are erected there by people from New Providence, who come to cut wood. This anchorage is safer in winter than in summer, as during the latter you have constant squalls from the southward, from which the lightning often does harm, and earthquakes are frequent, which drive off the people, who retire to Providence and Eleuthera.

From the west part of this bay, a chain of Keys extends 20 miles W. by N. after which you will see the east end of the Island of Great Bahama, which continues on nearly the same direction for 19 leagues, and the whole of these two spaces of the bank are foul with reefs and rocks, as far as the middle of Great Bahama, from whence it is clean and has a smooth bottom.

The S. E. side of GREAT BAHAMA ISLAND, which is wholly bordered with a reef, forms a bight, which is 14 leagues in length, and very dangerous with strong S. W. winds. Within the S. E. or more properly the *South Point* there is fresh water; and at this point, in lat.  $26^{\circ} 28'$ , long.  $78^{\circ} 40'$ , is a narrow spot of good anchoring ground, having 10 or 11 fathoms. Towards this coast there is generally an outset from the Florida Stream on the west, which however varies according to the wind, &c. and at all times it is necessary to give the west end of Great Bahama a good birth, not only on account of its shoals, for if the wind should hang to the southward, you would be embayed.

On the western edge of the LITTLE BAHAMA BANK, are several keys and dangerous reefs. Off the N. W. point of Great Bahama Island, are the Wood and Indian Keys, at a league to the northward of which is *Sandy Key*, and at two leagues to the N. by W. of Sandy Key is *Memory Rock*, which stands about half a league within the edge of the bank, and appears, when bearing N. N. E. as represented in



*Memory Rock, N. N. E.*  
3 miles.

From Memory Rock the edge of the bank tends to the N. W. and at four miles from the rock, is the south end of a reef which is even with the water's edge; this reef is two leagues in length, and is succeeded by several others, to the distance of three leagues more to the north. Between these and the Matanilla Reef, the ground appears to be clear, with soundings on the bank in the northern half, 18, 19, and 20 fathoms.

In the extreme western part of the Great Bahama there is excellent anchorage, from which the soundings of the bank run off five miles. N. N. W. from the west end of Great Bahama lies a small clean key called Tombado.

The west edge of this bank runs N. N. W. to latitude  $27^{\circ} 50' N.$  and is clean and regular, without either keys or danger, if you exercise the leadsmen; all the other keys to the northward of Tombado, lie on this side of the bank N. E. from it, so that there is no danger in sailing on or off this part of the bank, called Matanilla. When there is a sea from the N. E. on the N. W. point of this bank, in that part of it in  $25^{\circ} 30'$  and 40 fathoms, it makes at flood tide a race, and whirlpools produced by its encountering with the Gulf current, so as to cause it to break heavy, and makes it appear like shoals, but there are none; on the contrary, getting to the southward of this race, you will have smooth sea, and may keep in 15, 16, 14, 13, 8, and 7 fathoms water; the bottom is sand, gravel, and some stones, upon which you may occasionally anchor. On this bank the water is green, and you cannot see the bottom until in  $2\frac{1}{2}$  and 3 fathoms, upon which or in the green water, there never has been any current experienced, therefore the Gulf Stream does no more than touch along the edge of soundings.

The Matanilla should be avoided on a flood. It has been represented in the old charts as extending to  $27^{\circ} 50' N.$  It has been sought for in that parallel, and not having been found there, presumed not to exist, but still we think it should be avoided. The *Onir* entered on the bank in lat.  $26^{\circ} 45' N.$  long.  $79^{\circ} 12' W.$  from thence she steered north, ten leagues, leaving Memory Rock to the eastward, and the Western Reefs to the westward: from the lat. of  $27^{\circ} 15'$ , long.  $79^{\circ} 12'$ , she steered N. E. twenty-seven miles, having 20, 16, 15, 13, 10, and on the centre of the bank, 4 fathoms; from thence to the eastern edge, the water deepened to 23 fathoms, and then no bottom, lat.  $27^{\circ} 33'$ , long.  $78^{\circ} 42'$ . The "*Derrotero de las Antillas*" says, "It has been generally believed that this bank terminates in a great reef; but the truth is, that there is none: only the shock of the conflicting currents, particularly when the wind is from the northward and westward, causes heavy overfalls, and the sea to break much, which led to this mistake."

Capt. Livingston, in adverting to this passage, says, "I have been informed that, after Capt. Laso de la Vega discovered there was no reef on the Matanilla Bank, the ship of war *El Angel*, of 80 guns, was sent from Havanna, under the command of Don Dionisio Aleola Galiano, to examine it, and did so most minutely as far as  $27^{\circ} 51'$ , and found no danger whatever. I have also been told by an intelligent master of a New-Providence wrecker, that he has been at anchor on it, and that it is all perfectly safe, with a fine sandy bottom."

The *Derrotero* also says, "When there is a N. E. swell on, upon the edges of the Matanilla Bank, and in 25, 30, and 40 fathoms, the sea is jumbled up much by the shock of the current, and so forms overfalls or breakers, which seem to indicate a shoal, but there is none; on the contrary, to the southward of these overfalls, you may find smooth water, with 16, 15, 13, and 7 fathoms."

De MAINE, who surveyed the Bahama Banks by order of the British government, says, "he struck on the Matanilla Bank, and knocked off his keel." We have given all our authorities, and submit to the judgment of the reader.

The extensive chain of keys which borders the northern side of the Little Bahama Bank, extends from the Elbow Reef 34 leagues W. N. W. and the late delineations prove how very inaccurately they have ever before been represented. The bank which supports these keys is generally shoal, but there is a passage between them and the Abaco Isles, having from 4 to 2 fathoms, which leads to the centre of the bank. The entrance to this passage is close to the west of Great Guana Key, and the Whale Key Rocks in lat.  $26^{\circ} 45'$ , long.  $77^{\circ} 6'$ . To small vessels it affords excellent shelter between the keys and Abaco.

But it is to be noted, generally, that a very heavy swell commonly sets upon this coast; and it is never advisable for a stranger to advance nearer than two leagues, as the wind is mostly from the eastward. This is the case along the whole of the northeastern keys; and, therefore, when sailing in this part, whether beating up or running down, a too near approach is both unnecessary and dangerous.

We now return to ABACO, (or the HOLE-IN-THE-WALL) and describe the coast to the north, east, &c.

The N. E. point of the Island of Abaco lies in lat.  $26^{\circ} 17' N.$  long.  $76^{\circ} 57' W.$  The first island to the northward of the N. E. point, is *Little Harbour Key*; north of this, *Linnyard's Key*, and still farther north, *Little Guana Key*. Linn-

yard and Pelican Keys run S. by W.  $\frac{1}{2}$  W. and N. by E.  $\frac{1}{2}$  E. The distance between Linnyard's Key and Abaco is about two miles, fine sandy bottom, clear of rocks, and good anchorage, and bears north from the N. E. point of Abaco.

On the N. E. side of the Island of Abaco, in a direction N. N. W. from said point, N. W. from the south, and S. W. by S. from the north end of Linnyard's Key, is a good watering place, called Weatherford's well. To enter the channel leading to the watering place which lies between Linnyard's Key and Little Guana Key, you must keep a small island which forms the north side of the channel (about 800 yards from Linnyard's Key) well on board on your starboard hand, and you will pass the bar in 3 fathoms, and find good anchorage in 4 or 5 fathoms water, within about two miles west from the north point of Linnyard's Key. This channel is far preferable to the one at the N. E. point of Abaco, independent of its safety and facility in getting water, as you may approach within a mile and a half of the watering place with 3 fathoms, or come immediately abreast in 2 fathoms, within 300 yards of the shore. Wood may be had in abundance among the keys, together with shell and scale fish.

The water breaks where there is danger, with the wind to the eastward, and it is advisable to have a lookout aloft while going in.

The eastern part of the coast is completely iron-bound, and fragments of wrecks are found on all its shores and keys.

The first point, south of the N. E. point of Abaco, is called Rocky Point; S. S. W.  $\frac{1}{2}$  W. from this point, six miles distant, is a reef of rocks nine miles in length, and one and a half in breadth, running in the same direction as the shore, inside of which is Cheeric Sound, which makes a channel between the two.

After passing the reef which lies off Rocky Point, the water is bold to within half a mile of the shore, till up with the Hole-in-the-wall.

The land between Rocky Point and the Hole-in-the-wall forms a deep bay, in which you must be careful not to be caught with a south-easterly wind.

### *Directions for Providence Channel, Bahama Bank, with its Islands, Gulf Passage, and the Florida Coast.*

In preference to running down for Rocky Point, (which lies about two miles S. S. W. from the N. E. point of the Island of Abaco) where, if you get embayed, you must lie up S. S. E. and S. E. by E. to run parallel with the land, it is more prudent to run into the latitude of the Hole-in-the-wall, and with the wind any way to the southward of east, it is presumed every man would do it.

The N. E. point of the Island of Abaco lies in latitude  $26^{\circ} 17'$  N. longitude  $76^{\circ} 57'$  W. When in its latitude, distant nine miles, steer S. by W.  $\frac{1}{2}$  W. 12 leagues, which will carry you on the bank off the Hole-in-the-wall, in about 14 fathoms water. The Hole-in-the-wall lies in latitude  $25^{\circ} 51'$  N. longitude  $77^{\circ} 10'$  W. and is the S. E. point of Abaco. By making Rocky Point in the daytime, you may have a safe run on your S. by W.  $\frac{1}{2}$  W. course, 12 leagues, and then, if you do not choose to run, lay by, should it be in the night. The generality of vessels make the land too far north in the lat. of  $26^{\circ} 10'$  or  $26^{\circ} 20'$ , because an opinion prevails that the land thereabouts is soonest seen, not aware of its forming a bay to the south and west. If, at night, they make the land in the parallel of  $26^{\circ} 10'$ , with a strong breeze from the N. E. they are so close in shore, before they can discover the land, that it is almost impossible to clear it, for the land, in that latitude, tends a little to the westward, forming a bay, a few miles north of the Hole-in-the-wall, with a reef of rocks outside, in one part, half a mile from the shore: and should they make the land farther north, the danger, with a scant wind, is still greater, as there is constantly a heavy swell setting on the shore.

Vessels should run down their longitude in the parallel of  $25^{\circ} 50'$ , or from that to  $26^{\circ}$ , and not further north. By keeping in this latitude they cannot miss the Hole-in-the-wall, and they will likewise avoid the land on the South or Harbour Island side. See note to page 165, for description of Harbour Island.

Off the Hole-in-the-wall lies a bank, in a S. E. direction, 7 or 8 miles in length,



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and about 4 miles broad in the middle, ending with a point at the S. E. extremity.

*Soundings taken on the Bank.*

Hole-in-the-Wall, W. 2 miles,	12 fathoms.
do. W. $\frac{1}{2}$ N. 5 miles,	15 do.
do. W. 7 miles,	60 do. no bottom.
do. W. by S. 6 miles,	30 do. no bottom.
do. W. $\frac{1}{2}$ S. 3 miles,	13 do.
do. W. $\frac{1}{2}$ N. 3 miles,	12 do.
do. W. by N. $2\frac{1}{4}$ miles,	11 do.
do. N. W. $\frac{1}{2}$ N. $2\frac{1}{4}$ miles,	15 do.
do. N. W. by N. 3 miles, off the bank.	

Beyond 15 fathoms there were no soundings with 30 fathoms. You may know when on this bank, as the water changes at once from a dark sea blue, to a beautiful vivid green, is more agitated by a ground swell, and discovered the moment you are off, particularly with a S. E. wind, at which time the above soundings were taken.

The Hole-in-the-wall (or Hole-in-the-rock) is an arch through the land, about 10 feet wide, and 4 or 5 feet high, the bottom nearly one foot above the water, which breaks through the Hole, and may be seen when bearing S. S. W. to W. S. W. and N. N. E. to E. N. E. and at first sight appears like a sand bluff, but at 3 or 4 miles distance may be plainly distinguished to be an arch-way through the land.

South from the Hole-in-the-wall 100 yards distant, is a rock, 60 or 70 yards long, hollowed out all round at its base by the water, which may be doubled within half a mile.

On the south point of the main land is another corresponding projection, both which appear to have been caused by some convulsions of nature, of which the whole coast bears evident marks. It is covered with fragments of vessels, spars, &c. and the western side has a complete barrier of stones, formed on the beach, above the tide mark, both by nature and the S. W. gales, which at times blow very hard.

Five miles to the westward of the Hole-in-the-wall, and about 300 yards from the shore, the soundings are regular,  $2\frac{1}{2}$  and 3 fathoms, and deepening rapidly as you leave it.

One quarter of a mile off the S. W. part of the island, you will have two fathoms, fine level sandy bottom. The land here is low, and covered with brush wood. Here the ebb sets N. E. and tide rises three feet.

Vessels of any draught ought not to approach the land nearer than about 400 yards, where they will lie in about 4 fathoms water. Inside this the water shoals suddenly to two fathoms.

Vessels in the night, or in foggy weather, may run to the westward, when in latitude  $25^{\circ} 48'$  N. and sound till they get in 14 or 15 fathoms, and be then sure to clear the Hole-in-the-wall by a west course, six miles, when it will bear north, and then run W.  $\frac{1}{2}$  N. sixteen leagues, when \*Stirrup Key will bear south six miles distant. Vessels running down in the latitude of the Hole-in-the-wall, will not get soundings till up with it.

In taking your departure from the Hole-in-the-wall for the Great Bahama Bank, steer west, twelve leagues, and if the land be not in sight, haul W. S. W. or S. W. by W. and make the †Berry Islands, keep down past these islands, and

\* Off Stirrup Key there is good anchorage in 7 fathoms. To get shelter from strong easterly winds, in order to repair any damage or to obtain water, you may anchor to the west of the westernmost island, in  $7\frac{1}{2}$  or 8 fathoms, on good holding ground.

† The Berry Islands consist of about thirty large keys, with innumerable smaller ones: they lie to the N. E. of Andros Island, the south-easternmost of which is *Frozen Key*, and the northernmost *Stirrup Key*. There are soundings all round the group; and 20 fathoms may be found at two miles from any of the keys. The surface of the bottom is sand, and below that, a kind of limestone. The isles form several small harbours, where water and

keep a good look-out for the westernmost key, called *Stirrup Key*, before mentioned, which lies in latitude  $25^{\circ} 48' N.$  and longitude  $78^{\circ} 2' W.$

*Extract from the log-book of the surveying sloop Orbit.*

"In approaching the Berry Islands, the water is bold close in: two and a half miles from the shore, 11 fathoms; two miles, 9 fathoms; one mile, 8 fathoms; the northernmost part of *Stirrup Key* bearing W. by N. three and a half miles, 7 fathoms; W. N. W. two and a half miles, 8 fathoms, rocky bottom; west, one mile, 7 fathoms; W. S. W. three-quarters of a mile, 9 fathoms; and all along to the westernmost key, 8, 9, and 10 fathoms, generally fine sandy bottom. The moment you get on soundings, in approaching the Berry Islands, the water changes colour.

"Sailed around the Berry Islands till they bore N. N. E. two miles, and had 5, 4, 3, and  $3\frac{1}{2}$  fathoms; and far as five miles, 4, 3, 4, 4,  $3\frac{1}{2}$ , 4,  $3\frac{1}{2}$ , and  $3\frac{1}{2}$  fathoms; N. by E. six miles,  $2\frac{1}{2}$  fathoms. West Berry bearing N. N. E. and Blackwood's Bush S. S. E. (course W. N. W.) the soundings were 2, 4, and 5 fathoms: at 2½h. steered W. 4 fathoms; at 3h. S. S. W. 7 fathoms; at 3½h. S. S. W. 7 fathoms; at 3¾h.  $6\frac{1}{2}$  fathoms; at 4h. 6 fathoms; at 4¼h. 5½ fathoms; at 4½h. 4½ fathoms; at 4¾h.  $3\frac{1}{2}$  fathoms; at 5h. 3 fathoms; at 5¼h. 3 fathoms; at 5½h.  $2\frac{1}{2}$  fathoms; at 5¾h.  $2\frac{1}{2}$  fathoms; at 6h.  $2\frac{1}{2}$  fathoms; at 6¼h.  $2\frac{1}{2}$  fathoms; at 6½h.  $2\frac{1}{2}$  fathoms; at 7h. only 11 feet, and came to anchor among black patches, which we sounded and found to be flat rocks, about one foot high, covered with weeds. The water was shoal far to the westward of this. Vessels should not go among these black patches; the regular channel is quite free from them, and the water is muddy, having a milky appearance, which prevents the bottom being easily seen."

The best courses for crossing the Bahama Bank are the following, viz. when *Stirrup Key* bears S. 3 miles distant, (at which time it can be just seen from deck) steer W. S. W. 6 leagues; then haul to S. W. by S. 10 leagues: thence S. S. W. or between that and S. W. by S. to latitude  $24^{\circ} 55'$ , when you may keep away W. and make \**Orange Keys*, or continue on your course to latitude  $24^{\circ} 45'$ , when you may keep down west, and leave the bank without danger. In case you should prefer to haul too sooner than directed, in crossing the bank, and find your water shoaling, you may, by keeping off W. 3 leagues or more, find the deep water of the channel, which is 5 leagues in breadth; bear up as soon as you get but  $2\frac{1}{2}$  fathoms, as it shoals suddenly and irregularly from that depth.

other refreshments may be had, but are seldom frequented by any other than the people of New Providence. At the Berry Islands the tide rises two feet more when the sun is to the northward of the equator, than it does when to the southward of it. In the anchorage, or little harbour of these islands, the tide runs with strength among the rocks, in a N. W. direction.

\* *Orange Keys* is a cluster of rocks and keys, lying near the west edge of the Great Bahama Bank, extending from latitude  $24^{\circ} 53'$  to  $24^{\circ} 58' N.$  and longitude  $79^{\circ} 6' W.$  The main rock is about three-quarters of a mile in length, and the broadest part about 120 yards, highest part 20 feet, and narrowest 8 yards. It is a barren rock, the eastern side quite straight, and runs S. S. W. and N. N. E.—S. by W. of the main island, distant three-quarters of a mile, are two rocks, 6 feet out of water, about 15 feet in length; and one half a mile S. by W. of these, lie two smaller rocks. It is dangerous to pass between either of these rocks, and the principal island, as reefs run out and connect them, 30 or 40 yards broad, and soon as over 4 fathoms. One mile south of these rocks, you may sail with safety. They are a mass of solid rock, and may be approached at the westward to their very edge in 11 feet water. N. W. of them is good anchorage in  $8\frac{1}{2}$  fathoms, foul; there is also a good anchorage S. E. of *Orange Keys* in 6 fathoms, without other danger than the eye announces. To the northward it is not safe to approach within three miles, as the water breaks and has a ridge, projecting to a very considerable extent. There is no sign of verdure on these keys, but round them plenty of fish.

Many persons mistake *Orange Keys* for the *Riding Rocks*, north of which you cannot go; but north from *Orange Keys*, 3 miles distant, you will find a passage, although it is not safe for strangers to go this way, neither should it be attempted by any one, as you are obliged to pick your way through black patches, which are sometimes shoal. Var.  $4^{\circ} 26' E.$  1820.

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You may even run 7 leagues on your W. S. W. course, after leaving *Stirrup Key*, without danger; be careful to allow for the tide. On the north side the flood sets S. S. E. and ebb N. W. and as you draw on the bank, the force of the tide decreases, for when you have got 4 or 5 leagues on the bank, the tide is but a slight set.

By crossing the Bank as above directed, you will see few or no spots of sponge, and the bottom is with difficulty discerned, and may be sure of 3 fathoms all the way.

Be careful of Orange Keys in the night-time, as they are very low, and cannot be seen until on board of them, and the soundings are deep and regular, until very near them on their east side.

S. W. from Orange Keys, 5 or 6 miles distant, is good anchorage in 20 fathoms water. When up with these keys, a passage is secured through the Gulf, for then you may make sail either in the morning or at midnight, steering S. W. 10 or 11 leagues, that will enable you to fall in with \*Salt Key Bank, which for 10 leagues on the north side stretches E. and W. and consequently the current sets stronger as you come to the westward. In coming over you have good soundings all along by it. There is anchorage by spots all the way in, but the soundings are narrow at the Double-headed Shot, the N. W. point of which lies in latitude 23° 52' N. This route, however, demands the most zealous care, in order to avoid any shoal which may exist, although unknown.

The edge of soundings, between the †Riding Rocks and Orange Keys, is

\* *Salt Key Bank* lies between the Great Bank of Bahama and the Island of Cuba, and forms the channel of Santaren and Nicholas. Its greatest extent is from N. W. to S. E. On its S. E. end is the island of Anguilla, which may be seen four leagues off. The N. E. part of this island is foul, but the western side is clear, with good anchorage. From Anguilla Isle to the N. W. are several groups of keys, which rise almost on the very edge of the bank, and between which, in general, there are clear passages of not less than 4 fathoms, for any vessel, and behind them anchorage, except near Salt Key, on the east side of which 4 miles, and on the north side 3 miles, lie some sunken rocks, with some shoals stretching from them towards the Key.

The several groupes are denominated *Muertos*, (Deadmen's) *Damas*, (Ladies) *Piedras*, (Rocky) which are on the N. E. The northern are *Perros*, or Dog Keys: *Aqua*, or Water Keys, and the *Roques*, or *Double-headed Shot Keys*, the west end of which lies 12 miles to the westward of the eastern part of East Florida. Var. 5° 30' E. 1820. The straits between these groups afford free passage; but not so the straits which the keys of each group form among themselves, as they are very narrow. The keys and rocks on the N. and N. E. sides of the bank lie in clusters; they are more than fifty in number, but at a distance appear like one island. On the S. W. side of the bank there is only one islet, named *Cayo Sal* or Salt Key, and so named from various natural salt-ponds on it, which produce very good salt. This key may be descried at 10 miles off, and water may easily be procured at it, though there is none on Anguilla, and the other keys in its vicinity. The bank has three rocky shoals upon it, but vessels may navigate upon it without danger in 7½, 8 or 9 fathoms, from the months between October and May. Whenever the sky, &c. announce a hard *Norther*, it is advisable to enter on the bank, and anchor under the shelter of the keys, or you may lie to here without other trouble than that of the lead, until the wind changes, and becomes favourable for your voyage.

The current does not always set through Nicholas channel to the westward, but a regular tide of ebb and flood prevails throughout; the flood setting eastward and the ebb westward at the rate of about one mile an hour.

In the Santaren Channel, between the Great Bank of Bahama and the Salt Key Bank, there is said to be rarely any current, unless after heavy gales, when it runs with great violence up and down. If it predominates in one direction more than another, it is to the N. N. W. and about one mile an hour.

The times of high water on full and change days, at different places, are from 8 to 9 o'clock. In the Narrows the tide rises several feet, but it cannot be expected to be perfectly regular.

A Bank is said to lie off the N. E. part of Salt Key Bank, from which the Keys are in sight.

† *Riding Rocks* lie 6 leagues north of Orange Keys, consisting of one rock or key, about half a mile long, and 12 yards wide in the broadest part, which is nearly divided one-third from its south point by a bay. This key is very irregular in its height, and more uneven than Orange Keys; about 2½ miles to the northward of this rock, is a small island, about 2½ miles long, and 250 or 300 yards broad in the broadest part. To the northward of the southern-

clean; you may enter on it without other care than that of the lead. From Orange Keys, which are the southernmost keys on this side of the bank, the edge of soundings run about S. by E. very clean to  $24^{\circ} 10'$ , and more or less deep; it forms, with the keys on Salt Key Bank, a channel, which is bottomless, and called Santaren. The above observation, in entering on to the bank between Orange Keys and Riding Rocks, means only the edge; as you get further on, you find the soundings obstructed in their regularity by many coral shoals, but by day, and with a free wind, you can pick your way.

There is said to be a rock at the waters' edge, somewhere to the westward of \*Cat Key, with 8 or 10 feet water on it; but I have never been able to ascertain its position. There are few, even of able navigators, who can distinguish these numerous keys by name, therefore it is not possible to state the situation of this rock, without personal examination. It exists, and, I expect, about 200 fathoms from the middle of Cat Key, in a W. direction, but never saw it.

In star-light nights the bank reflects a bright light into the air, which may be seen at 4 or 5 leagues. You may observe this reflection all over both the Bahama banks, but not on Salt Key bank; neither can you see it while on the bank; but when in the Gulf, you can plainly distinguish the Providence channel, having

most key lie three small rocks, about 10 or 12 yards long, each running N. W. by N. The southern key runs N. by W.—the one next to this key is 100 yards from it: this, 100 yards from the third, and the third 100 yards from the second. These rocks are about 3 or 4 feet high. South of this key are two haycock rocks, just out of water, 6 or 8 yards from the land. There are also two rocks which lie half a mile east of the southernmost key, the largest 80 feet long, and the smallest 50 feet long, about one hundred feet asunder, and 12 feet high. These two rocks lie N. and S. There is a rock as big as a small boat about half a mile to the northward of these two rocks. A reef extends all along between these rocks, with the southernmost of the Riding Rocks bearing N. N. W. distant  $1\frac{1}{2}$  mile, 5 fathoms. Eastern Rock and the northern key, in a line bearing N. by W.  $2\frac{1}{2}$  miles,  $4\frac{1}{2}$  fathoms fine level sandy bottom;  $2\frac{1}{2}$  fathoms immediately, and 3 miles distant, 3 fathoms. Northern Riding Rocks bearing W. 5 miles,  $3\frac{1}{2}$  fathoms. Southern Key, bearing S. W. by W. 2 miles,  $3\frac{1}{2}$  fathoms. Main or Northern Key bearing W. N. W.  $2\frac{1}{2}$  miles, 3 fathoms. There is a shoal runs out from this key in a N. N. E. direction, on which are 6 feet water. You will not have a passage to northward of the Riding Rocks for vessels drawing 6 feet water. Ebb sets N. E.  $1\frac{1}{2}$  mile per hour. S. by E.  $1\frac{1}{2}$  mile from the east lump of the Riding Rocks, there is a sizeable isle, with various small keys in its vicinity, called Rock Key; there is good anchorage on its west part, in  $7\frac{1}{2}$  and 8 fathoms, sand; and the edge of soundings lies  $1\frac{1}{2}$  mile off.

In steering from the Orange Keys to the Riding Rocks, the deepest soundings are  $8\frac{1}{2}$ , and the shoalest  $4\frac{1}{2}$  fathoms. The western edge of the bank is an iron bound shore, being connected by one grand chain of rocks, extending under water from Key to Key.

*Extract from the Orbis's log-book.*—"Laying at anchor, among these shoals, at low water had 12 feet, and at high water 13 feet; had a light wind at W. S. W. and could see the edge of soundings off deck, not more than three-quarters of a mile distant: got under way at first ebb, and in making a tack crossed over some shoals with only 13 feet water on them, on which there could not be more than 7 or 8 feet at low water; and I have no doubt but, at times, after heavy gales, these shoals may be above the waters' edge.

High Water, at full and change on the edges of the bank, at 8h. 50m. On the north side the rise is 2 feet; on the west, to the northward of Orange Keys, 3 feet; to the southward of Orange Keys, 4 feet; and in lat.  $24^{\circ} 10'$  5 and 6 feet. The flood and ebb set from three-quarters of a mile to two miles, on and off the bank.

\*The Cat Keys are thus described in the Spanish Derrotero, "The northern one is Dog Key; the second, Wolf Key; and the third, Cat Key." The northern point of Dog Key has a mangrove thicket, and to the west of its south point there is anchorage in  $8\frac{1}{2}$  fathoms. Wolf Key has (or had) on its southern part, two palm-trees, of an equal size, which serve as a distinguishing mark; between it and Cat Key are two round rocks, close to the west of which there is anchorage in  $5\frac{1}{2}$  and 6 fathoms. From Dog Key the edge of the bank sweeps to the west, and leaves a clear space of soundings of about two miles broad; but at Cat Key it narrows so much that there is not above half a mile, and then the edge of the bank tends to the S. S. E. To the S. W. of the south part of Cat Key are some islets, at the distance of two-thirds of a mile.

At two miles S.  $\frac{1}{2}$  E. from the south end of Cat Key, are the Rocky Keys, (*Cayos Piedros*) three in number, and occupying an extent of two miles, to the S. E. At a league to the S. S. E. of these, is a larger key, called *Beak's Key*, distinguished by a sand hill, and from this a range of barren rocks extend  $2\frac{1}{2}$  leagues to the S. S. E. Var.  $3^{\circ} 22' E.$

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by N. The bank is 100 yards out 3 or 4 feet from the land. The largest shoal is 12 feet high. If a mile to the west, with the bank on the Eastern side level sandy Riding Rocks, 3½ fathoms. The shoal runs out to have a passage N. E. 1½ mile to a sizeable isle, and on its west

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none of this reflection between the two reflections of the Great and Little Bahama banks.

An experienced navigator (the late Capt. Parke, of New-York) while crossing the Bahama bank, made the following remarks, which we know are entitled to full credit: "Having been three days detained by light S. W. winds and calm weather on my last passage across the bank, I made the following observations on the tide, viz. the flood tide sets south, veering to S. W. and the ebb north, veering to N. E. For three days in succession the tide set nearly two knots in each direction, and very regular; on the third day the weather being still and calm, I weighed anchor, and drifted with the tide south, S. S. W. and S. W. When the vessel stopped drifting, I anchored in 3 fathoms water, and rode the ebb: when the tide slackened, I again measured the depth of the water in the same place, and found 15 feet."

It is not presumed the same depth of water can always be carried over the bank, even in the same track, as it must occur to the mind of every person that a strong easterly wind will drive the water off the bank, as well as a strong northerly increase its quantity; in all parts of the channel the bottom is of a sticky quality, whereas to windward the bottom is hard and the spots thicken as you shoal your water. Almost every regular trader has a different course to run across the bank, but the principal object is to clear \*Sheep Key Shoals; with the wind scant, and not drawing a heavy draft of water, you should haul too a little sooner, but not without a leadsman constantly in the chains, and should bear up as soon as you shoalen your water to 2½ fathoms. With the wind steady and free, so that you could lay to windward of south, you should always make sure of westing to clear the shoals to windward, taking care not to run so far as to get among the shoals which stretch off from the east side of the keys which border the bank on its western edge.

There are scarcely two men who cross the Bahama bank that agree as to the latitude of the Orange Keys, and many doubt their existence; this difference of opinion had some effect in sending the sloop Orbit: the subject is now at rest, as marine and land surveys have been made by her officers of the Orange Keys, Riding Rocks, Cat Keys, Great and Little Isaac, with the rocks, &c. adjoining, all which are previously described.

On the Bahama Bank, in latitude 24° 10' to latitude 24° 20' it is shoal near the edge. The tide rises 6 feet, and there are many spots in this space with less than 10 feet at low water. The shoal lies within one mile of the edge of the bank; they are of quick sand, and of course the depth of water on them must alter with every gale.

Should you prefer running down the Cuba shore, you may steer S. W. after leaving the bank in latitude 24° 40' and when sure of having past the Double-Headed Shot, haul a little more southerly, say S. W. by S. and make the island of Cuba; but to do this you must sail more than 4 miles an hour, otherways you may be carried out of the straight; this ought to be avoided with the greatest care; and, hence we recommend the route by the *Santaren Channel* as at all times preferable. Keep down in shore as far as the table land of Mariel, which cannot be mistaken, when you may run over N. W. and if not more than 24 hours in the Gulf, you will clear the Tortugas; but if you are a longer time in crossing, it would be prudent to keep a look out for coloured water and the Tortugas. The Pan of Matanzas bearing S. S. W. to S. appears like one round hill, but at any other bearing you will see another each side of it, not so high and adjoining to it. If you are near in shore, on passing the Havanna, you will see the shipping in the harbour, and the Moro Castle light may be seen 8 leagues off. The table of Mariel is 9 leagues from the Havanna.

When you anchor on any part of the edge of the bank, in order to pass the night, or for a favourable tide, you ought to have every thing ready to

\* Sheep Keys bear S. S. W. ½ W. 7 or 8 leagues from Stirrup Key, and lie off the N. W. part of Andros Islands; from these keys it is as before observed, very foul to the westward, and the shoal extends quite round to Stirrup Key; the bottom covered with spots of sponge and rocks, the size of a barrel or the head of a hoghead; and any object on the bottom may as plainly be seen as if no water intervened. Here the tide rises 4 feet.



make sail the moment it may be necessary; and also, if the sky looks ill, you should have the topsails reefed. From any one of these anchorages you may make sail with any wind; and, generally speaking, every one in these parts, who requires to anchor, may find a proper place to do so in, and in which he may be sheltered from the winds that molest him, or which he foresees coming; and without eddy winds to leeward, which cause trouble in case of fouling the anchor, though they only require vigilance and a *Seaman-like dexterity*.

On leaving the bank, you must be careful not to fall in with the Florida Shore or Double-headed Shot Keys in the night-time; but with day-light and a breeze, there is no danger in making either.

High water at full and change on the edges of the bank at 8h. 50m.—on the north side it rises two feet; on the west to the northward of Orange Keys, 3 feet; to the southward of Orange Keys, 4 feet; and in latitude  $24^{\circ} 10'$ , it rises 5 and 6 feet. The flood and ebb set from three-quarters to two knots on and off the bank.

#### WE AGAIN RETURN TO THE HOLE-IN-THE-WALL, AND ANNEX:

*Directions for sailing through Providence N. W. Channel, north of the Great Bahama Bank, and through the Gulf of Florida, &c.*

VESSELS drawing over 13 feet water, should not attempt crossing the Bank; the best passage is, when up with the Hole-in-the-Wall, to steer W. by N. 36 leagues, which will carry you to the west edge of the bank, and about  $2\frac{1}{2}$  leagues from the Great Isaac, taking care to keep in 12 or 16 fathoms, in which you ought to pass two miles from the Great Isaac; then shape your course through the Gulf, exercising the utmost care, so as not to get far out from the edge of soundings, because the moment you leave the edge, and get into blue water, you will be in the general current or Gulf Stream, which sets strongly to the northward; therefore, if the wind does not permit steering along the edge of the bank, you ought to anchor on it and wait till the wind be favourable. He who has no pilot, ought not to leave the bank at the Great Isaac by night, but may anchor on it, to the N. E. of the centre of the island, in from 7 to 10 fathoms, on sand, and wait for day-light.

To run along the edge of these banks, you have only to attend to the lead; with which guide, and the notice we have given, you will have sufficient information to enable you to avoid all danger. On the edge of soundings, although you do not feel the general current, yet there is a set of the tide, which may either run a vessel on the edge, or upon the Keys; but this cannot happen if the lead, which ought to be kept constantly going, is properly attended to, as it will warn whether to keep to starboard or larboard, in order to preserve the proper depth, but be careful not to go on the west part of the bank, as there is a dangerous rock, on which the English brig *Moselle* struck, that lies in latitude  $25^{\circ} 50' N.$  by De Mayne. It is advisable, when bound through the Gulf, to get a sight of land either one side or the other towards night: it will give safety to the ship, and relieve the Master's anxiety. In this passage you will pass *\*Little Isaac*,

*\* Little Isaac* consists of three islands or rocks, running in an E. S. E. direction; the western rock is about 40 feet in length: the eastern rock rather larger, about 5 miles from the western one; between these two in a direct line, is a smaller rock, about one mile distant from the eastern Isaac, on the same line; they lie about 5 or 6 miles in on the bank; outside of them the soundings are clean, you will have 14 fathoms on the edge, diminishing gradually, so that one mile from them you have 6 fathoms. In all the distance between Stirrup Key and Little Isaac, the edge is clean, and you may navigate down it by the hand lead. S. E. from the Little Isaac you may anchor, good holding ground, but a heavy sea. The shoal ground on which these rocks exist, is called the *Gingerbread Ground*; it extends 5 leagues E. by S. from the western rock, and has some dangerous rocky heads upon it, with only 7 to 9 feet of water. Under the S. W. end of the *Gingerbread Ground*, within the Little Isaac, you may anchor in  $3\frac{1}{2}$  and 4 fathoms; the holding ground is good, but there is often much sea; there is also good anchorage in 8 and 9 fathoms off the east end of the *Gingerbread Ground*, at  $12\frac{1}{2}$  leagues to the westward of *Little Stirrup Key*, which may be found useful during a northerly wind.

Too much caution cannot be used in sailing between Great Isaac and the Bimini Isles, as the water shoals suddenly, and there are many rocks under water.

†Great Isaac, and ‡Bemini Isles, a particular description of which we give in the notes.

The bearings of the land, &c. where the ship *Moselle* struck, were as follow :

The N. E. point of Bemini Isles S. S. E.  $\frac{1}{2}$  E. 5 or 6 miles. The southernmost part in sight S. by W.  $\frac{1}{2}$  W. The ground water rock (which appears above water, and lies to the northward of Bemini) S. E.  $\frac{1}{2}$  S.  $\frac{1}{4}$  mile distant.

This reef is upwards of a mile in length, and about 80 feet wide. It lies in a S. by W. and N. by E. direction, and has 3 and 4 fathoms close to it on both sides. In some spots, there is not more than 10 feet at high water, the tide rising and falling between 3 and 4 feet; flood setting to the N. E. and ebb to the S. W. forming a rippling, like the meeting of two currents. Position, when aground, latitude  $25^{\circ} 46' N.$  longitude  $79^{\circ} 19' W.$  De Mayne places the rock in  $25^{\circ} 50' N.$  and long.  $79^{\circ} 15' W.$

The flood here sets at the rate of about  $\frac{1}{4}$ , and the ebb 3 miles an hour.

The INLET or HARBOUR, between the Beminis, has throughout from 12 and 11 to 10 and 9 feet at low water.

From the S. W. point of the Southern Bemini, a chain of low keys and rocks, called the *Turtle Rocks*, extend about three miles to the south. Some of them do not rise to the level of the water. Here the bank is very steep : as, at the distance of a pistol-shot, no bottom is to be found, and, at the half-length of a ship, are 14 and 15 fathoms, on sand. *Barnett's Harbour*, a hole in the bank, of  $2\frac{1}{2}$  fathoms, divides this from a succeeding group of keys, called the *Cat Keys*, which extend to the south, nearly to  $25^{\circ} 30' N.$  as previously described, page 172.

*Extract from the Journal of Capt. Story, in ship Louisa Matilda, May 13, 1822.*—At 2h. 20m. P. M. bore away S. W. by S. At 3 P. M. struck soundings on the Bahama Bank in 5 fathoms; at 10h. 45m. P. M. lost soundings; at 6 A. M. made the Dog Keys, bearing S. distance 4 leagues; at 7 A. M. made the

† *Great Isaac* is a key of moderate height, about half a league in extent from east to west, in lat.  $26^{\circ} 1' N.$  long.  $79^{\circ} 2' W.$  and bears about W. N. W. from Little Isaac, distance  $5\frac{1}{2}$  leagues. A cluster of little islets and rocks, called the *Hen* and *Chickens*, lies at the distance of two miles to the S. S. W. of its western point. There is also a round rock, about 20 yards broad at the distance of two miles N. E. by N. from the N. E. point, and a reef called the *Brothers*, at the distance of a league to the east, from the east point. The ground in other parts is clear, and to the N. W. and S. W. of the isle is good and extensive anchoring ground, with regular soundings from 15 to 5 fathoms, with soft lime-stone bottom and broken shells. The *Brothers* are two haycock rocks, lying W. S. W. and E. N. E.  $\frac{1}{4}$  mile distant, the easternmost being about 5 miles from the *Great Isaac*. On the *Great Isaac* there are wells of fresh water and abundance of large shell-fish. The *Hen* and *Chickens* have good anchorage on the west side of them in  $5\frac{1}{2}$  or 6 fathoms of water, fine sand. The bank of soundings extends 6 miles to the west of the *Great Isaac*, with increasing depths, from 7 to 16 fathoms; and to the S. W. nearly 6 leagues with 7, 6, 7, 6, 10, and 17 fathoms, and from the *Great Isaac* to Bemini Islands the soundings are 9, 9, 8, 7, 7, 8, 8, 8 fathoms. On the bank you can anchor, the *Great Isaac* bearing S. E. in 8, 5, and 10 fathoms. Near the *Great Isaac*, at the N. W. extremity of the Providence Channel, the current runs to the east at the rate of two miles an hour.

‡ The Bemini Isles are low, with some small trees, or rather bushes on them, particularly on the S. E. part of the South Isle. They are the westernmost isles of the Great Bank, and lie in lat.  $25^{\circ} 44' N.$  long.  $79^{\circ} 4' W.$  Under the S. point there is a bay, with some low keys, lying S. S. E. and S. E. of it, in which you can anchor and have shelter from winds at N. round to S. E. with  $4\frac{1}{2}$ , 5 and 6 fathoms, or you can pass the night here when bound southward. On these keys and islands, there is some wood and water.

These islands are represented from a plan made by the officers of the British frigate *Moselle*, in July, 1810, which exhibits the shoal on the south side of the Southern Bemini, as having only 3 feet of water, white sand and sponge. On the edge of the bank, south of the S. W. point of the same isle, there are no soundings within a cable's length of the rocks; but, westward of the same point, is the anchorage above described, extending outward about one league: and the edge of the bank thence continues in a N. N. E. direction, but having within it similar soundings to the distance of 5 leagues. Beyond this, is a dry rock, and a ledge, on which the *Moselle* grounded.

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Double-headed Shot Keys, bearing S. W. by W. distance 3 leagues; at 10<sup>h</sup>. Double-headed Shot Keys bore E. distance 5 leagues. Latitude by observation, 25° 52' N. In crossing the bank, the least depth of water, 16½ feet; the lead and strop not included.

H.	K.	F.	Courses.	Winds.
1	8		W. S. W.	N. E.
2	8			
3	8	4	S. W. by S.	do.
4	8	4	do.	
5	8	4	S. W. & S.	do.
6	8	4		
7	8	4	S. W. by S.	do.
8	10			
9	10		S. S. W.	do.
10	10	4	S. by W.	do.
11	10	4	S. S. W.	
12	9		S. W.	
1	9			
2	9	4	do.	
3	9	4	do.	
4	10			
5	9			
6	8	4	S. W. by W.	do.
7	8	4		
8	8	4	S. W. by W. & W.	N. E. by E.
9	8	4	W. S. W.	do.
10	8			
11	8		do.	
12	8		do.	E. N. E.
Miles 213 distance per log.				

**NOTE.**—*The particular depths and shoal spots on the Great Bahama Bank, can be best understood by a reference to the new Chart of "BAHAMA BANKS and GULF of FLORIDA," on a square and large scale, published by E. & G. W. BLUNT, by which it will be seen, that there is on its northern part, a Middle Ground, of 8 to 12 feet of water, partly of hard sand ridges. This Middle Ground was not exhibited on any of the old charts; but it is now, with other discoveries, given from the late survey of the Orbit; among others, the Bank off the Hole in the Wall, and also from those of Mr. De Mayne. To the southward of the Middle Ground are several dangerous spots, not given in Mr. De Mayne's chart, but which were discovered by the American schooner Brilliant, Capt. W. Tullock, on the 19th of February, 1819, on the passage of that vessel over the bank, from the Stirrup Keys to the south-westward. Mr. Livingston was then a passenger on board, and the description is extracted from his journal.*

*First two Shoals.*—"At 2h. 30m. P. M. the man on the look-out at the mast head, discovered two shoals on the larboard bow. Captain Tullock called me, and both of us went aloft, and saw them plainly. We passed the most northerly, which seemed to have more water on it than the other had, at 2h. 43m. going six knots; and the southern one we passed at 2h. 50m. therefore they lie about three quarters of a mile apart. Captain Tullock and I both thought it probable that the southern shoal was nearly dry at low water.

"Positions of the centres: Northern Shoal, lat. 25° 11' 46", long. 78° 49' 45"; Southern Shoal, lat. 25° 10' 58", long. 78° 49' 57".

We passed about 2½ miles west of the northern shoal, and 2 miles west of the southern. They are both of an oval form. Their length seeming to stretch

agues; at 10h.  
by observation.  
feet; the lead

about S. S. W. and N. N. E. and their breadth W. N. W. and E. S. E. They are of but small extent; the southern, which is the largest, not being (I think) more than a quarter of a mile in length."

*The third Shoal.*—"Again, at 3h. 10m. the man at the mast head perceived another shoal to leeward or westward. Captain Tullock and I again went aloft, to see it more distinctly. At 3h. 24m. we had its northern end, which was lancet shaped, abeam of us; and at 3h. 31m, we passed the southern extremity of the shoal, at about  $1\frac{1}{2}$  or 2 miles to the eastward of it. This shoal appeared to have deeper water than either of those above described; but three spots on it, one at the north point, one on the west branch, and one on the eastern branch, showed whiter, and seemed shoaler than the rest. It has two branches, or legs, united toward its northern extremity, but open toward the South or S. by E.; and in the centre between them the water appeared to be as deep as on the rest of the Bahama Bank thereabout; that is, 3 fathoms, which depth we carried past the shoals."

North end of the shoal, lat.  $25^{\circ} 8' 23''$ ; south end, lat.  $25^{\circ} 7' 43''$ ; long. of centre,  $78^{\circ} 56' 57''$ .

*Old Wreck.*—On the next morning, at 9, the Brilliant passed about 30 or 35 fathoms to windward of a black spot, seemingly an old wreck. Latitude by account and a doubtful meridian altitude of the noon, at  $24^{\circ} 43'$ ; long. of the wreck,  $79^{\circ} 18'$ , by observation of sun and moon at 7h. 33m. A. M. When abreast of the black spot, we had 5 fathoms water, and in ten minutes thereafter ran off the bank into blue water. Lat. and long. of the above spot, subjected to re-calculation,  $24^{\circ} 47' N.$  and  $79^{\circ} 15' 27'' W.$  By subsequent observations, and re-computation,  $24^{\circ} 43' N.$  and  $79^{\circ} 12' 44'' W.$  Mean,  $24^{\circ} 45' N.$  and  $79^{\circ} 14' W.$

### *The southern border of Great Bahama Bank.*

Key Verde is the south-easternmost key of the Great Bahama Bank, in lat.  $22^{\circ} 0'$ . It is only a mile and a half in length, and about two cables' length broad, extending E. S. E. and W. N. W. and is destitute of fresh water. From this key the edge of the bank extends W. S. W. 14 leagues, to the Key of *St. Domingo*, in the mouth of the Bahama Channel. The ground between Key Verde and *St. Domingo's* Key is generally clean: but there are two shoals, one at 13 miles from Key Verde, on the edge of the bank, is called *St. Vincent's*, and does not exceed a cable's length in extent from N. N. W. to S. S. E. by half a cable at its greatest breadth, with only 3 feet over it: the second shoal is also on the edge of the bank, nine miles from *St. Vincent's*, and 22 from Key Verde: it is formed of rocks, is not so large as the former, and has one fathom over it.

The Key of *St. Domingo* is arid; it is a cable's length long, and half a one broad, and its middle forms a small hill, covered with the *Indian fish-bush*, which looks like an upset vessel, and may be seen at the distance of 3 leagues. A breaker extends from the S. S. W. side to the distance of 3 leagues; and W. by S. from its middle, at the distance of two or three cables, there is a bank of 6 and 7 fathoms, with very clear water, where shelter from the breezes may be found.

On the southern part of the Bank, to the westward of the Key of *St. Domingo*, there is no particular object which is not sufficiently described: the only spots above water are the two keys, called *Lobos* and *Guincho*, or *Wolf* and *Ginger Keys*, both of which have foul ground about them, from North round by East to South, so that, in these directions, they should not be approached nearer than a mile. Both may be seen at the distance of 6 or 3 miles. The shoal grounds named the *Mucaras*, which are about twenty miles to the south-eastward of *Lobos*, have weeds or grass at the bottom, and it is, therefore, requisite to notice that the water on them remains as dark-coloured as in the mid-channel. Without them are no soundings, and they should, therefore, be approached with great caution, for without this a vessel may easily be lost, even in day-light. On the very edge

of the bank, between Lobos and Guincho, there are some other shoal spots; and vessels of great draught should not venture upon the bank. There are, likewise, some rocky spots to westward of Guincho, so that caution here is also required.

**REMARKS.**—To communicate some idea of the force of the current in the Gulf Stream, and disastrous consequences, we copy the following from various authorities:—"We took our departure from the westward of *Cut Key*, and steered S. S. W. 24 leagues; then S. S. W.  $\frac{1}{2}$  S. 54 leagues, when we altered our course to S. S. W.  $\frac{1}{2}$  W. 6 leagues, with the wind squally at N. W. going at the rate of 8 knots; while in the act of reefing topsails, judging ourselves near the *Double-headed Shot Keys*, we struck on "Carysfort reef." The course steered by compass was S. S. W. whereas the drift made her course W. S. W.

"I left," says an experienced navigator, "the Bahama Bank in latitude 24° 53' N. and steered S. W. by S. by compass, and in the morning discovered myself within 6 miles of the Double-headed Shot Keys, which bear from the latitude I took my departure from S. W. by W."

"Aug. 20, 1816. At midnight left the bank with the wind south and south-westerly, run 28 miles W. S. W.—22 miles W. by S. close hauled upon our larboard tack; and found, by meridian altitude of the sun, our latitude to be 24° 50' N.

Aug. 30.—Winds westerly and light, still on the wind on our larboard tack; run 25 miles west to midnight, sounded, no ground; continued W. and W. by N. 4 miles, to 3 A. M. the ship *Three Sisters*, captain Armington, being then on our weather bow, distant one mile, made a signal she was ashore; hove the lead and had but 5 fathoms, tacked ship and stood off ten minutes, sounded quarter less 3, tacked again and stood in, sounded with 44 fathoms, when we let go our anchor and brought up at 4 A. M. Manned the boat and run out east three-quarters of a mile, when the boat struck on a reef, the ship *Three Sisters* then bearing W. S. W. one mile. Went off in the boat again in a N. E. by E. direction, and found a narrow channel of 12 feet; tried again in a S. S. E. direction, where we found a passage of 15 feet, one mile wide, current setting N. N. E. This must have been the channel which we fortunately got in at, there being but two channels to be found: the wide channel was the only one which would admit us both in the same direction we then were. Got under way, the captain of the ship being on board, the wind veering from S. S. W. to N. W. and stood out, but on approaching the passage, found the current to set strong on the S. end of the N. reef, which set us into 11 feet water, in about the length of the vessel, when it deepened to 3, 4, 6, 7, 16, 25 fathoms and off soundings, the lead being hove as quick as possible.

"The place we got in at, appears to be, by the chart, Buller's inlet and outlet, lying between Biscayno's and Ledburg's reef, in latitude 25° 24' N."

**NOTES.**—Many vessels have got over the Florida reef in the night, before they knew it, and afterwards brought up in safety on the inside; but when daylight came, they have been at a loss as to the way in which they came in, seeing nothing but breakers on the opposite point, by which he steered in, and have given some thousands of dollars to the Bahama wreckers, to take them out again. In preference, I would advise the master who unfortunately gets caught in this trap, to place himself on the foretop-sail yard, after getting under way, and run to the westward, by the range of the Florida keys, until he discovers a probable passage out, when he may bring too, and try the channel with his boat. Every danger can be seen from aloft in this channel, keeping clear of the black patches of coral, and white patches of shoals of sand, he will not run long before he finds a safe channel to go out, and save his thousands of dollars. I would not write thus, but for the impositions of many of the wreckers, on persons in such circumstances. Their trouble is no more than a few hours' work, and equally as easy for them as it is for a branch pilot to take a vessel over a difficult bar. They ought, under such circumstances, to charge well; but hundreds instead of thousands, and tens instead of hundreds, would be quite sufficient.

\* N.  $\frac{1}{2}$  E. distant 3 or 4 miles from the elbow of Carysfort Reef, a light vessel is moored, showing two fixed lights. [See page 141.]



Navigators should be cautious, while crossing the Bahama bank, never to follow vessels, if they alter their course often, as the New Providence wreckers have frequently decoyed them for the purpose of plunder; a crime which the most barbarous nation would treat with the greatest severity. This is not published to give offence to any one, but it applies to some of the New Providence navigators, and it is our duty to point out danger to mariners, from which the editor will never deviate, or hide from investigation.

I would also inform every person who may be so unfortunate as to lose his ship any where within the reach of the Bahama wreckers, that he has no occasion to make any agreement with them to save any thing, but to refer them to the Chamber of Commerce at Nassau, who will settle all this business for him in a very just manner. There is as little partiality among these gentlemen, as any equal number of men on earth; and for their decisions on such cases they are justly entitled to the thanks of every commercial man. They are always the judges where no agreement is made, but in case of agreement for a price, you throw it out of their power, and it must be complied with.

### ISLANDS, &c. to the eastward of the BAHAMA BANKS.

Having already described the Islands on the Great Bank, &c. we now proceed with those to the eastward, that is to say, Guanahani or Cat Island, Watling's Island, the Crooked Islands, &c.

ST. SALVADOR, to the S. E. of Eleuthera is worthy of notice, from its being the first land seen by Colon, (Columbus) who landed on its eastern coast on the 12th of October, 1492. By Colon it was named St. Salvador. Its length is nearly sixty miles, although narrow, as represented. The eastern side is lined by a reef, on which the ocean waters burst, and render it inaccessible. On the S. W. in Port Howe, is good anchorage.

LITTLE ST. SALVADOR rises on the same bank, to the N. W. of the larger island. The bank itself is foul and unequal.

WATLING'S ISLAND, which lies thirteen leagues to the east of the S. E. point of St. Salvador, is about four and a half leagues in extent from N. E. to S. W. and is of moderate height. It has a pretty little town on the south side, and on approaching in that direction, you will see several houses on the summit of a hill, and appearing nearly in the centre of the island. Off the S. E. point are two remarkable rocks, called the *Pigeon's Rocks*. On the east side of the island are a number of sandy spots. It is one of the most dangerous reefs of the Bahamas, extending about seven miles, having several rocks or heads which cannot be perceived by the colour of the water before you are close upon them, and which have 5, 4, 7, 9, and 10 fathoms water between them, and a current setting west and W. S. W. into Exuma Sound. Off the north side are the dangerous rocks called the *White Rocks*, and a reef extends outward four or five miles to the N. W.—vessels ought, therefore, to be very careful in rounding them. There is a small reef projecting from the S. W. point, but it always shows itself.

Captain Dowers of the navy, has stated that, in the route from New Providence to Jamaica, in 1814, when "passing along the west side of Watling's Island, about one and a half mile from the sandy beach, with the S. W. point bearing S. by W. just at dusk we discovered a ledge of breakers, (about a ship's length east and west) close to us.

"When about a cable's length to the westward of them, we had the following bearings, viz. a remarkable black rock, close to the shore, and breakers in one, E. S. E. the N. W. point of the island east, the S. W. point S. by E.

"We had 5 fathoms at about two cable's length to the northward, and deepened our water gradually as we increased our distance to the westward. No bottom with hand-line, about half a mile outside; the water of the same colour as the ocean: at this time land was distinctly seen from the mast head, bearing S. W. and very low.

Rum Key is about ten miles long, from east to west, three broad, and at first sight appears hilly. It has one of the best salt ponds in the Bahamas, where there is always a considerable quantity of large grained salt.

The anchorage, which is on the south side, near the east end of the island is good, about half a mile from the beach, and will admit vessels of any size, affording shelter from the S. E.—E. N. E. and round to N. W. no accident having ever happened to vessels loading here at all seasons.

On making this island from the eastward, several houses on its highest summit will be seen; and on a nearer approach, the cliffs above mentioned: a little to the westward of the latter is a small bay, called Fort Nelson or St. George's Bay. This side may be approached with safety.

The course from the Bird Rock (Crooked Island) to Rum Key, is N. W. by N. distant nineteen leagues; from Watling's Island, S. W. distance eight leagues, and from Great harbour, (Long Island) north, twelve leagues. Pilots will go to vessels approaching, on making the usual signal, and every despatch is given while loading; a few minutes after weighing anchor, a vessel will be out at sea, with almost any wind, and soon clear of these islands. Var. 5° E.

CONCEPTION is a little island, surrounded by a reef, and lies half-way between Rum Key and Cat Island. From its N. E. side a reef extends seven miles to the N. N. E. which was not known till the year 1812, at which time the British frigate Southampton was wrecked upon it.\* This reef is accounted one of the most dangerous in the Bahamas, having several dangerous rocks or heads, which cannot be perceived by the colour of the water before you are close to them. Conception is not yet considered as finally determined, but it appears to be in about 23° 50' N. and 75° 3' W. with the extremity of the reef in lat. 24° 1', and long. 74° 57'.

ATWOOD'S KEY lies in the parallel of 23° 10' N. with its west point in longitude 73° 47'. It is three leagues from east to west, and narrow from north to south. The island is surrounded by a white shoal, bordered with a reef. Off the west end the reef extends out one league; and under this point, in the extent of another league, along shore, there is an opening, or interval, in the reef; and here vessels may anchor in the white ground, in 7 or 8 fathoms, but very close to the shore. Off the edge of the white ground no soundings are to be found. To the east of the island are two small islets; the outer one at a league and a half from shore: these are surrounded with reefs and white shoals.

Atwood's Key is low, with bushes, and presents the same appearance as the other isles in this passage. Its greatest breadth, which is in the middle, is about 3 miles; for each extreme terminates in a point. The reef on the north side breaks, and extends above two miles from the land. The same reef, continuing to the west, forms a head, which is a mile and a half to the southward of the point. "On the south side, about two miles from the west point, you may anchor at three cables' length from the land, and, for half a league at least, along the shore, sheltered from westerly and N. E. winds. Having brought the west end N. N. W. about one mile off, we saw that end was a point only, and that the other side rounded away E. N. E. full of breakers, which were, at least, two miles from it; we also saw some ahead of us, and to leeward: we were obliged to haul our wind, and stand for the anchorage afore-mentioned, on the south side of the island. This anchorage extends about a mile each way from whence we were, and about three cables' length from the island. You may let go your anchor in 8 fathoms, sand and broken shells, but it is not good holding ground.

The CROOKED ISLANDS.—Of this singular group the best idea may be formed by referring to the particular plan of them. The positions appear to be well ascertained; and particularly of Castle Isle, or the South Key. PITT'S TOWN, a settlement on the N. W. part of the northern island, is the port of entry.

\* Upon enquiry, some time after, we were informed by Capt. Hurd, Hydrographer to the Admiralty, that the situation of this shoal was not known at the office, and the first notice of it which we afterwards met with was on a Spanish chart, of 1817.

CASTLE ISLAND is an islet lying off the south end of the southern Crooked Island: between are several white rocks, one of which is very remarkable, appearing, when you first make it, like a white fort or castle, from which the islet takes its name. The position of the islet, previously given, was  $22^{\circ} 7' 45''$  N. and  $74^{\circ} 17' 50''$  W. Mr. De Mayne, in 1815, made it  $22^{\circ} 7' 37''$  N. and  $74^{\circ} 17' 52''$  W. So that its position may be considered as finally determined. Variation,  $4^{\circ} 40'$  E.

Between Castle Island and Fortune Island, the land forms a great indent, named the Great Bay, at the entrance of which lie the Fish Keys. These keys are not to be approached too near. Between Castle Island and Salina Point is a fine sandy bay, called Jamaica Bay, wherein ships may anchor in 6 fathoms, well sheltered from S. W. winds. To the N. E. of this bay are two wells, with excellent water, and wood may be obtained.

FORTUNE ISLAND, distinguished by its salt-ponds and wharfs, is rather more than 10 miles in length and  $1\frac{1}{2}$  in breadth. It lies nearly N. N. E. and S. S. W. The south end is very bold. Off its north end are two islets; and, a little to the north of these islets is a sandy point, known by the name of *French Wells*. From this a small settlement will be seen on the high land to the northward. A vessel may anchor in 8 fathoms, with the French Wells due East, 2 miles. The anchor should be let go immediately when on the bank, only taking care to *pick* out a clear spot. At this place are several wells of excellent water, which give name to the point: stock and wood, also, may be obtained here.

The BIRD ROCK, or PASSAGE ISLET, is a low islet off the N. W. point of Crooked Island. A very dangerous reef extends 2 miles from it, in a N. N. W. direction; it then tends in a circular direction to the E. S. E. or towards the shore. This reef forms the Bird's Rocks anchorage, which is rather indifferent, the ground being partly foul.

Southward of the Bird Rock is a sandy bay called PORTLAND HARBOUR, in the middle of which, close to the beach, is a well of spring-water. The best anchorage in this place is off the first rocky point to the southward of the sandy bay, at about three cables' length from the shore, in 7 or 8 fathoms. You may anchor as soon as you are on the bank, with the Bird Rock bearing nearly N. N. W.; but, without great caution, the anchor will be lost.

If you anchor in the sandy bay above mentioned, you must be careful to avoid a rocky head, having only 16 feet water on it, and which lies off the centre of that bay, at about three-fourths of the distance between the beach and the edge of soundings.

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*Directions for vessels bound to Ragged Island, (one of the Bahamas,) on which there is always plenty of Salt for sale.*

It lies in lat.  $22^{\circ} 8'$  N. and long.  $75^{\circ} 20'$  W. of Greenwich.—If bound to it from the Windward Islands, a N. W. course from Cape Maiz, will fetch it, distance 45 leagues. Vessels bound to Ragged Island should pass to the northward of Key Verde, in lat.  $22^{\circ} 00'$  N. thence steer W.  $\frac{1}{4}$  N. by compass for Ragged Island. The island is surrounded by innumerable dangers, whose local positions are but little known. I would advise all masters of vessels bound to it in coming up the straits, to keep the Cuba shore on board until they run up as high as the well noted high hills of Givara, which is a Saddle Hill; then steer as above directed, and if they exceed 8 feet draft of water, keep the Island under their lee, and run the shore close on board until they bring the flag staff and houses to bear due south, then you will open the entrance into the harbour, when you must haul in S. W. then ahead of you a small Key with store houses on it will appear, and at your entrance into the harbour a low Black Rock will appear on your starboard side; give it a birth, and in running in you will observe a large red Canal Bank on your larboard side, which you may run close to until you come abreast of a low Black Point of Rock on the same quarter, and when you come abreast

of a couple of cannon mounted thereon, you may drop your anchor in 8 or 4 fathoms water until a pilot boards you, unless he may have met you on the outside. Ragged Island is distinguishable from all other sounding Keys by a lofty Hill about the middle of it, the number of houses and inclosures as well as the flag staff that appears on it. Vessels running far from Cape Maiz or Barracoa generally make Key Verde, close up to which, either to windward or leeward, there is plenty of water for vessels of any draft. Due south of Ragged Island, distance 4 leagues, there are three small Keys close to each other, called the Brothers, that have from 2 to 3 fathoms water close up to them.—Kiobano or St. Domingo Key lies S. by E. of Ragged Island, distance 12 leagues, to leeward of which there is plenty of water, but no vessels should attempt to edge the Bank to windward of it until you are close under the lee of Key Verde, as there are many dangerous ledges of rocks betwixt them on the edge of the Straits, on which many vessels have been lost.

American vessels subject to the following port charges.—At Ragged Island, which is a branch of the port of Nassau. Fee of entry (Bahama currency) £3 12—do. do. clearance, do. do. £7 11: King's tonnage duty 2s. 6d. sterling per ton, 4s. 6d. to the dollar; colonial tonnage duty 1s. 6d. Bahama currency, 8s. to the dollar; duty on Salt, 1d. per bushel Bahama currency.

Remarks on the action of the ebb and flow of tides at Ragged Island, by DUNCAN TAYLOR:

From the first of January to the last of April they flow from 16 to 18 inches, and the tide that flows an hour after the rising of the moon, is uniformly 6 or 8 inches higher than the tide, which flows after the setting of the moon.

I have frequently, during the above months, observed them not to flow more than from 6 to 12 inches; the spring tides, during the above months, generally rise from 6 to 10 inches higher than the common tides.

From the beginning of May to the first of October both tides gradually flow till they arrive at the height of from 10 inches to 2 feet 4 inches, and from 18 inches to 3 feet 6 inches, and then continue diminishing until the month of January.

WINDS.—The N. E. trade generally prevails here, except from October to April, which are considered as the winter months: during these months you have sometimes strong gales from the N. W. and very variable weather; particularly about the full and change of the moon, which ought to be guarded against.

DIANA REEF.—In the Crooked Island Passage there is a reef, discovered in 1805, called the DIANA REEF. This shoal appears to lie N. W.  $\frac{1}{2}$  N. 9 leagues from Castle Isle.

In the year 1805, his Majesty's packet Diana, when passing through Crooked Island Passage, and meeting a westerly current, made Fortune Island, and afterwards, standing to the S. E. struck soundings on a shoal, of which no notice had been taken in any chart. On the 5th of December, the latitude observed was  $22^{\circ} 56'$  N. and, on the 6th,  $22^{\circ} 54'$  N.; by which it appears, the edge of the Bahama Bank is farther to the northward than it is laid down in most charts. At 3, A. M. on the 6th, sounded in 20 fathoms, hauled and sounded regularly, 12 fathoms from N. W. to S. E., the bottom plainly to be seen; then suddenly had no soundings, with 25 fathoms. The shoal is composed of sand and rocks, as the anchorage at Crooked Island: it is about 2 miles in length. Captain Edgecumbe, of the Nassau, government schooner, says, he was once becalmed near it, and, rowing round in his boat, in one place found only 4 feet of water. [Since this (in 1820) the Bahama Bank has been surveyed, and a Chart published by E. & G. W. BLUNT, New-York, introducing all recent improvements.]

The TIRA-POR-VOS, an assemblage of barren rocks, with one low sandy islet, lie to the west of Castle Island, in  $22^{\circ} 7'$  N. on a shoal similar to that of the Hogsties. On the western side is an indifferent anchorage: the east side is bold; and, on the S. E. side, at a mile distant, there are from 20 to 25 fathoms, coral and rocky ground. As these keys are to leeward, they are not often seen by vessels in ranging along Castle Island; however, if it be necessary to turn, you may approach the bank within half a league. All the dangerous parts break, and the white ground will give you notice in good time. You may, if you



choose, pass to the westward of the Mira-por-vos, with the precaution only of not approaching too near. Captain William Dowers was passing this way in an evening of January, 1814, and came suddenly on a reef stretching out from the S. W. key, which bore East, 2½ mile. Captain Dowers says,

"We had 10 fathoms, sand, while in stays; but observed black rocks and less water in many places.

"This reef appears to run off west, for 8 miles, and then extends to the S. S. E. for some distance. We counted ten above water. They are all barren rocks, excepting the S. W. which is a low sandy island, about half a mile in length, and covered with brush-wood."

The Mira-por-vos range nearly N. E. and S. W. The middle of the group bears W. 11 miles, from Castle Island. In making them you will gain soundings in 11 fathoms; and at three-quarters of a mile thence may pass to the westward of them; but the general channel is between them and Castle Island.

**HOBART'S BREAKERS.**—These breakers lie to the south-eastward of the Mira-por-vos, and were first discovered by Mr. William James, commander of the packet Lord Hobart, who gives the following account of them:

"*Thursday*, Sept. 13, 1821.—At 1 h. 30m. P. M. saw Castle Island bearing N. by W. 14 or 15 miles; at 3h. 30m. P. M. saw heavy breakers ahead; at 4, tacked to the eastward; the Mira-por-vos bearing N. W. Castle Island N. E. and the breakers N. W. by N. distance from the latter half a mile.

"The above shoal I saw on a former voyage, on the 25th of March, 1818, when working up the passage from Jamaica: the weather was fine, water quite smooth; it did not break, and not seen until the vessel was on the outer part of the bank, in 5 fathoms water: the shoalest water we had, in crossing the outer edge, was 4 fathoms, sandy bottom, which was plainly to be seen."

**BROWN'S SHOAL.**—For our knowledge of this danger we are indebted to Captain Livingston, who has given us the following account of it:—"Brown's Shoal, ten leagues S. S. E. by compass from Key Verde, was seen by Capt. William Brown, of the schooner Union, of Plymouth, Mass. who stated to me that it is of considerable extent, and that, from the manner in which the sea broke over it, he does not suppose there can be more than 2 or 3 feet of water on the shoalest part. Latitude and longitude, inferred from the position of Key Verde, 21° 30' N. and 74° 52' W."

The HOGSTIES are three low keys, encompassed to the eastward by an extensive reef. They lie at the distance of ten leagues N. by W. ¼ W. from the N. W. point of Henega. About them are many rocks and broken ground, and when it blows hard the sea breaks over them all. The southernmost is the smallest, and bears from the middle key, which is the largest, S. S. E. The smallest requires a good birth, it being shoal all round; but you may sail close to the largest, and anchor in 4 or 6 fathoms, with that key bearing E. S. E. About a mile to the westward of the Hogsties is a depth of 18 and 20 fathoms.

**GREAT HENEAGA.**—Great Heneaga is rather low, and cannot be seen at a considerable distance, in consequence of the haze which constantly prevails in these latitudes. In making the west end there is no danger whatever. Two sandy bays at that end afford good anchorage. From the trade-wind's blowing over the island, the northernmost bay is the best. Stand in, and you will perceive the line of soundings by the colour of the water, extending about half a mile from the beach. So soon as you are in soundings, let go your anchor, in 6 or 7 fathoms.

This island is about fifteen leagues in length and ten miles in breadth. The body of it lies in lat. 21° 5' N. Fresh water may be procured in the northernmost bay, on the west side, at a small distance from the beach.

A shoal, marked doubtful, which is exhibited on some charts as lying off the S. W. end of Great Heneaga, has been carefully sought for, and said not to exist, but we think otherwise.

*M. Chastenot de Puysegur* says, "Great Heneaga, like all the islands which bound the Windward Passages, is very low, with small hummocks, which, at a distance, appear like detached islets. The land, in clear weather, may be seen at the distance of five or six leagues, and you need not fear coming within half a



league on the western side. In a fine bay which you leave on your starboard side, when going through the passage, you may anchor, on white bottom, choosing your ground by your eye; as, in many parts of such bottom, there are stones, which sometimes rise to a considerable height above the level of the sand."

There are some rocks about the southwest point, with a reef which stretches out to nearly the extent of a mile. In the bay between this and the west point, called *Shallow Bay*, you may anchor close in. The bay is surrounded by a reef, which, however, shows itself, although there are 2 or 3 fathoms over it; without the reef is a white sand, to the distance of three cable's length, and on this is the anchorage, in 7 or 8 fathoms. Farther out, in a line between the two points, which lie S. S. E. and N. N. W. from each other, in 15 fathoms, is rocky ground. This bay is not so deep as the *Great Bay*; but, as the bank is less steep, ships are not so liable to drive here; neither is the landing so easy, but there are clear places in the reef. There is no water but in the rainy season; then it is not very good, as it lies among the mangrove bushes.

The *GREAT BAY* is sheltered from the north by the northwest point, and from the south by the west point. This bay is two and a half leagues wide, and one deep; and all along the shore there is a border of sand four cable's length wide, on which you will have 5 fathoms, at a pistol-shot from the shore, to 15 fathoms; and, at half a cable's length from that, 45 fathoms of water. If you should be there in the season of the Norths, you may anchor under the north-west point, so as to be sheltered from the W. N. W.; and if there when the southerly winds prevail, you may anchor under the south point, so as to be sheltered from the W. S. W. There are not more than four or five points of the westerly winds which could hurt you; but they are not to be feared, as they seldom blow, and never violently. It is easy landing all round the bay.

Having rounded the N. W. point, you will see a little islet to the E. N. E. and a ledge of reefs for more than a league along the shore, and upwards of a mile from it. This coast will be known by a hummock, (*le Mornet*) the only one on the north side, which is lower than the south, and covered with bushes.

At the eastern part of the north side of Heneaga is a bay, three leagues wide, and nearly one deep, where you may anchor, but will be sheltered from southerly winds only. This bay is little known. At about a mile from the S. E. point is a little islet, and around it the bottom appears white: upon this you may anchor, at about a musket-shot from the island. The white bottom continues along the south part, with here and there some reefs with breakers.

**BISHOP'S REEF.**—This is a very dangerous reef, bearing, by compass, E. S. E. from the rock at the N. E. point of Great Heneaga. Captain Livingston, who has given us the information, says, "I saw it in September, 1816, on my passage from Jamaica to Charleston, S. C. in the brigantine *Agnes*, of Greenock, then under my command. The sea broke very heavy on it; and, from appearances, I cannot suppose that there are more than 3 to 5 feet water on the shoalest part of it. The white water showed at a considerable distance to the eastward of the breakers, and I am disposed to think the shoal extends fully two leagues out, from the N. E. end of Great Heneaga; but I conjecture there is a passage between it and the island.

"I was informed by the late Francis Owen, Master-attendant at Port Royal, Jamaica, that the *Statira* frigate, was lost upon this shoal; and Mr. Owen mentioned that it had been seen many years ago by Mr. Bishop. The variation here is only about one quarter of a point easterly, but it increases near St. Domingo."

In his notice of a rock, supposed to be this, Mr. Bishop says, when it bore N. W.  $\frac{1}{4}$  W. distant about two leagues, they saw the ground under them, having no more than  $3\frac{1}{2}$  fathoms water; therefore hauled up S. S. E. and kept the lead going till they had from  $3\frac{1}{2}$  to 4,  $4\frac{1}{2}$ , 8, 10, fathoms, and then no ground.

**LITTLE HENEAGA.**—This island, which lies to the northward of the N. E. point of Great Heneaga, is low and uneven, except a little mount or hummock, which is at an equal distance from the N. E. and S. W. points; not far from the shore, almost round the island, it is sandy, except at the S. E. point, where a ledge of rocks stretches off and breaks, nearly one mile and a half. On the south side there is a white bottom bordered with a reef, at the foot of which is

a depth of 40 fathoms. This island is divided from Great Heneaga by a deep channel, a league and a half in breadth.

**CIUDADO REEF.**—The shoal thus named lies to the northward of the eastern side of Little Heneaga, bearing N.  $\frac{1}{2}$  E. by compass, six leagues, from the body of that island. S. S. E.  $\frac{1}{2}$  E. 10 $\frac{1}{2}$  leagues from the S. W. point of Mogane, and N. W. by W.  $\frac{1}{2}$  W. ten leagues from the West Cayco, is a very dangerous reef of sunken rocks, called by the Spaniards the *Ciudad Reef*. The body of it lies in about 21° 55' N. and 72° 55' W. This reef was seen, in passing, by Mr. De Mayne, in the Landrail, surveying cutter, 1816, and is particularly to be noticed as lying in a direct line between Little Heneaga and the east end of Mayaguana, and only a few miles to the west of a line between the West Cayco and the S. W. point of Mayaguana, being nearly in mid-channel between each.

**MAYAGUANA** is an island, 8 leagues in length, between the parallels of 22° 18' and 22° 30' N. It is surrounded by a reef, which runs above a league and a half to the eastward: on the eastern part of this reef are several keys, and 5 or 6 huge rocks above water. Near the northernmost point of it is an islet, three-quarters of a mile long, with a small key to the S. W. of it. The rest of the reef is bordered with rocks under water, on which the sea breaks. On the south side is a passage for small vessels to go through, and be sheltered by Mayaguana on one side, and the reef on the other.\*

From the S. W. to the N. W. point of Mayaguana, the coast is clear, and forms two bays, the bottoms of which are of white sand, where you may anchor at about two cable's length from the land. The two points lie N. N. E. and S. S. W. from each other, distance seven miles. It is very necessary to be acquainted with these anchoring places, as you might be caught here with a north; then it would be better to anchor under the N. W. point, where you would be sheltered from the N. N. W.—N. E.—E.—S. E. and as far as the S. S. W. and that by the island and the reefs, which run a long league to the N. W. and on which the sea breaks with great violence. From the N. W. point the coast inclines to the E. and E. S. E. forming a kind of bay, bordered by reefs three miles from land, and having some passages for very small vessels. At the east point of this bay, a little inland, are two little hillocks; then the coast tends E. S. E. full five leagues to the east point, which we have already described. Mayaguana and Caycos Islands form the Caycos passage.

The **FRENCH KEYS**, between Mayaguana and the Crooked Islands, have been described by the pilot of the *Eagle*, a French bark, as follows: "These keys, hitherto but little known, have been said to be three; but what probably gave rise to that, was a rock which appeared out of water as high as a boat. It is about half a mile to the N. E. of the largest island, among the reefs and banks which run from one to the other. 'Having made Acklin's Isle, (the southern Crooked Island)' says the Pilot, 'we stood for the French Islands, and anchored in the white water, on the west side of the largest, about two cables' length from it, sheltered by a reef, which runs to the north and N. W. two miles.'

"This island is no more than three miles north and south, and half as much east and west; the east and north sides are surrounded by reefs, which break. The anchorage is about three-quarters of a mile from the south point, near which is a landing-place; and, by digging two or 3 feet in the sand, you will get good fresh water. Some English people, who were wrecked here, had made a pond, which dried up on the *Eagle's* filling four casks out of it, but in a quarter of an hour it was as full as ever. It is very surprising, that, at about ten paces from it, there is a salt-water pond. This island is low and almost even, though, when you are at a distance, there appear some small risings, which diversify a little its appearance: the ground is nothing but sand or rock, with some bushes upon it, fit only for firing. The other island, which is the smallest, lies east and west, about

\* Captain M'Gowan was lately cast away on Mayaguana Reef. He says it lies a mile and three-quarters farther out than the charts show. I previously considered that it did, a mile and a half. He has, I understand, determined the position of some points, in the Passage Islands, and found a spring-well on Heneaga; a matter of much importance under a tropical sun.

two miles to the eastward of the first; but the passage between them, made very narrow by the reefs on both sides, is not a mile wide, and is fit only for small craft."

**THE CAYCOS.**—The Caycos are an assemblage of several islands and islets, which inclose a white bank, some parts of which are very shallow, and others tolerably deep. There are four principal islands, viz. the *Grand Cayco*, the *North Cayco*, the *Northwest* or *Providence Cayco*, and the *Little* or *West Cayco*: These form a semi-circle from the east to the west, round by the north, and are terminated on the south part by a great bank, on which there is from 3 to 15 feet of water.

The northern part of these islands is bordered with a white shoal, on which is a reef, extending half a league from shore; at the N. E. part the white shoal extends outward a whole league; and, at its extremity, is a reef called *Basse St. Philippe*, or *St. Philip's Reef*, on which the sea breaks with violence. At a cable's length to the north and the east of this shoal, you will not have less than 7 fathoms. South of it the white bottom extends to the south, and approaches imperceptibly towards the shore; you find 4 or 6 fathoms between it and the shore, which, in an urgent case, leaves a sure passage.

From the south point of the *Little Cayco*, a chain of breakers extends to the east three leagues, after which they decrease, tending southward, to join a sandy islet called *French Key*. This is low, with some bushes on it, and bears from the south point of *Little Cayco* nearly E. S. E. five leagues. The reef from the *French Key* stretches to the south seven and a half leagues, to join another sandy islet, which has not more than 20 paces extent, and is entirely drowned at high water: all this part of the reef is bold, and, as the water breaks pretty strongly upon it, you readily see it; but, south of the sandy islet, there are no breakers, and you cannot have notice of the edge of the bank, but by the whiteness of the water.

From this sandy islet the bank sweeps a short league to the south, then to the S. E. six leagues, whence it trenches to the east five and a half leagues, and N. N. W. two and a half leagues to abreast of the southern islets, which is situated more than a league within the white water.

From the sandy islets, as far as abreast of the southern ones, the bank is very dangerous; you cannot see any land, and come suddenly from a sea without bottom into 2 or 3 fathoms. The colour of the water is the only thing that can warn you of the danger; and this is by no means certain, for navigators, accustomed to see on the surface of the water the shadow of clouds, which sometimes has the appearance of shoals, are often lulled into a fatal security. No motive then ought to induce you to approach this part of the bank, and you will do right to keep at a good distance.

If, after having been turned to windward several days in this neighbourhood, you have not seen the land, the safest way is never to cross the latitude  $21^{\circ}$  in the night, but to wait for day-light; then, should you perceive any change in the water, which indicates white grounds, without seeing either land or breakers, you may be sure you are on the western side; when you may steer N. W.  $\frac{1}{4}$  W. to fetch the *Little Cayco*, and go through the passage to leeward of these islands.

Should you see the southern islets bearing about north or N. W. you may stand on upon the white water, in from 7 to 12 fathoms; then make a tack or two to get to windward, and go through the *Turk's Island Passage*, which is to windward of the Caycos.

So soon as you see the southern islets, the bank is no longer dangerous, and you may go on it as far as one or one and a half league: south and S. W. of these islands you will not have less than 7 fathoms, and generally from 9 to 11.

The channel between the Caycos and *Turk's Islands* is six leagues across in the narrowest part: it is a good passage, and without any danger;\* you may come

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\* A shoal, called the *Swimmer Bank*, lies on the western side, as shown on the Chart. This shoal was discovered, some years since, by Mr. Cooper, master of the vessel *Speedwell*, and bears from *Grand Key*, S. W. by W. six and a half leagues. It is dangerous, and should not be approached without great caution.

within half a league of the Caycos, and on the eastern side of the islets without fear. Through this passage you may turn with great safety, and will not feel the current, if you do not come within one and a half league of the shore.

You will find an anchorage on the white shoals, near the south point of the Great Cayco, which may shelter ships that do not draw more than 15 or 16 feet: west of this point there is a fresh water lagoon.

The best anchorage for small vessels is to the west of the North Cayo, near the small Island of Pines, in the inlet which that island makes with Providence Island. Within the reefs that border that part of the coast, lies L'Anse à l'Eau, (Watering Bay) where you anchor in 3 fathoms, upon a white bottom: there is good water, and it is the watering-place of the Providenciers. You will discover the entrance of the bay, by coasting along the reef, from the rounding in of the coast, after passing the west point of the Three Maries and Booby Rocks. When you perceive a great extent of white water within the reef, you must send your boat to find the channel, and moor her in it, making use of your lead: and, if you want to get in, be not afraid of coming near the reef. When you are once within the reef, you may let go your anchor in 3 fathoms: you may go farther in, by towing or turning with caution: the entrance is not more than half a league or two miles from the shore.

At the N. W. point of Providence Key the reef terminates. There is anchorage off this coast in 8 or 10 fathoms, but you must range the shore pretty close to be on the White Shoals, bringing a steep hummock, seen a quarter of a league inland, to bear S. W. then you will see the shoal recede a little from the shore, and afford a large space for the turning of the ship. Four miles south of the N. W. point a reef commences from the coast, running S. W. westerly,  $2\frac{1}{2}$  leagues: this reef is terminated by a small sandy islet, almost under water.

From this sandy islet the reef runs in to the eastward, and afterwards trenches out to join the north part, off the Little Cayco, which is surrounded with white shoals.

The Little Cayco bears S. W. by S. from the N. W. point of Providence Cayco, which is of a middling height, and of a white colour; you may range along the N. W. part, close to the edge of the white grounds; the west part is very bold to the south point, where you may anchor in from 5 to 7 fathoms on the white bottom.

#### *Additional Remarks on the Caycos, &c. translated from the French.*

The Little Cayco extends N. N. E. and S. S. W. about 7 miles, being its whole length. You may anchor all along the western side, there being 4 or 5 fathoms water close to the land; but it is a hard bottom, and too near the shore. At the N. E. point is a bank of rocks, extending to the N. E. near a mile, on which the sea breaks; there are 2 and 3 fathoms close to it.

The length of the Little Cayco has been measured in a boat in a fresh breeze, and smooth water; the log hove frequently, and there was not any difference in the going and coming back, therefore it is probably very exact. This island is a low land, whose border is of sharp stones, which resound like a bell: it is the worst ground which can be seen; there are neither salt-pits, savannas, nor fresh water. On the north side, about 200 paces from the shore, there grow in the sand a few *Lataniers*, which always denote a bad ground: the inland parts are covered with bushes. There are some ponds with brackish water; and, as rain is not uncommon here, people who have the misfortune to be cast away on this isle may obtain fresh water.

By good observations, the latitude of the S. W. point is  $21^{\circ} 36'$ , longitude  $72^{\circ} 20'$ ; you may run along the south side, very close to it, upon the White Bank, in 5 or 6 fathoms, and no reef. When that point bears N. you have a full view of all the Caycos Bank. This elbow is a shelter against the North, for

there are 5 or 6 fathoms of water close to the breakers, which are very near the land.

Although the west side of the Little Cayco is quite clear of rocks, and there are 6 or 7 fathoms within musket-shot of the shore, so that you may anchor there, yet the best place to anchor (and which is most known) is under the N. W. point, rather within it, in 8 fathoms, sandy bottom; there you are sheltered from the easterly breezes. It is prudent, however, to have another anchor S. by W. in 14 fathoms, clear ground; this precaution will secure you against a sudden westerly wind; and by that, in case it should continue, you get easier under weigh.

The north side of the Little Cayco is covered by a reef, beginning off the N. W. point, and stretching as far as the Great Cayco. This reef is the only difficulty in the Passage between. It is nearly 4 leagues from the N. W. point of the Little Cayco to the N. W. point of the Great Cayco, and the reef extends along that space; that is, as far as the western point of the Great Cayco, which is about 2½ miles distant from the N. W. point of the island; to the southward of the last point is *Canoe Cove*, (*L'Anse au Canot*,) the only good anchorage in this western part, of which we shall speak hereafter.

On the west side of the reef there is a Little Key, called *Sand Key*, bearing north westerly, from the east part of the Little Cayco: it is very low, and has a reef on its north part. Many ships have been lost on it, by its not having been laid down in the Charts: for, after their running along the west side of the West Cayco, they have hauled to the eastward for the Providence Cayco; whereas, when you have run along the former about a league, you should make a N. by W. course, to give a birth to the Little Key, and the reef which stretches to the northward of it.

To the southward of the islet, between that and the reef, is a passage of about 1½ mile, to the Bank; without the islet are 10, 8 and 6 fathoms; in the middle, 4 fathoms, and within it, 3; but then you immediately come into 2 fathoms.

From Sandy Key, the reef runs N. N. E. 2 leagues, being bordered with white water, on which you have 10 fathoms, within musket-shot of the reef that joins the N. W. part of the Great Cayco, a little to the southward of Canoe Cove.

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#### *Particular observations on the Little Cayco, &c. from the Journal of the Emerald.*

"Being at noon, with the Hope, a small vessel, off the S. W. point of the Little or West Cayco, a mile from it, we ran along the west side, at that distance, and then made the Hope anchor in 7 fathoms, hard sand, within half a cable's length of the N. W. point. Seeing that the vessel drove, the bank being very steep and narrow, and the weather inclined to be squally, we preferred keeping under sail, and made several trips, keeping well in with the land, at one mile distance. Along the reef, on the west side, we landed very easily in some hollow places, filled with sand, and made by the sea in the sandy stones which compose the island: opposite these holes, at about three-quarters of a mile from the N. W. point, is the best anchoring.

"The west side of the Little Cayco runs N. by E. and S. by W. about five miles and a half. On this side is the anchoring, sheltered from the trade-winds: nearer the N. part, (which is nothing but a steep border of sand) at a cable's length, you anchor at about a pistol-shot from the shore, in 8 fathoms; at two ship's length, there are 15 fathoms; and at half a cable's length farther, there was no ground under the ship. If you want to stay there, the best way will be to have the outer anchor in 15 fathoms water, and to carry another on shore. There is no swell with the E. N. E. and E. S. E. breezes, however hard they may blow."

**CANOE COVE.**—This little bay is on the west side of Providence Cayco, and may be of great use, as there is water enough for all sorts of ships, sheltered



from the Norths, which you should always guard against in this Passage. The largest ships may anchor in 6 or 7 fathoms, on a sandy bottom, looking out for a clear ground, and here and there you will find it rocky. You are sheltered from the N. to the E. and to the S. E. by S. The anchoring is within the west point, which you bring to bear N. taking care not to come near the reef, which runs round this point for a quarter of a league; the reef ends there, and does not begin again till near two miles farther to leeward; then it must bear S. by W. from you.

From the north-west point of the Little Cayco to this cove, is N. N. W. 3½ leagues; but you must make a more westerly course, in order to avoid the reef and the Little Key already spoken of.

**WATERING BAY and PINE'S KEY.**—To the N. E. of the N. W. point of Providence Cayco, the coast forms a hight, the two points of which are five leagues asunder; between them is Watering Bay and Pine's Key.

At this anchoring you are sheltered from the N. E. to the S. S. W. passing by the East.

The greatest advantage of Pine's Key is a great lagoon of fresh water, sufficient for fifty ships: it is very drinkable, and not far from the beach.

The bottom is too white near the land, and in the Cove, for you to catch large fish with the seine; but you must go in a boat on the edge of the reef without; and you will succeed still better, if you sail over, with your lines afloat.

From the east part of Pine's Key you may descry all the islands and keys, which are scattered within the Cayco, from N. to S. E.

The following Remarks on the Caycos, &c. have been written by Captain Livingston:—

"The whole of the north side of the Caycos is bounded by a reef, through which, though there are various openings, they ought not to be attempted by a stranger without a pilot. Vessels ought not to near the land within a league and a half, in running down to the northward of the Caycos. Watering Bay is *extremely dangerous*, and is most incorrectly laid down in every chart I have seen. The Providence Caycos is bordered to the eastward, and northward, and westward, by as dangerous reefs as I ever saw; among which, if a vessel once gets embayed, it is next to impossible that she can escape. The American sloop of war Chippewa, the ship Aimwell, of London, and brig Messenger, Knuble, were all lost upon these reefs in 1816, within a few weeks of each other; and two days after the Aimwell was lost, a vessel narrowly escaped the same fate; to this I was an eye-witness, as I had observed the Aimwell on shore before dark, and laid too all night, with the view of rendering her assistance: and, when day-light came, I perceived a brigantine completely embayed; but those on board of her seemed to discover their error, and, profiting by the wind's being at the time off-shore, escaped.

"After rounding the north-west point of the Caycos, and bound to the southward through the Passage, having brought the N. W. point to bear E. or E. by N. you may run safely, even in the darkest night, steering at first S. W. ½ W. by compass, for 5 leagues, and then S. by W. till day-light. By these courses you will clear the elbow reef off Sand Key, between the Providenciers and Little Caycos, and at the same time, keep sufficiently to windward of the Heneaga and Bishop's Shoal.

The Caycoses are connected by a reef of coral rocks, and there is no danger of them in the day, as the white water shows itself. Vessels making the land about dark, should never attempt to run through this passage in the night, unless sure of their situation.

**TURK'S ISLAND PASSAGE.**—There are three principal islands, Grand Turk, Salt Key, and Sand Key; which they always make who go through the passage.

The western side of these islands is bold, and they may be approached very near, although there is a white shoal, with many rocky spots, which extends about a quarter of a league from the shore.

You may anchor in two places off the Grand Turk; one towards the middle of the island, opposite the huts, the other off the south part of the island; but neither

of them can be considered as good. You let go your anchor so soon as you are on the white ground, and take care to find out a clear bottom; as, in some places, the points of rocks rise to within 8 or 10 feet. After you have let go your anchor, and veered to half a cable under your stern, you will not get any ground. Off the south part of the island the anchorage is of more extent, and you will find, on the point near which you anchor, a lagoon of water that may serve for cattle. The white shoal S. W. of Sand Key decreases gradually to 5 fathoms, half a league from the shore.

East of these islands are several islets, which are connected by white grounds, with very little water on them: they are bold on the east side, and surrounded with a white ground that extends to the southward and S. W.

### *Particular description of Turk's Islands.*

Sand Key is one mile long; and, in fine weather, may be seen three leagues off: when you are to the southward of it, you would take it for two islands, its middle part being a low drowned land. On the west side are 7 or 8 fathoms, upon the bank which borders the key at the distance of three leagues, and joins a reef that extends a mile from the north point of it.

The south point has, at about two cable's length, three rocks close to each other, by which it may be known; but, to have them open and clear of the land, you must not be far off, nor bring them to the eastward of N. E.

The most certain mark by which you may know Sand Key is, that from the N. E. and the W. N. W. you will see no other island, and the sand upon it is quite white in the sun. The anchorage is only known by the white water, from 6 to 4 fathoms, within swivel shot of it; but ships which draw much water must anchor about half a mile off, bringing the south point to bear S. E. and the middle of it from east to E. by N.; the north rocks there cover you as far as N. N. E. and you may easily get under weigh with any wind; as the norths, which are most to be feared, blow only along the coast, so that the west side may be reckoned a good roadstead. A ship which may, by some accident, have been prevented from sailing through the Passage, would find good shelter here, and might, without difficulty, wait for a more favourable wind. The reef, on the north part of the key, stretches from it north, a little westerly, a long mile, when it makes a little hook to the S. W. but breaks every where, and within pistol-shot there are 8 fathoms; though you must not come so near on the other parts of the island, for here and there are some rocks, which have only two fathoms water upon them. The east side has high breakers quite to the shore.

Sand Key is low and barren, being burnt by the sun, and continually beaten by the winds and the sea: it produces some small bushes only.

### *Remarks upon Sand Key, made on board the Emerald, a French Frigate.*

Sand Key may be seen about 3 leagues off; it makes at first like three islands, being formed of two little hillocks, and a rock known by the name of the Split Rock, though there is water knee-deep between it and the key. This rock serves to distinguish Sand Key, over which it is probable that the sea breaks in all the norths, and other impetuous winds, for it is very low; you may easily land upon it under the hillock, where there was formerly a pyramid.

This key is scarcely more than 1300 geometrical paces (of 5 feet each) long. From the south end the reef runs off three-quarters of a mile S. and S. by W. at the end of which are three rocks, which always break and show themselves. The hillock on the south part is joined to that of the middle part by a low land, which looks like a savanna; and from that to the west point the land is also very low and even: you cannot land here, nor must you anchor near this part, but towards the south where all the dangers show themselves. From the N. W. point is a reef to the N. by W.—N. N. W. more than 2 miles; and, about a swivel-shot from the end of this reef, is a large rock always above water; three-quarters of

a mile from which you have 6 fathoms rocky ground. You cannot land at the east side, which is surrounded with rocks. The anchorage may be made very convenient, by carrying an anchor with two or three hawsers to the westward, and then you would clear the island with every wind. But in the months of May and June, you had better anchor about a mile or a mile and a half off, to be less exposed to the swell sent in by the S. E. breeze, which is generally violent.

To the south-westward of Sand Key lies the ENDYMION REEF or Shoal, upon which the British ship Endymion, commanded by Lieutenant Woodriff, was lost in 1790. The following remarks upon this danger were obligingly communicated by the commander himself.

The danger of this shoal is but of small extent: it consists of seven or eight heads of rocks, one of which has only  $8\frac{1}{2}$  feet of water; and this is the rock whereon the British ship Endymion was wrecked, on the 28th of August, 1790, and till then undiscovered. Some of the rocks have 2, 3, and 4, fathoms on them, and between them 7, 8, and 9, fathoms of water. The exact soundings between the key and the shoal could not be ascertained, by reason of the blowing weather, and from want of time. There are some rocks which lie off to the eastward of the south end of Sand Key; two of them appear above water, and two others are even with it. The reef, from the north end of the key, stretches off to the northward  $1\frac{1}{2}$  or 2 miles, and has some rocks out of the water. The channel between the shoal and the key appears to be clear and spacious.

"The north part of Sand Key lies from the Endymion, when aground N. N. E. and the south part N. E. about 7 miles distant. The rocks extended about a cable's length from the ship, which lay on the eastern and shoalest part."

South-west of Sand Key is a white shoal, extending about  $3\frac{1}{2}$  miles from shore, on which may be found from 7 to 9 fathoms.

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#### *Description of Salt Key, or the Little Turk.*

When you leave Sand Key, and steer for Salt Key, you must make a north course along the reef, which runs off more than one mile; on these bearings from you, you come almost within a stone's throw of it; for at that distance, there are 8 fathoms. Having gotten round the head of it, you are to make a N. N. E. course to the Little Turk, which you may then see; and you will lose the soundings so soon as you have brought the reef any thing to the southward of you. It is two leagues from the reef to the N. W. point of the Salt Key, near which you may anchor: but the bank is very steep; for, when your anchor is gone in 5 fathoms, within musket-shot of the shore, you will find the ship in 20 fathoms, and no ground a very little way astern. You bring one point N. N. E. or N. E. by N., and the other point S. by W. or S. S. W.; you must look for clear ground, or you will have your cable cut with the rocks. These places are fit only when the trade-wind is settled; for you must not be caught here with any other.

Salt Key is N. by E. from Sand Key, and lies N. by E. like the two others; it is of a triangular form, its length something more than three miles: it is higher than Sand Key, and you will see here and there some little risings or hillocks, and a great many bushes and small trees, fit only for fire-wood.

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#### *Description of the Grand Key, or Grand Turk.*

Having advanced to the north point of Salt Key, you will see the Great Key bearing N. N. E.  $2\frac{1}{2}$  leagues: so soon as you are clear of the reefs, which stretch off from the Little Turk, two cables' length, it will be found that the bank continues from this, N. E. by N. to the south point of the Great Key, for which you should make a N. N. E. course, though you might run along the west edge of the bank in 4 fathoms, or might indeed anchor upon it, as you would be sheltered

from the trade-wind by the bank and its keys. You must, however, be cautious, in steering N. E. of a reef that runs off from Cotton Key W. by N. seldom showing itself in moderate weather, and stretching as far as the South Point of the Great Key.

If you mean to anchor on the west side, which is much like that of Salt Key, (though not so good as at Sand Key) you had better keep along the Bank, lest you get too far to the leeward, and haul in west from an hillock, which may be plainly distinguished when nearly in: the bank is very steep, and looks shoal; but you will find 4 or 5 fathoms water very close to the land. You must, however, stand in only upon white water, till you bring English Point E. by N.; off that point are some breakers quite close to the shore, and there is shoal-water. When the before-mentioned hillocks bear E. by S. you may anchor within half a cable's length of the island, looking out for clear ground; English Point will then bear North, and the South Point S. E. your anchor will be in 4 or 5 fathoms, the ship in 9 or 10, and her stern in 20, 25, or perhaps no ground to be found. It will be prudent in staying here to observe when the trade-wind dies, for you have very little room to turn; you should also always buoy your cables, for the sandy bottom is full of large stones, among which, cables and anchors have often been lost.

The vessels which load salt generally anchor to the northward of English Point, that being nearer to the Salt Pond; but neither the shelter nor the ground are so good as at the other place. No passage is to be found to the southward of this island, but for a boat; as there is a reef, which is a branch of that surrounding the weather side of these keys and banks. The Great Key has the best ground of the three islands.

Of the two Salt Ponds which are on the key, one only furnishes salt; it is about 4200 yards wide, and its middling breadth above 200. It produces three times as much as the pond of Salt Key; but the grain of the salt is coarser, and not so bright as that of the latter.

The latitude of the Grand Turk, by a very accurate astronomical observation, is  $21^{\circ} 26' 42''$ .

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#### *Remarks on the rest of the Keys which are upon the Turk's Islands Bank.*

To the windward of the Turk's Islands (that is to say, to the eastward) are several little barren keys. The northernmost of these are three rocks, called the Twins; they lie three-quarters of a mile east from the south part of the Great Key, and are very nearly together. S. E. one mile from these is Pelican's Key, lying north and south, about three-quarters of a mile long, and very narrow. Bird Key, which is larger, is about  $2\frac{1}{2}$  miles in the same line. A reef, with great breakers, runs from one to the other of these keys, ending at another small one, called Breeches Key, which has two rocks at the south end, and is close to the S. E. of Bird Key. To the southward of these you might come in upon the bank, there being from 10 to 6 fathoms of water. Between the N. E. point of Salt Key and Bird Key is another, called Cotton Key; it lies nearly south from the Great Key,  $4\frac{1}{2}$  miles, and is the largest of all.

**SQUARE HANDKERCHIEF.**—This shoal is very dangerous and extensive. On the northwest edge there is a key, on which you find but 8 or 10 feet. From this shoal the bottom runs E. by N. seven leagues, to a rocky spot, where the water breaks with great violence. It is natural to suppose that all this interval is full of sunken keys, which render its approach very dangerous; on the S. and S. W. parts the grounds give warning, and you will find from 10 to 15 fathoms; however, the best way is to bear up, and pass to leeward, unless, being on the eastern edge, you perceive the end of the white grounds, and can weather them the next tack.

Having entered, on the third of June, 1785, at six o'clock in the morning, the

white grounds of the Square Handkerchief, on the S. W. edge, we found from 11 to 14 fathoms, smooth coral bottom. Stood to the N. N. E. at 50 minutes after seven; sounded in 14 fathoms; saw ahead, and a little to windward, a bottom, which appeared nearer the surface: we bore up, but too late, for the vessel was stranded on a key in 9 feet of water. This may show how dangerous it would be to run on these grounds. Close to the N. W. edge of this key, we could not get bottom in 40 fathoms. This key lies in the latitude of  $20^{\circ} 58' 40''$ , and longitude  $70^{\circ} 37'$ .

**THE SILVER KEY BANK.**—This shoal has more extent than the Square Handkerchief; the southern point is in the latitude of  $20^{\circ} 13'$ , and the northernmost part in  $20^{\circ} 32'$ . It is very white ground in many places, especially in the north part, and very brown in the south and S. E. parts.

The north and N. N. W. parts have some keys, with no more than 8 or 9 feet of water, and perhaps less; but it appears that these keys are not exactly on the edge. The master of a schooner, drawing 9 feet of water, found himself ashore on the Silver Keys, in coming down, after he had run near a mile S. W. on very white grounds. The east, or rather the N. E. edge is very dangerous. In this part there are three keys within a cable's length of the edge, which have not more than 10 or 12 feet of water.

The east part of the Silver Keys was explored and sounded in 1753, by Mons. Le Compte de Kerusoret, who, at that time, commanded the king's ship *l'Emérande*: in following the details of his route, and trying his longitude, soundings, bearings, &c. I found them to agree so well, that nothing remains to desire on the exact position of the eastern part of this shoal. The western side is safe, and there is a great depth of water; but at about one and a half league on the eastern side the bottom decreases, and you see shoals in the N. E. which rise very near the surface.

Ships ought never to venture within any part of the white grounds, because they may often fall from 14 fathoms to 10 feet: if, by accident, they find themselves in the middle of them, the best way is to tack, and go out the same way they came in, ranging along the grounds.

The Silver Key is eleven leagues long, east and west, and seven leagues broad, north and south, in the greatest dimension: the westernmost part lies north and south from Old Cape François.

You experience on the edges of the shoals weak currents, which generally follow the directions of those edges. On the Square Handkerchief they are scarcely felt; on the S. E. part of the Silver Keys you find them setting to the west and N. W. but a short league from the grounds their effect is not perceivable.

In general you ought not to mind, in your reckoning, the weak currents which exist in these passages, they being no where to be feared.

**THE BANK-BLINK** of the CAYCOS and BAHAMAS.—In a letter, dated September 30, 1819, Captain Livingston asks, "Has Mr. De Mayne taken any notice of the Bank-blink? I name this from the ICE-BLINK, to which, I presume, it bears a resemblance.\* On the Caycos Bank I have seen it very distinctly in a dark night. On the Bahama Banks I have not had the same opportunity of observing it distinctly, though I have, also, noticed it there. Once, on approaching the Caycos, when coming from the United States, I saw it appearing extremely beautiful, during sun-shine, and consider it as arising from the rays of light reflected by the white sand of the banks in day-light, and the reflection of the white sandy bottom on the atmosphere at night."

Another voyager, on passing over the Great Bank, has made similar remarks on the reflection of light from the white sand of the bank to the atmosphere. His words are, "It was a novel situation to behold an expanse of sea, unbounded by any land, and the bottom, at the same time, distinctly visible at the depth of a few feet, although the day was cloudless, and the atmosphere uncommonly

\* The Ice-blink is an effulgence or reflection of light, seen over the congregated ices, and even about individual ice-bergs. It enables the mariner to distinguish them at some distance, even in the darkest night.



pure, the azure of the horizontal sky seemed flushed with an infusion of pink colour, producing an effect as beautiful as it was singular. We now drew near to New Providence."—*M'Kinnon's West Indies*, 1804.

In allusion to this passage, Captain Livingston says, "There was a *greenish* rather than a pink tinge thrown up over the Caycos Bank; at the time I most particularly remarked it. Some of the fainter hues of the rainbow come the nearest to its appearance at that time."

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### Tides and Currents between Watling's Island and New Providence.

The tides or currents between Watling's Island and the Hole-in-the-wall are generally found to set to the S. W. About Egg Island they set in various directions. Off Douglas Rocks, New Providence, the tide runs very regular; and at the entrance of the New Anchorage it flows, on the full and change, at 8h. 30m. The flood sets to the N. E. and very strong between the rocks. The vertical rise of a spring-tide is 4 feet. In the passage between Egg Island and Nassau, the stream has been found to set at the rate of 4½ knots; the flood setting east, and running strongly over the reefs. Near Egg Island the current is very uncertain; great attention should here be paid to the lead.

The stream sets strongly over the Egg Island Reef, when the wind is from N. W. The flood sets very strongly between the rocks to N. W.

The tide about the Berry Islands rises 2 feet higher when the sun advances to northward of the line, than it does when it is to the southward. The flood sets strongly over the bank, and the ebb over the bar. In the N. W. Channel of Providence, the current generally runs to the eastward two miles in an hour.

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### The Caycos and Mayaguana Passages.

The Caycos Passage is that which lies between Mayaguana and the Caycos. The first of these isles have been described in page 185; the latter, in pages 186 to 189. Of this Passage Captain Livingston has said, "For vessels bound from North America to Jamaica, I consider the Caycos Passage preferable to that of Turk's Islands, which has been commonly used; because, if you can only distinctly make out the N. W. point of the Caycos, and bring it to bear E. or E. by N. however dark the night may be, you may run safely, steering at first S. W. ¼ W. by compass, 5 leagues, and then S. by W. till day-light; by which courses you run no risk, either from the Caycos Reefs or the Heneagua; and, however fast your vessel may sail, you have more distance than you can run in one night before you can make Hayti or St. Domingo. By steering this course, or rather these courses, you also avoid all danger of being dragged by a lee current down upon the coast of Cuba."

We have already shown, in the description of the Caycos, page 186, that nothing short of a S. W. ¼ W. course will take you in safety clear of the elbow of the rocky reef abreast of the Sandy Key.

The Caycos Passage is also recommended as the best passage for ships bound from Cape Haytien, formerly Cape Francois, when the winds are not steady from the E. S. E. You will always go with a large wind, which is of great advantage; and will avoid all the white grounds to the S. E. of the Caycos, which it has been customary to make. This custom of coming to the white grounds is very dangerous; but there is no risk in making the land some leagues to leeward of the Little Cayco.

*In leaving the Cape*, you must steer a N. by W. course; and after having thus run 35 leagues, you will find yourself 2½ leagues S. W. of the Little Cayco; then you may haul your wind, first as high as north only, on account of the reefs of Sandy Key, which lies to the north of the Little Cayco; after which you may

steer N. by E. 5 or 8 leagues, when you may haul up N. E. or continue to steer north without any fear. Having run 10 or 12 leagues on this course, you will be out of the Passage.

*If, when you are two leagues S. W. of the Little Cayco,* the winds do not permit you to steer N. by E. or to make good a north course, after having run 18 leagues, without getting sight of Mayaguana, the best way, if night comes on, is to tack and stand to the S. E. 3 or 4 leagues; then tack again to the north, and you will weather, by 3 or 4 leagues, the breakers off the east point of Mayaguana.

*If, when you are to the S. W. of the Little Cayco,* two or three leagues, and the wind will not suffer you to lay north, you must not attempt to go to windward of Mayaguana, but must fetch the channel between it and the French Keys. [See page 185.] You steer for it N. W.  $\frac{1}{2}$  N. Having run 18 leagues, you will come in sight of the S. W. point of Mayaguana, which ought to be north of you, two leagues distant: you do not run any risk in approaching this point, which is safe. A small white shoal extends from it, with three fathoms water on it, almost close to the shore.\*

When you have doubled the west end of Mayaguana, so as to bring it to bear East, you may, if the wind permits, steer N. In that case you will pass 4 or 5 leagues to the windward of Atwood's Key; but, if your course is not better than N. by W. after having run on 12 or 13 leagues, and the night comes on before you can see that island, tack, and stand on for 5 or 6 leagues. Then, if you can make good a N. by W. course on the other tack, you will weather the eastern breakers of Atwood's Key, at about 3 leagues. Should you be 2 leagues from the west point of Mayaguana, and the wind will permit you to make a course only N. N. W. after having run thus 6 leagues, you will see the French Keys, bearing nearly W. N. W. 2 leagues. You may pass to windward or to leeward of them, as the wind may admit. When you are 2 leagues N. N. W. or N. W. by N. from them, upon running in that direction, 12 or 13 leagues, you will be out of the passage. You must not go in the least to the northward of this course, as the breakers off the west point of Atwood's Key bear nearly N. N. W. from the westernmost of the French Keys.

The French Keys are very low; they bear from the S. W. point of Mayaguana N. W.  $\frac{1}{2}$  N. 8 leagues. You may go pretty close on the east, north and south sides: the white bottom, which encloses them, being pretty steep. On the N. W. of the large island, the reef running out some little way, it is necessary to give it a good birth. You may anchor in the S. W. part on the white bottom, but very close to the shore. There is a small lagoon of fresh water, supplied entirely by the rain. The isles have been described in page 185.

On leaving Cape Haytien, you will generally find the wind at S. E. or E. S. E. and near the shore the current runs to windward: these are two powerful inducements to engage you to steer N. E. or N. N. E. for the Turk's Island Passage: but, at about 10 or 11 o'clock, the wind generally chops round to the E. N. E. or N. E. Being then 5 or 6 leagues from the coast, and the current no longer felt, you would necessarily make the white grounds to the southward of the Caycos. This circumstance has caused many shipwrecks, merely from the eagerness of going 20 leagues to windward, in a voyage of perhaps 1500 leagues. Under these circumstances, I would advise mariners from the Cape to steer at once for the Little Cayco.

### The Turk's Island Passage.

This passage is very short and good; but you cannot always be sure of fetching it from Cape Haytien. You ought to steer N. E.  $\frac{1}{2}$  E. and the wind often

\* The *Ciudad Reef*, which lies to the westward of the Caycos Passage, has been noticed in page 185. It lies in a direct line between Little Heneagua and the east end of Mayaguana.

will not admit running so much to the eastward; it is therefore recommended, in leaving the cape, to keep the wind as close as you can, with the early breeze, and tack so as to fetch the Grange before night. You will generally bring it to bear S. E. or S. S. E. If the ship sails well, or has been favoured by the breeze, you may bring it to bear S.\* whence, making good a N. N. E. course, you need not tack until you have run 18 or 19 leagues. If your last course should not have been better than N. by E. or N. you must be particularly cautious not to pass the latitude of  $21^{\circ}$ . In the night, when you think that you are near that latitude, be sure to sound; and the moment you have bottom, about-ship, and stand the other way till morning, when you may again tack, and fetch to windward of the white shoals of the Caycos.

The white bottom is very readily seen: you may run on the edge of the bank to the southward of the Southern Keys, for a league, or perhaps a league and a half, in from 7 to 14 fathoms; but farther on there are rocks, with 3 fathoms at the most on them. In the day-time you may stand on to the northward, (supposing that you have not seen the land,) and you will descry the Southern Keys of the Caycos; or, if farther to windward, Sandy Key. You must be careful not to go to leeward of the white shoals which extend south of a small sandy islet, which is entirely drowned at high water. It is very difficult to be seen, and your lead even cannot give you warning, as you fall suddenly into 3 fathoms.

To the southwestward of Sandy Key lies the Endymion Reef or Shoal, which has been described in page 191.

When you have Sand Key bearing East, at the distance of 2, 3 or 4 leagues, steering N. by E. or N. N. E. 8 or 10 leagues, will entirely clear you of the passage. In going through, keep the Turk's Islands side on board, in order to avoid the reefs of St. Philip, which extend from the N. E. point of the Grand Cayco.†

### Crooked Island Passage.

Of the Crooked Island Passage, the Count Chastenot de Puysegur says, this is the longest of these passages, but it is far the most convenient for ships coming out of the bay of Gonaives, or from the southern ports of Hayti, and for those which are bound to the United States. These commonly take their departure from Cape St. Nicholas; and being 2 leagues from the Cape in the offing, must steer N. by W. 23 leagues, to make the S. W. point of Great Heneagua. This course will generally lead 2 leagues to the westward of the point.

Great Heneagua has already been described in pages 183 and 184. The Hogsties and Brown's Shoal, in page 183. The Mira-por-vos and Hobart's Breakers, in pages 182 and 183.

When you are opposite the west point of Great Heneagua, at 2 leagues off, steer N. N. W.  $20^{\circ}$  or  $30^{\circ}$  W. for twenty-five leagues, when you will make Castle Isle, which you may approach within two miles, or nearer, without fear. If you should depart from Heneagua in the evening, it would be better to steer N. W. † N. for 17 leagues, to avoid the *Hogsties*; then to haul up, and make a good N. by W. course; when, having run 8 leagues, you would be one league to the westward of Castle Island.‡

Should you make Heneagua toward noon or afternoon, it will be best to drop anchor in the N. W. or Great Bay, and get under way at midnight, or two in

\* On approaching the Grange, be cautious in respect to the reefs, after described.

† The *Swimmer Bank*, which lies on the western side of this passage, is described in page 186.

‡ The Hobart Breakers lie about 3 leagues to the S. W. of the Castle Island, as shown in page 183.

the morning, according to the strength of the breeze, and steer N. W.  $\frac{1}{2}$  N. until you have run sixteen or seventeen leagues; then haul up N. N. W. or N. by W. when there will be daylight for any thing through the rest of the passage. But should there be light baffling winds in the night, with probably a weather current, keep the lead going, and you will avoid the Hogsties; as, in advancing towards them, there will be found soundings of 50 to 30 and 20 fathoms.

*From the west end of Castle Isle* you steer north or N. by W. seven and a half leagues, to make the west end of Long Key. This course and distance will lead within a league of it. Continue in the same direction to make Bird Rock, off the western extreme of Crooked Island. Having thus run six leagues, you will be one and a half league west of this islet; so that the direct course from Castle Isle to the end of the passage, is N.  $5^{\circ}$  W. fourteen leagues.

When you are come to this place, you suppose yourself out of the passage; nevertheless, should the wind happen to the N. E. or E. N. E. you have to fear Watling's Island, which bears from Bird Island N.  $40^{\circ}$  W. true, twenty-three leagues; therefore, to avoid it, you ought, in leaving the passage, to keep as much to the eastward as the wind will permit; but, should the wind be at S. E. and you steer at N. E. you would make Atwood's Key; so that, keeping the wind when you are out, you must observe not to steer higher to the eastward than N. E. nor more to leeward than N. by E.

**CURRENTS.**—You have little occasion to fear the currents in this passage, which, in a fresh breeze, are scarcely perceptible; but, in calms and light winds, they may set you to the westward, but slowly and so feebly, that in a passage so short you need not to mind them, especially as you generally make it with a large wind. Nevertheless, in the months of June, July, and August, when calms or light westerly winds are common, you may experience a current setting to the west strong enough to alter your course; which effect only can happen in this passage, and is occasioned by the proximity of the extensive shoals forming the channel of Bahama and those of Providence Island. In this season it would be proper, if you have not wind sufficient to make you go more than two knots an hour, to allow a quarter of a mile per hour for the current setting to the westward; if you go three knots and upwards, this allowance will be unnecessary.

#### *Directions for sailing from Jamaica, through the Windward Channel and Crooked Island Passage.*

To those who are bound from Jamaica to Europe, or any part to the north-eastward; it is recommended, if possible, to take the Crooked Island Passage in preference to any other. From Point Morant, Jamaica, you should endeavour to gain easting as soon as possible; and, by taking advantage of the wind's shifting from N. N. E. to east, which it generally does in the night, you will gain ground very fast; and, by working up under Cape Dame Marie, on Hayti, you will avoid a strong set to the S. W. caused by the trade-wind.

There is found, however, at times, great difficulty in working around Cape Maize, owing to the strong lee-current, which generally prevails with a strong N. N. E. wind, particularly in the months of January, February, March, and April, during which months the strong northerly winds prevail. This current is found to run strongest between Cape Maize and Cape Dame Marie (or Donna Maria); the stream occupying a space in breadth equal to the distance between the contracting points, and runs at the rate of two knots in an hour, setting, during the strong N. E. winds, to the S. W. between the N. E. end of Jamaica and the Morant Keys.

Some commanders, after clearing the east end of Jamaica, have stood over to the Cuba shore, in order to round Cape Maize; but they, also, have found a strong lee current; and having little or no land-wind to assist them in working along the south side of that land, in the months above mentioned, they have, at last, been obliged to bear up for the Gulf Passage.

It is to be understood that the following directions are not intended as a standing rule for working, at all times, around Cape Maize. In the fine season there are variable winds, and the current is sometimes in your favour, of which every advantage should be taken, according to circumstances.

In sailing between Cape Maize and Cape St. Nicholas, the *Montagnes de la Hotte*, or Grand Anse Mountains, (the westernmost high land of Hayti) are often seen. They may be descried at the distance of thirty or forty leagues; and by their situation and bearing, become a good guide in working up the Windward Channel.

In sailing from Port Royal to windward, and finding a strong lee current against you, stand well out, and work in the stream of the Morant Keys, endeavouring to get to the eastward of those keys as soon as possible. The Morant Keys are by no means dangerous; as they can, at all times of the day, be seen at a sufficient distance to avoid the danger that surrounds them: under the N. W. side is anchorage.

Having made the Morant Keys, stand well to the eastward, and keep working, in a direct line, for the highland over Point Boucan, which is to the E. S. E. of Cape Tiburon; and, by not standing farther to the westward than with Cape Tiburon bearing N. E. you will avoid the stream of the current, and gain ground very fast. When you have advanced as far to the northward as  $17^{\circ} 40'$ , you will sometimes meet with a counter current, and it frequently happens, particularly in the night, that squalls are met with from the southward, which are caused by the high lands of Hayti. In this case, keep well to the eastward of the Isle Navaza, between it and Cape Tiburon. With frequent flaws of wind in your favour, endeavour to get close under Cape Tiburon, and keep working along that shore, which is very bold, to Cape Dame Marie; and, by not standing farther off shore than seven or eight miles, you find a very little current.\*

In the channel between Cape Nicholas and Cape Maize, the current sets with great strength, particularly on the Cuba side, where it, however, varies with the seasons. It is, therefore, necessary to work up for Cape Nicholas, before you attempt to weather Cape Maize; and, by keeping within the line of Cape Nicholas and Cape Dame Marie, you will work to windward very fast. When Cape Maize is brought to the westward of north, you may venture to stand across the channel to the northward, and you will, generally, as you stand over, find the wind more easterly. Fetch over to the Great Heneaga, as that island should always be made if possible. (See the description, page 183.)

In proceeding from off Cape Maize for the Crooked Island Passage, make the land of Heneaga, if it be possible, as short departures are best in navigating amongst these islands, particularly as the currents are found in various directions.

On proceeding from Great Heneaga to Castle Island, you should leave Heneaga so as to allow sufficient time for entering the Crooked Island Passage before dark; or in the evening, so as to arrive there by day-light in the morning. The latter is generally preferred. The course from Great Heneaga to Castle Island is N. W. by N.

Having entered between Castle Island and the Mira-por-voa, the course to Long Key is N. by W.  $\frac{1}{2}$  W. seven or eight leagues. Towards the northern end of Long Key is a rise of land, with a flag-staff on the summit. In advancing toward this place, you will perceive the sandy point, called the *French Wells*, off which there is good anchorage for men of war, in 7 fathoms, about two miles from shore.

From abreast of Fish Keys to the Bird Rock, off the N. W. point of Crooked Island, the course and distance are north, eight and a half leagues. You may run along shore, there being no danger but what may be seen in the day. The Bird Rock lies in latitude  $22^{\circ} 48' 50''$ , longitude  $74^{\circ} 19' 25''$ .

When you get abreast of this key, you may with safety haul up N. E. if the

\* It has, however, been observed that, by keeping too close in with the land about the S.W. end of Hayti, you may be becalmed for a month.



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wind permits, to go clear of Watling's Island. It is very dangerous to approach Watling's Isle in little wind or calms, the current setting wholly on it; as it is very rocky and steep-to, there would be no possibility of saving the ship. Captain Hester observes, in his Journals, that it had been remarked of late years, by those who have passed both ways through the Crooked Island Passage, that in going to the northward you can seldom clear Watling's Island, after you are past Crooked Island, without beating to windward; and going to the southward, after you are past the Mira-por-vos and the Hogsties, it is difficult weathering or rounding Cape Maize.

It appears, from the preceding remark, that the safest passage may generally be made to the westward of Watling's Island. The course, by compass, from the Bird Rock to this island is N.  $\frac{1}{4}$  W. distance twenty-three leagues, and to Rum Key, N. W. by N. nineteen leagues. The current hereabout generally sets to the westward.

On leaving the Bird Rock, when bound for New Providence, it is best to make Watling's Island, proceeding along the west side of that island, or between it and Rum Key, for a good departure. You must be careful not to approach the little island called *Conception Island*, because a long and dangerous reef extends in a N. N. E. direction from that Island, above seven miles, as already shown in page 180.

[The Crooked Islands have been described in pages 180, 181; Watland's Island, and Guanahani or Cat Island, in page 179; Rum Key, and Atwood's Key in page 180.]

### The Silver Key Passage.

Should you, by any circumstances, be forced to go from Cape Haytien, through the passage between the Square Handkerchief and the Silver Keys, you must, at the departure, make your course good N. E. by E. and E. N. E. If the winds suffer you to steer that course, you would pass in the mid-channel; but if you are forced to turn, and should not get sight of the Haytien shore, after you have once got into the longitude of 70° 20', you must not pass the latitude of 20° 25', without frequently heaving the lead. If you come as far as 20° 35', without getting ground, you have nothing to fear from the Silver Keys, and must only look out for the Square Handkerchief, which is not dangerous on the south, the bottom giving you notice in 10 and 15 fathoms. In the latter case, continue to get to the north-eastward; and when you come into the latitude of 21° 20' N. you will be entirely out of the Passage.

*Additional remarks on the Coasts, Isles, &c. which form the Windward Passages; by several French and English Navigators.*

### Directions for going through the Caycos Passage, &c. by Capt. Hester.

After having cleared the east end of Jamaica, says the Captain, I would endeavour to get to the eastward as fast as possible, taking every advantage of wind. In so doing, when advanced to Cape Nicholas, I would prefer the beating up as high as the island of Tortue, (or Tortuga, or Turtle Island) and take my departure for the Caycos Passage, thinking it less tedious and difficult than the passage by Crooked Island.

From the Mole to the west end of Tortue, in latitude 20° 5' 20", the course is N. E. by E. about eleven leagues. It is all a bold clear shore, giving it two or three miles birth. The N. E. part is foul three or four miles, but from that part down to the west end it is bold; and the west end is as steep as a house-side. When the high hill, which is seen over Port Paix, bears S. W. by S. then the east end of the island is between you and it.

From off the middle of the Island Tortue, to go between Heneaga and the Caycos, take your departure in the evening, steering north by compass, taking care not to run more than eighteen leagues at the most before daylight, with the distance off from it included, at taking your departure; when, if you see nothing of the east end of Great Heneaga, continue your course for seven or eight leagues, and you will not fail of seeing the Little Caycos, or Little Heneaga.

You may borrow near to the Caycos, and haul your wind to N. E. which will clear you of Mayaguana, and its reef, the outer point of which lies in latitude  $22^{\circ} 20'$ , then you are in the open ocean, clear of every thing.

If you find a leeward current, or a scant wind, between Heneaga and the West Cayco, so that you cannot weather Mayaguana and its reef, you may bear up and sail under the lee or west end of Mayaguana, there being no danger but what you may see, to sail between Mayaguana and the French Keys, which is a wide and fair channel.\* Then you haul your wind to windward of Atwood's Key, which lies in latitude of  $23^{\circ} 11'$ . In going through either of these passages, there is a greater advantage gained, with less trouble, and sooner, than by Crooked Island Passage.† Though I think that, in time of war, it would be very tedious and difficult to attempt any of them with a convoy: not only because you are infallibly exposed to be annoyed by cruizers and privateers, but also because of the almost impossibility of keeping a number of vessels together in these narrow channels. As for the Turks' Island Passage, in sailing to the northward, I would not offer to mention it, looking upon it to be both tedious and hazardous; but in coming from the northward, it is, in my opinion, a very easy, safe, and expeditious, passage.

#### *On Mayaguana and Atwood's Key passage; translated from the French.*

This passage may be very useful and convenient:

1. For ships intended for Crooked Island Passage, and meeting, after they are past Heneaga, with the wind at North, N. N. W., or N. W.; then, not being able to sail up to Castle Island, they are obliged to sail to the southward of these islands, going along the Planas or French Keys, and between Mayaguana and Atwood's Key.

2. For those intending to go through the Caycos Passage; who, when advanced to the West Caycos, if the wind is at N. N. E. would be obliged to sail to the southward of Mayaguana, and to pass between this island and Atwood's Key.

3. When they are about passing between the two islands, if the N. N. E. wind is too near, they may advance westward, and sail between Atwood's Key and the Crooked Islands.

It is therefore of great importance that you should be acquainted with the dangers, and also with the places where you may anchor about these islands. If, in going for Crooked Island Passage, the wind obliges you to pass to the southward of the Crooked Islands and the French Keys, it is usual to sail mid-channel, between the Hogsties (of which see page 183,) and Castle Island, from which they are distant 11 leagues, and then make the Planas, which are in latitude  $22^{\circ} 43'$ , or thereabout. They bear N. by E. from the Hogsties, about 20 leagues, and lie 5 leagues to the eastward of the N. E. point of Crooked Islands. You may safely pass them and the latter, keeping mid-channel, or rather over to the French Keys; for, in case of necessity, you may anchor on the west side of the largest of them.

\* But see the description of the Ciudadado Reef, page 185. This reef lies with the S. W. point of Mayaguana bearing by compass N. N. W.  $\frac{1}{4}$  W. distant ten and a half leagues, and the S. E. point of the same nearly N. N. E. nine leagues.

† This is very different from the opinion of Mr. De Mayne, and other modern navigators, as shown in the preceding directions.

*Passage between Crooked Islands and Atwood's Key.*

Those who are obliged to pass to the westward of the French Keys, may go between Crooked Island and Atwood's Key, which is a very good passage, 5 leagues wide. After having the French Keys about a league to the eastward of you, make your course N. N. E. a little eastwardly, 10 leagues; you will then get sight of the East point of Atwood's Key, which you must not approach nearer than 4 or 5 miles; but, having brought it S. W. from you, 2 or 3 leagues, there is nothing to be feared.

It is necessary to observe that the Norths in this passage are very dangerous winds, and may throw you upon the reefs, which border all the banks on the east side of the Crooked Islands: this happened to the French man of war, the *Orox*, in 1736, which was very near being wrecked, and was obliged to anchor close to them in foul ground.

Being in sight of the French Keys, you may also, according to circumstances, pass to the southward of them, giving them a birth of 4 or 6 miles: and, having cleared them, stand away to the northward, to sail between Atwood's Key and Mayaguana, which is a fine clear passage.

For the description of Atwood's Key, see page 180. For the French Keys, page 185.

*Additional remarks on the Caycos, &c. translated from the French.*

It has happened that ships, intending to go through the Caycos Passage, have made Little Heneagua, either by inattention, or from the currents. To make sure of being far enough to the windward, when bound from Cape Haytien, you should make your course good N. or N. by E. 25 or 26 leagues, and you will see the white water on the banks, which you may run along at the distance of a league without fear. On the western edge of the bank is the islet called Sandy Key, which you may approach within that distance; then make a N. W. course, and, four leagues from Sandy Key, you will see French Key; when the latter is North from you, thence steer W. by N. 6½ leagues, which will bring you south from the Little Cayco; and, being past this, you are to make a N. or N. by E. course, as before directed.

According to the survey, made with great care, the White Bank and the Reef continue between the French Key and the Little Cayco. You may run along them very near, in 10 fathoms, and you will see the openings in the reef, through which small vessels go in upon the bank.

The reef which borders the White Bank, from the Little Cayco to French Key, begins one league East from the former, and it always breaks. You may stand very near it coming from sea; but, if you are upon the bank, you must take great care, for half a mile within you will find but 3 fathoms water; and, in getting nearer, it shoalens very quickly. Here is a great deal of swell, it being open to the breezes; the bottom is sand and good holding ground.

*General Observations on Turks' Islands and Turks' Islands Passage, coming from the Northward. By Captain Hester, '770.*

"When bound to the Old Riding Place at the Grand Turk, your eye must be your pilot, or you will come from no ground immediately into white water, when you must be very brisk in letting go your anchor, as it is very little more than one-third of a mile from no ground to the beach, with not more than 4 or 5 feet water; and from the outer edge of the bank to the reef not above a cable's length distance. It is very rocky ground all in and about the anchorage. Bring

the centre of the highest hill you see in the bay to bear East; then steer right for it, till you come into white water, and you will have 4½ fathoms, white sand.

"From October 6th to October 9th, the North point of the Grand Turk bore North, and the South point S. E.; Salt Key S. by W. ¼ W.; the body of the town East; the extremes of ditto N. E. by E. to S. E. distance off shore 1½ mile; distance of the reef 1½ cable: depth of water at the anchor, a quarter less seven: veered out to half a cable, then had 17 fathoms under the stern. The Grand Caycos from W. ¼ N. to N. W. by W.; wind at E. by N.; latitude 21° 28', variation 6° 40' E. Tides rise and fall about 3 and 4 feet; a N. N. E. moon makes high water. Currents very uncertain. The autumnal equinox subject to north winds, and rain very variable; the vernal equinox to the contrary.

"Wood may be cut with leave at Grand Turk; water is scarce and very bad. They have no provisions; but turtle and fish may be caught at times. The trade consists in salt, with which they load for America and the adjacent islands.

"The North point of the Grand Turk lies in latitude 21° 30'. To make this island, coming from the sea, run down in the parallel of 21° 40'; when you think you draw nigh them, night coming on, and seeing nothing, stand off to the northward, under an easy sail, endeavouring to be as near the same place at day-light, as you were the preceding evening; but do not sail farther to the westward than what you could see the night before, and keep running down in the above latitude. It may so happen that you will be obliged to do the same thing the second night, if not the third; but that depends on the justness of your reckoning. You cannot well pass the Turks' Islands, in the latitude above said, without seeing them; likewise you would make the N. E. part of the Great Cayco, which lies to the N. W. of the Grand Turk. There is a reef which runs to the northward of the latter about 2 miles, but nothing but what is discernable. The course through is S. S. W. 7 leagues, and then you will be in the open channel, between all the islands and the north side of St. Domingo, and may shape your course as you please.

"It is true that the channel between the Caycos and Mayaguana is wide; but when I consider the difficulties which will arise from thick, blowing, hazy weather, and night coming on; from your being more in the stream and way of currents, between the reef off the S. E. end of Mayaguana and the back of the Caycos; from the possibility of driving or passing between them without seeing them, &c. all this would make me give the preference to Turks' Islands Passage. In attempting the Caycos Passage, coming from the northward, you will not be able, (at least, it would not be advisable,) to run in the night any more than in endeavouring for the other; and in case of a continuation of blowing hazy weather, you might be puzzled and at a loss how to behave, if (which could very well happen) you were surprised with the breach of the Hogsties; whereas, by endeavouring for the Turks' Islands, though you should pass them, you would be sure of making the Great Cayco; and then it would be but running down a-back of that isle, and choose your channel and time, either to windward or leeward of Heneagua, having a known departure to go from."

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#### *Concluding Remarks on the Windward Passages. From the 'Derrotero de las Antillas.'*

The choice of either of these Passages depends entirely on the situation the vessel is in, and the wind you have to take it; for, if you are at St. Nicolas' Mole, with the breeze at E. N. E. it is indispensable to take the *Crooked Islands Passage*; and he who sails from Guarico, or Cape Haytien, may take the *Caycos Passage*, though the breeze should be N. E.; and, if it be from E. S. E. he may take the *Turks' Islands Passage*: so that the passage he ought to choose is that which he can fetch upon a stretch, and better still if the wind be free. It must not be thought, from this, that there is any difficulty in varying the channels or the route, if the wind changes; even before that it may often be adviseable to



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do so for the convenience of the voyage itself. In the option which we have recommended, we have preferred stating general principles in place of fixed rules; and this liberates us from having to trace out, as if with a finger, the route which ought to be followed. On the contrary, let every one follow the way most suitable to circumstances.

*Directions for Sailing from the Crooked Islands, and from the Eastward, generally, to New Providence.*

On leaving Watling's Island, particularly if late in the evening, you should steer N. ¼ W. until you get into the latitude of 25 degrees, before you steer to the westward, on account of a very strong indraught which sets to the westward between Cat Island and Eleuthera, through the passage called the Ship Channel.

Having arrived at 25° N. you may haul more to the westward, towards Palmetto Point, and then endeavour to make the land to the westward of Harbour Island. The land here referred to is very remarkable, particularly the *Cow and Bull*, two rocks, situate on a base of sand, and appearing like two large trees. A little to the westward of them is a gap or separation of the land, which is also very conspicuous. This is the best route, if the wind be to the eastward and fine weather; but, if blowing strong from the northward, make the Whole in the Wall, at the south end of Abaco. [See page 165.]

The remarkable perforated rock, called the Hole in the Wall, stands, as already shown in page 169, in latitude 25° 51', and longitude 77° 10'. Eleuthera, Harbour Island, the Current Isles, and Egg Island, have been noticed on page 165. From the Hole in the Wall to the west end of Hog Island, or the entrance of the Harbour of New Providence, the bearing is South and the distance 15 leagues. But allowance, in sailing, must be made for the current, which generally sets, with considerable strength, between Abaco and the Lerry Islands. At Great Egg Island, and in its vicinities, the currents are very uncertain, and there much caution is necessary.

Vessels from the eastward, in general, had best make the coast of Eleuthera, in a tract between the parallels of 25° 20' and 25° 30', not exceeding the latter, or the parallel of Harbour Island.

On leaving the Bird Rock, when bound for New Providence, it is best to make Watlings Island, proceeding along the west side of that island, or between it and Rum Key, for a good departure. You must be careful not to approach the little island called Conception Island, because a long and dangerous reef extends in a N. N. E. direction from that island, above 7 miles, as already shown in page 180.

HARBOUR ISLAND lies in lat. 25° 31', but a reef extends about three miles from its north shore, to which a birth must be given, there being several rocks, near the outer edge, nearly even with the surface of the water. The water is, however, perfectly clear, and they may be seen from the fore-yard or bowsprit end in time to be easily avoided. The Bank extends West and W. by N. to Egg Island, a distance of 7½ leagues, and a reef extends from that island nearly 4 miles in a N. N. W. direction. Having advanced to the northward of the Cow and Bull, off Harbour Island, the course to Egg Island, the westernmost island of the range, is W. by N. and the distance, to clear the reef, 8 leagues. On running along shore, you will pass some rocks, called the Perno Rocks; but the islands are too closely connected to be particularly distinguished.

EGG ISLAND is a small island, covered with brush-wood, with a rise of land in the middle of it. Being off this island, keep well out to avoid the reef, the pitch of which lies with the centre of the island S. S. E. ¼ E. On rounding the reef, you will open a small rocky island, situated to the south of Egg Island, called Little Egg Island. The course, by compass, hence to the light-house or Nassau Bar, will be S. W. by S. 10 leagues, and to the Douglas Passage, eastward of the harbour, S. by W. 8 leagues.

The keys between Egg Island and Providence, upon the edge of the bank, form a bay, as represented on the Chart, and the reef is steep-to. Of course,



vessels passing in the winter or during the prevalence of northerly winds, must cautiously avoid being embayed there; as the only shelter is an inlet between the eastern end of Rose Island and the Booby Rocks, where there is a depth throughout of 27 feet. But, in summer, as northerly winds then seldom prevail, and the trade-wind generally, the shore may be kept well on board; and, especially, because the current may sweep you past the Harbour of Nassau, which could not be regained without difficulty.

The town is on the north side of the island, sheltered on the north by Hog Island, and stands at the westward of the harbour. It may be distinguished, at a distance, by means of the Government-House, which is a large white house, upon the top of a hill, seen over Hog Island. Bring this to bear S. S. W. or S. S. W.  $\frac{1}{2}$  W. By keeping it so until within 2 or 3 miles of Hog Island, or perhaps sooner, a pilot may be obtained.

The entrance into the harbour is at the western end of Hog-Island, which is distinguished by the light-house. It has 18 feet of water, with sandy ground. The latter is not good for holding. In the middle of the harbour there is a bank of 3 or 4 feet water; but there is a channel on each side of considerable extent.

THE DOUGLAS PASSAGE and NEW ANCHORAGE are situated on the east and south side of Rose Island, to the eastward of Nassau Harbour. The entrance is denoted by beacons, fixed on two rocks, called DOUGLAS' ROCKS, which form the entrance, and a black buoy, which is placed at the end of a reef stretching from those rocks, and situate at N. by E.  $\frac{1}{2}$  E. 179 fathoms from the high or upper beacon. These beacons can be seen from the deck of a frigate, when steering in a line between Egg Island and Nassau.

The black buoy, above mentioned, is placed in 9 feet water; but, at a boat's length from it, there is a depth of 4 fathoms. Opposite to it is the end of a reef which extends from Booby Island, leaving a passage of 160 fathoms in breadth, which has a depth of 4 fathoms at very low tides.

To steer for this anchorage, bring the beacons in a line, bearing nearly S. E. by E. and steer directly for them until you bring Booby Island end on: then haul up for the buoy, passing it on the starboard side, and to the eastward, at the distance of about 30 fathoms. When past the buoy, every danger may be seen, and you may haul round to the westward, and anchor in 4 $\frac{1}{2}$  fathoms, good holding ground, with the beacons in one, bearing N. W. by W. distant about 2 miles, where you will be well sheltered from N. W. winds.

A frigate, drawing 18 or 20 feet of water, may proceed to the S. E. side of Rose Island, and anchor in a quarter less five, at about 6 miles from the town of Nassau, well sheltered from N. W. winds, and from the S. E. by the Bank.

The DIRECT BEARING from the HOLE IN THE WALL to PROVIDENCE BAR or LIGHT-HOUSE, is S:  $\frac{1}{2}$  W. 15 leagues. The bearing and distance from the Hole in the Wall to the pitch of Egg Island Reef are S. E.  $\frac{1}{2}$  S. 20 miles.

Those bound to New Providence, who are unacquainted with the Douglas Passage and the New Anchorage, should not attempt to pass the Hole in the Wall with a N. W. wind, when blowing strong, there being no safe anchorage hereabout.

In the event of making the Hole in the Rock or Egg Island in the afternoon, with a strong wind from the N. E. you should haul close around Egg Island Reef, and steer S. by W. 8 leagues, for the Douglas beacons; and, having made the beacons, bring them in one, bearing nearly S. E. by E. and steer for them. Keep your lead going, and you will have gradual soundings. When in 9 fathoms, you may anchor, with the marks in one, fine sandy bottom, well sheltered from northerly winds, by the rocks, &c.

At Nassau, New Providence, and in the entrance of the New Anchorage, and in its channels, the tides run at the rate of 4 $\frac{1}{2}$  miles, and rise 4 feet at the springs, and the currents have much force.

For the TIDES and CURRENTS between Watling's Island and New Providence, see page 194. General Directions for coming in, towards the Hole in the Wall, &c. have been given in pages 165, 167 and 174.

*Directions for sailing in over Nassau Bar, during stormy weather, when a pilot boat cannot go out.*

Vessels approaching Nassau in tempestuous weather, when the pilot cannot cross the bar, by observing the following directions, may come safe over, when the pilot will be ready to receive and conduct them to their anchorage.

On a white flag being hoisted on the point of Hog Island, near the light-house, a small white flag flying, will be in readiness within the bar, the vessel will then steer in, giving the point of Hog Island about 80 fathoms distance, and keeping Toney's rock (a small rock within the bar, on which a beacon is erected) and the west end of Fort Charlotte barracks in one; keep this course until you bring the white flag on the point to bear east; then put your helm to the starboard and keep for the boat. It sometimes happens that the sea breaks from point to point, even in moderate weather. When this is the case, and the wind should be to the south or east, it would not be prudent for vessels of a large draught of water to enter, as there are not more than 17 feet water at low tide on the bar. By order of the Commissioners of Pilotage.

[We recommend to every navigator to make himself acquainted with the set of the currents through the whole extent of the Gulf, and with a description of all the Islands and Keys which compose the Bahama Banks, as at times a knowledge of them may be highly important.]

*General directions for making, and navigating on, the Coast of Cuba.*

In the rainy season, or season of the southerly winds, vessels bound from Europe to Cuba ought to pass to the northward of Porto Rico and Hayti or St. Domingo; and during the season of the norths, they should pass to the southward of these islands, unless their port of destination requires them to do otherwise. There are other reasons for adhering to this mode of navigating. In Cuba the ports, to which vessels are bound from Europe, may be reduced to two: these are *St. Jago de Cuba* and the *Havanna*. If bound to the first, it is necessary, in every season, to direct your course directly to it; that is, in the season of the norths to steer from Cape Tiburon, the S. W. point of Hayti, in order to make some point on the south side of Cuba, to windward of the intended port, or even to windward of Guantnamo; and, in the season of the souths, to steer from Cape Nicholas' Mole, on the N. W. coast of Hayti, almost west for the port, marking, in the first place, the various points of the coast of Cuba, which are after described. (See pages, 207, &c.) But if bound to Havanna, attention should always be paid to the season; that is, if your passage is made in the time of the norths, you should go to the south of Cuba, although you have to return the distance between Cape Antonio and Havanna; because this inconvenience is not comparable to that which might be occasioned on the north side by a hard north, which would not only expose a vessel to heavy risks, but might retard the voyage much longer than the time required to reach Havanna from Cape Antonio; for this distance may be worked up in a short time, as you may have the assistance of the current to the eastward, as more particularly described in the directions for the Strait of Florida, page 156, &c.

Those navigating on the south of Cuba, who have no occasion to touch at Trinidad, or any other part of that coast, should give it a good offing, and proceed to the west from Cape de Cruz. Here it may be observed that, at the distance of thirty-five leagues from that Cape is the western end of the low island called the *Caymanbrack*, the N. E. end of which is surrounded by an extensive reef, the making of which is dangerous by night, because a reef extends from it, four miles out to sea; and allowance must always be made for the current, which, although variable, is generally prevalent here. The safest course appears to be to the northward of the Caymans; but even here it is requisite to beware of a shoal, on which 14 fathoms have been found, and which was discovered by a

Spanish packet, bound to Trinidad, in 1800, and there is reason for suspecting that it has spots of very little water. The position of this shoal, according to the last Spanish chart, is lat.  $20^{\circ} 11' N.$  long.  $80^{\circ} 38' W.$  It had previously been represented more than half a degree farther to the eastward.\*

The navigation on the North of Cuba is that of the Bahama or Old Channel. For this channel it is customary to take a pilot, who may be engaged either at Aguadilla, on the N. W. coast of Porto-Rico, or at Baracoa, in Cuba, as noticed hereafter. If approaching Baracoa, for this purpose, it will be requisite to determine the ship's place in the vicinity of Cape Maysi; for otherwise you may happen to fall in to leeward of Baracoa; and even, without the necessity of calling for a pilot, it will be proper to make the land in the neighbourhood of the cape, for the sake of a departure hence to the westward, and for correcting any error produced by current. The remarkable points of all this coast will be described in the next chapter. The Bahama Bank, with its keys and reefs, in Chap. III. pages 165, &c. These descriptions must, of course, be especially regarded, and strictly attended to.

We have already noticed that in this channel, independent of any current, there is a regular tide. The current itself is very uncertain, and no doubt fluctuates according to the variations of the Gulf Stream, winds, &c. It sometimes sets E. S. E. at other times W. N. W. and again ceases. With every precaution, a vessel ought not to cross the meridian of Point Maternillo without having made and remarked it well; as all the care of the most zealous and attentive navigator may otherwise be of no avail to keep him clear of the *Mucaras Shoal*, on the north side which shows no symptom of its existence until a vessel is aground upon it. (See page 177.) If obliged to beat up at night, it ought to be done so as not to prolong the tack more than will completely and certainly clear the Mucaras. Having passed over the night in this manner, so soon as it is clear day, steer so as to make the coast, and recognize it well. If it be not in sight, steer to the south until you make it.

Having once recognized Maternillo Point, direct your course so as to pass *Guincho* or *Ginger Key*, at the distance of two leagues, if by night; or make it by day, and thence keep over toward the edges of the Great Bank and Salt-key Bank, rather than to the keys of the Coast of Cuba, which offer few marks that can be depended on; and an approach to which is, therefore, dangerous. You will have passed all these keys when abreast of Point Yeacos, and may thence proceed according to the descriptions already given in page 173. But the safest way, as before noticed, is towards the southern edge of the Salt-key Bank, passing thence to the westward, according to judgment, the state of the current, &c.

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\* The same chart represents another shoal of  $8\frac{1}{2}$  fathoms to the north-eastward, in lat.  $20^{\circ} 30'$ , and long.  $80^{\circ} 27'$ .

## CHAP. IV.

## ISLAND OF CUBA.

## THE NORTH-EAST COAST OF CUBA.

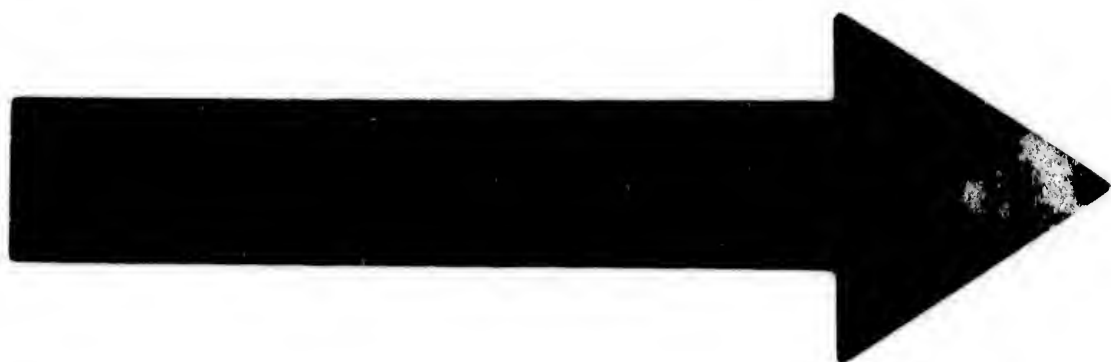
Cape Maize, the most easterly point of the south part of Cuba, is situated in or near lat.  $20^{\circ} 13'$  N. and long.  $74^{\circ} 1'$  W. The point itself is a low beach, and cannot be clearly seen until you are nearly up with it. Landing on it is extremely dangerous, for a reef extends from it nearly a mile to the eastward; and advancing towards it during the night is very unsafe, unless you have previously, in day-light, marked the high lands of the interior country, either of Cuba or of Hayti. From this point the coast tends to the N. W. and rounds to the river Maysi, at a mile from the cape. From this river to *Point Azules*, which is another mile, nearly in the same direction, the coast is bounded by a reef, which extends out about a cable's length, and has a break at the mouth of the Maysi. From *Point Azules* the land begins to rise, and the coast is clean, and tends about W. N. W. for five miles to *Punta Frayle* or *Friar's Point*, whence it extends west, six miles to the river *Yamuri*, and continues in the same direction, two miles more, to the harbour of *Mata*. All this coast is very clean, and you may run along it within half a mile.

The *Harbour of Mata* is very small, and too shallow to admit vessels drawing more than 12 feet. To enter it, you have only to keep in mid-channel, and anchor in from 14 to 18 feet water, almost in the middle of the bay. All the shores have shoal water from them, so that there is a space of only two cables' length in diameter, in which there is sufficient depth for anchoring.

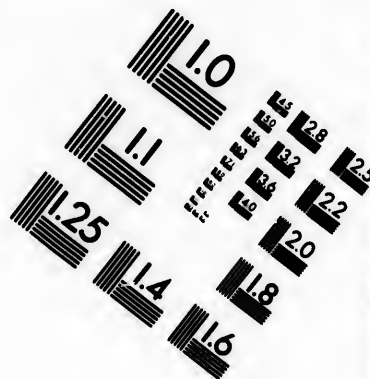
From *Puerto de Mata*, the coast tends nearly N. W. 6 miles to *Port Majana*, and at 2 short miles from it is the mouth of the river *Boma*. This piece of coast, as well as the preceding, is very clean.

*Point Majana* and *Baracoa Point*, which lie nearly east and west, two miles distant from each other, form a bay, in the east part of which is the anchorage of *Playa de Miel* (Molasses Beach): and in the west, the mouth of the port of *Baracoa*; in the middle, between these two anchorages, is the town of *Baracoa*, standing on the S. E. point of the harbour of the same name. In this town dwell the *Pilots*, for the *Bahama* or *Old Channel*, and therefore vessels which have not previously engaged one, at the *Agadilla* in *Porto Rico*, come here for one.

The anchorage of *Playa de Miel* is very open to the norths. To anchor in it, you have only to approach *Point Majana*, and anchor something to the south of it, in from 10 to 20 fathoms, on a sandy bottom, taking care not to get to the east of that point, where you would immediately be in 4, or even in less than 4 fathoms of water. The general object of coming to *Baracoa*, being only to obtain a pilot, there is no necessity, in that case, to anchor; but, approaching *Point Majana*, even within two cable's length, if you choose, fire a cannon or gun, and a pilot will come off directly. As the *Playa de Miel* is entirely open to the norths, in the season of them it is much exposed; and, therefore, any vessel under the necessity of anchoring, should steer at once for *Baracoa*, to the entrance of which there is no obstacle, as it is completely clean, having no danger, but what may be seen; and consulting the plan of it, you may choose the spot to anchor in which best suits the draught of water of your vessel.







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**BARACOA HARBOUR**, though secure and sheltered, has the great inconvenience of presenting its mouth to the breeze, and a great swell consequently sets in; and, being able to get out of it with the land breeze only, vessels are often detained much time in it during the norths, when the land-breeze is not frequent; but, in the rainy season, you may almost reckon on having it every night. The *Anvil Hill of Baracoa* (*El Yunque de Baracoa*) which is a little mountain about 5 miles to the westward of the harbour, is an excellent mark to recognize it by, as, in clear days, it may be discovered at a distance of more than 12 leagues, and appears, over the other high land, like the flat top of an anvil.

From the *Harbour of Baracoa*, the coast tends almost true north, 3 miles to *Point Canas*, which although very clean, ought not to be approached; because, being completely open to the breeze, there is always a heavy swell setting upon it. From *Point Canas* to the harbour of *Maravi* is two miles: the coast tends nearly west, and is very clean.

*Port Maravi*, though small, is well sheltered from the Norths. Its entrance is not difficult, for you have only to keep in mid-channel, which is less than a cable's length in width, and, running in for the middle of the bay, anchor as soon as an islet, which is on its western side, bears in the same direction.

From *Maravis* the coast tends nearly north, making a bend (or bight) to *Point Van*, and from thence it runs to the W. N. W. forming another bend to *Port Navas*, which is an opening of about two cable's length in extent, in all directions, with its mouth to the north, therefore useful only as a shelter from the breezes. To enter it, no more is necessary than an inspection of the plan.\*

From *Port Navas* to *Port Cayaguaneque*, the distance is only two short miles. *Cayaguaneque* is fit for very small vessels only, and its entrance is only 40 yards wide. The Plan will give a perfect knowledge of it, and of the difficulties which present themselves in taking it.

**TACO**.—Three and a half miles from *Cayaguaneque* is the harbour of *Taco*. It is well sheltered; but though, in its interior, there is depth for any class of vessels, yet its entrance has a bar with only from 13 to 18 feet on it, and it is also obstructed by rocky shoals, with little water on them, which stretch out from both shores; but as, on account of the bar, vessels drawing only 10 or 12 feet water should go in, those will run no risk in running over the shoals, and therefore may take this harbour by keeping in mid-channel; and, when once past the entrance, they may direct themselves to that part of the harbour which suits them best.

From the *Harbour of Taco* to *Point Jaragua* is 2½ miles: and the coast, which is a sandy beach, is clean. At *Point Jaragua* it ceases to be so, though all between it and *Cape Maysi* may be run along at a mile's distance. *Point Jaragua* sends out a reef, which stretches to the N. W. of it; this point is the eastern one of the anchorage of the same name, which is only an opening in the reef, by which a vessel may enter upon the bank or shoal, and find shelter from the sea, behind the reef. The break or mouth is only two-thirds of a cable's length wide; and from it to some islets which are to the S. W. of it, the distance is two cables. The islets are three in number; the southern one is the largest; the anchorage for large vessels extends only till you are E. and W. true, with the south part of the middle islet; as farther in, there is only from 12 to 18 feet of water. To take this anchorage, it is necessary to sail outside the reef, which extends out from *Point Jaragua* until the east part of the great islet bears nearly S. W.; then steer directly for it; and, if the vessel be large, anchor as soon as you are E. and W. with the middle islet in 6 fathoms, on a sandy bottom; but, if the vessel draws not more than 12 feet, you may run farther in, keeping if you choose, within a quarter of a cable of the great islet, and about a cable's length from the middle of it, you may anchor in 19 feet, on clay. You may also enter the mouth without attending to the given mark of S. W. because the reef itself shows the opening. This harbour should never be taken except in a case of necessity, as there can be no other motive for vessels coming to it.

\* The Plans referred to in these directions, are those of the *Portulano de la America Latina*, published at Madrid in 1809.

From Point Jaraqua the coast tends first to the N. W. and afterwards to the North, forming a great bay to *Point Guarico*, which is 7 miles distant from the former. The reef which extends from Point Jaraqua rounds the whole of it, and stretches out about two miles from Point Guarico. In approaching this side of Cuba, be careful not to mistake Guarico Point for Cape Maize, it being dangerous at night and in thick weather, when you cannot recognize and use as marks the eastern lands of the island, and particularly when you are uncertain of your latitude.

From *Point Guarico* the coast tends nearly N. W. 8 miles to the *River Moa*; it is all bordered by a reef which extends about two miles out to sea. Almost N. by W. from the mouth of that river, and between the reef and the shore, is an islet, named *Cayo Moa*, which offers an excellent anchorage, sheltered from all sea. It is entered by an opening in the reef almost due north from the mouth of the river. This opening is about two cable's length in width, and continues W. by S. forming the channel and anchorage, until the east part of *Cayo Moa* bears north. To take it, run along the east side of the reef until up with the opening, which will be when the eastern part of *Cayo Moa* bears W. by S. and then steer S. W. until the south part of *Cayo Moa* bears W. N. W.  $\frac{1}{2}$  W. then steer W.  $\frac{1}{2}$  S. and continue so till you anchor to the southward of the eastern part of *Cayo Moa*, in  $6\frac{1}{2}$  or 7 fathoms, upon clay. The plan of the port will give a perfect idea of this anchorage; for recognizing, or finding which, some mountains about 4 leagues inland, named the *Sierras de Moa*, may serve as landmarks.

From the *Anchorage of Moa*, the coast tends about west; it is all bounded by a reef, which extends 2 or 3 miles from it, as far as *Port Yaguaneque*, which is 11 miles distant from the former. On this part of the coast, and between it and the reef, are two keys, the eastern one named *Burros (Ases)*, and the western *Arena (Sand)*: these keys may serve as marks for knowing this part of the coast. The harbor of *Yaguaneque* is fit for small vessels only, because its bottom is shallow and unequal, and its entrance narrow and difficult to take, for the mouth is formed merely by a break in the reef. To take this port, it is necessary to follow the edge of the reef to windward, until you come to the opening, which lies N. W. two thirds of a mile from *Arena Key*; then steer to the southward, keeping along the edge of the weather-reef, because the lee-reef, which commences when you are west from *Arena Key*, narrows the entrance so much, that there is scarcely a cable's length of width in the channel. It is fit for small craft only.

**CANANOVA.**—A mile and a half from *Yaguaneque* is the port of *Cananova*, which is properly an opening of the coast only, and must be entered by another opening through the reef.

Three miles to the westward of *Cananova Harbour* is that of *Cebollas*, which is alike most difficult to enter, or to get out of, and therefore unfit for large vessels.

**TANAMO.**—Ten miles west from *Cebollas*, is *Port Tanamo*, and the intermediate coast is foul, with a reef which extends out about two miles from it. *Tanamo* is a large harbour, and fit for vessels of any denomination; to enter it, you must run along the edge of the windward-reef, until you find the opening in it; then steer S.  $\frac{1}{2}$  E. until you have passed the leeward point, when you may keep away up the elbow which the channel makes, in the middle of which you ought to keep; but no more is necessary than to give a birth of a third of a cable to all that is visible. *With the Plan, and your eye, no farther directions are needful.*

**CABONICO and LIVISA.**—From *Tanamo* the coast tends west, 10 miles, to the entrance of the harbours of *Cabonico* and *Livisa*; a reef extends also two miles from this piece of coast. These two harbours have one common entrance, which divides within into two branches; one to the eastward, leading to *Cabonico*, and the other to the westward, leading to *Livisa*. To enter these harbours, you must go in by the opening in the reef, and then steer for the windward point, until it bears S.  $\frac{1}{2}$  E. and being then near it, keep mid-channel, avoiding a reef which runs out from the windward shore, and which lies out about a cable's

length from the interior point. You may approach within a third of a cable of the leeward shore; once abreast of the *interior points*, steer for the channel of the harbour you wish to take, without any other care than to keep mid-channel.

**NIPE.**—From these ports the coast continues foul, having a reef about W. N. W. 5 miles to the *Harbour of Nipe*. This bay, for its magnitude and depth, is very extensive, and has a spacious entrance. The harbour is always accessible, for with either the breezes or the norths, you will run in with a free wind; coming out is quite the reverse, for this requires the land-breezes, which, as we have said before, is often very rare in the season of the *norths*.

To distinguish this part of the coast, the mountains of *Cristal* may serve as marks: these are a continuation of the Cordillera (or range) which comes from Baracoa, and extends to the south from Port Livisa, at about 13 miles inland. The *Pan of Sama*, to the west, is also another excellent mark of recognition; its figure being such that it cannot be mistaken, because the summit of it forms a table. It rises on the land to the north of Nipe and Banos, and is almost N. and S. (true) with the harbour of Sama; and as the mountains of *Cristal* terminate to the east, and the *Pan of Sama*, which begins to rise gradually, almost from *Point Mulas*, form an opening or break in the chain of hills or mountains, it is almost impossible for any one to mistake the place. The *Pan of Sama* may be seen 20 miles off.

**BANES.**—From the harbour of Nipe the coast tends N. W. 11 miles, to the port of *Banes*: it is all clean, and may be run along at half a mile's distance. The harbour of *Banes* has its entrance in the middle of a bay, formed by the coast, and which has  $2\frac{1}{2}$  miles of opening, whence it narrows in to the entrance of the port, which is only a cable and a half in width, so that it resembles a funnel. The shores of both the bay and channel are uncommonly clear and deep-to, and you have to fear nothing but what is seen. Only thus could this port be entered with facility, as its entrance is so tortuous, and with such elbows and turnings, that you must alter your course, almost in an instant, from S. to N. It is excellent as a place of shelter, for any class of vessels. It is extremely difficult, however, to get out of; because its mouth stands open to the trade-wind, and it is necessary to avail yourself of the land-breeze to get out clear: at any rate as far as the middle of the bay, that you may have room to tack and clear yourself from the rest of it, as well as of the coast, which there tends about N. by E. 10 miles, to *Point Mulas*, and which is foul, with a reef that stretches a mile from it.

**POINT MULAS.**—To enable any one to recognize *Point Mulas*, which on account of its being very foul, and lying farther to the northward than any of the anterior coast, may be very suspicious; the marks already given may suffice: these being the mountains of *Cristal* and *Pan of Sama*.

About 5 miles N. W. from *Point Mulas* is *Point Lucretia*, which is clear and high; the coast thence continues to the west, with some inclination to the South, for 13 miles, to the Port of *Sama* forming a bay named *Rio Seco* (*Dry River*.) All this coast is very clear and scarp'd, excepting the bay, which has a beach.

The **PORT of SAMA** is fit for vessels only which do not draw more than 12 feet of water: and, as the shores both of its entrance and the interior are very clean, the inspection of the Plan will afford all the necessary instruction for taking it. You may know this part of the coast and harbour, by the *Pan of Sama*, and a hill or mountain near its western part, which is pretty long, and lies N. W. and S. E. and the top of it seems to be plain and equal, and at its west end are scarp'd rocks, which seem white, and where much honey is made. From this slope a sandy beach named *Guardalaboca*, continues to the west: to the south of it may be seen a detached hill, in the form of a *sugar-loaf*, and to the S. W. a small mountain, covered with trees, the top of which forms a table, and which is named the *Mesata de Naranjo* (Little Orange Table.) Between the hill and the mountain is *Port Naranjo*, which is 5 miles distant from *Sama*.

**PORT NARANJO** is a good harbour for vessels of every class. Its windward point may easily be known by being high and scarp'd, while the rest is of beach. To take the harbour you must sail without the reef, until the windward point bears S.  $\frac{1}{2}$  E. when you may sail towards it, taking care to give it a cable's



length birth, to keep clear of a shoal which surrounds it, and stretches out about two-thirds of a cable from it. It is also necessary to be cautious of another shoal which stretches out from the leeward coast, and which sallies out to the north of the exterior sloping point, about one cable and one third. What ought to be done is, to run in mid-channel, until you are past the two points of the entrance; and so soon as you are well past that to windward, you may luff up, and anchor in a bight formed by the east coast, at about two-thirds of a cable from it, and in 10 fathoms water, opposite the spot where the mangroves come down, so as to be bathed with the water.

This harbour has the peculiar advantage that a vessel may sail either *in* or *out* with the breeze.

From Port Naranjo, the coast, which is a foul beach, tends W.  $2\frac{1}{2}$  miles to *Point Pesquera Nuevo*, which is sloping and clean; thence it descends W. S. W. three miles to *Port Vita*, and is very clean. This little port is very good for vessels, which do not draw more than 18 feet, and the inspection of the Chart of it will be a sufficient guide. Three miles to the west of Vita is another small harbour, named *Bariay*, at the mouth of which there is shelter from the breezes, but only in the *interior* from the *norths*. Very small vessels only can get up there. The coast between Vita and Bariay is very clean. A mile to leeward of Bariay there is another port, named *Jururu*, the entrance to which is very difficult, being very narrow: and although vessels drawing 20 feet may enter it, only *small* vessels ought to do so.

**GIBARA or XIBERA.**—Five miles west from Jururu is the harbour of *Gibara*. Its entrance is 5 cable's in breadth, and completely open to the north. The coast between it and Jururu is very clean. To find the port, three hills or mounts, which are to be seen to the south of it, and which, at a great distance, appear to be islands, are excellent marks. The first and most easterly of these is named *Silla of Gibara* (Saddle of Gibara): the middle one resembles the shape of a sugar-boiler; and to the west of the third are some hills of a regular height.

From Port Gibara, the coast, which is clean and sloping, tends to the north, two miles to *Point Brava*, from which follows N. W. 10 miles, of the same kind of coast, to *Punta Mangle* (Mangrove Point): and from it continues 6 miles in the same direction, but is a sandy beach and clean. From this point it tends west, but is foul, with a reef of six miles, to *Puerto del Padre*: all this land is low, and on the coast may be seen some small palm trees, called *Miraguanas*: at the west side of Port Padre, there are two little mounds very close together.

**PUERTO DEL PADRE.**—The harbour of Padre is excellent, and fit for any class and number of vessels: its entrance is long, and only two cables in width; but its shores are very clean and have deep water. To enter this harbour, it is necessary to navigate outside the reefs, until the east point, named *Jarro*, bears S. by E.  $4^{\circ}$  E. when you may place the prow to the outer leeward point of the entrance channel; and, it is necessary not to confound this point with another, which is to the N. E. upon the same coast, and which, for distinction, is named *Guinchos*: the last has an islet of the same name, very close to it, and it may assist much in finding the mouth of this harbour. Running for the before mentioned point to leeward, and then close past the S. E. part of *Guinchos*, no more remains than to steer for the channel, without its being necessary to beware of any more than what is visible.

From PORT PADRE the coast follows to the west, 5 miles, to *Point Piedras*, or Rock Point. Here is the entrance of the great bay of *Malagueta*, which is no more than a lagoon, formed in the interior, in consequence of the land being low and wet. The coast thence tends N. N. W. 5 miles, to the Point of *Covarrubias*, from which it tends W. N. W. 10 miles, to the harbour of *Manati*. All this coast is foul, with a reef which stretches out from it about two miles.

**PUERTO DE MANATI.**—The harbour of Manati may be known by a mount, which may be discovered inland from it, shaped like a sugar-loaf; it is called the *Manuco*, and may be seen at the distance of 15 or 20 miles. Close to the west of this may be seen another hill not quite so high as it, which is called *Fardo*, or the *Table of Manati*, which when open in one, or shut in with the

Manueco, looks like one hill, and presents to the view the appearance of the *Saddle of Gibara*, which appearance has deceived many, and is dangerous to navigation.

This harbour of Manati may be considered as a lagoon, formed in low wet land, with a long, narrow and crooked channel in it, and in which there is depth of water for small vessels only; as this channel, throughout its extent, is bordered with shoals of 6 and 8 feet of water, it is running much risk to enter it with middling sized vessels, and much more so with ships of war.

Three miles N. N. W. from Point Manati, is Point Brava, which is foul, with a reef; the coast thence, which is also foul, with a reef, tends about west, for five miles, to the port of *Nuevas Grandas* (Great News.) To enter this port, which is fit only for vessels of 12 feet draught, it is necessary to go in at a break in the reef, and the reef lies out six cables or two-thirds of a mile from the coast, and follow in afterwards all that distance by a channel which the reef forms, and which, in some places, is only half a cable's length in breadth. This channel is very crooked, and therefore any one who is not well acquainted runs much risk. So soon as you are abreast of the points of the harbour, you may run along the coast, at the distance of one-quarter of a cable, without any fear.

**NUEVITAS DEL PRINCIPE.**—From *Nuevas Grandes* the coast tends about N. W. eleven miles, to the harbour of *Nuevitas*: it is all foul, with a reef, and may, as well as the harbour, be recognized by three mounts, of short extent, which rise within the harbour; there are also three islets in the harbour, named the *Ballanates*: these seem high to the east, and diminish towards the west. *Nuevitas* Harbour is a large bay, with many shoals, but fit for any number and class of vessels. To enter, it is necessary to avoid its windward or east point, to which you ought not to approach nearer than a cable's length, but approaching if you choose within half a cable's length of the leeward point: but the best way is to keep in the middle of the channel, which is very long and crooked.

From mid-length of the channel, going in the coasts, send out shoals, to keep clear of which requires good practice; which practice is equally necessary in the interior of the bay.

From *Nuevitas* the coast tends about N. N. W. to the point of *Maternillos*, and is very clean. From Point *Maternillos* it tends about W. N. W. and is bordered with a reef, which stretches out a mile and a half. All the coast from *Maternillos* rises a little; and nearly at the end of it, and about fourteen miles from *Maternillos*, there is a little mount, called that of *Juan Danue*, which forms a kind of table. At this point commences a great white shoal or bank, which extends far to the west, and upon which are many keys and reefs. Here we cease from describing the coast, as being of no use to navigation, and begin to describe the edge of the *white ground* or shoal, with islets and keys upon it.

About W. N. W. from the point of *Juan Danue*, but almost joined to it, there is a little islet, and in the same direction, and at the distance of six miles, is the Island *Guajaba*; this island may be known by four little mounts, which lie almost in a line, east and west; the first three may readily be seen, but it is not so with the fourth, which being of less elevation than the third, remains hidden by it, but as you advance to the westward it opens out, and the whole four may be perceived. At about four or five leagues beyond, these hillocks appear, as it were, many islets, caused by the lower lands of the coast being invisible above the horizon.

**KEY ROMANO, &c.**—To the west from *Guajaba* at the distance of eight miles, lies *Key Romano*, an island stretching N. W. and S. E. in which direction it is sixteen leagues in extent. This land properly consists of two islands, separated by a channel, half a mile wide; the eastern isle has some heights, which, in the middle of it form a kind of saddle. The western isle is of low, wet, mangrove land. *Key Romano* lies considerably within the *White Grounds*, and two small keys, called *Key Verde* and *Key Conites*, lie nearly N. & W. from its easternmost height; the first at the distance of seven, and the second at twelve miles. *Key Verde* lies N. W. & W. from the west part of *Guajaba*, and *Key Conites*, N. W. by N.: between these two keys is an anchorage, which may be taken in case of necessity.

The *Key Verde* or *Green Key*, lies four and three-quarters miles S. by E. from *Key Confites*, and a reef extends from it, northward, to the distance of a mile and a half. From *Key Confites*, a reef likewise extends to the southward, one mile, and there is a clear passage of more than two miles within these reefs.

In order, therefore, to gain this anchorage, when coming from the eastward, you must stand in for the passage formed by these reefs, keeping a little nearer to *Confites* than to *Key Verde*; and, when the middle of *Confites* bears due N. W. by N. and the middle of *Key Verde* S. by W. you will be on or nearly on the edge of the bank. Then lay the ship's head W. N. W. and stand on in this direction, until the southernmost part of *Key Confites* bears north, when you will stand N. N. W. or a little more to the northward. Having at length brought the south end of *Confites* N. N. E. half a mile distant, you may let go the anchor, in 3½ or 4 fathoms, on sandy ground.

In getting under way from this anchorage, should the wind not allow you to stand to the S. E. you must bear away to the N. W. by N. until you have cleared a reef of rocks extending three-quarters of a mile to the N. W. from *Confites Key*; after which you may stand to the north, in order the sooner to gain the main channel.

West from *Key Verde* there is a round key, named *Palomas*, (Pigeon's) with various other small ones in its neighbourhood: to the northward is the island named *Key de Cruz*, (Key of the Cross) which is about thirteen miles in extent, N. by W. and S. by E. To the N. E. of this isle, and at the distance of three miles, there is on the very edge of the grounds, a shoal named *Tributario de Minerva*, which lies N. 41° W. from *Key Confites*, at twelve miles distance.

The *Edge of the Grounds*, which is reef, stretches out a mile and a half from *Juan Danue*, two and a half miles from *Guajaba*, and from the E. N. E. to N. E. from the high part of *Key Romano*, forms an opening, by which, according to report, a vessel may enter, and anchor in 6 fathoms, upon sand, but good holding ground; but as we cannot guarantee this, any one who makes the attempt ought to exert great caution.

From this opening the reef rises again, but makes the opening already described between *Key Verde* and *Key Confites*; and thence the edge of the ground continues, sometimes foul, and at others without reef, to the *Tributario Shoal*: this shoal breaks with a fresh breeze, and shows above the surface at low water. Six miles W. by N. from it is *Key Baril*, (Barrel Key) and farther to the west is *Great Paredon Key*. The edge of the grounds, which is sometimes foul, and sometimes clean, lies out two miles from *Key Baril*, and one and a half mile from the north part of the *Great Paredon*. The latter key affords good anchorage in either the time of breezes or land-winds. To ascertain and take it, remember that, at a cable's length to the north of its north point, there is a small round key, which you ought to leave on the larboard hand when going in, and passing within from half a cable to a cable's length from it. You anchor so soon as you are sheltered by the land of the *Great Paredon*, in the depth of water that suits the vessel's draught. On entering, you will leave to starboard another key, rather larger than the one you leave to larboard; it is called the *Middle Paredon*, and lies about two and a half miles from the first.

From the *Middle Paredon* to the west, there is another large key, called *Coco*, from the middle of which, to the west end, there is anchorage on its north side.

To the westward of *Coco*, follow the groups of keys called *St. Phillip's Guillermo's*, and *Santa Maria's*; to the west of these, and at the distance of sixteen leagues from *Coco Key*, lies that called *Key Frances*, which may be known from its having three round mounts; two of them very close together, and the third separate. These are named *Tetas de Viuda* (Widow's Paps.) Westward from this key is another portion of keys, one of which cannot be distinguished from another without difficulty, as they are so much alike.

The *edge of the Grounds* from *Key Frances*, and even something before that, is clean, and the lead will there warn you before you are in any danger upon it. Nevertheless, there is considerable risk from the *Bazo Nicolao* or *Nicholas Shoal*, which is a spot of sand, lying at a considerable distance to the northward of the other keys, and is 4½ fathoms long, and 5 fathoms wide; it is surrounded by a

reef to the N. E. —N. and N. W. to the distance of a cable and a half. Two miles to the west from it, another shoal breaks, which is named the *Alcatrazes*, and, as these shoals present great dangers to the navigator, it is necessary to give some marks to recognize them by, and which will indicate the position of a vessel in respect to the shoals.

Among other mountains which are on the land of Cuba, and about S. S. E. and south from these shoals, the *Sierra Morena* (Black Mountain) is the best known; it is long, and lies N. W. and S. E. The S. E. head of it is moderately high, and upon its extremities are various points or peaks (*pichachos*); of these peaks the two which are on the N. W. extremity of the *Sierra* (mountain) are high, and lie N. and S. true, with *Nicolao Shoal*. A little more to the west of the *Sierra Morena* rises another mountain, with three heights on it, of which the middle one is the highest; it lies S. by W. true from the *Nicolao Shoal*. These heights are named the *Tetas de la Bella* (Belle's Paps); and being N. and S. true with the middle one of them, you will be also N. and S. with the Bay of Cadiz Key, and past both the *Nicolao* and *Alcatrazes* Shoals.

To the west of the *Tetas de la Bella*, two mountains are seen; the first is of regular extent, the second or westernmost very long, and at the end of it are two hills, named *Sierra de Limones*, (Lime Mountain) which runs S. by W. true with the western extremity of the Bay of Cadiz Key. Farther to the west lies out another mountain, of proportioned extent, named *Santa Clara*; and something to the west of it may be seen the *Paps of Camaricoa*, of which there are four, though in some positions, there do not appear to be so many. The middle one is the largest, and lies S. W. with the westernmost part of *Key Cruz del Padre* (Key of the Father's Cross.) These mountains are the highest which are on the north coast of Cuba; but it is to be remarked that those which are to the east and west of them are very equal; those to the west, indeed, are little less elevated than these mountains themselves. Such are the lands that are seen in the interior of the island, from the proximities of the *Nicolao Shoal*.

The *White Ground* still tends to the west: there are many keys upon the edge or border of it, and the edge is dangerous, having some reefs on it. The *Ground* and *Keys* terminate at *Point Jacos*. The keys named *Mono*, *Piedras*, and *Monillo*, are the westernmost on the reef; these afford good anchorage where shelter from the swell of the norths may be found.

**THE YCACOS KEYS.**—To the north-eastward of *Port Yacacos*, at the distance of about a mile from the edge of the bank, lie the three islets called by the Spaniards *Cayo Mono*.

**PIEDRAS and MONILLO.** These keys afford convenient anchorage to vessels which cannot advantageously use the harbour of *Matanzas*. The southernmost and smallest is the *Monillo*, which lies at the distance of three miles from *Point Yacacos*; from the *Monillo* to the *Cayo de Piedras*, (Rocky Key) the distance is only half a mile, and from the latter to *Mono Key* it is two miles. At a mile and a quarter N. E. by N. from *Mono*, there is a dangerous reef.

The anchorage, in regular soundings of 5 to 7 fathoms, bottom of sand, is to the southward of *Mono*, and on the east and south of *Piedras*, where ships may be defended from any sea coming from the northward. The ground is sandy and clean, with from 5 to 6 fathoms, and vessels here may at all times get under sail. To take the anchorage, so soon as you discover the keys, stand for the middle of either passage, and let go the anchor at pleasure. It is only necessary that in approaching from the N. E. you must take care to avoid the reef above mentioned, lying to the north-eastward of *Mono*.

**MATANZAS.**—From *Point Yacacos* the coast tends to the S. W. and W. S. W. fourteen miles, to the *Point of Maya*, which is the eastern point of the great Bay of *Matanzas*. You may run along this coast at the distance of a league. The Pan of *Matanzas*, which distinguishes the bay, appears from this direction like an insulated mountain, having a round surface, and without peaks, water-courses, precipices, or other inequalities, excepting a small fissure near the S. E. part of the summit, which can hardly be noticed at a distance, being of so little depth. When bearing from S. S. W. to south, it appears like one round hill; but on any other bearing, another appears on each side of it, adjoining, and not



so high. The land to the eastward is even, though not very low; but it begins to rise at Matanzas with a gradual slope, and to the west the coast may be seen at the distance of eight leagues, but it is unlike even or level, without any remarkable height, other than the Pan, which appears over it.

The *Harbour of Matanzas*, which is at the bottom of the bay, is well sheltered from the norths; but it has several reefs. The *Derrotero* says it is difficult to get out of this place; for, as there is not room to beat out, it is necessary to get clear of it with the land breeze, which, during the season of the norths, occur but seldom. The harbour is of easy entrance; but it is necessary to avoid some shoals which lie almost in the very anchorage; to accomplish this, it is advisable to keep along the leeward coast, at the distance of two or three cables' length; passing Point Maya at the distance of a mile and a half, while it bears to the southward. With the vessel's head nearly south, you pass the western shore at the distance above mentioned; and so soon as you see the *Castle of St. Severino*, bearing W.  $\frac{1}{2}$  S. steer in that direction, until the houses, which will be seen in the S. W. corner of the bay, bear S.  $85^{\circ}$  W. when you must steer towards them, and anchor so soon as the *Castle of St. Severino* bears between N. W.  $\frac{1}{2}$  W. and N. W.  $\frac{1}{2}$  N. where you will have 5 or 6 fathoms of water, on loose clay or ooze.

To get out of this harbour it is best to clear yourself by towing, or by the aid of the land breeze, if you have any, at a time when you consider the weather as settled, and there is no appearance of norths coming on. If agreeable, you may cross over, and come to an anchor on the bank or Shoal Point of Maya, which will be a proper situation to make sail from, when convenient.

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*Remarks on the Harbour of Matanzas, by Captain Livingston, from his own experience.*

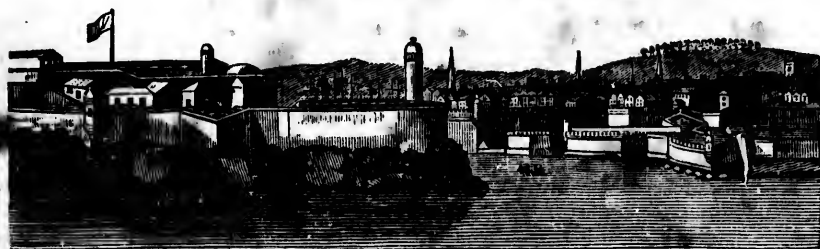
"Vessels drawing not more than 12 or 13 feet, may keep about  $2\frac{1}{2}$  cable's length from the west shore, all along, until past the *Castle of St. Severino*, which lies on the starboard hand, about, or rather more than a mile from the town; by this they will pass between the castle and the *Baro Nuevo* or *New Shoal*, and will soon have from  $3\frac{1}{2}$  to  $2\frac{1}{2}$  fathoms, when rounding-to: with the vessel's head to the eastward, they may anchor in 3 or  $3\frac{1}{2}$  fathoms, on fine sand, inside of the shoals, and in the best place for getting loaded. All vessels are loaded by launches; cargoes are also landed by means of them. The tide rises about two feet four inches—at least it did so in 1818, but I have been told that prior to 1817, it did not rise more than from nine inches to one foot. I cannot vouch for the accuracy of this information. Vessels may obtain very good water in Matanzas River, but boats can get out with it only at high water; and, to obtain it good, it is necessary to ascend the river 5 or 6 miles, or even up to the falls, which are caused by walls built across to raise the water sufficiently high to supply some mills. If any person agrees with a Spaniard to water his vessel, he should send someone in the Spanish launch to see it taken in, otherwise they will not be at the trouble of ascending the river far enough to get good water.

From the harbour of Matanzas to the N. W. the coast rounds to *Point Guanós*, which is about four miles distant from the mouth of the bay or harbour. From *Point Guanós*, the coast tends nearly true West to the *Moro* of Havana, as already noticed. The coast is mostly clean and bold-to; but a little to the west of *Arco de Canasi*, a kind of reef lies out, about one cable's length, and, at a mile N. N. E. from the *Moro Castle*, is the shoal on which the *Mariner* grounded, in 1815. A vessel may, however, run along at the distance of a league, or less, if required. There is a rocky shoal, with little water on it, which extends from the coast between the *Rincon*, or Corner, and the *Point of Tarara* or *Cobre*; but it will be avoided by sailing as above. On this part of the coast are various small harbours to which droppers resort, such as *Puerto Escondido*, *Arco de Canasi*, and *Santa Cruz*, but they are not fit for vessels drawing above 6 feet of water. All along the coast are soundings on sand, which extend more or less from shore;



but the edge is so steep, as immediately to pass from 100 fathoms to 20 ; but, with the lead going, there is no danger in running along, because the soundings will warn any one of the limits they may stand into without danger ; and, in good weather, you may even pass the night, letting go a kedge upon the soundings, a manœuvre which may sometimes be very convenient, either to avoid passing your port, if the breeze blows fresh at night, or not to lose ground if the land-breeze is light, or it is calm. The hills or mountains of *Jaruco*, which rise nearly in the middle of this coast, serve to recognize it by, and determine your situation.

**HAVANA.**—This, as noticed, is in point of importance, the principal harbour of Cuba, and has been described as one of the best in the world, being deep enough for vessels of the largest class, sufficiently capacious to receive a thousand ships of war ; and so safe that vessels ride securely without cable or anchor. The entrance is by a channel half a mile long, so narrow that only a single vessel can enter at once, and fortified through the whole distance with platforms, works and artillery. The mouth of this channel is secured by two strong castles, as exhibited in the figure beneath. That on the eastern side called *Morro Castle*, is built in the form of a triangle, fortified with bastions, and mounted with forty pieces of cannon, almost level with the water. On the opposite side of the channel is another strong fort, called the *Punta Castle*, connected with the *Castle town*, on the north. The city is situated on the western side of the harbour, and is surrounded by ramparts, bastions, and ditches.



*The Morro Castle, Light-house, and Entrance of Havana.*

You enter under the *Morro Castle*, situated on a high rock, on the south end of which is a light-house, containing reflecting lamps, which make a brilliant appearance, showing a *revolving light*, which may be seen twenty-five miles, past which the channel is so narrow that you may nearly touch the side with a boat-hook : the top of the fort overtops the masts of the stoutest ship. After entering through this pass, you arrive at a second, only one hundred yards wide, on one side of which is the *Punta Fort*, (before mentioned) and on the other *Castle Blanca*, a prodigious strong fort, directly opposite the city ; having passed these works, you enter a harbour almost unrivalled.

In passing the first castle, (*Morro*) you must not come to anchor, as a reef lies off the starboard hand as you enter, which is dangerous.

It is stated that the entrance to the harbour of Havana is rapidly filling up. The channel by which three-deckers formerly entered, will now barely permit forty-four gun ships to pass.

The harbour of Havana may be distinguished, at a distance, by the paps of *Managua*, which, as already stated, lie on the meridian of the entrance ; while the land, both to the eastward and westward, is low and equal, with the exception only of the *Morro*, or little hill, surmounted by the fortifications and light-house. At six leagues to the eastward, the *Hills of Jaruco* or *Iron Hills*, may be seen. These are of moderate height, and detached. The tables of *Mariel* are about six leagues to the westward ; and, in advancing, not only these, but the *Hill of Cavanias* may, at times, be seen. The form of the harbour can be best understood by reference to the particular plan of it, from the survey of *Don*

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*José del Río*, by whom the position of the Morro Castle has been determined, and delineated on a chart, published by E. & G. W. BLUNT. The entrance is five miles long, E. and N. W. and it is, therefore, very difficult to enter when the breeze is not to the northward of E. N. E. The breeze enters at about 10h. A. M. and blows till sunset ; and, therefore, it is only between these hours that you can sail into the port. It is very difficult, if not impossible, to sail in when the breeze is from E. N. E. or S. E., which it often is in the rainy season, and some times even in the dry season, under such circumstances the only resource is to anchor in the Morro Shoal or Bank, and entering by towing or warping, when the breeze takes on, which, as already stated, is at night. As on entering, these shoals are so exposed to the N. E., when the breeze comes to the N. E., which it often does, in the dry season, so that of the necessity is not only inconvenient, from the wind's being scant, but also because, when the breeze enters the mouth of the harbour, which renders this operation much exposed to danger. Generally speaking, it is best to enter about mid-day, and to go out at the dawn of day, should the wind be scant for getting in, it is impossible to anchor outside the Morro, and to warp in at night.

The Morro Bank affords anchorage safe enough in this time of the ordinary winds, and is much exposed in the season of the northers, and in the hurricane season, and, therefore, advisable to anchor so as to have the mouth of the harbour open, and to be extremely vigilant, lest you should be surprised. To draw yourself into the harbour the eye may suffice ; for in the channel there is no other danger than the shallows, which stretch out from each side. That on the Morro side does not extend one third of a cable from the shore. To avoid the reef and shoal, it is requisite not to go farther from the eastern shore than a cable's length, working your vessel so as to run along half a cable's length from the coast on the N. E. side, the mid-channel being at about three quarters of a cable's length. When done abreast of the middle of Castle Balaca on the N. E. which is the place where you are abreast of the N. E. front side of the Morro, you may keep away, and anchor opposite to the eastern part of the city, at what distance you choose. The largest ships may approach near enough to lay a plank on shore.

At a short distance, without the Morro Castle, to the S. W. is a very small shoal, with 10 fathoms over it, this bank is to be feared only when there is much swell on ; at other times the largest ship may pass over it without touching. Even when the water begins to stir on, you need not be afraid of it, as at half a cable's length from the Morro, you will be perfectly clear of it. Finally, if you wish to pass up, without any risk, send a boat to place yourself on the Capitan shoal, which will serve you for a mark, then stand up to the outside of her, and you will be free from all danger.

A respectable English navigator, giving directions to the Havana, has said, "On going in with the wind from the eastward, keep as close to the Morro as possible. So soon as you are within, you may meet with heavy and variable winds, and should you be obliged to go in anchor, great care should be taken to shorten sail, and veer cable quickly, as the ground at the entrance of the harbour is not very good for holding. All ships lying in the channel of the lagoon, moor head and stern. There are two wrecks lying rather more than two cables' length within the entrance of the harbour, and marked by buoys, with small flags. The channel lies between them."

Ships of war and large merchant vessels generally warp up the harbour, and

When approaching the Havana, from the eastward, care must be taken to avoid a shoal more than a quarter of a mile from shore, and on which the ship *Mariner*, of Port Glasgow, grounded in 1836. The vessel drew about 17 feet of water, and from the shoal, the Morro Castle bore about S. E. W. distant one mile. This notice is given from the information of Mr. Cooper, who was mate of the ship *Jane*, of Glasgow, then in company with the *Mariner*.

The Capitan is the projecting edge of the shelf within the Morro, at about a cable's length from the light-house. A similar projection farther in, on the same side, is the *Pastor* or *Shepherdess*.

anchor off the sheers or arsenal, where there is sufficient room for a great number of ships to labor; in from 7 to 5 fathoms.

From the Morro, or Castle of Havana, to *Punta de Yacoo*, (or Yaco), the distance is twenty leagues, and the course nearly E.  $\frac{1}{2}$  N. From this point may be seen the Loaf or Pan of Matanzas to the W. S. W. This hill, which is the northernmost that you will descry to the eastward of the Havana, lies over the Bay of Matanzas, and constitutes the grand point of departure for ships bound hence to the northward, through the Strait of Florida.



*Pan of Matanzas to the E. S. E.*

## ISLAND OF CUBA

We now commence with the *south coast of Cuba*, from Cape Maize, proceeding regularly westward to Cape Antonio, including the Isle of Pines, &c. From Cape Antonio we continue to describe the coast eastward along the north side to Havana.

The greater portion of the coasts of Cuba are extremely foul. Those most clear are the southern coast, from Cape Maize to Cape Cruz, the N. E. coast from Cape Maize to Punta (Point) Maternillo, and the N. W. coast, from the Port of Mariel to Matanzas. On the other parts are many shallows, keys, and reefs, so thickly planted and so numerous, that in many places they form barriers, which prevent access to the coast of the island.

The land to the southward of Cape Maize, at about half a mile from it, begins to be high and clear, and it tends about S. W.  $\frac{1}{2}$  W.  $\frac{1}{2}$  miles, forming a small bay, with a sandy beach, named *Calate Ovado*. From this *Calate* or Cove, the shore tends about S. S. W. 4 miles, to *Punta Negra*, or Point Negra, whence it winds more to the W. S. W. about 4 miles more, to *Punta Caleta*; 28 miles W.  $\frac{1}{2}$  S. from which lies *Point Savana-la-Mana*, and 4 miles to the westward, from the latter, is the *Port of Baitiqueri*.

The *Derrotiro* says that, "From Cape Maize to Point Negra, the shore ought not to be approached nearer than two leagues; for, as there is no inducement to approach it, surely it would be foolish to run upon a coast which lies completely open to the breezes, and along which there is no anchorage, although it is clear, and has no unseen danger. From Point Negra to Baitiqueri there is no risk in running along shore, at the distance of a mile; and along this part, and to leeward of the various points thereon, you may anchor in the depth of water which suits you, from 35 to 7 fathoms; but the best bottom is in 16 fathoms, where you will be at a good distance off shore. At this place, several rivers discharge, from which you may provide yourself with excellent water, and plenty of firewood may be procured."

The Cape Bueno, or Ocoa Point of the English charts, lies to the eastward of the Punta de la Caleta of the Spanish; and it has been said by a British navigator, "Within this cape is the Bay of Ocoa, in which there is anchorage. The marks for anchoring are, the easternmost point bearing E. S. E. about one mile and a half, when the Table Land of St. Nicolas Mole will be in a line with the point. You may anchor in any water, the depths being from 35 to 7 fathoms, but 16 and 18 are the best; and plenty of fish may be caught with hook and line. Two fresh-water rivulets run into this bay, the one named *Rio do Mel*, or *Honey River*, lying 2 or 3 miles to the westward of the anchorage; the other, which lies nearer, is to the eastward, and at the bottom of the easternmost gully, but is generally dry, from the unregularity of rain."



The Harbour of Baltiqueri, already mentioned, is very small, and has a very narrow entrance; it has only from 15 to 20 feet of water, and therefore is fit for small vessels only: it is well sheltered from all winds, and the rivulet, of the same name, which runs into the interior of the harbour, affords an opportunity of watering. There is rather more than a cable's length between the two outer points of the entrance, but a rocky reef, with from 10 to 17 feet on the edge of it, runs out from the windward point; and there is, also, a reef running out about a quarter of a cable from the leeward point. Between these two reefs lies the entrance channel, which is only 60 yards wide, and continues thus narrow for about a cable's length, after which it widens as you approach the two interior points, and the depth of water admits of approaching the shore.

From Baltiqueri the coast tends about W. S. W. true for 5 miles, to Point Torquilla, from whence it follows W. true 5 miles, to the river *Yateras*; S. W. 4 miles, is Point Malabo; and at 5 miles west from the latter lies *Puerto Escondido* (Hidden Port). All the coast between Baltiqueri and Port Escondido is clean, and may be safely sailed along at the distance of a mile.

Port Escondido forms an anchorage sheltered from all winds: in the interior of it are various bays, fit for all classes of vessels; but its entrance is very narrow, for between the outer points there is only one cable's length; and, as each of them sends out a reef, of which the windward one lies out a third of a cable, the channel is only 60 yards wide: it, however, luckily has no windings, and the whole length of the strait is not more than a cable and a half; and as to enter it you must steer N. 45° W. it may always be done with a free wind, even if the breeze is at N. E. The most prudent mode of entering this harbour, is to order a boat to be placed on the outer point of the windward reef, which is nearly fit mid-length of the channel, and which will serve as a mark to sail in by. You have then only to bring the vessel's head into the direction above given, and run on in that direction, passing close to the boat, until you have passed the inner point to leeward, where you may anchor in 4 or 6 fathoms, clay ground.

As there is no light on this harbour, nor any proper leading marks for running in, it is proper to show the vessel sufficient room to alter her course from windward to N. 45° W. the course for entering the harbour; we, therefore, recommend, although the windward coast of the entrance may be passed at half a cable's length, that it should not be passed at less than 3 or 4 cables; thus, although in luffing to, the vessel may pass the demarcation given (N. 45° W.) yet there will be room to rectify this, by luffing to windward before you are between the points, so as to gain the proper bearing, which is absolutely necessary, as the entrance cannot otherwise be passed without danger. Any one, wishing to run fast up the harbour, instead of bringing to in the anchorage which we have mentioned, may easily do so by the eye, by towing, or even under sail; but for this it is necessary to consult a pilot of the harbour.

*Puerto Escondido*, having no commerce, it is seldom that any vessel is bound into it; and if, in any storm or hurricane, one is obliged to seek anchorage, we would rather advise every exertion to be made in order to reach the next harbour to the west, named *Guantanamo*; because, if it be difficult to enter *Port Escondido* in good weather, it must be much more so in storms and obscure weather, and it will be by no means strange if, without a pilot, or even with one, a vessel might be driven on one of the reefs of the entrance, or, what is still worse, might get on the rocks at some point of the coast, which might be mistaken for the entrance of this harbour.

**GUANTANAMO CUMBERLAND HARBOUR.** A very extensive and excellent harbour, lying more than 24 leagues to the westward of Cape Maize, and 4 leagues from *Puerto Escondido*. The coast, in the latter distance, forms a series of very small sandy coves, and it is very clean. The entrance of Guantanamo, between the two outer points, is more than a mile broad. *Don Perrotero* says, "The east point may be approached without fear, as there is no danger but what

\* *Puerto Escondido* or Hidden Port, is well termed so, as I have been within less than a mile of the entrance of it, and could not make it out distinctly. — A. L.

is visible. The coast tends nearly North, about a mile and a quarter, whence it changes to the N. E. to form the harbour. On the windward side of the entrance, and at about three quarters of a mile within the outer point, a rocky shoal stretches from shore, upon the edge of which are from 4 to 5 fathoms of water; this shoal is rather more than a cable's length broad, and may be easily avoided by attending to the subsequent directions. On the western side there is also a reef of rocks; but it is narrower than that on the east. To enter this harbour it is necessary only to place your vessel so as to pass its windward point at the distance of one or two cable's length, and thence run up to N. W. by N. on which course you must continue until the North point of the River Guantanamo, Augusta River, bears West: you may then change your course to N. by E. until you have the interior point of the windward shore bearing East, when you will be clear of the reef, which stretches from it. You may next haul by the wind, and anchor where it may suit you best: or, if you wish to run into the interior of the harbour, and the breeze will not allow you to lay through, you may beat in with the assistance of the lead only.

The following remarks on the Harbour of Guantanamo were made by an officer on the Jamaica station, in 1809:

"The appearance of a remarkable spot of land, on the side of a hill, at a distance in-shore, determines the situation of Cumberland Harbour, which, if you fall in to the westward, exactly resembles a kite, and is totally open when it bears N. E.  $\frac{1}{2}$  E. but, if you are far to the southward, it will either be partly or entirely hid, unless you are far enough to the westward to bring it over the hills on that side of it."

The following directions for sailing in, have been given by Mr. J. Town, from observations made by him in 1817:

"On coming in, you will observe in the middle of the bay, a remarkable light yellow (or brown and white) cliff: bring this cliff to bear about N. by W. or N. W.  $\frac{1}{2}$  W. and run in with that bearing until you open, on the eastern side, a small sandy point, with two huts on it. This point, called Fisherman's Point, cannot be mistaken, as there is no other sandy point on the East side of the harbour. After you have opened Fisherman's Point, with the bearing above described, you may steer N. W. E.; and when Fisherman's Point bears E. by S. haul up N. E. or N. E. by E. and anchor in 6 or 7 fathoms, muddy bottom. The best marks for anchoring are, Fisherman's Point S. by E. or S. S. E. the West head of the East Head S. W.  $\frac{1}{2}$  W. and the light yellow cliff, W.  $\frac{1}{2}$  S. in 7 fathoms.

"On coming in from the eastward, you may keep in as near to the east head of the entrance as you please, there being 10 fathoms close to it: after passing, run to the westward, and bring the afore-mentioned bearings on, which will clear the reef that lies off the point a little to the S. W. of Fisherman's Point. The marks for the south end of this reef, which has heretofore been described as a single rock, are, the two huts on Fisherman's Point on with each other, bearing N. E. by E. and the point within the East Head S. by E.; West Head S. W. by W.  $\frac{1}{2}$  W.; entrance of Augusta River, W.  $\frac{1}{2}$  S.; the yellow cliff, N. W. by N. The marks for the north end of the reef are, the N. E. hut about its breadth open to the northward of the S. W. hut, bearing N. E. by E.  $\frac{1}{2}$  E.; a point within the East Head S.  $\frac{1}{2}$  E.; the entrance of Augusta River, W. S. W. The reef lies N. by W. and S. by E. about  $\frac{1}{2}$  cable's length, and 20 fathoms in breadth. It has 17 feet water on its shoalest part, 3 $\frac{1}{2}$  fathoms within it, and 5 fathoms close to the outer edge, which is about  $\frac{1}{2}$  cable's length from the shore.

"On coming in from westward, you may approach the point to a cable's length, as it is steep-to; but, from the appearance of the point at a distance, a stranger would suppose there was a reef extending from it: at least, when you are within a quarter of a mile. After you are within this point, haul more to the eastward, as there is a flat that extends from the entrance of Augusta River, in a straight direction for the yellow cliff: this flat extends nearly one-third of the distance across the harbour towards Fisherman's Point; but the soundings to and along it are very regular.

If the wind is off the land, and you have to work in, your lead will be the



best pilot when standing to the westward; but, in standing to the eastward, be careful, and do not approach the land nearer than three cables' length, as the reef, already described, is steep to.

In running in, with the marks described, you will be within the points before you get soundings; after which the soundings are very regular, from 18 to 6 fathoms.

Augusta River is narrow at the entrance, and has only 12 or 14 feet water at about one quarter of a mile up. You may go up the river by keeping the starboard shore on board, or go into a large lagoon on the larboard side.

When the entrance of the Harbour bears nearly North, 5 or 6 miles distant; the land to the westward of the harbour and the Morro Castle of St. Jago de Cuba will be in line, bearing W.  $\frac{1}{2}$  N; and the outermost land to the eastward E. N. E.

From Guantanamo to Point Berracos the coast tends nearly true West, 26 miles; it is generally clean, and you may run along it at a mile from shore. Point Berracos may be known by a metro or hill, which rises on it. From this point the coast bends to the north-westward, and forms the Bay of Cabo Baxa (*Low Cape*), whence it tends west to the River Juragua. The space between Cape Baxo or Juragua is named *los Altos*, or the *Altars*, because the coast forms three beachy bays, separated from each other by high scarped mounts. The river Juragua is 10 miles distant from Point Berracos.

From the river Juragua the coast continues nearly West, 12 miles, to the entrance of the port of St. Jago de Cuba: it is all clean, and may be run along at the distance of a mile; the rivers *De Sardinero* and *De Aquadores* disembogue upon it; and near this last may be seen some small houses inhabited by water-carriers.

The HARBOUR of ST. JAGO DE CUBA is very good; but the entrance, being narrow and crooked, is difficult to take. On the east point stands the *Morro Castle*, and a little farther in *Estrella* (Star) *Castle*, which is separated from the Morro by a bay, at the end of which is another small fort or battery. A rocky shoal runs out from the windward coast, which extends about 2 cables' length from the Morro Point: and, on the leeward side, another shoal runs out, about a cable's length to the south of the point. The channel lies between these two shoals. At its entrance it is a cable's length in width, and farther in, is reduced by about a third of a cable; so that, when abreast of the bay, which is between the Morro and Estrella Castles, which is the narrowest part, it is only two-thirds of a cable in width; and from this it continues, with the same width, until you pass *Cape Smith*, when the harbour begins to open.

Take this point you ought to sail half a league or two miles off the shore, until the Estrella Castle bears N. E.; when, placing the vessel's prow to that direction, and steering the same course, you will enter the channel formed by the shoals; but, so soon as you are abreast of the Morro Point, within a quarter of a cable's length of which you may pass, you may begin to keep away; so that, when up with the battery, which is at the bottom of the bay, between the Morro and Estrella Castles, the vessel's head shall be N.  $\frac{1}{2}$  W. which course it is necessary to follow until you are past Cape Smith, when you may anchor.

The necessity you are under (from the crookedness of the entrance) of keeping away four points, viz. from N. E. to N. renders it almost needless that a large vessel should have sufficient space to make the turn in: to this end we advise that, so soon as you are abreast of the Morro Point, you ought to begin to keep away; for, without this, you may very easily get ashore at the Estrella Castle. It must here be remarked, that it would be improper to keep the vessel's prow away to the North at once, though it may sometimes be done under favourable circumstances; for, by doing this, you incur a risk of getting ashore on the corner of the leeward reef.

The distance between the Morro Point and abreast of the battery, at the bottom of the bay, on the East, is one cable's length; with the knowledge of this, the Pilot will know to regulate the reefing and trim the sails, &c. as may be necessary to gain his purpose, and according to the facility with which the vessel can be worked.

At the bottom of this harbour, on the N. E. is the City of St. Jago, or of Cuba, which is the most ancient city in the island.

From St. Jago de Cuba, the coast continues to the west, forming various bays, with anchorages of little importance, the knowledge of which is alone useful to coasters. Upon this coast are the high Copper Mountains (*Sierras del Cobre*), which are about 11 miles distant from St. Jago: in clear weather these mountains have been seen 33 leagues off.

Forty miles W. by S. from St. Jago de Cuba rises another very high mountain, named the *Peak of Tarquino*, which is an excellent land-mark. *Cape Cruz* is the last place on this part of the island, where the coast is clean: it lies more than 30 leagues from St. Jago; and you may run along the whole intermediate coast at the distance of a league, or even less; but, as there is no motive to induce one to approximate it so much, it seems more advisable for those bound to the westward to run along at 2 or 3 leagues distance from the shore.

At *Cape de Cruz* commences a *White Bank*, which extends 60 leagues to the north-westward, and terminates at *Trinidad*. Upon this bank are keys and reefs without number, which form channels of more or less width: of the keys on the edge of the bank, the principal are those called the *Cayos de las Doce Leguas*, or the *Twelve-League Keys*, the whole range of which extend not less than 20 leagues in a W. N. W. direction.

To coast along the *Doce Leguas Keys*, and being 3 miles to the southward of *Cape de Cruz*, steer W. N. W.  $\frac{1}{2}$  W. with which course you will run along the edge of the bank; and, having run 12 miles in this direction, alter your course to N. W.  $\frac{1}{2}$  N. with which you will enter upon the bank in 40 fathoms, on sand and rocks; keep this course for 21 miles, when, with the edge in sight, you will leave it in nearly 50 fathoms. Continuing the same course, 17 miles more, you will again find 50 fathoms, or less; and soon afterwards will see *Levesa Key* to the N. N. E. and a-head will be seen the *Eastern Head* of the *Doce Leguas Keys*.

Having recognized these two points, you must run along on the bank, but without getting into less than 4 fathoms, until you find yourself 3 miles to the south of the *Eastern Head*, and in 7 fathoms water, over a bottom of sand; you must then run W. by N. With this course you will shortly run off the bank, and may coast along the *Doce Leguas Keys*, at the distance of a league, without any fear; and having run 21 miles, steer W. N. W. 18 miles, and you will then have the *Boca de Caballones* (or Mouth of the *Caballones Channel*) open, and it may be easily known, as it is broader than any other to the eastward, and because the S. and E. point of its entrance is very low, and the edges at the water of *Cabo-ruco* rock.

Having ascertained your situation, from seeing this boca or channel, you may continue coasting along the keys, at the distance of 3 miles, continuing on the preceding course; and having run 21 miles, you will see to the northward a great opening, formed by the keys, which is the *Boca Grande*: passing by it, pursue the same course, keeping the *Cinco-Balas*, or *Five-Balls' Keys* in sight, at the distance of 2 leagues, and noting that a reef extends 3 miles to the S. W. of *Key Breton*. The latter is the westernmost of the *Doce Leguas Keys*. Nearly in a line between *Key Breton* and *Puerto Casilda*, on the main of Cuba, is the *Placer de la Puz*, a sand-bank, having on its eastern part good anchorage, and no where less than 14 fathoms, on sand and shells.

**ADMONITIONS.**—If night comes on, when you are in the vicinity of *Cape de Cruz*, or to the south of it, as assumed in the preceding directions, you must steer W.  $\frac{1}{2}$  S. for 12 miles, and thence N. W.  $\frac{1}{2}$  W. to keep completely free of the *Doce Leguas Keys*, continue this course till day-light, changing it afterwards so as to make and recognize these keys, and thus include yourself in the route already recommended.

Should night overtake you in the traverse between *Cape de Cruz* and the *Eastern Head*, when it might suit you to anchor on the bank, you may do so on any part of it observing only that the edges of the bank are rocky, and that to get clean ground, you ought to run upon it into 20, or even 10 fathoms, on sand.

If night falls when you are coasting along the Doce Leguas Keys, as already directed, steer true West until you consider yourself from 3 to 3½ leagues from them, and even then continue the same course, considering that hereabout the currents set N. E. and S. W.; and, if the tide happens to set in, it is very possible to get aground on the reef: hence no precaution ought to be omitted which similar cases require.

If, when in sight of the Canal de Caballones, you wish to anchor in its mouth from a case of emergency, you can do so without getting into less than 3 fathoms, on sand; and, in case of being unable to continue your course to the south of the keys, you can shape your course so as to desery the land of Cuba, passing between the Bermeja and Manuel Gómez Keys, in 12 fathoms, on clay; following afterwards to the north, to make the Ana Maria Keys, and giving a birth to the shoal of Yagua, which you leave to larboard, and to some heads which are to the east of it, and which should be left to starboard. Having seen the last keys, and placed yourself about half a league from them, you must steer for the coast; or act as directed in the instructions for this interior navigation.

The City of TRINIDAD, is situated in lat.  $21^{\circ} 42'$ , long.  $80^{\circ} 4'$ . It lies on high ground, about three miles from the sea: the River Guanabo, or of Trinidad, passes rather more than half a mile to the northward of it, and falls into the sea at a little to the south of it. Trinidad communicates with the sea by this river, from the mouth of which it is three short miles distant; by Puerto Casilda, from which it is distant two miles and a half; and, by Puerto Masio, the distance from which is 4 miles. The mouth of the River Guanabo is to the north of the point of *San Aguilár*, at which the white grounds extending from Cape de Cruz terminate. The harbours of Casilda and Masio are to the eastward of this point, and to arrive at them a vessel must enter upon the white grounds.

Directions for sailing from Cape de Cruz to the neighbourhood of these ports have already been given. We have only to repeat that it is always advisable to keep a good look-out, and the lead going, especially by night. Having recognized *Key Grande*, continue the N. W. course until *Key Breton* bears N. E., bringing it to the distance of 9 miles. From this spot a N. N. W. & W. course, 38 miles, will bring you to another, from which the *Pico de Azúcar*, or Sugar-loaf Hill, will appear on with the most easterly of the hills of *Bonao*, which are some high ridges immediately to the westward of it. In this navigation the keys called the *Zarza* and *Machos* will be seen from without, and, when the leading mark above given is on, you will still be in sight of the *Machos*, and of another very small key, named *Puga*: the latter is rendered remarkable by the breaking of the sea upon it, and it will bear about N. & W. a mile distant. From the same spot *Key Blanco* will be seen, bearing about N. N. W. & W. This key is remarkable both as the westernmost key on the bank, and because its shore is bordered with white rocks.

The place where you ought to enter upon the White Ground is between the *Key Puga* and *Blanco*, to do which you must steer so as to pass about half a mile, or rather less, from the reef of *Puga*, which reef always shows; and in the passage you will always have 8 fathoms of water. Having passed *Puga*, you must steer N. & W. in order to anchor in 4 fathoms, sand and weed; with the south part of *Key Blanco* W. & S. that is, if the approach of night, or waiting for a pilot, render it necessary.

On the route between *Key Grande* and *Key Blanco*, no one need be at any loss, who has the particular chart of the navigation between the *Rio Guanabo* and the *Boca Grande*. By it may be seen that any one who wishes to enter upon the bank by the *Boca Grande* may always do so, provided his vessel does not draw more than 12 feet of water; and it may even sometimes be convenient to run in here to anchor, under the shelter of *Key Grande* or those of *Cinco Balas*, in case of bad weather coming on, which will frequently happen, and which is much to be feared in August, September, and October: or, if he does not choose to anchor in the shelter of those keys, he may run in until he recognizes the key called *Rabi-horcado*, which lies on the larboard hand, and will afterwards see *Cayo Burgab*: having passed eastward of the latter, he may run N. N. W. without fear, being guided by the vessel's draught



of water; and, entering by the Machos Channel, he may run for Masio or Puerto Casilda, as he sees proper.

The key called *Blanco de Zarza* lies N. by W. 8 miles from the Cayo Zarza de fuera, and half a league to the southward of *Punta del Caney*. Between this key and the coast there is anchorage, as there also is in various other places hereabout, which will be found more or less commodious, according to the winds and draught of the vessel. The keys, in general, are but little above the surface of the water, and their low shores have no extent of beach; but rocky banks stretch out to a short distance from their points; excepting, however, those which form the Machos Channel, which, within the strait, are very clean.

The Coast from the River Jatibonico, westward, to Port Casilda, Trinidad, &c.—The coast between Point Jatibonico and Point Pasabanao, in a distance of two leagues, forms a bay with 2½ and 3 fathoms. The shore is drowned and covered with mangroves. At Point Jatibonico the river of the same name enters the sea. To water in it, you must ascend the river for a league. Many cedar and Mahogany trees are brought down this river, and many vessels take in cargoes here. Three miles to the west of Pasabanao is the *Estero de las Caovas*, (Mahogany Creek,) in which small craft, not drawing above 6 feet, may find shelter from the south-east winds. After *Estero de las Caovas*, at 3 miles, follows *Point Manati*, on which there are some wells of tolerably sweet water. Point *Manati*, with Point *Tolote*, which lies two leagues to the west of it, form a small bay, in the middle of which is the mouth of the *Estero Nuevo* (New Creek.) Point *Tolote* and Point *Zarza*, 2 miles distant, form another bay, in which is the *Estero de San Marcos*, with very little water at its entrance. On the eastern part of Point *Zarza*, the river disembogues itself. By this river there is much traffic carried on with the town of Sancti Spiritu, which is 13 leagues inland. West of *Zarza Point* is the creek of the same name, with 7 feet water, where small vessels may find shelter from the South-easters, as they may also to the westward of Point *Zarza*, under the lee of a reef, which runs out to the W. S. W. of it for nearly a mile, and which forms a bay with a clayey bottom of 3 and 3½ fathoms.

A league to the west of Point *Zarza* is Point *Caney*, between is a small bay, with 3 and 3½ fathoms, clay and grass bottom. On the west of Point *Caney* is the *Estero* (Creek) of the same name, with 7 feet of water. To the south of this point is *Cayo Blanco de Zarza* (the White Key of Zarza;) and between the reef which runs out from it, and the point, there is a good channel, navigable for any vessel, which, as before said, may find good shelter to the west of the key. Beyond Point *Caney*, on the west, is the *Desembarcadero de Mangle* (Mangrove Mouth). Two leagues west of Point *Caney* is Point *Ciego*; between is a bay, with from 3 to 5 fathoms: in the middle of it is the river *Tallaboa*, which has very little water in the dry season, and that is a brook, at a very short distance to the westward of Point *Ciego*, is always preferable. After Point *Ciego* comes that of *Yguanojo*, at which is the river of the same name, the water of which is excellent; but, to procure it, it is necessary to ascend the river for a league. One league and a half west from Point *Yguanojo* is that of *Agabama*, to the eastward of which run out the *Cayos de Tierra* (Keys of the Land,) which, with Point *Yguanojo*, form a bay called *St. Pedro's*, having from 3½ to 6 fathoms, on clay.

The *Cayos de Tierra*, with Point *Agabama*, form another small bay, having 7, 5, and 4 fathoms, on clay and sand. At Point *Agabama* is the river of the same name.

The shores from *Agabama* to Point *Casilda* are drowned, and covered with mangroves (literally watery mangrove land;) and, from *Casilda* to Point *Guanrabo*, they are of sand and scarp'd rock. Relative to the interior of the land, we shall only notice that the *Potrerillo*, which is the highest point of the mountains above Trinidad, may be seen in clear days at 21 leagues off, and the Sugar-loaf (*Pan de Azucar*) and its adjacent marks for accurately ascertaining your position.

From Boca Grande, the sea may be entered on the bank as far as the Outer *Zarza*, between which and the Machos there is a spacious entrance, with

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depth for any vessels. Nevertheless, if, when in sight of Key Breton, and to leeward of Boca Grande, you wish to anchor upon the bank, in order to regulate the time for making *Puget* and *Cayo Blanco*, or for any other course, it may be done by steering towards Key Breton, until the N. W. part of that key bears E.  $\frac{1}{2}$  N.; but in running thus, sound frequently; until you have from 4 to 5 fathoms, on sand, when you may anchor. If the wind will not allow you to steer in for the anchorage directly east, and you are obliged to beat to windward, observe not to prolong the tacks to the northward longer than until the N. W. part of the key bears E. S. E. or the south tack farther than until the same point of the key bears N. E. by E.; between these bearings you may work, tack and tack, till you reach the anchorage, in which there is a shelter from the winds from N. by E. to S. W. caused by the cordon of reefs and keys which lie in these directions. All these reefs show above water, and the outer part of them lies nearly three miles S. W. from the west part of Key Breton.

Any large vessel seeking shelter, from the weather or any other cause, upon the bank, may enter between the Outer Zarza and outer Machos, and may run over the whole of the interior of the bank; there being sufficient depth for vessels of any class; and for this the chart is the best guide.

TIDES.—We shall now terminate this part of the subject by remarking that the tides produce streams more or less rapid, and in various directions, according to the channels which the reefs form; but they are of very little importance, because the greatest rise of water, which is at the time of the new moon, is not more than about one and a half, except with S. E. winds, when it sometimes rises 5 feet.

MASIO, PORT CASILDA, and TRINIDAD.—To enter *Port Masio*, being within the bank, steer N.  $\frac{1}{2}$  W. until the south part of Key Blanco bears W.  $\frac{1}{2}$  S.; in which situation you will find 4 fathoms, on clay and weeds, or grass (*yerba*). From thence run N. 50° W. with which course you will run along the middle of the channel of Masio, which is formed by a shoal extending N. W. by W. from Key Blanco, and a shoal, with some heads nearly even with the water, on the land-side; and you must continue thus till you have *Point Jobabo* N.  $\frac{1}{2}$  W. This point may easily be known by a sandy beach. You must then luff up with the prow to the west point of the harbour; and steering N. N. W. take care to keep a very little away until you are past the Guard-house Point, that you may keep clear of the reef which runs out from it; being past this, keep the prow, as above directed, to the west point, until near the entrance, when you may run up the middle of it by the eye, because the edges of the shoals show distinctly, and the eye and lead are the best guides. Having run up the middle of the entrance, luff up N. by E. until, having passed the points, and being in 4 or 3 $\frac{1}{2}$  fathoms, you may anchor where it suits you, being cautious, solely of a clay-bank, which runs out from the lading place on the west shore, and the extremity of which is in line with the west point of the port, at south.

Passing in for Masio, you leave the Bay of *Caballones* to the starboard; and, if you wish to anchor in it, for shelter from the N. and S. E. winds, you may do so by keeping in the middle between the two points which form it, and directing yourself mid-aitrait, and with the prow N. E. by E. anchor when you are in 3 $\frac{1}{2}$  fathoms, clay or ooze.

To enter *Port Casilda*, observe the same route as that given for *Port Masio*; until the south part of Key Guayo is on with the south part of the main land of *Casilda*, in which direction is the mouth or opening of *Jobabo*, by which you ought to enter; and, keeping away in this position to run in the middle of it, the eye and lead will facilitate the entrance, which is 110 yards wide, with 4 fathoms of water. Being at the west of this opening, at a cable's distance, steer W. S. W. sailing in 6, 7, and 8 fathoms, (clay) until you bring *Point Casilda* on with the north point of *Cayo Ratones*, at which moment place the prow to the westernmost part of the City of Trinidad, avoiding the reef, which runs out S. S. W. from *Cayo Guayo*, and which will be passed so soon as you bring the south part of this key on with the south part of *Point Casilda*. Afterwards steer towards the easternmost part of the city, until you bring the south part of Key *Ratones* on with the westernmost part of the high land of *Honda*, when you will



steer towards these objects until you pass the shoal *Eumec*, and, following the same mark, with the precaution of keeping a little to starboard, you will pass clear of Point Casilda, which is rather foul; and, passing on for the interior, go to the south of Key Ratones, giving a birth to the point of it; having passed which you may steer N. W.  $\frac{1}{2}$  W. and shortly afterwards anchor in 5 or 6 fathoms, on clay.

You may anchor in any part of these channels, if circumstances require it, upon a clayey bottom. You may also take Port Casilda, entering from the channel of *Agabama*, by the north of Key Guayo, or from the west of Key Blanco, and by the breaks or mouths in this part of the reef, as *Boca Grande*, the *Negrilla* and *Mulatas*; but the entrances are dangerous, and there are no proper leading marks.

To enter the mouth of *Guarabo* or *Trinidad* River, steer outside the bank, and run in without fear, even within a musket shot of the shore, which, in this place, is very clean; and, running on at the same distance, you will see the bay of the entrance, formed by the Point of *Ciriales* to the south, and the point of the River *Canas* to the north; and, when you have it well open, direct yourself (with little sail set) so as to pass nearer Point *Canas* than Point *Ciriales*, for it is much clearer: sound frequently, however, and, if in a large vessel, anchor immediately upon getting bottom, because the anchorage is of very small extent. If the vessel is small, you may run in, steering towards the south shore of the bay, keeping the prow between two sandy beaches, which are the only ones on it; and, when in 8 or 9 fathoms, sandy bottom, you may anchor.

Having now described this navigation, it is necessary only to add that *Masio* is preferable to *Casilda*, not only on account of its deeper water, and that you can sail out of it with the trade-wind, but that it is more easy to take, and does not require a pilot; while, on the contrary, Port Casilda cannot be entered without one; its anchorage is not more than four cables' length in extent; it is very difficult to get out of it with the trade-wind; and finally, to obtain water, it is necessary to send boats to the River *Guarabo*. Port *Masio* is, therefore, the only one which vessels, intending to load or discharge, or remain any time at Trinidad, ought to take.

From the River *Guarabo* the coast westward is very clean, and you may run along it at the distance of a league. For eight long miles it tends W.  $\frac{1}{2}$  N. as far as the west point of the River *Honda*; from this it continues N. W. by W.  $\frac{1}{2}$  W. nine miles, to the Point of San Juan, which is well marked, as the coast afterwards tends N. by W.  $\frac{1}{2}$  W. for a long mile, to the River *Guaigimico*.

Between the River *Guarabo* and the Point of San Juan, the rivers *Guanayara*, *Cahagan*, *Honda*, *Yaguanabo*, and *St. Juan*, run into the sea: in all these, coasting vessels, which do not draw more than 6 feet, sometimes anchor. To get fresh water, in any of them, it is necessary to proceed a league up from their mouths.

Along this part of the coast the water is deep, and the bottom clean, excepting a little reef, which stretches out between the Rivers *Yaguanabo* and *San Juan*, and which does not extend from the coast so much as half a mile. The shore is steep, and of *Solortuco* rock. The land is mountainous or hilly, for a little to the west of San Juan's Point, and at it commences the Mountains of San Juan or of Trinidad.

From the River *Guaigimico* the coast tends fourteen miles N. W. by W. to the *Colorado* Point, which is the east point of *Port Xagua*, and is so clean that it may be run along at less than half a cable's length; the land is level, without mountains, and in it the rivers *Gavilan*, *Gavilancito*, and *Arimao*, are met with; but they are of little importance.

The Port or Harbour of *Xagua*, or *Jagua*, is very spacious, secure at all times, and has deep water, but its entrance is very narrow and crooked. The east point, named *Colorados*, and the west, *Sabanilla* or *de la Vigia*, are the exterior points of this port, and the distance between them is a large mile. The windward shore, from Point *Colorados*, tends N. W.  $\frac{1}{2}$  N. three miles, to Point *Pasa Caballos*, whence it sweeps to the N. by E. about two thirds of a mile, to Point *Milpa*, which is the interior eastern point of the strait. The leeward shore,

the entrance runs nearly the same direction as the windward, and narrows the channel so much, that, opposite Point Pasa Caballos, it is only a cable and a third in width, and thus it continues to Point Milpa.

To enter *Port Xagua*, pass Point Colorados at the fourth of a cable's length; but shun the exterior coast to windward, as a reef stretches from it, and it cannot be approached nearer than a mile. You run on, inwards, preserving the same distance of a quarter of a cable, until you arrive at Point Pasa Caballos, when you must luff, for the purpose of keeping in mid-channel, or rather nearer to the leeward side; and, so soon as abreast of the interior points, place the vessel's head towards the S. E. point of *Cayo de Carenas*, and proceed thus, in order to avoid a shoal which lies to the northward of Point Milpa; and of which you will be clear when the northern point of the Key *Alcatraz* bears east: When once the interior points are passed, you may anchor where you please, a chart of the harbour being a sufficient guide.

The coast west of *Xagua*, or *Jagua*, is all of Soboruco rock, and without any bank or shoal, for nearly twenty-one and a half miles, to the point of *Caleta Buena* (Good Cove); it thence tends W. N. W.  $\frac{1}{4}$  W. six and three-quarters miles to the east point of Cochinos or Swine's Bay.

COCHINOS BAY is formed by the point above mentioned, and another point which lies W. by N. from it: the last is named *Punta del Padre* (Father's Point). The bay extends thirteen miles to the N. N. W. The edge of its eastern coast is of Soboruco rock, without a bank, until at about half a mile from the shore, when bottom is found in 15 fathoms, on sand and rock, diminishing the depth rapidly towards the coast. The western coast is a sandy beach, and sends out a bank to a short distance, but all of it a rocky bottom: in the northern part of the bay is a landing-place, which leads to the stock farms, (*Haciendas de Ganado*) but it is little frequented, on account of its having so little bank, and the little that is having generally a bottom of sharp rocks.

Point Padre is very low, with a sandy beach. S. E. from it, at the distance of six and three-quarters miles, lies *Piedras Key*, which is low, and of small extent. A little to the east of the point, the bank which borders the west-east of the bay continues towards the south, and along the edge of it is a reef, which almost joins the north part of *Piedras Key*. The eastern side of this reef is very steep-to, and has some openings, of 3 and 4 fathoms, which allow a passage on to the bank. The most frequented one is that formed by the southern extremity of the reef and *Piedras Key*, both because the key serves as a mark for it, and because it has a greater depth of water than any of the others. The break which terminates this reef ends to the westward at the *Lavandera* (Washerwoman) Rocks, which lie about four leagues W.  $\frac{1}{4}$  N. from *Piedras Key*.

From Padre Point to that of *Don Christoval*, all the coast is broken with lagoons, forming many keys, with groups of Mangroves, having their roots growing in the water, or so close to it that the water washes in among them, and having no navigable channels. In this large space is comprehended *Cayo Blanco*, the south side of which is a sandy beach; and there is fresh water, in holes, at its eastern part. On that side, at the distance of a mile and a half from the shore, is the *Lavandera Reef*, which extends two miles east and west. The west point of it lies west, fifteen and three-quarters miles from Point Padre, and, with another key, which lies to the N. W. forms the *Boqueron* (Little Mouth) of *Calvario*, which has little depth.

The Boqueron of Calvario, with the southern extremity of *Diego Perez Key*, which lies six miles distant from it S. W. by W. forms the Bay of *Cazones*, which extends inland N. W. by W. for about seven miles. At the bottom of this is *Masio Key*. There are various small channels at the bottom of the bay, formed by Masio Key, which are connected with lagoons, lying along its sides, and at the north end of it. To the south of this key is a bank of 3 or 4 fathoms, sand and rock, but it is of no use, there being no communication thence to the main land of Cuba. At the distance of more than a mile and a half to the east from the south point of *Diego Perez Key*, a reef begins, which, stretching out with a turn to the S. E. unites with the eastern part of the *Jardinellos*, and steep-to. Between the same point of *Diego Perez* and the commencement of the reef, there

is a passage on to the western bank, which begins with 7 fathoms; but, in a short distance, has only 14 feet. Four miles to the S. E. of the same point there is another channel, with at first 3 fathoms, and very soon after only two: there is no good mark for it, and the former is most frequented.

S. W. by W. a mile and nine-tenths from the point of Diego Perez, lies the southernmost part of Palanca Key; after which follow in order to the N. W. by W. true, the chain of keys named *Sal* and *Fabrica*, and which, connecting with the main part of Cuba, at Don Christoval's Point, form innumerable passages, but with very little water. The southernmost keys of this chain, named *Bointo*, *Cacao*, and *Palanca*, are the marks for vessels sailing along the bank, which has not more, in many places, than 11 feet of water; and its bottom, of fine white sand, is studded with heads of rocks, with only 6 feet over them, but their colour indicates where they are. This passage is bounded by the keys above mentioned, another key, *Rabihorcado*, to the south, and the edge of the Jardines Bank.

From Palanca Key, which lies twelve and a half miles W. N. W. true from Flamenco Key, the western Fabrica Keys take a turn to N. E. by N. true, towards the main land, and they form a passage or channel with another chain of keys, to the west of them, called Don Christoval's.

*Don Christoval's Point*, lies N. N. W. two miles from Palanca Key; and from it the coast, which is low and swampy, tends W. N. W. for eighteen and nine-tenths miles to a little key which lies at the entrance of a small bay called *Mata-hambre*. The interior of the country along this part of the coast is low land, and is called the *Savanna of Juan Luis*: to the south of it extends a chain of keys, which are also called *Juan Luis' Keys*. There is a passage between them and the coast, as there is, also, between the east part of them, and the west part of Don Christoval's; only, however, in any of the channels, for vessels which do not draw more than 10 feet.

N. W. at the distance of three and a half miles from the little key, which lies in the mouth of Mata-hambre, the Great Mangrove Point and the swampy land ceases. From this point the coast tends to the N. N. E. and N. E. for a short distance; and then to the east, to form the *Esplanada* or Bay of *Bron*, which extends inland, in that direction, about seven leagues. On the north it is bounded by the *Point of Mayabeque*, which lies N. by W. fifteen miles and a half distant from the *Punta Gorda*. The shores of this bay are all of mangrove and swampy land, and on its north side are the branches of the *Cienega* or Shallow Lake, which the natives of the country have distinguished by the names of the rivers *Guaico*, *Guarion*, *Mora*, *Nacra*, and *Belen*, as far as Mayabeque Point. In this bay, as well as in the whole space of sea comprehended between the coast of Mayabeque, and the keys in front of it, as far as the Caymas channel, the depth is from 3 to 4 fathoms on clay.

To the N. W. and about a mile distant from the Point of Mayabeque, is the river of that name, in which vessels trading to Batavano can easily provide themselves with water. From this river the coast tends W.  $\frac{1}{2}$  S. to the anchorage of Batavano, which is eight and a half miles distant from it.

From this place, the coast tends to the west thirteen miles, to *Point Cayamas*; but, in the intermediate space, lies the *Point of Cagio*, and the river of the same name, in which the Batavano vessels sometimes also procure water.

The *River Cagio*, formed by the branches of the *Cienega*, runs into the anchorage of that name, in which, at a moderate distance from the coast, from 21 to 6 fathoms water are found; sheltered from the winds by the chain of keys which lies in front of it. The bight of the *Cienega*, comprehended between its mouth and the main land, is more extensive than that of Batavano or Mayabeque, and the lands around it are well cultivated.

*Cayamas Point*, and the chain of keys to the south of it, form the channel of the same name, which has 7 feet of water: this chain of keys extends to the S. E. by S. about seven miles, when it forms the channel of *La Hacha*, which divides it from another chain of keys, which extend from this place as far as Cruz Key, lying thirteen miles S. by E.  $\frac{1}{2}$  S. from Batavano. The *Canal de la Hacha* has 11 feet of water, and is much frequented by vessels trad-

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ing to Batavano, when they either enter or sail out to the westward of the Isle of Pines and *Caño de San Felipe* (St. Philip's Keys.)

At a short distance to the westward of Cruz Key, lies another, called *Redondo*, under which the vessels belonging to Batavano secure themselves in the season when the fresh (or stormy) south-east winds blow; that is, in the months from July till October, (hurricane months,) which are much to be feared on all this coast.

To the southward of Cruz Key, at the distance of two leagues, lies *Monte Rey Key*; and between is a channel, with 2½ fathoms, clay. This channel is the largest of those leading to Batavano, although care must be taken to keep clear of a spit, which runs out about 7 miles to the S. W. of the key; and to the heads, which are to the south of those keys, forming the north side of the channel.

From Cayamas Point the coast of Cuba tends W. by N. ½ N. forming a regular bay, called *Ensenada de Majana*, and which terminates to the South at *Point Salinas*, which lies 10-10ths miles to the W. S. W. from the former. In the intermediate space, and near Cayamas Point, is the mouth of the river *Guanima*, at which the Cienega ends.

S. W. 12-10ths miles from Salinas Point, a little point stretches outward. At a short distance to the north of it is the Creek of *Savanna la Mar*, which is much frequented by trading vessels. From the same point the coast continues forming a bay with *Mediacasa Point*, which lies 15-4-10ths miles to the S. W. of the former.

Between this coast and the Bank or Middle Ground, on which stand the keys to the northward of the Isle of Pines, the depth of water is from 2 to 4 fathoms, on a bottom of clay; except a spit with one and a half and two fathoms, which stretches out from the southernmost key, about two leagues to the S. W. ½ W. of the Guanima Keys. The extremity of the spit lies S. ½ E. 5½ miles from Salinas Point.

The Guanima Keys are included in the group which, to the westward, form the Channel of *La Hacha*, and are situated to the southward of the river *Guanima* and of *Point Cayamas*.

S. ½ E. 12 miles from Mediacasa Point lies *Dios Key*, between which and that point is the passage for vessels trading from this quarter to Batavano. Dios Key is low and of small extent; it is detached, and the bank on which it stands turns to the eastward, and unites with that which surrounds the keys to the north and east of the Isles of Pines. It also forms a channel with the *Indian Keys* and those of *St. Philip*, with from 3 to 4 fathoms depth of water.

From Mediacasa Point the coast tends W. by N. true for about two leagues, after which, following S. and S. W. it terminates at *Fisga Point*, forming the Bay of *Amiguas*; this point lies S. W. ½ S. distant 10½ miles from the former.

About S. ½ E. 10½ miles from Fisga Point, lies the easternmost of the Keys of San Felipe, from which this chain of keys continues in a westerly direction as far as the meridian of *Guama Point*; between these keys and the Indian Keys, there is a passage, with two fathoms of water; and the depth in the space of sea comprehended between the coast and the north part of them is generally from 4 to 5 fathoms, on clay and weeds.

From *Guama Point* the coast follows to the West, for about 2½ leagues, to the *Point and Creek of Guano*, where the Bay of Cortez begins. From this place the coast runs W. by N. true for about two leagues, to the bottom of the said bay; and the inconsiderable rivers of *San Juan*, *Martinez*, and *Galafre*, disembogue in it.

About W. S. W. true, at the distance of three leagues from the Point of Guano, disembogues the river *Cuyajayay*, to the S. E. of which, at the distance of about a mile, begin three little keys, which, extending themselves in the turn more to the east, for about a league, forms with the main land of Cuba, the Lagoon of Cortez, which has about 6 fathoms of water; but the little passages formed by the keys have not more than 7 feet. Some huts have been established on them by persons who fish for Hawksbill Turtle, or the turtle which produces the tortoise-shell.

The southern extremity of this lagoon, which is on a parallel with the keys of San Felipe, and about 5 leagues distant from them, is the termination of the Bay of Cortez, in which there are 5 and 6 fathoms water, on a grassy bottom. About two miles to the east of the south end of said lagoon, begins the deep water; the edge is very steep; it begins with 7 and 8 fathoms on a rocky bottom, and continues on so as to join the coast close to the northward of Point Piedras.

Point Piedras lies about S. by W. from the Lagoon of Cortez, 7 miles distant; the coast, which is low, part of firm land and rocky, with spaces of sandy beach at the shore, running nearly in the same direction.

From Point Piedras, the coast, which has no bank, runs nearly S. W. by S. to the Point Llana, distant about 5 miles. This point is low, and has no other marks to distinguish it than the different directions of the coast, and some huts near it, and to the west of it there is a small sandy beach. To the S. E. a reef, which is very steep-to, extends out about two cable's length.

From Llana Point the coast tends W. S. W. & W. and more southerly, to Point or Cape Leones; and then again follows the first of these directions as far as Cape Corrientes. All this piece of coast is of high Soboruco rock, and without danger at a stone's throw distance.

CAPE CORRIENTES, ends in a low point, with a sandy beach; and to the S. W. of it a short bank stretches off, on the edge of which are 15 fathoms; and close to the shore there are some rocks, on which the sea breaks.

From the cape the coast tends, without any bank, N. W. & W. for about a league, to Cape Cayman, on the point of Maria Gorda, and from it to the bottom of the bay N. 40° E. The place called Maria Gorda is remarkably high of Soboruco rock, scarped, and higher than any other part of the bay; thence the bank again begins to run off, with bad holding ground, the bottom being rocky, although farther to the North, and from the inflection which the coast makes, the bottom is sand; and very near the beach an anchor may be let go in 5 fathoms, with the precaution of having a cable on shore, on the edge of the bank is very steep. This is the only anchorage in this bay, and affords shelter from the strong trade-winds, and S. E. winds; none of the rest of the bay has any bank. The water met with in the lagoon of Maria Gorda is brackish; but the fresh may be perceived rising in bubbles in the middle of the salt, and near the bottom of the bay, and shoots very distant from the water's edge; with industry, and in a case of necessity, it may be obtained in a drinkable manner.

From the bottom of Corrientes Bay, the coast tends West, then to the Salcoches, which is a piece of coast of high Soboruco rock. From thence it continues N. S. W. to Holandes or Olandes Point. This point, which bears nearly West 4 leagues from Cape Corrientes, terminates to the westward of the bay of that name. Near and to the east of it begins a reef, which runs in that direction about half a mile, but offers no danger, as it lies very close along the coast, and is very steep-to. Point Holandes has an agreeable appearance, having a resemblance to the stairs of a wall, and extending, with this figure, about two miles; beyond which it descends, in a kind of falls, or steps, and the shore continues woody after passing it.

From Point Holandes, or Olandes, the coast tends nearly West to the point of Cayuelos, which is the southern point of the front of Cape San Antonio, or Cape Antonio. The westernmost point of the cape is called Pocillo, or Little Wells Point; and from this the coast tends N. 99° E. for the space of a mile or thereabout, to Sordos or Deaf Point, whence the coast inclines more to the north-eastward.

To the eastward of, and from Cayuelos Point, extends the bank, which thence surrounds the cape, half a mile from shore, and continues on to the northward, where it forms the Colorado Bank. Its edge begins with from 20 to 25 fathoms, on a rocky bottom, and diminishes regularly towards the coast, with some spots, which have a sandy bottom.

The point of Cape Antonio is low, and very rocky; and its shore appears with many streaks of Soboruco rock and sandy beach. In the wells, called those of Sordos la Sorda, (Deaf-Woman's Cave,) and the Pocillo (Little Wells) water is abundant, and of good quality.

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Cape Antonio, (A) bearing N. W.  $\frac{1}{2}$  N. true, distant 5 miles.

Cape Corrientes looks very much like Cape Antonio, and in order to ascertain it, observe it is rather level land, of moderate height; but, being near it, or off it, in clear weather, some hills in Cuba, named the *Sierras del Rosario*, which stand toward the north coast, may be seen, bearing nearly true North. They are the only hills that can be seen from a similar situation, and present two summits only to the view.

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Corrientes, (A) bearing N.  $35^{\circ}$  E. true, distant 4 miles.

### The Isle of Pines, Jardines, and Jardinillos.

The form of the Bank and Reef, which surround the isles or keys called the Jardines, &c. can be best understood by reference to the chart. Toward the N. E. on this bank is Diego Perez Key, already noticed, (page 227) and the edge of the bank thence extends to the S. E. forming a bight at the *Megano* or *Sand Islet of Biscayno*, whence it extends to the easternmost key of the Jardines. From the north end of the latter a reef stretches out to the eastward, about a mile; and the bank extends, in the same direction about 3 leagues; and nearly 2 north and south, with a depth of 15 fathoms at the edges, and 7 or 8 on the whole of it, excepting the proximity of the key, where 4 fathoms are found, on sand and rocks. This key, as well as all those which follow to the westward, under the name of *Jardinillos*, which extend as far as Key Largo, are regularly high, and scarped at the shores.

To the S. W. about 2 leagues from the easternmost key, follows the edge of the shoal water, with a westerly direction then west for 4 leagues; it is studded or streaked with reefs, as far as a key which lies a league to the west of *Trabuco*. For about 5 miles, the same edge forms a bend, as it approximates the east end of Key Largo.

Key Largo, which extends W. S. W. and E. N. E. 13 5-10ths miles, is the easternmost of the Jardines, under which name are comprehended all those which follow it to the west, as far as the Isle of Pines. The south side of Key Largo is a sandy beach, bordered with a reef, which runs out about a mile from the east end, and afterwards approaches nearer, so as almost to join the west end of the key, whence the same reef continues, without any break, W. by S. and W. by N. true, to the Rosario Channel, which is 5 leagues distant from Key Largo. On the very reef, and near the west point of Largo Key, there are two rocky keys, named the *Ballenas*, distant a league from each other, and they are of moderate height. In all the space comprehended between the Eastern Head of the Jardinillos, and the Rosario Channel, the bank, which extends along to the south side of the keys, does not extend farther out than one or two miles: its edge begins with 15 and 18 fathoms of water, on a rocky bottom, and the depth diminishes rapidly to the very reef itself.

Rosario Key, the west end of which bears North, true, from the channel to which it gives name, forms a channel of 3 and 4 fathoms of water, with another key to the westward of it, named *Contiles*; but its outlet on to the interior bank, to the westward of the Passage Keys, has not more than 10 feet of water. The

opening, or channel, through the reef, is a third of a mile in width, with a depth of 3 fathoms in the middle: it is steep at the sides, and, about a mile from its north part there is a rock, which shows above water. Vessels struggling into Cuba generally enter and sail out by this passage.

From the Rosario Chapel, the reef tends S. by W. 10 miles, then W. N. W. 4 W. 19 miles, to join the east point of the Isle of Pines: in this space are included the keys named *Abalo*, the *Agua Dulce*, *Campos*, *Mation*, and many others which have no names. The outer edge of the bank is parallel to the reef, and generally extends out about 2 miles, excepting opposite *Abalo* Key, where it runs out almost 3 miles, at about 7 miles to the south of the key. The least water on all this bank is 5 fathoms, on a rocky bottom, with some sand and spots of sand.

The ISLE OF PINES, when first seen, appears to consist of a ridge of a moderate height, and the tops of the mountains very sharp from the east point, the south coast tends S. W. 1 S. for 5 7-10ths miles, with sandy beach, and a point, which may be easily known, being of high perpendicular rock, and having a detached rock (*farallon*) very near it. From this point the coast continues, without any bank along it, for 7 miles, to another little point, which, with the former point, are the boundaries of the piece of coast called *Playa Larga* (Long Beach.)

From the western point of *Playa Larga*, the coast tends N. by W. 1 W. true, for 8 leagues, to *Cocodrillo* (or *Crocodilla*) Point, the eastern point of the island; and from the latter to the cove of *San Juan*, the coast tends N. W. 1 S. for 8 7-10ths miles, to *Puerto Pederasta*. All the ground between the west part of *Playa Larga* below and rocky, with shores of *Soho*, and may be coasted along at less than half a mile. From *Pederasta* the coast bends (forming a bay) N. W. by N. 2 miles, to *Key Frances*, which is the westernmost point of the island. Near this point are the anchorage and watering place at *Bayo Frances*. This little cove is the harbor, which extends about half a mile, with a depth of 3 fathoms, on sand, and the shore is also a sandy beach, is much frequented by vessels coming for timber, and affords shelter from winds of the N. E. and S. W. and here

*Sierra de la Cumbre*

*San Juan*

*Cabeller*

Isle of Pines, *Playa Larga* N. 53° W. true, 25 miles

Key Frances is separated from the coast by a small channel, and forms the west point of the deep *Bayo Frances*: from that point the coast tends to the S. E. for 5 leagues, all watery, or swampy, and broken into keys: thence it turns to the N. E. up to the *Lagoon of Siguanea*, which lies at the foot of the hills of the same name, and has a depth of 10-15 fathoms of water, but its entrance has not more than 9 feet; from its branches off a strip of water, which in nearly an E. and W. direction, divides the island into two parts. At the foot of the hills of Siguanea there are two filters of excellent water, which, at about distance from the beach, rise out of the land.

From the Lagoon of Siguanea, the coast tends N. W. by W. 1 W. for 10 miles, to a little point which turns, to the west, the mouth of the *Rio de los Indios* (Indian River,) whence the coast continues N. W. 1 S. 4 faths miles to *Buena Vista* Point, which is the northernmost point of the Bay of Siguanea, and is 10 1-2 miles N. N. E. from *Key Frances*. *Siguanea* Bay extends 10 miles N. W. and S. E. and has from 10-15 fathoms water, on a grassy bottom; but the passage between *Key Frances* and the northernmost of the Indian Keys is not above 10 fathoms, on sandy and grassy bottom.

The Indian Keys, separated by small channels, extend from the N. W. by W. from the southernmost of them, which is 8 miles distant from the

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northernmost. The southern extremity lies N.  $\frac{1}{2}$  W. from the point of Key Frances, 9  $\frac{2}{10}$ ths miles distant, and 4  $\frac{6}{10}$ ths miles W.  $\frac{3}{4}$  S. from Buenavista Point; in the channel between them and the latter there are from 4 to 5 fathoms water, on clayey and grassy bottom.

From the Point of Buenavista the coast inclines to the eastward as far as the *Cove of Barcos*, and the point of that name, which terminates it to the north, and lies 4 leagues N. E. by E. from the former. From the last point the coast tends N. N. E.  $\frac{1}{2}$  E. to a short distance, and afterwards E. N. E. true, to the northernmost part of the island, which lies 3  $\frac{4}{10}$ ths miles distant from Barcos Point. From the northernmost point the coast continues E.  $\frac{1}{2}$  N. 5  $\frac{2}{10}$ ths miles to a little point which lies to the N. E. of, and close to *Nuevas River*; thence it follows E. by S. true, about 5 miles, to the high hill, called *Ojos del Agua*. This hill or mountain is one of the highest in the island, scarped or precipitous on the north side; and close-to are 3 fathoms water. Nearly in the middle, between this point and the former, is the mouth of the *River of Casas*, which rises at the foot of the hills of the same name, and which, together with *Nuevas River*, are the most frequented in the Isle of Pines by those carrying on traffic with Cuba.

In the same direction, from the mountain of *Ojos de Agua*, at the distance of 5 miles, is the hill of *Vivigagua*, also precipitous and of moderate height: from this hill the coast runs S. E. by E.  $\frac{1}{2}$  miles, to *Salinas Point*, and thence continues S. E. by E. 7  $\frac{3}{10}$ ths miles to another point, to the north of the *River Guayabo*, and between the two disembogues the river of *Santa Fe*, which has excellent water. From the first a spit runs out, which, separating about 2 miles from the coast, joins it again at the river.

From the last point, the coast winds to the southward as far as the eastern mouth of the *Cienega*. This part is named *San Juan*; and in the space is comprehended *Mulatas Point*, and the *River Guayabo*, which disembogues close to the north of it. From the eastern mouth of the *Cienega*, (which divides the island in two,) the coast tends S. E. to *Piedra Point*, which lies N. by W. true, from the east point of the Isle of Pines, distant two miles.

From the Bay of *Siguanea* to *Nuevas River*, the shore is all watery, and covered with mangroves; and, from this river to that of *Santa Fe*, it is firm land, continuing generally so, though with some watery places, as far as the east head of the island.

From the Bay of *Siguanea*, as far as the river *Guayabo*, the coast may be run along at two miles distance, in 3 and 3  $\frac{1}{2}$  fathoms water, on a clayey and grassy bottom; but a passage farther to the eastward is prevented by the shallow bank which surrounds the *Jardine Keys*, and is here connected with the Isle of Pines.

**INDIAN KEYS, &c.**—From *Key Frances*, the edge of deep water follows nearly N. W. 11  $\frac{1}{2}$  miles, as far as the parallel of the southernmost Indian Keys, and at 7 miles to the west of it; and, continuing from thence to the northward and N. W. so as to approximate the most northerly of the Indian Keys, it then extends so as to pass about a league to the southward of the easternmost of the keys of *St. Felipe*, running parallel to those keys, as far as the middle of the chain; whence it nears them to within a mile, and continues along them at that distance, as far as the westernmost key, on the parallel of which it runs off to join the main land of Cuba, near *Point Piedras*. Generally, from *Francis Key* to the parallel of the southernmost Indian key, from 13 to 25 fathoms are found at the edge of the bank: from the last named key to the meridian of the easternmost of the *St. Felipe Keys*, from 30 to 50 fathoms. To the southward of these keys, as far the westernmost, 9 to 10 fathoms; and between it and the main land of Cuba, about 20 fathoms, except in the proximity of the latter, where it shoalens to 7 or 8 fathoms. The bottom of the whole is rocky; and, very soon after entering on the bank, the depth diminishes to 5, 4, and 3 fathoms, on sand. All these keys have sandy beaches towards the south.

This Great Bank, which we have now described, from east to west, is studded with keys, which, with the coast, and among themselves, form the outer channels of *Diego Perez*, of the *Rosario*, of *Siguanea*, and of *Cortes*; which afford a passage to *Batavano*, by the inner narrows of *Don Christoval*, *Las Gordas*, *Monte Rey*, and of *La Hacha*, all with a depth of 11 feet, except *Monte Rey* or *Redondo Key Passage*, which has 2  $\frac{1}{2}$  fathoms, on clay.



*Remarks on Cape Antonio, the S. W. of Cuba, and the Isle of Pines, by Captain Livingston.*

At about two cables' length to the northward of the pitch of the Cape, you may, when the weather is moderate, land with your boats, picking out, by the eye, the best place among the rocks. At about 50 yards within the first trees or bushes, you will perceive a space, of about two acres in extent, clear of wood. On the opposite side of that opening, where the wood again commences, and about 10 or 15 yards into the wood, you will meet with very sharp coral rocks, among which are two wells, in cavities of the rocks, of about 7 feet deep. The water of the northernmost well is excellent; that of the southernmost not so good, but yet very palatable. There is a good rolling way from them to the beach; but boating large casks off is attended with difficulty, from sharp rocks which lie under water. We filled five or six puncheons at these wells, on the 12th of August, 1817, and were not delayed altogether more than three hours.

There are plenty of excellent gray land-crabs at Cape Antonio, which are quite safe to eat, there being no manchineel trees hereabout: also plenty of pigeons, and other birds, some of which are likewise excellent.

There is a fisherman's hut and a turtle-crawl on the southernmost part of the cape, at which you may, in the fishing season, generally find a person to point out the wells; but what I have said will enable any person, who looks carefully, to find them; though a person may be within 8 or 10 yards of them, and not perceive them, without a good look-out. Men sent for water should always have their shoes on, to protect their feet from the sharp rocks. There is abundance of sponge to be found at the cape, although it is, by no means, of the first-rate quality.

The fisherman's hut is one of the best marks for Cape Antonio, when coming from the eastward. Off the cape, about two miles out, the current often sets very strong to the S. E. When the current sets thus, it is advisable for handy-working vessels to keep pretty close in shore; by doing which, they will avoid the strength of the current; this, however, is to be understood as applying only to vessels coming from the eastward.

*Cape Corrientes* and *Point Piedras* were formerly exhibited on the charts considerably to the southward of their real positions; but, having lost my memorandums of their positions by my own observations, I can only say that I think *Point Piedras* is placed nearly eight minutes south of the truth, and *Cape Corrientes* between five and six minutes. The coast between partakes of the same error, but *Cape Antonio* is very correct.\*

**ISLE OF PINES.**—The most dangerous error in the charts and tables, of the positions of places on the south side of Cuba, is that of the latitude of the Isle of Pines, which is uniformly stated as lying in  $21^{\circ} 22' N.$ ; whereas the S. E. point lies, by a very excellent observation, taken on the 9th of August, 1817, in  $21^{\circ} 31' 37'' N.$ : my observation, and my mate's also, agreeing exactly in making

\* Captain James Wallace Monteath has made some observations on the Capes Antonio and Corrientes, which corroborate those of Captain Livingston. Captain Monteath says, "In April, 1820, I measured the distance between the two capes by chronometer. The distance gained was only 28 minutes of longitude. The latitude of Cape Corrientes given in the tables,  $21^{\circ} 41' 30'' N.$  is incorrect; as I observed in  $21^{\circ} 43' N.$  when upwards of three miles south of the cape: it should be, at least,  $21^{\circ} 46' 30''$ . On the 12th of December, 1820, by nine observations, lunar and chronometric, the longitude of Cape Corrientes, as computed by Captain Monteath, appeared to be  $84^{\circ} 29' 20''$ : it had previously been placed in  $84^{\circ} 23' 30''$ , being  $5^{\circ} 50'$  more to the east. By similar observations made on the next day, the mean longitude of Cape Antonio was  $84^{\circ} 59' 8''$ . We had previously given it as  $84^{\circ} 57' 30''$ , from the Spanish observers. Here, it will be observed, the difference is only  $1' 38''$ : and if from  $84^{\circ} 57' 30''$  we subtract  $28'$ , as above, the longitude of Cape Corrientes will be  $84^{\circ} 29' 30''$ , which admirably verifies the preceding result of Captain Monteath, 12th of December, 1820.

These remarks are more particularly to be regarded, because they show the inaccuracy of a Spanish chart of the south side of Cuba, published at Madrid, in 1821, which might otherwise be considered as the standard authority for this coast.

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our own latitude  $21^{\circ} 20' 37''$ , and both of us agreeing in opinion that the land was fully two minutes due north from us.

This error of latitude, and the prevalent, though most erroneous, idea that the current sets always from the eastward towards the channel of Yucatan, has, I have reason to believe, deceived many; as, after sighting the Caymans, and shaping their course for Cape Antonio, (more generally for Cape Corrientes) the easterly current, which often runs very strong, causes them to make the Isle of Pines; and, finding the latitude quite different from that assigned to it, are completely at a loss to know what land they have made, or fall into the more fatal error of supposing it Cape Antonio; and, hauling round the S. W. point of the Isle of Pines, get embayed among the Cayos de los Indios; and, perhaps, are finally lost in the bay, as was the case with a very fine ship a few years since. I have twice made the Isle of Pines when I considered myself to the westward of it; once when I expected to have made Cape Corrientes, and again, when, had it not been for a lunar observation, I should, from the courses steered, have thought us abreast of Cape Antonio. On the latter occasion my mate and myself calculated the probable effect of the current, from the courses steered, distance run by log, latitudes observed, and time elapsed, after we passed the Grand Cayman, taking also the landfall made into account. My mate, an intelligent young man, made the current set  $S. 67^{\circ} E.$  at the rate of sixty-three knots per day. The result of my own calculation, perhaps not so carefully worked as his, gave  $E. S. E.$  and two and a half knots per hour, which nearly corresponds with Mr. O'Hara's.

I had, some time since, the misfortune to be upset in a small schooner, belonging to Kingston, Jamaica, about two leagues from the south coast of the Isle of Pines: two ladies (passengers) and one man were drowned; and the remainder of us, with difficulty, made the land, (owing to the current's carrying us off shore and to the eastward) after about 13 hours of unceasing exertion. As many vessels have been cast away on this island, within the last four years, and many more probably may be, while the charts continue so inaccurate, I subjoin the following remarks, the results of my own painful experience.

The Isle of Pines is very thinly inhabited, but I found it very difficult to obtain any exact account of the actual population. Most of the inhabitants reside in the north part of the island; indeed, so far as I could learn, there are only three houses on the south side, in an extent of twenty-one leagues. One of these is situated near Calabash Bay, at the east end of the island, and the other two nearly two leagues from Puerto Frances, or Siguanea Bay. There is also a fisherman's hut on Key Frances, sometimes called Bush Key; but it is inhabited only about five months in the year, viz. from March to August, being the season for catching the hawks-bill turtle, from which the tortoise-shell is got.

The houses are very hard to find, being all concealed among the trees, at a considerable distance from the shore; and it is perfectly in vain for a stranger to attempt finding them, as the paths which lead to them are no better than cattle-tracks; and there are so many of the latter, intersecting the woods, in every direction, that, unless a person is acquainted with the place, he must run much risk of losing himself in the woods, and of being starved to death; but he may possibly fall in with some of the inhabitants or their dogs: the latter are very sagacious, and I have known one of them to save two men's lives, by conducting them to his master's house.

Water is to be found in some places, but in very few quite fresh. There is none quite close to the west end, except at Puerto Frances, where, about fifteen yards to the westward of the most westerly cliffs in the island, a small path leads into the wood, by following which, a well of excellent water may be found, at about half a mile's distance from the beach: it is in a hollow place, about 8 or 10 feet below the surrounding ground; and, unless when the sun is almost vertical, is little affected by its beams, and is, consequently, in general extremely cool and refreshing. Casks cannot be rolled from the well, but all the water must be car-

\* A fallen tree lies across the path about half way to the well, and may probably remain there for many years.



ried by men in small casks, buckets, or demijohns. There is not sufficient water to supply a vessel of any size; but it may afford seasonable relief in case of necessity, and I dare say supply two puncheons in 6 or 8 hours.

There is a kind of small beans, which grow upon a species of vine along the ground, and are inclosed in a rough pod: they are sweet to the taste, but extremely poisonous, and are therefore to be avoided. To persons who may unfortunately be in the same predicament as I was, that is, destitute of food, or the means of procuring it, it may be interesting to know that the thatch-tree, a species of palmetto, grows on the south coast of the Isle of Pines, in the most arid places, and is sometimes, as far as I can judge, 60 feet high. This tree, when young, affords a wholesome and not unpalatable food. Cut or break over a thatch-tree, of 7 or 8 feet in height, and tearing down the leaves in the neck, or, more properly speaking, at the junction of the leaves to the trunk, you will find a part of the inside, about as thick as a man's wrist, very white, of considerable length, and which tastes like something between a Swedish turnip and the common cabbage. I did not know this when I remained five days without any thing to eat, excepting some raw shell-fish; and for four days out of the five, we were constantly passing thatch bushes.

During the nine days I remained on the south side of the Isle of Pines, the current constantly set strongly to the eastward. The whole coast, from the east end of the island to the S. W. point, is bold close-to; but off the S. W. point, and between that and Puerto Frances, dangerous reefs extend out to sea, to a considerable distance.

I regretted much that the loss of my instruments did not permit me to renew my observations for latitude on shore; but the day before the vessel upset I had a good observation, corroborative of that of the 9th August, 1817. I am, therefore, certain that the latitude is incorrect in all charts I have seen.

The Rio de Santa Fe is on the north side of the island: on the south side there are no rivers, unless it may be possible some small ones may empty themselves into some of the esteros, or salt lagoons. We waded across all those that we met with, excepting one, near their junction with the sea. There are one or two other rivers on the north side, but that of Santa Fe is the only one that has two fathoms of water at its entrance; though some have much more than that depth inside, but with bars at their entrances.

There is some mahogany and plenty of lignum-vitæ in the island; also, I believe, very fine lancewood.

In *Puerto Frances*, or *Siguanea Bay*, I am of opinion that, with good ground-tackle, a vessel may ride out almost any gale: so far, however, as I could judge from its appearance from the shore; and shelter may be found under the lee of the reefs. A Spanish fisherman informed me that it was a much better place than it was generally thought to be, and had clean ground, bottom of fine white sand all over, within the reefs, with from 3 to 3½ and 4 fathoms.

On approaching the *Isle of Pines* from the southward, the first objects you will discover are three very remarkable peaked hills or mountains, on what are called the *Sierras de St. Pedro*. The land appears extremely arid and barren. The greater part of it on the south side is covered with wood, among which, however, many cattle and pigs find pasturage.

Between the *Isle of Pines* and *Bataviano*, there is a great number of keys, with shoal water between them. Among the roots of the mangrove-trees on them are many and excellent cray-fish.

The Spanish master of a schooner told me that he had entered among the *Jardines*, and went quite through, carrying not less than 7 fathoms; and I am disposed to believe him; only I consider its entrance must be much narrower than what we found the deep water between the *Bataviano* and the *Isle of Pines* Keys; as, from the deck of a schooner of about forty tons, we could not, when in mid-channel, see both at the same time.

In the neighbourhood of it are immense quantities of the *Palmetto Real*, or cabbage tree.

\* These beans grow on open spots near the shore.

**JARDINES.**—In all the *Jardines* excellent fresh water may be found, by digging a few inches deep in the sand, at a very short distance from the sea, according to my information, "not more than half a yard:" while in the *Cayos de San Felipe*, to the westward of the Isle of Pines, no fresh water can be procured. On the *Jardines* are also plenty of thatch-trees. Some of the Spanish fishermen have remained six or seven days at a time on one of the *Jardines*, living upon the heart of the thatch-tree, and upon the water got by digging, as before described.

### *The North West Coast of Cuba, from Cape Antonio to Point Yacabo and Matanzas.*

Having already given the description of Cape Antonio, &c. from the *Derrotero* and the notes of Captain Livingston, we shall here only notice that the cape has since been described as a low sandy point, with a flag-staff upon it and several huts. From Cape Antonio the coast sweeps to the N. E. and thence to the E. and E. N. E. in a broken and variegated form, which can be best understood by reference to the chart. Without this coast, to the West, W. N. W. and North, is the extensive bank and reef called those of the *Colorados*, after described, which are naturally divided, and ought, therefore, to be distinguished by different names, that is to say, the *Antonio Bank* and *Colorados*.

Following the *Colorados*, to the East, are the *Banks and Reefs of Isabella*, which terminate at the entrance of the harbour called *Bahia Honda*, in longitude  $83^{\circ} 7'$ . A too near approach here is very dangerous, as the reefs are generally very steep, and the current from the gulf sets along them mostly from the N. W. to W. and S. W. whence it sweeps along the edge of the bank, near the shore, around Cape Antonio, and thence eastward towards Cape Corrientes, &c.

The *Derrotero* says that, "between the bank (that of St. Antonio) and the reefs and keys of the *Colorados*, there is an interior passage, for vessels of 11 or 12 feet draught, but much experience is required for taking it; and all vessels are recommended to pass outside, keeping well away from the edge of the reef, which is very steep-to; and near it a vessel may be entangled by eddies proceeding from the general current of the strait."

Mr. Gauld says it is high water at Cape Antonio, on full and change days, about 9h. 33m. and that the verticle rise is 18 inches. The flood sets to the southward,† and the ebb northward. The velocity is about three quarters of a mile in an hour.

From Cape Antonio, the bank, which appears of a whitish colour, with only 10 or 12 feet water on it, tends North by compass, about 8 miles, whence the edge turns gradually round to N. E. by N. and north-eastward to lat.  $22^{\circ} 8'$ , with very uneven soundings, from 8 to 3 fathoms, rocks and sand. To the eastward and southward, the soundings decrease from 6 fathoms, very gradually to the shore, all fine sandy ground. The late Mr. Owen of Jamaica said the edge of the bank is clean all along, and steep-to, and that he had run along it, at a very short distance, in a line of battle ship, guided by the eye, and himself keeping at the mast-head.

In proceeding from Cape Antonio to the northward, it is requisite to be aware of a shoal, seen in 1797, and which is represented at 14 miles N. N. W.  $\frac{1}{2}$  W. from the cape.‡ In the day time you may safely take the passage between this shoal

\* Mr. Finlaison says, when you are abreast of Cape Antonio, you will perceive the discoloured water on the bank, and should take care not to approach too near, particularly in light winds, the edge being steep-to, with generally a current setting over it.

† The flood therefore blends with a southerly current; and thus it appears to continue eastward, within the Isle of Pines, &c.

‡ It seems that Mr. Bishop was once near this rock. He says that, having worked from Cape Antonio, to the N. N. W. about 5 leagues, he had soundings in 15 fathoms. He then went up to the mast-head, being the main-top-gallant mast of the *Sphinx*, a 20 gun-ship, and from thence saw the tops of three small hills to the eastward, with Cape Antonio bearing S. S. E. distant 3 leagues.

and the edge of the bank; but in the night, or in thick weather, it is better to make sure of passing outside of it. It is also proper not to forget the bank of *Sancho Pardo*, which lies about 6 leagues to the W. by N. from Cape Antonio, a near approach to which is unnecessary.

If, when at Cape Antonio, the wind comes to the north, it will be best to maintain yourself to leeward of the cape, either on short boards, or by coming to anchor; because, with such a wind, in place of advancing on your passage, you would probably be caught in a gale or storm.

The *Colorados Reefs and Keys* are very extensive. The S. W. extremity lies in about  $22^{\circ} 19' N.$  and  $84^{\circ} 45' W.$  The whole are, in general, steep-to. Of the principal rocks, or keys, the westernmost or *Black Key* shows itself above water like the hull of a ship, and may be seen 4 miles off; the other two, *Colorados* or *Red Keys*, are not seen unless the weather be quite calm; they have not above two feet of water on them; and to the westward no ground is to be found at a short distance, or less than a mile. The channel between is half a mile wide. Between the *Black* and *Red Keys* is a depth of 4 fathoms, but very foul ground. Capt. Street, in his account of these rocks, gives the following detail: "We took our departure from 4 or 5 leagues abreast of Cape Antonio, and made our way good N. E. by N. 15 leagues, and then fell upon the *Colorados* in 3 feet water. They were about me dry in several places, without any distinction of swells and breakers; we saw flocks of pelicans sitting on the red white sand. In this place we could see no dry land from the top-mast head, though very clear weather, but we saw to the east of us three hummocks on Cuba; the innermost, or biggest, bearing E. by N. so near us, that we could see other hummocks within and without these three, and low land tending away from the innermost hummocks to the southward, and likewise the hummocks almost join with the low land between them. All this we could see on deck, or but two or three rattlings up; but the three aforesaid hummocks we raised upon deck, when we were about 3 or 10 leagues off our aforesaid station of 5 leagues to the westward of Cape Antonio.

The high lands of Cuba are in many places particularly marked. The principal lands, thus remarkable, in regular succession from West to East, have been enumerated as follow: the *High Lands of Buenavista*, the *Cor Comb*,\* the *Saddle Hill*, *Dolphin Hill*, *Tables of Mariel*, *Maiden's Paps*, to the southward of the *Havanna*, *Iron Hills* to the eastward of the *Havanna*, and the *Pan*, or *Loaf*, or *Hill of Matanzas*, to the S. W. of the port of that name. The appearances of all these may be seen on the new chart of the Gulf and Windward Passages, as well as on the old chart by Mr. Romans. Those noticed in the *Derrotero*, are the *Hills of Rosario*, (noticed in page 231.†) the *Gap of Yollal*,—we presume the notch in the *Cock's comb*; the *Pan of Cavanas*, or *Dolphin Hill*; the *Tables of Mariel*; the *Tetas de Managua*, or *Maiden's Paps*; the *Sierra de Jaruco*, or western part of the *Iron Hills*, and the *Pan of Matanzas*. These, it is added, are all points from which a ship's situation may be ascertained in clear weather; but it frequently happens, in hazy weather, that they cannot be seen from sea at 5 leagues off.

**BAHIA HONDA, &c.**—The harbour called *Bahia Honda*, or *Deep Bay*, is situated at the eastern end of that range of islands and reefs distinguished by the name of *Isabella*. Its entrance, according to the Spanish officers, is in latitude  $22^{\circ} 59'$ , long.  $83^{\circ} 71'$ . When you are before that entrance, it bears nearly South, but you cannot get in till the sea-breeze comes on, at about ten in the morning.

*Bahia Honda* is a spacious and well-sheltered harbour, but the points which form its entrance, as well as the interior points, are bordered with a reef and edge of shallow water. The outer point, on the east or windward side, is named *El Morillo*, (*Little Morro*) from its presenting a rising ground: from this a shoal ex-

\* Mr. Finlaison says, "With the *Coxcomb Mountain* bearing S.  $\frac{1}{2}$  E. you will be in longitude  $84^{\circ} W.$ "

† Probably the high lands of *Buenavista*: for the charts of this part are yet inaccurate and contradictory.

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tends two-thirds of a mile to the N. W. having, however, at its extremity, a depth of five fathoms. The outer point, on the west, is *Punta Pescadores*, (Fisherman's Point) from which a reef extends to the N. N. E. about one-third of a mile. The distance between the two points, which are nearly East and West, true, from each other, is about two thirds of a mile; but the channel formed by the edges of the shoals is only a cable and a half in width.\*

At a third of a mile within the exterior points are two others, *Punta del Cayman* on the west, and *Punta del Real* on the east; and between these the breadth of the channel does not exceed two cable's length. From Point Real the edge of the bank extends at the distance of two-thirds of a cable; but from Point Cayman, not more than half a cable's length. At half a mile farther in, the harbour opens, and you arrive off *Punta del Carenero*, which is on the eastern side. At a third of a mile to the southward of Point Carenero is an island, *Key Largo* or *Long Key*,† the west point of which (*Punta de Difuntos*) lies a little more to the west than Point Carenero, and it may therefore be seen from the sea.

To enter this port, it is requisite to keep at some distance from the coast, and outside the edges of the reefs, till you are N.  $\frac{3}{4}$  W. from the mouth, when you may run for it. When near it, or at about the distance of a mile, you may perceive Point Difuntos; and, placing your vessel most carefully to S.  $\frac{3}{4}$  E. you may steer in that direction; as with that course, keeping Point Difuntos open, in the mid-channel, you will run in with sufficient water, 13 to 6 fathoms. When abreast of Point Carenero, you will see to the W. S. W. a long point on the west side of the harbour, named *Punta de Mangles*, or Mangrove Point:‡ with this in sight you may now steer to the S. W. and when you have arrived on a line between it and Point Difuntos, you may anchor in 7 fathoms upon clay; or, if more convenient, you may luff up to the south-eastward of Point Difuntos, and drop your anchor in 6 fathoms, same ground. There is, also, anchorage to the northward of Key Largo, between it and Punta del Carenero, in 6 or 7 fathoms, which may be found, after sailing in by the lead, along the reef on the eastern side.

The BAHIA BANK lies rather more than 5 leagues to the N. W. by N. from the mouth of Bahia Honda. It extends nearly East and West a league in length, and is about half a league broad. On this bank you may come to an anchor, taking care that you do not go too near the rock that lies in the middle of it. There is no water on the rock, and when the breeze blows strong, the sea breaks over it; but on the bank are 6, 5, and 4 fathoms of water.

PUERTO DE CABANAS, or Porto de Cavanás.—This harbour lies rather more than four leagues to the eastward of Bahia Honda. It has an extensive reef on each side of its entrance; yet it is a fine bay to sail into, having 5 and 6 fathoms at the entrance, deepening to 8 and 10 within, with room enough for several hundred sail of ships. The *Derretoro* says, you may run along the coast between Bahia Honda and this place, at the distance of two miles. Port Cavanás is a good anchorage, sheltered from all winds, and fit for any class of vessels. It may be known by a round hill, which forms a gap or break, and upon the summit of which there is a grove of trees, and by another hill, named the *Pan of Cavanás* (Dolphin Hill.) The latter descends gradually towards the east, until it ends in low level land, which continues for a long league, until it meets with the Table land of Mariel. In addition to these marks, you may see upon the coast two rows of hillocks, which resemble shepherd's huts, and from which the place has derived its name. These hillocks lie to the eastward of Bahia Honda, and the Pan of Cavanás appears as if in the middle of them.

To enter this harbour, you ought to open the mouth well out, until you are on its meridian, and that of the east part of an island (*Isla Larga*,) which is within

\* In a late description of Bahia Honda, by a British officer, it is said that it may be known by a remarkable tower and a small hut on the eastern side of the entrance, and a large plantation on a round hill just on the back of it, and two small huts about  $\frac{1}{2}$  mile to the westward of the west point of the entrance.

† Wood Island of the old English charts.

‡ Long Point of the old charts.



the harbour on its west. Steer in S.  $\frac{1}{2}$  E. until past the reef of Punta Longa, on the east side, when you may luff up, and anchor in from 7 to 9 fathoms. Be cautious, in advancing, not to touch on the reefs on either side; that to windward extends cut more than half a mile, and that to leeward about two cable's length. At the extremity of Punta Longa the reef extends out only two thirds of a cable; but the channel here is only two cables' in breadth. Another reef extends to the same distance, northward, from the eastern point of Larga Island.

PUERTO DEL MARIEL, or Port Mariel, which is  $\frac{1}{4}$  leagues to the eastward of Port Cavanas, is large, well sheltered, and fit for any class of vessels. You may know when you are to the north of it by the Tables of Mariel, which are moderately high, and form very broad table-lands or hills. On approaching these, you will perceive various white patches. The coast hence tends to the eastward, towards the Havanna, and is very low. In proceeding towards the latter, you may descry the *Paps of Managua*, commonly called the *Maiden's Paps*, which are two round hillocks, lying on the meridian of the port. To the westward of Mariel the coast is likewise low, for a long league, until it rises and forms the hill of Cavanas. Farther to the west may be distinguished other high lands in the vicinity of Bahia Honda, and which seem to rise from, or to be surrounded by, the water.

To enter Port Mariel, you have only to steer towards the western extremity of the Tables; and, having recognized it, may run in, along the windward shore, at the distance of a cable's length. This will lead clear of the reef, which borders the coast, and on which the sea breaks. Having the mouth of the harbour well open, place your vessel's head towards a small rocky key, which lies off the leeward point; and, so soon as you are within two-thirds of a cable from it, steer S.  $\frac{1}{2}$  E. or what amounts to the same, steer in that direction, when the leeward point of the interior part of the entrance has the same bearing: continue this course, until you pass the round tower, which you will see on the windward side; you may then luff to port, (larboard) so as to maintain yourself at a cable's length from the eastern shore, and you may anchor upon it, where you please, in 8 or 10 fathoms water. If more agreeable, you may run into the interior of the harbour, for which, a reference to the plan of the harbour will be a sufficient guide. We only add, that, as the narrowest part of the entrance is only 50 yards wide, it is requisite to be very cautious on entering with a large vessel.

It sometimes happens that strangers mistake the land to the westward, and about Bahia Honda for the table land of Mariel; but it is to be observed that the latter is not so high, and is more regular than any land near, or to the westward of Bahia Honda.

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## CHAP. V.

## HAYTI OR SAINT DOMINGO.

This Island, once more called *Hayti*, its original name, was discovered by Colombo, (Colon or Columbus) in 1492. By Colombo it was called *Hispaniola*; but giving the name of *St. Domingo* to a city which he founded in 1494, the whole island, in process of time, came to be so called. At length the island was divided into two parts, under the respective governments of Spain and France, when the name of *Hispaniola* was limited to the eastern or Spanish portion; and finally, the whole is now independent, under the title of the *Republic of Hayti*.\*

To the natives the climate, though hot, is healthy; yet it is exceedingly pernicious to Europeans, and the shore of Hayti has been the grave of thousands, who have been the victims of its heat and moisture: many of the inhabitants are, nevertheless, said to live to a great age. The thermometer in the plains, rises as high as 99°, but the country is continually refreshed by breezes and rains, and its salubrity is increased by the beautiful variety of its surface, exhibiting hills and valleys, woods and rivulets. Its highest elevations are about 6000 feet above the level of the sea, and its hills are covered with forests of mahogany, Brazil-wood, palms, elms, oaks, pines, walnut, gayac, maple, iron-wood, cedar, ebony, &c. The island is said to have its mines of gold, silver, copper, quicksilver, iron, lead, precious stones, and chrystal.

The rivers are numerous, but none are navigable, even by boats, in the dry season; in the rains, they often rise 25 feet perpendicular, and sometimes spread destruction over the plains.

The principal towns are, the city of Cape Haytien, formerly *Cape Francois*, in the N. W. the city of *St. Domingo*, in the S. E. *Port au Prince*, *Leogane*, and the *Mole of St. Nicholas*, in the west.

We commence the description of the shores of Hayti with the *Mona Passage* and *Eastern Coast*, and thence proceed in succession with the southern, northern, and western coasts, as this seems to be for the mariner, the most convenient mode of arrangement.

### *The Mona Passage and Eastern Coast of Hayti from Cape Raphael to the Island Saona.*

The channel called the *Mona Passage*, between Porto Rico and Hayti, is twenty-six leagues in breadth, and generally clear and safe, with the exception of shoals in the vicinity of the coasts of the two islands. On the N. E. side, the land of Porto Rico is low, to the westward of the harbour of *Arrecibo*, until it reaches *Punta de Pena Agujereada*, (or Point of the Holed Rock) where a kind of cliffy high land begins, which tends S. W. rather more than a mile, to Point *Braguen*, the north-westernmost point of Porto Rico. The coast again declines

\* The whole was united under one government, General Boyer, President, in 1822.

in height, and forms a convex bow to *Punta de Penas Blancas*, (Whitestone Point) the north point of Aguadilla Bay.

**AGUADILLA BAY.**—From the Point Penas Blanco, the little town of Aguadilla bears S. S. E. two miles. In the bay, before the town, or rather village, is anchorage for the largest ships, with shelter from the sea-breeze. This bay may be entered at any hour of the day, with facility and safety, but not at night, as the breeze then dies away, and a calm ensues. There is excellent water to be obtained at a rivulet which passes through the middle of the village. The situation of the latter, as given by the Spanish officers, is lat.  $18^{\circ} 25' 53''$ , long.  $67^{\circ} 6' 20''$ .

This bay is much frequented by vessels bound from Europe to Cuba, both on account of the facility with which they can procure refreshments, and because pilots for the Bahama or Old Channel may always be found here. If intending to anchor in Aguadilla Bay, after rounding Point Bruguén, keep about three cables' length from the shore, in order to give birth to a shoal which spits out from *Punta de las Palmas*, whence to that of Penas Blancas you may approach the coast nearer, as it is very clean; and, at half a cable's length from the shore, you may find four fathoms of water.

The best anchorage is in front of a house, (noticed hereafter) which is in the extreme north part of the village, and named *La Cabeza de Zereza*, in from 11 to 15 fathoms of water, at two and a half or three cable's length from the shore; but the nearer the shore the better, as the bank is very steep, and anchors are apt to drag off it.

At S. W. by W. seven and a half miles from the village of Aguadilla, is Punta St. Francisco, with various rocks about it. All the coast between has a beach, with many shoals formed by the rivers that empty themselves into the sea. At two cable's length from the coast are 4 fathoms of water, with bottom of rocks and sand, but there is no anchorage. At S. W. by S. rather less than half a mile from Point St. Francisco, is *Point Guigero*, the westernmost point of Porto Rico, otherwise called *El Rincon*. About it the ground is shoal, with many rocks. *The preceding description, &c. is from the "Derrotero."*

### *Remarks on Aguadilla Bay, &c. by Capt. John Mackellar, R. N.*

"The town is in latitude  $18^{\circ} 24' 57''$ , and longitude  $67^{\circ} 8' 15''$ . In proceeding for the anchorage, from the northward, you may run round the N. W. point of the island, about S. W. or S. S. W. within a mile of the shore; your depth of water will be 20 or 25 fathoms. Point Bruguén, the N. W. point, is a high steep cliff; about a mile to the southward of it is *Point Palmas*, a low sandy point, covered with trees. The latter forms the north side of the bay; and in rounding, you must give it a birth of a mile, as a reef stretches off to that distance. Having rounded this reef, with the bay fairly open, you will see the town, lying in the N. E. side of the bay, with straggling houses to the S. W. for two miles. The anchorage is before the town, and near the shore. The whole of the bay is perfectly clear, with the exception of the white reef (*Penas Blancas*) extending from Point Palmas; and you may stand to a quarter of a mile from shore any where, for the depth of water will not be less than 7 or 8 fathoms. The marks for anchoring are, a large house standing by itself, about a cable's length from the north end of the town. Between it and the town is a small battery of three guns. Bring this house to bear N. E.  $\frac{1}{2}$  N. the church-steeple E.  $\frac{1}{2}$  S. and the north point of the bay N. by W. Here you will have 18 fathoms, and very good bottom, at about half a mile from shore. The anchorage is very good farther in shore, in from 10 to 15 fathoms. If you moor, lay your anchor in 10 fathoms, and outer one in from 15 to 18. There is, also, good anchorage in from 20 to 24 fathoms, but there you are more liable to drive off the bank. In shore the anchorage is so extensive that you can hardly err in anchoring any way before the town. The winds are frequently variable, and render it difficult to get

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up to the anchorage. At times the sea-breeze blows fresh over the land from the N. E.; then you may beat in with ease.

"In the winter months, when the north winds blow strongly, there is a heavy swell into the bay, and great surf on the beach. Large ships ought not then to anchor farther in than from 23 to 25 fathoms: they will thus have room to get under weigh and work out, in the event of its coming on to blow; and as the west point of the bay bears from the anchorage S. W.  $\frac{1}{2}$  W. a ship will lay out with the wind at N. W. and may run through between Zacheo and the S. W. point of the island.

"Ships coming from the southward for Aguadilla, may also pass between Zacheo and the island, and when Zacheo bears W. by S. they will have the bay fairly open, and may work up as above, taking care to keep the west point of the island bearing to the southward of east, for off it there is foul ground all the way to southward as far as Cape Roxo, but all clear to the northward.

"Here is plenty of good water and wood, cattle and stock of all kinds, of a superior quality, but not cheap. Fruit and vegetables may be procured in great plenty, by remaining forty-eight hours, the time required for it to be brought from the country."

**DESECHO or ZACHEO.**—This little island, nearly covered with trees, stands like a beacon in the ocean, at the distance of eleven and a half miles W.  $\frac{1}{4}$  N. from Point St. Francisco on Porto Rico. It appears like a green mountain, 800 or 1000 yards broad at the base, and is so high as to be seen at twelve leagues off. The coast is generally clean, and there is no danger but what may be seen.

**MONA and MONITO.**—These isles lie nearly in the middle of the Mona Passage, towards the south. On the large one, Mona, there is fresh water. You may pass both isles to within the distance of two miles; and at a league and a half to the leeward of Mona, you may come to anchor in 8 or 9 fathoms, with the N. W. point of that island N. by E. distant two miles; the S. W. point, a low sandy point, off which is a small reef S. E. or S. E. by E. a mile and a half, and Monica N. by W. about five miles. The bottom is here of white sand, with black spots of turtle-grass.

**ISLE of MONA.**—The following remarks, made on the 1st of May, 1814, are from the pen of Mr. John Bragg, master of the brig James, of Lancaster.

"The S. E. and east ends of Mona are steep and bluff, of a white colour, and on the east, southerly side, are in some places of a brick-red, or fire-stone colour. The island is nearly an even plane, and of moderate height when near to. It shows no high wood upon it, but presents a dark green colour, at the distance of two or three leagues; and with the glass towards the west or S. W. small shrubs or bushes are visible, but no signs of inhabitants. It is in extent, from appearance, three leagues, but does not measure two from the bearings.

"When the N. E. end bore by compass N.  $50^{\circ}$  W. distant five miles, or nearly two leagues, and the S. W. end N.  $83^{\circ}$  W. distant three leagues, or a little more; the S. W. end seemed to run to a lowish point; but, on coming abreast, on a W. S. W. compass course, found it to be of good height, (though not so high as the east end) and to a steep rugged point of a darker colour. On the south side, near a third of the way from the N. E. end, saw a white sandy beach from deck, and here the steep bluff seemed to end, and the beach within a point. Farther to leeward, a long landing seemed as if safe; and though so close in, we did not discolour our water, nor could we see it anywise about discoloured, therefore suppose that the island, on these south and east sides, may be closely approached, and from our view, the island appeared longest in a S. W. by W. and N. E. by E. direction, tapering from the S. E. headland more to the northward to the N. E. point. The south shore is a plain coast, without any acute bays.

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S.W. End, N.  $83^{\circ}$  W. Isle of Mona, from the E.S.E. as described above. N.E. End, N.  $50^{\circ}$  W.

"When the above bearings were taken, the island Desecho bore also N. E. by N. apparently 7 or 8 leagues off, and is high land, Porto Rico in sight. Close to

the N. W. point of Mona is a high perpendicular rock, making exactly like a sail, which is just open clear to the westward of the land, when it bears North or N.  $\frac{1}{2}$  E. and with this latter bearing the island of Monito is open with the N. W. point of Mona, (at our distance, say about 3 leagues,) about half a cable's length to view. Monito is nearly of the same height as Mona, but from this direction, appeared like a hill, which is here sufficient to distinguish it, as Mona now makes like an even plane, ending with steep bluffs at each end. Var.  $30^{\circ}$  E.

The *Derrotero* says, Mona is almost level, is not high, and has no prominences on it: it is not inhabited, and its surface seems covered with brush wood, without trees of any considerable height; its N. E. and W. coasts are of white rock, perpendicular to the water, and may be approached as close as you choose; the south coast is considerably lower, but as clean as the former. Near the west point, however, some vessels anchor, in order to procure grass, when engaged in carrying cattle. The island may be seen at the distance of six leagues.

Monito is an islet, the greatest extent of which scarcely reaches to two-thirds of a cable's length; it is much lower than Mona, and in shape resembles a shoemaker's last; on its surface no bush is seen, and it is the perpetual resort of immense numbers of booby birds. The pilots of these coasts state that there is a clean and deep passage between it and Mona.

Capt. Livingston says, I have seen some directions by the master of H. M. S. *Surveillante*, for landing on Mona, to cut grass, in which it was expressly stated that the boats had to pick their way through a reef; and from memory, I am disposed to think it was also stated to have water on it. I had a copy of the MS. but lost it in the Jane; I received it from the late Francis Owen, Esq. Master Attendant at Port Royal.

**EASTERN COAST of HAYTI or of ST. DOMINGO.**—The eastern shore is generally low, but the land may be descried at the distance of 10 leagues. Cape Enganno, the easternmost point, lies in latitude  $18^{\circ} 34'$ , and longitude  $68^{\circ} 20\frac{1}{2}'$ . From this point the land of Porto Rico may, in clear weather, be seen.

From Cape Enganno to Cape Raphael, the bearing and distance are N. W. by W. 14 leagues; at about 3 leagues to the south-eastward of the latter the land rises, and so continues to the cape.

Cape Raphael is of moderate height, and appears at a distance like an island. It is distinguished by a conical peak island, which resembles a sugar-loaf, and is commonly called the *Round Hill*. The shore eastward is not only low but foul, and ought not to be approached nearer than a league. At rather more than half-way from Cape Raphael towards Cape Enganno, is Point Macao, on the S. W. of which is a little town of the same name.

Cape Enganno is low by the sea, and a shoal extends from it nearly 3 miles to the N. E. This shoal, having little water on it, must have a good birth. Cape Enganno bearing W. by S. 6 leagues, makes with two heads like a wedge.

From Cape Enganno the coast tends to the S. W. and South to *Point Espada*, which is low, and bordered by a white shoal and reef. From this point to the S. W. the coast forms a bay called *Higüey*, and a smaller one, *Calamite*; both are very foul, with reefs. To the southward of the latter is the island *Soan*, having a channel of considerable breadth between it and the land of Hayti; but it is so obstructed as to be impassable for any but small craft.

### *The Southern Coast of Hayti, from Soan to Cape Tiburon.*

The ISLE of SOAN, which lies off the S. E. coast of Hayti, is about 13 miles in length from east to west. It is covered with trees, and is surrounded by a white shoal to the distance of nearly two miles. The position of the eastern

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point of this isle, according to the Spanish observers, is latitude  $18^{\circ} 12'$ , and longitude  $68^{\circ} 31\frac{1}{2}'$ . At the western end are several islets on the bank.

From the S. W. extremity of Soan to *Point Caucedo*, on the eastern side of the bay of St. Domingo, the bearing and distance are W.  $\frac{1}{2}$  N. 16 $\frac{1}{2}$  leagues. The coast between is, in general, tolerably clean; for there is only one place, the *Playa de Andres* (Andrew's Beach) which has a reef, and this stretches out to sea about a league; but at four leagues from Soan, is the little island of *Santa Catalina* (St. Catharine) the eastern part of which is narrow, and the western foul.

On the West of Cape Caucedo is an anchorage, named *La Caleta*, which affords shelter from the breeze. The coast hence sweeps to the westward, to form the great bay of St. Domingo, at the bottom of which the river *Ozama* disembogues. On the western bank of this river, stands the *City of St. Domingo*. Along all the front of the bay is a sand-bank the *Estudeos*, having 5, 6 and 8 fathoms of water, and extending about half a mile out to sea. On this bank vessels anchor, but with some risk, especially in the season of the souths, which raise a heavy swell, and there is no shelter from these winds, added to which the coast is wild and rocky, without any beach, and the sea breaks on it with violence. The safe anchorage is within the river, but it has a bar of rock, which prevents vessels drawing more than 13 feet from taking it; and even these are in danger of striking during the souths.

To anchor on the *Estudios Bank*, it is necessary to coast the windward land from Cape Cauceda, at the distance of from three cable's length to half a mile; it is very clean and deep, and only on the eastern point of the river is there a shoal of little water: this stretches out about two cable's length, and to keep clear of it you must not haul to the northward, in any degree, until the west point of the river bears North.

The *City of St. Domingo*, which is the metropolis of the eastern division of Hayti, is situate, according to the late observations, in latitude  $18^{\circ} 28'$ , and long.  $69^{\circ} 50'$ . It stands on the right or western bank of the river *Ozama*, the entrance to which may be known by a great fort on that side. To the westward of this fort is a large savanna, which forms an amphitheatre, and makes a beautiful prospect. The harbour is very commodious, and ships may lie close to the shore to take in their lading, by planks from the wharves.

The city is built on a rocky point. The streets are at right angles, N. and S. and E. and W. and have footways of brick. The greatest part of the town is built of marble found in the neighbourhood, and in the style of the ancient houses of France and Italy. The more modern houses are of clay, which acquires the hardness of stone, or of wood thatched with the leaves of the palm-tree. The cathedral is spacious and magnificent. The population is computed at more than 20,000. The fortifications have been judiciously constructed, and the town is surrounded by a thick wall.

To sail into the harbour, run in directly towards the church with a flat steeple, and to within a mile of it: here you will have 15 fathoms of water, nearly opposite the eastern point, and a little within, off a small fort on the larboard. Run in directly; you cannot do amiss.\* Towards the sea there is no danger.

In navigating off this coast, allowance must always be made for the currents, which set, most frequently, to the eastward; and there is, very commonly, an indraught into the Bay of Nave, to the west, which must, of course, in some degree, affect the navigation towards that of St. Domingo.

#### *Remarks and Directions for St. Domingo by Capt. Mackellar.*

"The anchorage is about three-quarters of a mile from the shore, and is open to all winds from S. S. E.  $\frac{1}{2}$  E. to S. W. by W. and, when the sea-breeze is at all to

\* It has been said, that since this description was written, the depth of the harbour has been reduced by an accumulation of sand; caution in entering it is therefore necessary.



the southward, there is, of course, a very heavy swell. The bottom is of black sand and mud, apparently a good holding ground. Ships intending to anchor here, and being round Point Nisao, with the tower in sight, ought to keep well to the eastward; and when the tower bears N. N. W. they may steer for it, keeping it in that bearing, until within a mile and a half of it; then bring the west point of the entrance of the river, on which stands a signal-tower, to bear N.  $\frac{1}{2}$  E. and in a line with some houses on the east side of the river; these houses stand within the river's mouth on a small sandy beach; and, by keeping them in one with the west point of the river bearing N.  $\frac{1}{2}$  E. will carry you into the best anchorage.

"On coming within a mile of the town, you will get soundings of 40 or 50 fathoms; the next east 15; then 10, and from that it shoals gradually to the shore. The bank being very steep, I should recommend to ships having the wind free, to shorten sail in good time, and run in with their sails clued up, by doing this you will get your soundings true: and, so soon as in 8 or 9 fathoms, let go your anchor, not waiting to round to, as there is but little room.

"The east point of the entrance of the river is a flat rocky point, and stretches considerably out farther than the west point. The east point will be the nearest land to you when you anchor, bearing about N. E. The whole of the town is on the west side of the river, and has been well fortified, but the fortifications at present are out of repair. The river forms an excellent harbour inside, but has a bar of solid rock at its entrance, with never more than 15 $\frac{1}{2}$  feet water on it. The pilots here affirm that the anchorage outside is perfectly safe; in my opinion it may be well enough to stop a day or two in that season of the year when the weather is settled; but not, on any account, should a ship anchor here during the hurricane months.

"I had no opportunity of determining the situation of this place, while lying here. I got the latitude at anchor by two stars, one on the north, and the other on the south; they gave the anchorage  $13^{\circ} 27'$ , and the town was nearly a mile north of us. I should say the latitude of the town was about  $13^{\circ} 28'$ , but not to be depended upon.

*Point Nisao* is the western point of the Bay of St. Domingo; and to clear it in going out from that anchorage, you must steer S. by W. or S. S. W. and having run 14 miles on either of these courses, you will be to the southward of it.

From Nisao Point the coast tends about S. W. and W. S. W. and is so clear that you may run along it at less than two miles. It then sweeps to the westward towards Nave Bay, in which there are various harbours and anchorages.

*Salinas Point*, on the east side of Nave Bay, is in latitude  $13^{\circ} 12'$ , long.  $70^{\circ} 36'$ . From this point the coast extends to the N. E. a mile and a half, to *Caldera Point*, where a large bight begins to form. Here is an inlet of two miles to the east, in which every class of vessels may anchor in the greatest security, sheltered from both wind and sea. The mouth of this harbour (that is, the space which intervenes between *Caldera Point* and the nearest land) is half a mile wide, but the good and deep channel is reduced to a cable's length; for a rocky shoal, at the edge of which there are 4 $\frac{1}{2}$  fathoms water, stretches out about three cable's length from the coast; and another of the same kind, and with the same depth of water at its edge, runs out to half a cable from *Caldera Point*. The depth of water in this channel is from 7 to 8 fathoms, on oozy sand. Although this harbour is large, the ledge of rocks which border the coast rounds the whole interior of it, and reduces it much; it is also farther reduced by various rocky shoals in the very anchorage, but they have between them good and deep channels. As these shoals obstruct it so much, it is extremely difficult, even with a good knowledge of it, to enter it under sail, and totally impossible if you are not acquainted with it. In addition to this, on account of the narrowness of the channel, you cannot work in, and therefore no one should enter into this bight otherwise than by warping or towing; having previously anchored to the north of *Caldera Point*, and at about a cable's length from it. In order to this, you must keep within two cable's length from *Salinas Point*, and preserve the same distance until you are past a small point, which the coast forms between *Salinas* and *Caldera Point*, which is foul, and sends out a rocky shoal, on which there is not more than 2 or

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3 fathoms water. Having passed that point, which is called *Rancheras Point*, you may run within less than one cable's length of the coast, if you choose to make *Caldera Point*, and anchor in its vicinity. If the wind is not favourable for obtaining this situation, you may tack in, but take care on both boards, to tack in 8 or 10 fathoms, that you may keep clear of the ledges. If once anchored outside, you must get a warp carried out by your boats (which must also examine and ascertain the proper channel) and having warped two or three cable's length farther in, you will be in a very secure and well sheltered anchorage.

From *Caldera Point* the coast tends towards the N. W. to the *Point and River of Ocoa*; whence it returns towards the N. E. and forms a very extensive roadstead, which is sheltered from the breezes: but the bank, which is of sand, is so steep, that the anchors are apt to drag, and the cables sometimes fail, being damaged by the loose stones which are in the bottom. From these reasons vessels anchor very near the land, and send a cable ashore, which they make fast to some of the palm trees that are on the bank, having also a cable laid out for the changes of wind which take place in the night from the W. and W. N. W. and which render it necessary for those, who take this anchorage, to wait until the breeze comes in, which happens at 10 A. M. With the breeze you leave *Ocoa Point* well prepared to receive the gusts of wind which come off the coast, for they are very heavy.

From *Ocoa Roadstead* the coast follows to the North for 4 miles, and then to the west eight more, where it begins to take to the South, to form the west coast or shore of the great bay.

Near the turn where the coast begins to descend to the South, there is a harbour named *Escondido* or *Hidden Harbour*, which lies nearly N. W. from *Salinas Point*. The mouth of this is more than half a mile in width, and to enter it you must keep near its south point, which is clean; and the water is so deep that at half a cable from it there are 5½ and 6 fathoms. A reef stretches out a cable's length from the north point. Half a mile within the harbour, and in the direction of the middle of its mouth, there is a rocky shoal, which is two cables in extent from N. to S. and one from E. to W. and upon which a vessel must run, if keeping in the middle of the harbour, and steering N. W. To avoid it, you must keep within two cable's length of the south shore, and anchor about half a mile within the harbour, but not farther in with large vessels, for the depth diminishes so that at two cables farther in, there are only 15 feet of water. You can also anchor to the north of the shoal, in 5 fathoms, taking care not to run farther in than 3 or 4 cables' length from the mouth. In fine weather this harbour is excellent for vessels, which do not draw more than 13 feet, which may enter, and be sheltered from all winds. Frigates and ships of the line remain always exposed to some swell from the S. E. and had better be, in this case, near the south, than the north part of it.

**BEATA POINT, or LITTLE CAPE MONGON**, is the southernmost point of Hayti. Its bearing and distance from *Punta de Salinas* are about S. W. ½ W. sixteen leagues. Of the coast between we have no particular description. Eight miles to the north-eastward of *Beata Point*, is *Cape Mongon*, and between these points appears the high mountainous land of *Bauruco*.

**ISLE of BEATA.**—This island lies to the south of *Beata Point*, and is one league and a half in length from north to south, and about two miles broad from east to west. It is low and covered with bushes. There is a breaker off the N. by E. side of it, stretching towards *Cape Mongon*, at the extremity of which is a white shoal, that very much narrows the passage between *Beata* and the shore. In the passage are but three fathoms of water. There is anchorage to the westward of *Beata*, between it and the shore, in 7, 8, and 10 fathoms, sandy and weedy bottom, with the N. W. end bearing about N. by E. or N. N. E. one mile, and the S. W. end S. by W. four miles.

East of the isle the water is deep, and there is no ground at a short distance from it with 50 fathoms of line. There is, nevertheless, a shoal stretching from the S. W. point, to which a small birth should be given, as there are no more than 4 fathoms of water west, three cables' lengths from the point. When the

latter bears E. S. E. you may haul up from the N. W. end. In the anchorage there is good fishing.

The *Frayles* or *Friars*, a number of steep rocks above water, lie west three leagues from Beata. The sea breaks over part of them, and they are so bold-to, that vessels may sail within a quarter of a mile round; but it will be prudent not to approach within a mile.

Near all the isles off the main coast, the bottom may generally be seen; but near the shore of Hayti the water is very deep. The coast hereabouts is a flat of white and hard rocks, about 40 feet high, in which appear large holes and breakings with some prickly shrubs.

ALTAVELA, or the *Little Mount*, a high rocky islet, lies at the distance of five leagues south from Beata Point, in latitude,  $17^{\circ} 28'$ ; and longitude about  $71^{\circ} 23'$ . The islet is peaked, but its summit has a rotundity resembling the upper part of a bell. It is generally seen before any other land in the vicinity, particularly from the southward, and appears like a dome emerging above a mist or fog. Being very bold, it may be approached with safety.

At the distance of two and a half leagues N. N. E. from Altavela, lies the south end of Beata Island. Between is a good and very deep channel. There cannot, however, be any motive for preferring a passage between these islands to passing southward of Alto Vela; and, therefore, vessels bound to the westward from Ocoa Bay, may steer S. S. W. twenty-two and a half leagues, and a west course will then lead well to the southward of Alta Vela; a more southerly course is, however, to be preferred, in order to avoid danger, should the wind become scant, with a westerly or W. by N. current, which has often been found to prevail here with considerable strength.

POINT AGUJAS, or the *False Cape*, bears from Beata Point W. N. W.  $\frac{1}{2}$  W. six leagues, and from the Frayles N. W. by N. three leagues. *Cape Lopez* bears north, true, five miles from Point Agujas. The coast between forms a bay, affording good anchorage. From Cape Lopez, *Cape Roxo* bears N. by W. two and a half leagues, and between is the *Ensenada sin Fondo*, or Bottomless Bay; from this bay the coast tends to the N. W.; and at five leagues from Cape Roxo, is the mouth of the *Rio de Pedernales*, or Petre's Cove, which constituted the old limit between Hispaniola and Hayti. At this place is a good anchorage, which it is easy to take, a bank here extending along shore, and there is no risk in nearing the coast.

From Cape Lopez, the promontory called *Morne Rouge*, or Red Hill, bears N. W. twelve leagues. A league and a half to the eastward of Morne Rouge, is the village of *Sale Trou*, or Foul Hole, where there is a good anchorage for vessels drawing less than 16 feet: larger ships may anchor there, but they must lie farther out, where the ground is not so good.

From Morne Rouge the coast trenches in a little to the northward, then out again, E. S. E. to the *Anses a Pitres*, or Pitre Coves. All the coast is clear, and may be approached with great safety, as noticed above.

There is good anchorage at the Anses a Pitres, and of very easy access. At two miles from the shore the water is very deep. All the coast hereabout appears white, being chalky. You may anchor either before the plain of Anses a Pitres, or southward of a small cape, before the mouth of a river, which is considerable enough to be easily distinguished. The water is smooth, and you will be well sheltered in 6 or 8 fathoms, good ground, or in 4 fathoms and better ground nearer shore.

From Morne Rouge the coast round to Cape Jacquemel or Jacmel, which bears from the former W. S. W.  $\frac{1}{2}$  W. twenty-nine miles. From Cape Jacquemel, Cape Marechaud bears N. by E.  $\frac{1}{2}$  E. distant rather less than two miles.

In approaching Morne Rouge from Cape Jacquemel, it may be known by its white hummocks. The coast in the space between forms several little creeks, wherein small vessels may anchor; but in none of them will they be sheltered.

JACQUEMEL or JACMEL.—Between Cape Jacquemel and Cape Marechaud lies the Bay of Jacquemel, in the upper part of which there is anchorage for shipping of every class. The town of Jacquemel stands at the head of the

bay, to the east of the *River Guache*, which has several mouths in the beach. This bay, which is two miles in depth, was surveyed by Captain Mackellar and the officers of the British ship *Pique*, in 1817; and from this survey it appears that in the middle of it no bottom could be found at 70 and 80 fathoms; but the bank around the coast, which is about three cables in breadth, has from 20 to 3 fathoms, shoaling to the land. On this bank, upon the N. E. side of the bay, is a dangerous reef, nearly half a mile long, the outer edge of which is three cables' length from the shore. To the westward of this reef, and opposite the town, is the anchorage, having from 5 and 7 to 3, and in one spot  $2\frac{1}{2}$  fathoms. You may sail in with a remarkable white cliff, the last cliff on the western side, bearing from W.  $\frac{1}{2}$  N. to N. W.  $\frac{1}{2}$  N. until the wharf, near the middle of the town, comes on with the eastern side of an old battery, bearing N. by E.  $\frac{1}{2}$  E. and, with this mark on, you huff up to the anchorage, which, at half a mile to the southward of the town, has the depths above mentioned.

Jacquemel Harbour may be distinguished at a distance by the sudden cut-off or drop of a hill, seen over another long hill at the upper part of the harbour. Running in towards that drop will lead directly to the entrance.

**BAYENETTE.**—From Cape Jacquemel, Cape Bayenette lies nearly W.  $\frac{1}{2}$  S. distant five leagues. The latter may be known by the white hummocks and cliffs, on its extremity. This cape forms the south side of a bay of the same name, which is open to the S. E. Its name *Bayenette*, signifies *Clear Bay*, and is supposed to have been given from its great depth of water, and being entirely clear of shoals. This bay is unsheltered, but there is anchorage on the north side near the shore.

**LA VACHE.**—From Cape Bayenette to the east point of La Vache, the bearing and distance are W. S. W.  $\frac{1}{2}$  W. thirteen and a half leagues. The isle is three leagues long, and about one broad; it is hilly, and at the distance of six or seven leagues, appears like an assemblage of small islands. The south side is bold, and along the north a reef extends to the distance of a cable's length. From off the east point is a white shoal, connected with a reef, extending from an islet to the N. W. called *La Folle*, or the Fool's Rock.

From the Fool's Rock to the N. W. end of La Vache, there is a range of islets and shoals, among which are some narrow passages. On the north side of La Vache is a bay, called the *Baie de Feret*, where there is good anchorage, but it is accessible only to those who are well acquainted. The northernmost of the islets above mentioned, is *Grosse Caye*, called also *Caye de l'Eau* or *Water Key*, which is readily known by a great tuft of large trees. It is bold-to; and at some distance from its north side there is good anchorage, in from 15 to 30 fathoms.

The western end of La Vache forms the east side of the entrance of the great bay, called *Bay of the Cayes*; and from its S. W. point called *Point Diamant*, Point Abacou bears nearly W. by S. five miles. In mid-channel between, there is a depth of 25 fathoms, thence decreasing towards the island. From the S. W. point of the isle a white rocky spit extends to the south, having from 7 to 5 fathoms over it, at about two miles from shore.

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*Remarks on the anchorages within La Vache, by Captain Mackellar, 1817.*

"The N. W. point of La Vache is in latitude  $18^{\circ} 5' 12''$  N. longitude, by chronometer, &c.  $73^{\circ} 43' 15''$  W. Variation,  $6^{\circ} 20'$  E. Ships coming from the westward, and intending to anchor here, ought to round Aboucou Point, at a good mile off, as a reef stretches to the S. E. to nearly that distance from it. Having rounded this reef, there is nothing in the way, and you may steer for the N. W. point of La Vache. At half way between it and Aboucou Point there are soundings in 15 fathoms, and the bottom thence shoalens gradually to the island. The best anchorage here is with the N. W. part of the island bearing E. N. E. in 5 fathoms; you will then be about three-quarters of a mile from the shore, on



a white sandy bottom. The soundings all over this part are so very regular, that you can hardly err in anchoring any where, so long as you keep the N. W. point of the island bearing to the northward of east. From the N. W. point to the S. W. point of the island the soundings are not so regular, and strangers ought not to come nearer than in 7 fathoms, especially near the S. W. point, for a reef stretches from it to the southward not less than two miles, having very foul ground, with irregular soundings, to upwards of a mile or more. Therefore, ships, coming from the eastward, and intending to anchor, ought to keep Aboucou Point bearing west until the west point of La Vache bears north. They may then haul in to the northward, and steer for the anchorage.

"About a mile to the eastward of the town of *Aux Cayes*, which stands to the north, there are three small white cliffs, close to the sea-side; and the mark I have generally run in and out by is, the easternmost cliff bearing north, and in a line with a small round hill, on the highest land behind it; and anchoring with this mark nearly on the N. W. point of La Vache bearing E. N. E. or N. E. by E.

"The whole of this large bay to the westward of La Vache is clear, and the soundings very regular, while you keep the west end of the island bearing to the northward of east. To the northward of this I had no opportunity of sounding, although I am well aware that, between La Vache and Aux Cayes, the bay is covered with large reefs, and several are above water."

The CAYES, ST. LOUIS, &c.—Point Aboucou is composed of two points or reefs, which stretch three-quarters of a mile to seaward; but you may pass, without fear, at the distance of half a league, and will find no ground with a line of 40 fathoms. The town of the Cayes bears from Aboucou Point, nearly north, four leagues. In sailing towards this place, and approaching Point Diamant, before noticed, you will not find the white ground for more than a quarter of a league from it; and the ground is good in 6 or 7 fathoms. With Point Diamant bearing east, there are soundings all across. There is good anchorage to the west of Diamant Point, and farther to the northward, opposite a sandy cove, in from 6 to 7 fathoms, bottom of mud and sand.

To go into Aux Cayes, you range along the N. W. point of La Vache, in six fathoms water; and you steer nearly N. by E. to make on your starboard hand the white hummocks of Cavaillon. You will then leave on the larboard hand a large reef, surrounded with a white shoal, which takes up almost all the middle of the bay. When you have brought the town to bear N. W. & W. you must haul up two points to windward of the town, standing towards the Company's Islet, where you may anchor if you do not mean to go into the road; if you do, you shorten sail a mile from the shore, and wait for a pilot. The channel is two-thirds of a cable in breadth. Ships drawing more than 13 feet water cannot go in; those of 15 and 17 feet water always anchor at Chateaudin, half a league to the westward, and which is separated by shoals from the port.

To anchor in the road of Chateaudin, (coming from the mooring of La Vache) W. or W. N. W. off Diamant Point, in 8 or 11 fathoms, you must steer directly for Torbec, which is a small town, very easily distinguished in the cod of the bay: this track will be about N. W. When you are within about two miles of the shore, you will discover a little white flag, which is on a shoal; you double it to the westward at about half a cable's length, leaving it on the starboard hand; when you have brought it to bear south, you steer along the coast for the road of Chateaudin, and anchor in 6 or 7 fathoms mud. In all this passage, if you keep the proper channel, you cannot have less than from 7 to 9 fathoms, and often 12 and 16, muddy ground.

In advancing towards the Tapion of Cavaillon, you must not approach too near its S. E. side, as a shoal of only 6 feet water, called *Le Mouton*, or the Sheep, lies S. E. from the eastern point, at the distance of about half a mile. There is a depth of 8 fathoms between it and the coast.

CAVAILLON BAY is spacious, although its anchorage is of small extent. The coast on the western side is very steep, and the bottom full of rocks; but there is anchoring ground on the eastern side, opposite a coast covered with mangroves, which may be approached without fear, the bottom being clean, with 5 fathoms close to the shore. This bay affords shelter from the sea-breezes by the



eastern point of an island, which leaves a passage into the *Baie des Flamands*, next described.

*Baie des Flamands*, or *Flamingo Bay*, lies a quarter of a league from Cavaillon Bay, and extends upwards towards the N. E. Its entrance and shores are clear and bold, and it is the place where ships lie up in the hurricane months. There is a good careening place, and anchorage in every part.

**BAIE DE MESLE.**—From Flamingo Bay the coast extends E. by N. two miles to the *Grand Baie du Mesle*, all over which the anchorage is good; but, as the entrance is broad and open to the southward, there is no shelter from southerly winds. The coast hence continues its direction to Point Pascal, half way towards which is the *Petite Baie du Mesle*, in which a vessel may anchor, but it will not be sheltered even from the sea-breeze.

Off the Great Bay du Mesle is a shoal, lying like a bar across the bay, and extending opposite the point, which is to the westward of the Little Bay du Mesle. This bank has not, in some places, more than from 15 to 18 feet water; it is very narrow, and leaves a passage of three-quarters of a mile only between it and the coast. To the southward it extends about half a league from shore.

To go into the Great Bay, with a ship drawing more than 15 feet, you must keep close to the shore on the western side, steering by Point a Paulin, which forms that side of the entrance.

**BAY OF ST. LOUIS.**—The great entrance of the Bay of St. Louis lies between Point Pascal, which is steep and wide, and a little isle called Orange Key: the bearing and distance from one to the other being E. 4 N. rather more than half a league. This isle may be seen from the entrance of the Cayes, thirteen miles distant, whence it appears nearly in a line with the southern extremities of the intermediate coast.

About two-thirds of a mile N. E. by N. from Pascal Point is the Vigie or Old Lookout Point: between is a cove, called the *Bai du Paradis*. When off the Vigie Point you will have the whole of the Bay of St. Louis in sight. The bay is shut in on the eastern side by Cape Bonite, which bears from the Vigie Point N. E. 4 E. distant one mile and three quarters.

In proceeding to the anchorage of the Bay of St. Louis, run along past Point Pascal and Point Vigie, and thence along the western coast of the bay, in 8 or 10 fathoms water. The anchorage is west of the Old Fort\* about a quarter of a mile from the western shore, and so situate that the town may be seen from it, between the Old Fort and shore, in the bottom of the bay.

In the anchorage before the town, called the Little Anchorage, the greatest depth is 5 fathoms.

S. S. E. three-quarters of a mile from the Old Fort, and west of Cape Bonite, at nearly the same distance, is a shoal called *Le Mouton* (The Sheep.) There is a good passage between it and the shore, as well as between it and the Old Fort; but the depth of water is less on the eastern than on the western side of the bay.

Between Orange Key and the shore, in a N. E. direction, there are two islets and some shoal ground; the first of which next to Orange Key, is called *Rat's Key*. You may pass into the bay of St. Louis, through a small passage, immediately on the north side of this Key.

**AQUIN BAY.**—One mile and a half E. by N. from Orange Key is Moustique Key, a little island clear of shoals, unless very close in shore. You may pass without or within it at the distance of one-eighth of a league, in 10 fathoms. Cape St. George is north of Moustique Key, and N. W. of a key, called *Cayo a Ramiers* (or Pigeon's Key) which bears E. by N. 2 miles from Moustique Key, and is known by a white hummock rather steep, and seen at some distance. There is a deep passage between it and Moustique Bay, by which ships pass into the great Bay of Aquin.

\* The Old Fort is on an island of rocks towards the middle of the bay, half a mile to the southward of the town. In the passage between it and the shore there is a depth of six fathoms.

South of Caye a Ramiers is a shoal extending half a league, which has, on its middle part, only 3 fathoms. East of the same key is a small isle, called L'Anguille, or the Eel, and to the N. E. is another, called Le Ragale; the three form an equilateral triangle, having each side half a league in length.

E. N. E. three-quarters of a league from Caye a Ramiers, lies the west end of the Great Key of Aquin, which is two miles in length, and distinguished by two very remarkable white hummocks. It extends E. and E. by N. true, and its south side is bold-to; but the white shoals of L'Anguille extend to its western point, so as to prevent a passage between it and Caye a Ramiers, for ships that draw more than 12 or 14 feet.

East of Aquin Key, at the distance of a short quarter of a league, is a white insulated rock, called *Le Diamant*, or the Diamond; to the eastward of this, at the distance of two cables' length, is the point of *Morne Rouge*, or Red Hill. Thus the eastern end of Aquin, the Diamond Rock, and the point of Morne Rouge, form the two passages into the bay. All the islands and shores are bold. In the Morne Rouge Passage are 5 and 6 fathoms water; and in that between Aquin Key and the Diamond, 6, 7 and 8. The bay is extensive, and trenches considerably inland, but the water is shallow, and there are only 3 fathoms at a distance from shore.

The point of Morne Rouge may be readily known at a distance by three very high white hummocks, called the Tapions of Aquin, which together form a great cape, under which is anchorage in 10 and 12 fathoms, at a distance from land. This bottom continues as far as the Petite Baie des Flamands, or Little Flamingo Bay, which is W. N. W. a league and a quarter from the Tapions of Aquin.

To enter the passage into Aquin Bay, between Caye a Ramiers and Moustique Key, before mentioned, steer N. N. E. so as to get into the mid-channel between the shore and the island. Having doubled Key a Ramiers, you will see La Ragale, which is a very low isle of sand; leave this on the starboard side, keeping in mid-channel between it and the shore; then haul up for Aquin Key, as much as the wind will permit, and anchor to the northward of it, in 6 or 7 fathoms, or farther in, at pleasure.

### GENERAL REMARKS.

Observe that from Point Pascal all the capes are broken and steep, and from the S. and S. E. and as, on all this coast, the land is white, many white hummocks will be seen. Aquin has two, above-mentioned; but the easternmost and highest are those of Morne Rouge, and, with attention, it will be impossible to mistake them. From the point of Morne Rouge, or the hummocks of Aquin, the true direction of the coast, after having trenced in to form the Petite Baie des Flamands, is East, southerly, 10 leagues to Cape Baienet. The whole of this coast is free from danger, and bold-to, but has no bay or anchorage, or shelter from the common breeze. Two leagues and a half westward of Baienet, the coast is iron-bound, and the water near it of great depth.

POINT ABACOU to CAPE TIBURON.—From Point Abacou to Point a Gravois, the bearing and distance are west, southerly, 2½ leagues. The latter is low, not easily distinguishable, and has frequently been mistaken for the land of Port Salut, a small cove, lying a league farther to the N. N. W.

From Point Gravois, N. W. by N. 4 leagues, there is a bight of half a league, in which anchorage may be found. This bight lies about two miles to the southward of *Les Cotteaux*. From this spot to a large hummock called *Les Chardonniers*, which is very remarkable at a distance, the bearing and distance are nearly W. N. W. 10 miles.

From *Les Chardonniers* to the *Fond des Anglais*, or English Bottom, the coast extends W. by N. 4 miles, and a bay thence rounds to within a league and a half of *Pointe du Vieux Boucan* or Boucan Point. All this part is safe, but it has no anchorage; a ship may indeed anchor very near the land, but is every where exposed to the sea breeze.

From Boucan Point to Point Burgos which is a low point, the coast tends westward 4 miles. Between these places, off a point called Aigrettes Point, there are some white shoals, rocks and breakers; but their extent is not more than half a league.

*The Northern Coast of Hayti, or St. Domingo, between Cape Raphael and St. Nicolas' Mole.*

[Variation, generally, about 5° East.]

CAPE RAPHAEL is of moderate height, and lies in or about lat. 19° 2', and long. 68° 52'. It has already been described in page 244. From this cape to Cape Samana the bearing and distance are N. W.  $\frac{1}{2}$  W. nearly 7 leagues. Between the two is Samana Bay, about 10 leagues deep, so that you can scarcely see the land at the bottom of it; but what appears to the eye is very high double land.

CAPE SAMANA is a broken rugged point of land, which appears, from a great distance, like a ship with her topsails down, and seems not to join the main, but on a nearer approach, this shape changes. The cape makes with two points, both alike, bluff and steep, about the height of Beachy Head, in the English Channel, but not so white: they are 4 or 5 miles asunder, with a small bay and harbour between them. At two or three miles to the westward of the westernmost point, there is very high land, which falls down to the water-side, and is twice as high as Cape Samana.

SAMANA BAY.—There is good anchorage in Banistre or Levantados Road, on the south side of the peninsula of Samana. In advancing for this place, observe that, when Cape Samana bears N. W. by W. about a league, it appears like two points, the westernmost of which, as you come farther in, you should bring open with a white spot of sandy ground, which may at first be mistaken for one of the sand-keys, although it is connected with the main shore. In order to ascertain the true point, observe that, in coming about it, it will appear as if a small rock were lying off it, which, on a nearer approach, will be found to join to the land. The soundings are uncertain. Having well shot into the bay, you may have 10 fathoms, and then no ground in 20.

Or, being off Cape Samana, and intending for this port, sail S. S. W. three or four miles, along shore, (you may go within a mile, for it is bold-to,) to *Point Velandras* or *Blue Point*, which has two or three black rocks lying near it. When at the length of this point, steer thence west about half a mile, and you will leave three keys, which are high and woody, a mile from you on your larboard side. With the westernmost of the three keys bearing S. S. W. you may anchor in 15 fathoms, half a mile from shore, and have good water: then Levantados or Banistre Key will bear W. by N. one mile off.

There is good easy riding in this harbour, in from 7 to 8 fathoms: you may also find good fresh water in many places, with plenty of fish and fowl. Here is commonly a fresh breeze from the eastward all day, and open to the north.

The preceding paragraphs are from the French of the Count *Chastenot de Puysegur*, &c. The following from the Spanish *Derrotero*.

SAMANA BAY.—From Cape Raphael the coast tends nearly West, and forms a gulf, shut in to the N. W. by the peninsula of Samana. The east point of this peninsula, named Cape Samana, lies 7 leagues N. W. by W.  $\frac{1}{2}$  W. from Cape Raphael. This bay, which is more than 11 leagues in extent, from East to West, and 4 from North to South, is obstructed and almost shut up by a great reef, which extends from the south coast, and so far to the north, that a channel of only 3 miles in width remains between it and the peninsula of Samana: The northern extremity of this reef is marked by some keys or islets, the largest of which, called *Cayo Levantados*, must be left on the larboard hand on going into the bay. Within there are several anchorages, but little frequented, as there is

scarcely any commerce here. The first anchorage is on the coast of the peninsula, and near the entrance of the bay; it is named the *Carenero Chico*, (or Little Carenage): to enter and anchor here, it is necessary to approach within half a mile of *Point Velandras*, which is the S. E. point of the peninsula, and to keep along the edge of the coast at this distance, until sheltered by *Vinas Point* when you may anchor in 6 fathoms, taking care to keep half a mile from a key, named the *Key of the Caren-ro Chico*, which is at the west part of the road, and has, to the south of it, either four or five small islets. Behind this key, and between it and the coast, is the proper anchorage; but it is much narrowed by shoals, and must be entered by warping. Point Vinas is easily known, as it bears true North from the west part of *Levantados Key*. In the entrance there is nothing to be feared, because there is no danger but what may be well seen; and only inward from Point Vinas is there a shoal, having on it two feet of water: to keep clear of this shoal, bear in mind that it bears East, a long mile from Vinas Point. By following the coast, as we have directed, at the distance of half a mile, you will go safe from it; but, for greater certainty, keep something to starboard, when you sound in 5 fathoms water; for in the channel, between it and the coast, there are 6½ and 7 fathoms.

A league and a half to the west of the *Carenero Chico*, is the *Puerto de Sta. Barbara*, or of *Samana*: the anchorage here is very narrow at the entrance, which is formed by a great reef, that runs out to the east from *Point Escondido*, the S. W. point of the harbour; and on this reef, rise several keys or islets, of which the outermost is named *Tropezon*; the second is the *Greater Carenero*; and the third, *Cayo Escondido*, is very near the *Point Escondido*, on the west. There is not only this reef at the entrance, for the north coast sends off two, which stretch far to the south, and form two bays: of these the first is called *Aguada*, or *Watering Bay*, and it has *Point Gomera* for the N. E. point of its entrance. The second roadstead lies between the two reefs. In *Aguada Bay* there is good anchorage, in 6 fathoms, clay; the second anchorage is very narrow, but has 7 fathoms water. To the west of these two reefs and roadsteads, lies the principal harbour and anchorage of *Samana*, with a depth of 5 and 6 fathoms, on clay, which is found to the south of the town. To enter this harbour, it is necessary to run along the north coast, at half a cable's distance, and steer to the west, taking care neither to get nearer to, nor farther from *Point Gomera*, than half a cable; for you will thus run in mid-strait; and, by keeping farther off, you would incur the risk of getting on the southern reefs, or by coming nearer, get on those of *Point Gomera*, which lie out one-third of a cable. So soon as past *Point Gomera*, you may see a little rivulet in *Aguada Bay*; and then you ought to place the prow direct for the western extremity of *Carenero Key*, until *Point Escondido*, or its key, bears W. ½ S. when you may run about W. by N. towards the bottom of the harbour, and perfectly free from the northern reefs, and may anchor to the south of the town, in 5 or 6 fathoms water, upon clay. If you wish to anchor in *Aguada Bay*, you must run in, luffing up to the northward so soon as past *Point Gomera*, in order to anchor in the middle of it, and about S. ½ E. from the rivulet of *Aguada*.

From this anchorage the coast of the Peninsula continues bold, and with roadsteads, in which there is nothing to fear, except the south winds, which in their season are often violent. Two leagues to the west of *Samana* lies *Point Espanola*, with an islet; and thence, in the interior of the bay, there is no establishment whatever. A large clay bank, in the interior of the bay, runs out more than two leagues.

From *Espanola Point*, in which you will be well to the west of the reef at the entrance of the Bay, you should steer to the south for the Bay of *Perlas* or of *St. Lorenzo*, in which there is no necessity to run far in; and it may suffice to anchor at its entrance, and about south of *Arenas Point*, which is the north point of this bay; for although farther in there is sufficient depth, yet there are sandbanks, on which you might easily get aground. To find this bay it is better to make the land to the east than to the west; for the south coast of *Samana*, from *Perlas Bay* to the west, is very wild and unsafe, on account of the many islets along it. Steering from said *Point Espanola* to the S. ½ E. you will fall to the



east of the bay, and make a little town named Savanna de la Mar, which affords anchorage for very small vessels; and thus, so soon as you discover Arenas Point, when crossing over, steer towards it, and you may approach within a cable's length of it.

The entrance of Samana Bay is affected with the regular breezes; but you can get out with the land breezes only, which blow by night.

Cape Samana is of considerable height, and steep down to the water's edge; on nearing it, you may also discover Cape Cabron, which is N. W. from it, nearly 3 leagues: this is even more high and scarped, or steeper, than the former, and the coast between is green, and covered with large trees: on it there are some islets, and as it is foul, it should not be approached nearer than one league. From Cape Cabron the coast takes to the west, and forms a great bay called Escocesa Bay; the coasts of this bay are low, and very foul; from which reason, and as there is neither town nor establishment in it, to induce vessels to visit it, they ought to proceed direct from Cape Cabron to Cape Viejo François, or Old Cape François, which lies 15 leagues from it, W. N. W.  $\frac{1}{4}$  W. Old Cape François may be seen, in clear weather, at the distance of ten leagues. It is known by a mountain inland, which may be seen at the distance of 15 leagues.

### *Directions for those sailing in from the Eastward.*

Ships coming from the eastward, towards the N. E. coast of Hayti, should, previous to their making the island, run down between the latitudes of  $19^{\circ} 30'$  and  $19^{\circ} 50'$ , taking particular care not to pass either to the northward or southward of these latitudes. In this track they will make the land, either by Cape Cabron, or Old Cape François, and they will pass clear of the Silver Key Bank on the one side, and the current commonly setting towards Samana Bay on the other. For a description of the Silver Key Bank, see page 193.

E. S. E. from Silver Key, 40 miles distant, lies the East Reef, in a N. E. direction, having from 6 to 15 fathoms water, with the appearance of a dangerous reef on the N. end, which is said to extend from lat.  $19^{\circ} 45' N.$  to  $20^{\circ} 35' N.$

In passing to the northward of Porto Rico, a look-out should be kept for a rock or shoal, (if not more than one,) which certainly exists there, although its exact situation is not yet known. This danger has been noticed, where it is stated that an American schooner struck upon it in 1817, in latitude about  $20^{\circ}$  north; and we have since met with another notice, which states that, "At fifty miles north from Porto Rico, Captain Baxter, in the brig Robert, struck on a rock, and remained several hours."

Capt. Miles, in the schooner Dick, of Baltimore, struck on the Morillos rocks, south side of Porto Rico, at midnight, on the 13th June, and was totally lost.

**OLD CAPE FRANÇOIS.**—The point of the Old Cape is rather low, and stretches out in the form of the snout of a porpoise; at 5 or 6 leagues distance to the N. N. W. of Cape Cabron, in a clear day, the Old Cape is seen making like an island, whose ends slope gradually into the sea. When you have made Cape Cabron, being 4 or 5 leagues to the north-westward of it, you must sail 13 or 14 leagues N. W.  $\frac{1}{4}$  W. and you will pass 5 leagues to the northward of the Old Cape; then steer W. by N. when having run 15 leagues, you will see Point Casrouge at about 3 leagues distance from you; continue on for 5 leagues, when Ysabelica or Isabella Point will bear S. W.  $\frac{1}{4}$  W. distant 4 leagues; having advanced thus far, you have nothing to fear, and, if necessary, you may keep within half a league of the shore, the coast being very clear.

At about 4 leagues off, to the northward of Old Cape François, its point appears like a porpoise-snout, projecting to the eastward; and 3 leagues farther west is a point named *Cabo de la Roca*, or *Rocky Cape*, very much resembling it, and projecting to the westward. The coast between lies W.  $\frac{1}{4}$  N. and E.  $\frac{1}{4}$  S. it is low, rather steep to the sea-side, and covered with trees, remarkably green.

Towards the point of the Old Cape, a mountain is perceived inland, which, in clear weather, can be seen 15 leagues off, and is a good mark to point it out.



There is some foul ground laying off the pitch of the Cape, and a harbour a little to the westward of it for small vessels. When sailing from Cape Samana to Old Cape François, which is about 6 or 7 hours sail, you see a point of land on the east side of the Cape, which oftentimes, at first sight, you suppose to be the Cape, but coming nearer, you will see your mistake. And when you are due north of Old Cape François, you will perceive, to the eastward of the Cape a very steep point, which seems to be divided from the main, and, running off the land, rises higher and higher, in such a manner, that the highest part of it lies open to the sea, so high that you cannot see the land within.

When from Old Cape François you sail for Monte Christi, observe to steer a more northerly course in hauling off, giving a good distance between you and the shore, because the currents always set upon it; and, unless you do this, you will run the hazard of being ashore.

From *Cape de la Roca*, the land trenches in to the distance of 2 leagues, and forms a bay pretty deep, which is sheltered by reefs. This coast thence tends to the W. N. W. and, rising in height to the northward, comes to *Punta Macuris* or *Point Mascoury*, which bears W.  $\frac{1}{2}$  N. from Cape de la Roca. This point is high, and its shore bold: it serves as a mark for the small harbour of St. Jago, which is 3 leagues distant from, and to the eastward of, *Puerto de Plata*.

PUERTO DE PLATA, or Port Plata, lies 17 leagues from the point of the Old Cape, and bears from it west. It is known by a mountain at some distance inland, which appears insulated like the Grange, (see page 257) although not in so precise a manner. The anchorage is good, and the entrance nearly covered with mangrove islets, which you range along, leaving them on your larboard hand; when you are within these islets, you anchor in 17 to 20 fathoms, good bottom. Observe, when sailing in, to keep close to that point of land on your larboard side, which will see to be broken and rugged. When coming about the said point, luff up round, and run up as far as you can, with your sails almost shivering in the wind; thus you will gain the best place in the road.

On approaching the coast, you will descry to the westward a great cape, very high and steep; the extremity of this is *Punta del Algarroba*, or *Point Casrouge*, which is readily known by its magnitude.

The bight from Port Plata to Point Casrouge is bordered with reefs close to the shore, and does not admit of any anchorage.

Old Cape François, and the Great Point of Algarroba, or Casrouge, bear from each other W.  $\frac{1}{2}$  N. and E.  $\frac{1}{2}$  S. 18 $\frac{1}{2}$  leagues. When at the distance of about 3 leagues to the northward of Casrouge, you will see a low point projecting out to the westward, which is remarkable by its having the appearance of being detached from the coast like an island: it is Ysabelica or Isabella Point, the northernmost point of Hayti.

YSABELICA, or ISABELLA POINT, according to the late observations, lies in latitude  $19^{\circ} 59'$ , longitude  $71^{\circ} 10' 30''$ , and at the distance of 4 $\frac{1}{2}$  leagues W. N. W.  $\frac{1}{2}$  W. from Algarroba or Casrouge Point. To the eastward of it lies the deep bight, called Puerto Caballo, or Port Cavallo. In the bight between these, is an anchorage for vessels drawing 12 or 13 feet water, and sheltered by the reefs: the entrance is readily known by running to it along the reefs.

On the western side of Isabella Point is a more extensive anchorage, and more easy to gain than that of the east, but the ground in many places is foul: there is a depth of from 5 to 7 fathoms water.

From Isabella Point to the Grange, the bearing and distance are W. S. W.  $\frac{1}{2}$  W. 10 leagues. The coast between is bordered with reefs, among which the entrances are narrow and dangerous.

West of Isabella Point is *Punta Rucia*, or Rocky Point, to the westward of which is an anchorage for large vessels, which, being very bad, ought to be used only in case of necessity.

To gain this anchorage, you must haul very close to Rocky Point, and anchor so soon as you are in 12 fathoms, white bottom.

This anchorage, which is sheltered by the reefs that stretch N. N. W. from Punta Rucia, lies about four leagues from Isabella Point.

The GRANGE.—The Grange Point is known by the mountain of that name, and is seen at a great distance, before you perceive the sea-coast. This mountain, which is insulated, and stands upon a low peninsula, has very much the appearance of the roof of a barn, from which it takes its name, *Grange*. The northwest part of it is bold, and you may approach it within a quarter of a league, or even less. Close to the west part of the Grange Point is a rocky islet, named the *Frayle*, or Friar; and from its S. W. part, at three cables' length, is another, somewhat larger, and named *Cabras*, or Goats' Islet. These are the islets of *Monte Christi*.

HAUT-FOND.—Two leagues to the N. N. E. of the Grange Point lies a white shoal of not more than two cables' length each way, called the *Haut-fond*: there is a small spot on the shoal, with only 25 feet of water, on which the *Ville de Paris* struck in 1781. Close to it is a depth of 6 fathoms, then 10 and 15, and suddenly no ground. The white ground has generally scattered rocks, so that it cannot be ascertained whether there may not be some spots on it, even with less than 25 feet. When you are on this shoal, the Grange bears S. by W.  $\frac{1}{2}$  W. you will then have the islets of Monte Christi open of each other, the westernmost of them bearing S. S. W.  $\frac{1}{2}$  W.

MONTÉ CHRISTI REEF.—About three leagues to the westward of the *Haut-fond*, lies another reef, on which the British ship *Torbay* struck, and lost her rudder, in 1783. It extends nearly N. E. and S. W. is about three-quarters of a mile in length, and half a mile broad. On the shoalest part the points of rocks stand up like sharp spires. On other parts were seen white patches of sand. The shoalest water, 3 fathoms; thence 3 to 4, 5, 6, and 7 fathoms. It is steep-to, and has from 15 to 17 fathoms close to it, and 20 to 25 all round. The bottom is soft in 20 fathoms; and, in some places, you will have coarse sand. The water, when smooth, is very clear, so that you may see the pinnacles of the rocks as you pass over them in a boat. From the shoal, in 3 fathoms, the eastern end of a grove of trees open to the south-westward of Monte Christi (and between it and the key) bore S. E. and the Mount of Cape François (now Cape Haytien) S. W. by W. The variation at the same time was  $6^{\circ} 20'$  E.

With *Isabella Point* bearing S. W. distant four leagues, the course and distance to pass without the shoals called the *Haut-fond* and Monte Christi Reef, will be a few degrees to the northward of west, seventeen leagues; and then the latter will bear about S. E. But, should you be up with *Isabella Point*, and prefer the mid-channel between these shoals and the coast, a W. by S. course, sixteen leagues, will clear the shoals, and bring you in sight of the high land of Cape Haytien, (formerly Cape François) at the distance of about five leagues.

In sailing between *Old Cape François* and the *Grange*, be careful to keep sufficiently to the northward in hauling off, that you may not be driven ashore by the current, which always sets upon the coast.

There is anchorage under the *Grange to the west*: to take it you must range along the *Frayle*, or islet of Monte Christi, and let go your anchor so soon as you have 6 fathoms; but under the south side of *Cabras*, the westernmost islet, you may anchor farther in, with 4 fathoms. From the *Grange* you may see the mountains above Cape Haytien.

In approaching this anchorage, you must be cautious of a shoal, which lies W. by S. from *Cabras Isle*, at the distance of a long mile: to keep clear of it, on entering and leaving the anchorage, take care not to bring *Cabras Isle* to bear any thing to the northward of E.  $\frac{1}{2}$  N. but, on the contrary, keep it rather to the southward of that bearing.

The Shoal or Bank of *Monte Christi* extends fourteen miles to the west, and to the south as far as *Manzanilla* or *Manchioneal Point*, and it thence continues to border the coast, at the distance of half a mile, more or less, according to its sinuosities. On this bank rise the islets named the *Seven Brothers*, which are low, and covered with mangroves. The islet named *Monte Grande* is the most remarkable of all of them: it is the second from the eastward, and has high trees upon it. This bank, as well as many others in these seas, has a very white bottom, and is very dangerous, because the bottom is very irregular in its depth, with stones and rocks; you may have eight, and immediately after three fa-

thoms. You should, therefore, avoid sailing on this or similar banks, unless they have been well examined and sounded.

**MANZANILLA BAY, &c.**—To the east of Manzanilla Point there is an excellent anchorage, in Manzanilla Bay; from this bay the coast tends in to the S. E. and then turns to the west, in which direction it continues to a distance of eight leagues, when it ascends to the north, and terminates with *Point Picolet*. The Grange Point, with Point Picolet, form a great bay, in which, besides Manzanilla Bay, there are two harbours; the first of these, named *Bayaha*, or *Port Dauphin*, is to the S. W. of Manzanilla Point, and about two leagues from it; and the second, at the western extremity of the bay, is known as *Guarico*, or the city of *Cape Haytien*, or *City of the Cape*.

The coast from Bayaha to the west is bounded by a white bank and reef, on the edge of which there are from 50 to 80 fathoms: between the reef and the coast is a channel, with two or three fathoms of water, to which there are various passes in the reef, known to the coasters and pilots only.

*The navigation from Grange Point to Manzanilla Point* should be made on the white bank of the Seven Brothers; it is, therefore, very necessary to know the channel; and, though you may proceed on the outside of the islets and the bank, extending to the westward, it follows that, in doing this, vessels must get much to leeward, and are then obliged to beat up to the anchorage. The delay in following this route is not so great when bound to Bayaha, or Port Dauphin; but the channel for crossing the bank, which we are about to describe, being very safe, it does not seem requisite that any one should go round about, but that all should proceed as follows.

Having passed near the Grange Point, steer W.  $\frac{1}{2}$  S. without going to the southward of that bearing until you are to the north, or on the meridian of Yuna Point;\* the vessel, having arrived at this situation, should now steer towards Yuna Point, until the islet named *Monte Chico*, which is the easternmost of the Seven Brothers, bears west; whence you must steer S. W. leaving to starboard the islet or key *Tororu*, which is the southernmost of the Seven Brothers; and, when you mark it at about N. by E. you must steer S.  $\frac{1}{2}$  E. until you have Manzanilla Point E.  $\frac{1}{2}$  N. when you must haul to the wind, on the larboard tack, to take the anchorage, if you can; and, if not, you must prolong the stretch to the southward, as far as necessary, to enable you to get into the bay upon the other tack, in the understanding that you may run along the whole of the south shore at half a mile, or even less. In running by the way we have pointed out, you will find upon the bank 7 to 8 fathoms of water, on sandy clay, and you may anchor on any part of it commodiously, especially to the S. W. of the eastern keys, Monte Chico, and Tororu; and it may even be convenient to anchor, in case of night coming on, by which the inconveniences arising from darkness may be avoided.

The edge of this bank is so steep that, from 12 to 20 fathoms, you rapidly pass to 100 fathoms; and of the same nature is Manzanilla Bay; for, from 7 fathoms, you pass to 100 in the short distance of 5 cables' length; from which reason an anchor should never be let go until the depth has been previously ascertained by the lead, keeping in mind that the best anchorage is in from 6 to 10 fathoms, on a stiff clay bottom, which the anchors catch well, and at less than half a mile from the shore.

In the *River Tapion*, (E. S. E. of Manzanilla Bay) and also in that of Axabon, to the S. E. water may be conveniently got, and you may cut wood on any part of the coast that is desert and uncultivated. In this bay there are always fresh land-breezes, which facilitate much the communication between Bayaha and Monte Christi; for those to whom the breeze is contrary, navigate at night, by aid of the land-breeze. In Manzanilla Bay no hurricanes are felt, which is an advantage of great consideration.

The **HARBOUR of BAYAHA or PORT DAUPHIN** is one of the finest ports in Hayti; for to its great extent it adds shelter equal to a dock, with an excellent

\* Yuna Point is a low point, which bears S. W. true, five miles from the Grange Point.

clay bottom, and the depth does not exceed 12 fathoms, nor is it less than 5 fathoms, which are found at half a cable from the shore; but notwithstanding these singular qualities, if the difficulty of entering and getting out of it, in consequence of the narrowness and foulness of the channel or mouth, is considered, it will be seen that it would not answer for any vessel on actual service to enter and be shut up in a harbour from which she could not sail, unless at night, with the land-breeze; and thus exposing herself not only to the danger of getting aground on the shoals of the entrance, but also, in case of the land-breeze failing, she may both lose the time for getting out and the object for doing so. The interior of this harbour needs no description, more than the chart, by which it may be seen that its entrance is only a cable and two-thirds in width; and this narrow breadth continues inwards, to the distance of a short mile. The several points which are in this passage render the entry still more difficult: the risk of this consists in a shallow ridge, which borders both sides of the channel, and which, at the points, stretches out more than half a cable, and reduces the channel to one cable's length in width. Again, this channel being serpentine, it is necessary that a vessel, in running in, should take the turns with much dexterity and promptitude, in order to avoid getting aground. It is therefore necessary to enter this harbour when the breeze is to the northward of E. N. E.; for, if more scant, an attempt to take the entrance will be impracticable. Keeping well in the middle of the channel, you pass close to the White Shoal, which runs out from the windward point of it; and, when abreast of it, you must luff up, so as to place the prow towards the second point on the windward side, so as to free yourself from the ledge which lies off the second point to leeward: and, so soon as you have this a-beam, on the larboard side, you must luff up for the last point to windward, till you have passed the third leeward point, when you may run in and anchor between *Port Dauphin*, and the little isle called *Tonantes Island*, without approaching near the N. E. part of the latter, because a shallow bank stretches off it. From what has been said, it may be seen that the harbour requires no other direction than that of an eye accustomed to run in mid-channel through a devious passage; and he who knows how to do this, need never get ashore here; for his eyes will direct him when to luff and when to bear away, without particular leading marks. From the mouth to the third leeward point you cannot anchor, from want of space to turn the vessel, and because the bottom is of sharp rocks. The tide at full and change of the moon, flows here at 7h. A. M. and spring tides rise  $5\frac{1}{2}$  feet, but neaps only  $3\frac{1}{2}$  feet.

THE HARBOUR OF GUARICO, or CAPE HAYTIEN, is no more than a bay, formed by the coast, and shut to the east and north by a group of reefs which rise upon the White Bank, extending outward, at this place, more than a league. Those bound to this port ought to run from the Grange Point towards Picolet Point, outside the Seven Brothers, and to place themselves so that they may run down towards Point Picolet, with the vessel's head to the south or S. S. W. In this direction they may approach without fear, within the distance of a musket-shot, and may wait for a pilot, as convenient; but, if obliged to take the anchorage without one, they must steer from Point Picolet S. E. and S. E. by E. leaving a *white flag* (if there) on the larboard hand, and which, placed upon the northern extremity of a reef, serves for a beacon, taking care to carry plenty of sail to clear a *red flag*, which they will see a little afterwards, and which must be left half a cable's length to the starboard; and, so soon as they have this flag on their beam, they may steer for the city, and anchor in from 7 to 9 fathoms.

Those who go out from Manzanilla or Bayahá (*Port Dauphin*) to the Cape, ought to steer to the northward until Picolet Point bears to the southward of the true west, and then direct their course to the west as convenient; for they will be clear of the white bank off Point Picolet; but, *if bound to the east*, they must run to the northward until the Grange Point bears to the southward of the true east, in order to clear the Seven Brothers' Bank.

The *Count Chastenot de Puysegur*, in his Directions for the Coasts of Hayti, gives the following for Cape Haytien, &c. These were written in 1787, but



they include some description not given in the *Derrotero*, and we, therefore, insert them here, with a trifling correction.

"Ships bound from the eastward to Cape Francois always make the Grange; for the coast in the environs of the Cape offers nothing remarkable, unless they be near enough to distinguish the hummock of Picolet, and the rock of that name, lying to the north, and very near the hummock. Having brought Monte Christi to the south, distance about a league and a half, the proper course, in order to fall a little to the northward of Picolet Point, is between the W. S. W. and S. W. by W. distance nine leagues.

"The mark is surer when you approach the Cape from the Grange, in steering W. S. W. and S. W. by W. for, in this last position, the hummock of Picolet must appear to project in the sea more than the rest of the coast. The best mark that can be given is, that the hummocks, which are to the west of the road of the Cape, are the highest of all this part; besides you can distinguish in them large white-spots. With some attention you will discover Point Picolet, which is lower than the said hummocks, and seems to lose itself among them. This point terminates the road of the Cape on the west side; in coming near you desery Fort Picolet itself, built upon the point, at whose end lies the rock of the same name, which is not discernible at a greater distance than a league.

"So soon as you have descried Fort Picolet, you steer directly against it, because you must sail very near that fort to enter the road, whose opening is bordered with dangers or keys, which you leave on the larboard in coming in. We would advise no stranger to attempt the channel without a pilot, for whom he must wait in the offing.

"At half-past ten the wind comes to the E. S. E. but it must blow from the N. E. to carry you into the harbour, for you are obliged to steer S. E. and even E. S. E. The breeze is very regular. The land-wind blows in the evening, and often during the night; but, about 10 or 11 in the morning, after an interval of calm, it turns to the E. N. E. or N. E. So that at twelve o'clock ships are able to enter the harbour.

"The city of Cape Haytien is under Picolet Mount: there is no danger in running in for Picolet Point, if you keep it bearing from S. S. W. to S. S. E. Should you not have time to wait for a pilot, you must range along Picolet Point, having it about south, or S. S. W. at the distance of a short musket-shot.

"To sail into the harbour, bring Point Picolet to bear S. by W.  $\frac{1}{2}$  W. and steer S.  $\frac{1}{2}$  W. A remarkable mountain, called the *Bishop's Cap*, will then be seen directly ahead; bring this mountain, which appears in three points, in a line with a remarkable hummock, by the water-side, in the harbour, which will bear S. by W. Steering in this direction will lead to the westward of the outer reef, named *Le Coque Veille*. The water generally breaks on this reef, which has (or had) a buoy, or white flag upon it. Continue in the same direction, leaving the buoy at the distance of about 15 fathoms on the larboard side, until a small rock, standing detached a little from Picolet Point, appears just open of that point. Now haul to the S. E. or S. E. by S. keeping the rock just open, and you will pass between the *Coque Veille* and *le Grand Mouton Bank*, a bank having a buoy or flag on its eastern edge, which is left on the starboard side; the *Petit Mouton*, a danger that always breaks, and a shoal named the *Trompeuse*, with a buoy or white flag on it, are to be left on the larboard side. You must, therefore, have sufficient sail out to weather round the *Grand Mouton Bank*, giving the buoy or flag upon it a birth of half or two-thirds of a cable's length; and, having passed it, steer for the town; and you may anchor where you please, in 8 or 9 fathoms, good ground.

"A ship cannot enter the harbour unless the wind be at N. E. as she is obliged to steer S. E. by S. and even S. S. E. The breezes are very regular; they come from the land in the evening, and, very often, during night; but at about 10 or 11 in the morning, after an interval of calm, they chop about E. N. E. or N. E. Strong *norths* heave a great swell into the bay."

The town is on the western side, about two miles from Point Picolet, in latitude  $19^{\circ} 48' 20''$ , longitude  $72^{\circ} 14' 0''$ .

PORT FRANCOIS.—From Point Picolet the coast tends west to Honorat



Point, which is the north point of Port François; whence a reef stretches out, a cable's length to the N. W. at its extremity are three fathoms of water. The anchorage off Port François is in a small bay, and about two cables in extent; between the points of the bay there is good shelter from the breezes. To enter, you must run along the edge of the reef of Honorat, which is on the north side; and, after having gone about two cables to the S. S. E. you may anchor in 8 or 10 fathoms, on clayey sand, about S. W. by W. from the fort.

**BAY of ACUL.**—From the south point of Port François, a reef extends as far as the entrance of the Bay of Acul, without leaving any practicable pass. The Bay of Acul is extensive. It has three entrances, but the western is the best; the eastern being narrow and devious. The first entrance is between Rat Islet and Sandy Islet, situated on the reefs extending from Port François, and which shut in the entrance to the N. and N. E. That to the N. W. is shut in by other reefs and shoals, which, though among themselves they have only difficult and narrow passages, form an excellent channel with the west coast of the bay. The three channels into the harbour are called the *East*, the *Middle*, and the *West*, or *Limbe*, Channels. To enter any one of these channels, it is necessary to approach on the outside of the White Bank, extending along shore between Port François and the Bay of Acul, until Rat Islet bears S. by W.  $\frac{1}{2}$  W.; and, so soon as you are a league from the Sandy Islet, you will plainly see *Trois Maries' Point*, which is the eastern point of the bay; and, approaching nearer, you will also see a low point on the western side, in the interior of the bay, named *Point Belie*, which is known by a clump of trees that is upon it: having recognized these points, bring them in a line, and steer in with this mark, keeping, by small variations of course, the depth of 10 fathoms. Thus you will run in mid-channel, which is not more than a cable's length wide, and the bottom of clay: on both sides of it there are white banks, with four fathoms of water on their edges. It is necessary to notice that you must have recognized the two points which serve for the leading-mark at two miles from *Trois Maries' Point*; for, from that distance, it is necessary to come in by the mark described. In thick or hazy weather, when these objects cannot be seen at the proper distance, you must not attempt to enter by this channel. At about four cables' lengths within, the channel begins to widen; so that when Rat's Islet, which you leave to starboard, bears N. W. you may anchor in from 14 to 18 fathoms. All the reefs which lie within Rat Island are visible.

To enter by the *Middle Channel*, you must run outside the bank until Rat Islet bears S. by E.  $\frac{1}{2}$  E. and, placing the prow in that direction, steering that course, and keeping in 9 fathoms of water, you will pass very near to some reefs which are about one-quarter of a league to the northward of Rat Islet: these are easily seen, and it is necessary to approach them within a cable's length, on the larboard hand, and to luff up to S. E. or S. E. by E. to pass along the north side of that which stretches to the east from Rat Islet, and which must be left to starboard. Having once got to the S. E. of Rat Islet, you may anchor, as above stated. All the reefs show clearly, and, therefore, there is no danger in taking this channel when the winds allow you to shape the proper courses; but, if you cannot do this, you ought not to take it, as there is not room for working in: in case the wind becomes scant in the channel, you must anchor in a moment, and you will be free from danger; for the holding ground is very good, being hard clay, and you are sheltered from the swell of the sea.

The *West* or *Limbe Channel* is the best and widest, for you may work in it, if requisite. To enter by this channel, run outside the banks or shoals, until Point Icague, on the west side, bears south; this point lies between Limbe and Grand Boucand Points. That of Limbe is the north-westernmost, and has an islet at its base.

*Point Icague* is easily known by the scarped or bluff rocks which form it; and from its being the only one of any elevation lying to the south of Limbe. So soon as Point Icague bears south, steer towards it; and, as you get nearer it, you will see, to larboard, the breaking of a reef of considerable extent, named *Cocqueville*, on the edge of which there are 5 fathoms of water; having recognized this reef, taking care to pass in mid-channel between it and Point Icague,

in 10 or 15 fathoms of water, and with nearly a S. E. course, with which you must run in, amending successively a little to the east, to pass about three or four cables' lengths from Grand Boucand Point. You may then anchor to the west of Trois Maries' Point. If obliged to tack, you must prolong the tacks until very near the reefs, on the supposition that their breakers afford the best marks for avoiding them; and that, at the very edge of them, there are 5 and 6 fathoms of water. You may, also, prolong the tacks to a cable from the coast, without any risk; for, though Boucand Point is foul, the reefs show above water, and have 8 and 10 fathoms up and down at their edge. The anchorage, or place which we have assigned for anchoring, between Rat Islet, Trois Maries' Point, and Boucand Point, is not properly that which is called the *Bay of Acul*; but, as there is good shelter in it, those who have no occasion to make a long delay, or to discharge, may avoid entering the bay.

To enter the *Bay of Acul*, you must not approach Trois Maries' Point nearer than three cables' length, for it is foul and shallow; and, so soon as you are past it, steer towards the point of Morne Rouge, (Red Hill) on the east, which you must pass at about half a cable's length, in order to give a birth to a shoal which lies off Belie Point, opposite: having passed Morne Rouge Point, you will see a fine cove, on the same side, called the *Lombard Cove*, in which you may anchor in 7 fathoms water, at about a cable's length from the shore. From this cove southward, into the interior of the bay, there are many shoals; and no one should pass the cove who has not a practical knowledge of them. In the route above described, you will always find from 10 to 15 fathoms of water, on clay.

Between Trois Maries' Point and that of Morne Rouge, in a line with them, and about half a mile from the first, there is a shoal of small extent, which you will shun by taking care to pass at not less than three cables' length from Trois Maries' Point, and not to place the ship's head towards Morne Rouge Point, until you are at half the distance between the two points. The anchorage of the Lombard Cove is a natural dock. In Acul Bay it is difficult to get water; the best is on the eastern side of the cove, between Trois Maries' and Morne Rouge Points.

ANSE A CHOUCOU, or Chouchou Bay.—To Point Limbe follows that of *Margot*, which has a round islet, lying rather farther out than that of Limbe. It is very useful to make this islet, in order to direct yourself to Chouchou Bay, which lies two miles west from it. In this bay there is a good depth of 6 or 7 fathoms: to enter it, you must keep towards the east point, which has 6 fathoms close to it; and, so soon as you have passed it, and the vessel begins to lose head-way, you may anchor; for, the moment you enter under the point, the breeze calms, and the little you have comes a-head: this happens even when the wind is very fresh without the bay. To the west of this bay, there is a small one, called La Riviere Salee, or Salt River Cove, which has little depth, and is fit for small craft only.

FOND LA GRANGE.—Four miles westward from the Bay of Chouchou is that of *Fond la Grange*, or the *Grange Bottom*, 600 fathoms broad, and the west point of which, named *Palmiste*, is distinguished by a chain of reefs extending nearly a league to the west, and almost to *Point d'Icague*. Fond la Grange is a good roadstead, and, in case of necessity, a ship of the line may ride in it; for throughout it there is not less than 6 fathoms water, and at less than a cable's length from the shore. To enter in it, you must pass near the east point, and anchor in about the middle of the bay, on clayey sand. At a short league westward from Palmiste Point lies that of *Icague*; the coast between is foul, with sunken reefs, which advance half a league out to sea.

PORT PAIX.—Eight miles from Point d'Icague is that of the *Carenage*, which is the northernmost headland of this part of the coast, and which, from a distance, may be mistaken for Point d'Icague. The coast between is very clear. From this point the coast tends S. W. by S. to form the cove of Port Paix. To enter here, you must avoid the east shore; because, from a point which lies a little to the N. E. of the town, a reef stretches out about a cable's length, and immediately without it there is a depth of 13 fathoms, with oozy sand. To avoid this reef, keep in the middle of the entrance, which has only 3 cable's

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length in breadth, and anchor to the N. W. from the town; in 12 or 13 fathoms, on clayey sand, and about a cable and a half from the shore.

**CHANNEL of TORTUE.**—Nearly north from Point d'Icague is the east point of Tortue or Tortugas Island, which extends nearly east and west, and, in that direction, is about 6 leagues in extent, but only one from N. to S. all its north side is iron-bound, and steep-to: and the south-side is, for the most part, bounded by a white shoal and reefs. The only good anchorage in Tortue is that of *Bassterre*, on its south side, at a league and a half from the east point: it is formed by the shore, and the reefs which run out from it, and no vessels drawing more than 14 or 15 feet can enter it. The passage is narrow, but easy to fetch. You must keep the weather reefs on board, leaving them on the starboard hand, and steer N. N. W. and N. to double the reefs you leave on the larboard hand: do not be afraid of coming near the land, and anchor in good ground so soon as you have brought the lee reef to bear S. W. Large ships may come to an anchor outside the reef, upon white ground, a mile to leeward of *Bassterre*.

To the eastward of *Bassterre*, towards Portugal or the east point, there are several bays or coves, in which boats or schooners may anchor, but nothing of a larger size.

The channel which the Isle Tortue forms with Hayti is 6 miles wide, and fit for every class of vessels, which may commodiously beat in it, and often with great advantages for getting to windward, when the currents in it run to the eastward, which they do for the greater part of the year; for rarely and only during souths do they change their direction to west. In the latter case, it is necessary to advance northward, and get 6 or 7 leagues from the Tortue, to beat to windward. When beating in the Tortue Channel, you ought to stand on within less than a mile of the coast on every tack; for towards the coasts the current is stronger, and the wind more favourable, than in mid-channel. As there are several bays on each side, the setting of the current is neither uniform nor in the same direction. You will sometimes see it run in numerous directions; and, sometimes, in the middle of the channel, it will run contrary to the current in shore.

**PORT PAIX to ST. NICOLAS' MOLE.**—Four leagues from Port Paix lies Port Moustique: the coast between is clear, and bluff or scarped. Port Moustique has scarcely an opening of 4 cables' length; its bottom is unequal, and impeded with rocks, which render it necessary to examine it with the lead before you let go an anchor; for between the two outer points you cannot find bottom with 40 fathoms of line.

At a league and a half from Port Moustique is Port a l'Ecu, and the coast between the two is rocky, steep-to, and bluff. This cove is better than Port Moustique, but not so easy for large ships, as its entrance is narrow, in consequence of a reef which stretches off about two cables' length from its eastern point, and upon which there is not more than 3 fathoms water. To take this anchorage, it is necessary to keep near to the reefs off the east point, and haul by the wind, ranging along the reef, to anchor in 8 or 10 fathoms in the centre of the cove, on clay, and about N. N. E. from a house which is at the bottom of the bay.

Six miles from Port a l'Ecu is the anchorage of Jean Rabel, which is good, safe, and easy to take: on approaching this place, you ought, without any fear, to approximate the reef on the east side, which has 10 fathoms close to its edge. The anchorage for large ships is about two cables' length from the eastern breakers, in 12 or 15 fathoms; and care must be taken not to shut in the two points, which are on the east coast, for though it is possible to run farther in, yet it is not advisable: for the depth suddenly diminishes, and the bottom is not very clean.

Should you be to the north-west of Jean Rabel, at a short league's distance from the land, and have half the island of Tortue open with the point, you will find 60 fathoms of water, oozy ground, and a little farther out 80 fathoms.

From Jean Rabel the coast forms a great bight to the southward, as far as the peninsula, called Presqu' Isle, or the Mole, the western point of which, called the Mole Point, lies 13 miles W. S. W. from it. All the shore between is rocky, and

does not offer any shelter. At all times the currents here are very perceptible near the shore, and generally set on it; at two leagues in the offing, they are less so, and run to the north-east; near the peninsula they are much stronger, and commonly set towards the north.

**ST. NICOLAS' MOLE, BAY or HARBOUR.**—This harbour is large and spacious at its entrance, but narrows towards the town, which you will desery as soon as you have doubled the cape. You may stand very close to either shore, but it is adviseable to allow on the south side more room for veering than on the north side, as there is no anchoring ground, which you have on the north side, though very near the shore. The anchorage is before the town, and under the barracks, in 15 or 18 fathoms, sandy bottom. In going in, you must be prepared against the pulls or squalls which come down from the land with such violence as to endanger the masts.

Within the bay or harbour you will be sheltered from every wind. There is a fine river to water at, and places where a ship may be careened with her side to the shore. When it blows hard it is difficult to get to the anchorage; and, if you are not quick in letting go, the anchor may fall from 6 to 30 and 35 fathoms.

The *Derrotero* says, that the north coast from Cape St. Nicolas, sends out a white bank, which stretches about one third of a cable from the shore, and on which there are 3 and 4 fathoms water. The south shore has also its white bank, which extends out about a cable's length from an interior point S. W. of the town, upon which there is a battery; from this point, the white bank extends directly to the Fort Point, the N. E. end of the town; and, therefore, when to the northward of that point, you must not prolong the tack to the south farther than to bring the north part of the town to bear east. You should, also, be aware that, on the south coast, and a little to the west of the above mentioned point, no bottom has been found, therefore you ought to look out, and tack in time. On the northern tack, there is not so much danger; for it is possible to let go an anchor, although it must be done very near to the shore. In the anchorage, which is well sheltered from all winds, vessels pass the dangerous season of the hurricanes.

In going out, you will see, to the southward, the point of the cape which forms its entrance; and, farther to the southward, you will then desery the *Point du Cap a Four*, or of Fool's Cape. The latter lies  $5\frac{1}{2}$  miles to the southward of St. Nicolas Point; and the coast thence tends  $2\frac{1}{2}$  leagues more, nearly in the same direction, to the Point a la Perle, or Pearl Point.

The sea breeze at the Mole is from N. E. by N. it comes on at 8 in the morning, and blows very strong till 10 or 11 at night. The land-breeze comes on moderately at S. E. it continues till 6 in the morning, then dies away, and it is calm till 8. If bound to the northward, ships generally weigh at 8 or 10 at night, when the sea-breeze begins to slacken enough to run them out.

#### *Directions for Ships bound to Cape Haytien, &c. from the Westward.*

In advancing from the westward, towards Cape Haytien, give the N. E. part of Tortue Island a good birth; and after you get to windward of the east end of the island, you will desery the cape.

The land to the west of Port Paix shuts to the northward a low point, and rises gradually towards the south to a high mountain, with a sugar-loaf top, and then it declines on the same side to a large valley, whence it rises quickly to a prodigious high mountain, smooth at the top, and the highest land in this part of Hayti. The high land after this, to the southward, is of sugar-loaf form, with a little one to the south of it, which are both ten or twelve miles in the country. The next high land, or point, which is seen by the water side, is Cape Haytien. The land, at first, makes like a saddle; but on nearer approach, a low point will appear, which shuts from the eastward the eastern part of the saddle-land. This is Point Picolet, or the Cape Land, the extremity of the cape already described.



**MANZANILLA BAY.**—Ships from the westward may, with safety, proceed to Manzanilla Bay. It is quite clear, and you may approach within one third of a mile in every part of it.

The *Seven Brothers*, which have been described, (page 257,) are mostly barren, with reefs about them. There is some wood upon them, and plenty of fish all round. You need not approach the western part of them nearer than two leagues, until you see the bay: on advancing into this, there will be found ten fathoms water, at about three-quarters of a mile from shore.

The River Massacre, formerly a boundary of the Spanish and Haytien territories, fall into the bay, to the eastward of Port Dauphin: but it will be very difficult, if not impossible, to water there, as you must go up the river nearly two leagues to obtain it.

To anchor properly, so as to have the best shelter, run along the inside of Manzanilla Point, and drop it in 6 fathoms, muddy bottom. All the anchoring places are within the Spanish line, where the land is low, marshy, and covered with mangroves. The bay is as easy to go in as to get out, having regular land and sea breezes, and being quite secure from any swell. A ship, having lost her anchors, may run in upon the muddy shore. The landing is very easy. Here is game and fish; and bullocks, cows, and hogs, may be purchased.

The ROAD OF MONTE CHRISTI is more open than Manzanilla Bay, although in it there is good anchorage, well sheltered from the N. E.—East, and S. E. which are the strong breezes; and, during the norths, you may anchor in 5 or 4 fathoms, under *Cabra*, the islet of Monte Christi. The same resources may be found here as in Manzanilla Bay.

"The anchorage at the Grange," says an able navigator, "is less spacious than that under Point Ysabelica, but it is more sheltered from the norths by the islet. Ten ships of war might easily be anchored, in from 5 to 7 fathoms, within pistol shot of this islet, which makes half a league distance from the islet to the reef that is as far from the shore. We had four strong breezes, which might be called gales of wind, yet we rid with only half a cable, and had not occasion to freshen hawse. See the description, page 257.

"The islet *Cabras*, or *Cabra*, is nearly half a circle of 200 fathoms diameter, and has a hillock about the height and length of 30 feet, with a cut in the middle, of near 10 fathoms; and this is what breaks off the sea and winds. The French had made there a very good salt-work, which the Spaniards have let go to ruin. It differs from those at Turks' Islands, produces better salt, and is more convenient, as you may introduce the salt water as you want it, in the several pans.

"The landing is easy every where. Very good hay is made on the island; it is a kind of Dog's Grass, which they pull up by the roots; that which grows by the river's side is coarser. The river (*St. Jago*) is one league from the island, to the S. W. of the town, and marked by a tuft of trees. The water is very good, and easily got; the boat may go in at high water, and at about half a cable's length within, you will find it fresh, the current being so strong that the salt water cannot get in; you have commonly a quarter-wind to fetch it in, and bring it back. Here is very good fishing, and you may haul the seine, as well as near the shore. On the larboard side of the town, about a league from the shore, it is good shooting; you will find plenty of wood-pigeons and India fowls."

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*The western coasts of Hayti or St. Domingo, between St. Nicholas' Mole and Cape Tiburon.*

In proceeding from St. Nicholas' Mole, as already observed, you will descry to the southward the *Point du Cap au Four*, or of Fool's Cape, which lies 54 miles to the southward of St. Nicholas' Point; and the coast thence tends 24 leagues more, nearly in the same direction, to the *Point de la Perle*, or Pearl Point.



This part of the coast is steep, without any shelter; but here it is generally a calm. The currents in-shore set to the northward, and two leagues in the offing, to the west and W. S. W.

**PLATTE-FORME or PLATFORM, &c.**—From Point de la Perle the coast rounds to the south-eastward and east, to the point of the Platform, which is at the distance of three leagues from the former. This point is easily distinguished, as well by its flat form, as by its being the southernmost of this part of the island. The anchorage is before a small sandy cove, at the bottom of which some houses are seen. You anchor near the shore in 8 or 10 fathoms, weedy bottom. At this place, water may be obtained after rains, but there is none to be had at other times.

To anchor under the Platform, bring its southernmost point E. by S. the westernmost point in sight W. N. W. the watering-place N. N. E. Then come to in about 9 fathoms. In deeper water the ground is foul; and the nearer the shore, the clearer the bottom. The bank is very steep for two cables' length. Without, 10 fathoms soundings will not be found. The bay is very convenient for cruising-ships to heel and boat-top in, &c.

From the Platform Point to Point a Pierre, on the north side of the entrance of the Port of Gonaives, the bearing and distance are E.  $18^{\circ}$  S. ten leagues. The point is high and steep; and all the coast between is safe, and may be ranged very near: there is anchorage, even for large ships, at Hen's Bay and at Port Piment, but it ought to be used only in case of necessity. In the winter months there are tornadoes or gales of wind almost every night, coming from the S. E. some of which are violent; and unless you have business on this part of the coast, it is best to stand off two or three leagues, so that you may, with any wind, keep to the westward.

**GONAIVES.**—The bay of Gonaives, or Gonaivees, as the French pronounce it, is very large and fine, the anchorage excellent, and the entrance very easy. You range along the shore, at half a league or two miles distance, steering nearly east, and let go your anchor in from 10 to 6 fathoms, ooze: you will find from the entrance under Gonaives Point, which is low, and one mile east of Point Pierre, 15 and 12 fathoms: the water decreases as you get into the bay. When you are a good half league from the land, and two miles from the Debercadaire, (or landing-place) you will have 6 fathoms. After you have doubled the point, leaving it on your larboard hand, you will see Fort Castries on a point of land, which you must not approach too near, as there is a key that lies about a mile south of the point.

Observe that, from the south point of the entrance, a reef extends to the N. E. to the distance of a quarter of a mile. It is nearly steep to from 6 fathoms.

Captain Mackellar says that the harbour of Gonaives is an excellent one, and capable of containing any number of ships of the largest size, completely shut from all winds; it is of very easy access, and generally clear, excepting a small reef that extends about two cables' length from Fort Castries, on the north side. The latitude of the town is  $19^{\circ} 26' 41''$ , and its longitude  $72^{\circ} 41' 7''$  W. Var.  $50^{\circ} 50'$  E. 1817.

Ships intending to anchor at Gonaives, and having advanced to Point Pevis, on the north side of the entrance, will gain soundings in 15 or 16 fathoms, and have the town in sight, bearing about E. by N. they may proceed for the town on that bearing, keeping in mid-channel, or any way near it; then soundings will be very regular. When well up the harbour, you will see Fort Castries, which stands on the north side, on the top of a small hill, about a mile without the town. When this fort bears N. by E.  $\frac{1}{2}$  E. you will have 7 fathoms in mid-channel, fine soft mud. When it bears N. by W.  $\frac{1}{2}$  W. in  $5\frac{1}{2}$  or 6 fathoms, this seems to be the best anchorage, and as close in as a ship of war ought to go. I have been so far up the harbour as to have Fort Castries bearing N. W. in 4 fathoms; but the best anchorage is with it bearing N. by W.  $\frac{1}{2}$  W. and the middle of the town E.  $\frac{1}{4}$  N. nearly in mid-channel.

The sounding all over the harbour is so very regular, that it is not necessary to have marks for running in and out by; but in the event of having to beat with the sea-breeze, you must not stand too near Fort Castries, as there is a

small reef extending from it to the southward: the mark for keeping clear of this reef is, a large tree behind the town on with the northernmost houses, bearing E. by N. but this reef stretches to so short a distance, that a ship will scarcely stand so near the shore as to touch it. In standing to the south side of the harbour, give the shore a good birth till without the inner point; and, after that, you may stand from shore to shore, by your lead, with safety.

ST. MARC, or ST. MARK.—From Point St. Pierre, without the entrance of the Bay of Gonaives, the distance to Cape St. Mark, in a direction nearly south, is nearly seven leagues. A league and a half to the northward of St. Mark's Bay is a low point, which appears at a distance like an island, and forms a cape that is called *La Point du Morne au Diable*, or the Devil's Bluff Point: it points out the mouth of the River Artibonite, which falls into the sea two miles northward of the point. There is an anchorage the whole length of this coast for small vessels only.

Cape St. Mark is high, and of a round form; you will descry at a great distance the hillock which forms it, and stands only one mile from the sea-side.

The opening of the Bay of St. Mark lies to the north of the cape: it extends one league within the land, and the water in it has a great depth. Ships anchor in the bottom of the bay under the town, in 15 or 18 fathoms of water; small vessels may come into less water, but they will be very near the shore. In the south side of the bay is a piece of foul ground, extending two miles from a bluff point to the S. E. and on which a reef stretches out about two cables' length from the coast.

*The following description of the navigation between the Platform and St. Mark, is given by Capt. Hester, an eminent English navigator.*

"About nine leagues eastward of the Platform is the fine bay and harbour of Gonaives. All along this coast you are sure, about ten o'clock in the forenoon, to have the sea-breeze, which lasts till night, and then you have the wind off-shore; therefore you may stay till that time, before which there is little or no wind at all. If you intend to go into Gonaives, you must keep a good distance off the south point, which is flat for a considerable distance. When you are about the point, open with the bay, you will descry a small island, which you must leave on your larboard side, and run in with your lead in 10 or 12 fathoms of water. You may also run along close by the island, if you choose, in 4 or 5 fathoms.

"About two leagues to the southward of Gonaives is Artibonite Point, and two leagues farther south, Artibonite River. In sailing from Gonaives to the latter place, it is good to keep your lead; for, as you come near the river, you will find the water shoalen to about 4 fathoms, and, after that, deepening again to 7 or 8 fathoms.

"This place is very remarkable, the land being high and uneven, and a bold clear shore all along to the northward, from the Platform to Gonaives. When you have run 8 or 9 leagues E. S. E. ½ E. you will then see the land ahead, or eastward, very low by the water-side, and prodigious mountains over it: this low land reaches from Gonaives, to the southward of Artibonite River, about a mile; and its south end, somewhat higher than the rest, appears like a table-land, overgrown with weeds and green trees: this is the *Devil's Bluff*: round its south end is the Bay of St. Mark, the other point of which you can see to the S. W. of the Devil's Bluff. To anchor off the river, bring the south end of the low land to bear south, three miles distant, and as you run in, you will see five or six small houses by the water-side: bring them to bear E. S. E. two miles; then the river will bear S. E. On the starboard side, or south side of the entrance of the river, there is likewise a small hole, which you may see. Be sure to keep these bearings, and you will be upon a fine level bank, where you may anchor in what water you please, from 20 to 6 fathoms. But, if you go within two miles of the shore, you will drop off that bank from 6 fathoms to 20, the next cast; then 50 or 60, and then 90 or 100 fathoms, within less than half a

mile of the shore, and from that to 5 at once. When you are at anchor at Artibonite, you may see the Platform, bearing W. N. W. about ten leagues.

"Artibonite River is not a place of great note, because it ebbs almost dry at low water; neither is there any town in this place, but only some plantations five or six miles up the river: there you can have good water, but no wood. The sea-wind comes on at noon at N. W. till 10 at night, and the land-wind at E. by S. till 8 in the morning."

From St. Mark's Point, the coast of Hayti tends nearly S. E. true, six and a half leagues, to *La Souffriere*, or *Vazes Point*, and thence E. S. E. five leagues, to *Port au Prince*. The coast is generally clean and bold, and you may run along it, at the distance of a mile, in 10, 15, and 20 fathoms of water. In proceeding thus, you will first perceive the *Magazine of Moutroui*, and afterwards the villages of *Arcahais* or *Arcahaye*, and *Boucassin*; and finally, the city of *Port au Prince*. Off the coast, at about half-way between St. Marks Point and Port au Prince, are three small islets, called the *Arcadins*, which are situate at nearly a league from the shore, and separated by channels about half a mile in breadth. Near these islets, on every side, the depths are 5 and 6 fathoms.

To the E. by S. of Boucassin, and very near the coast, is Mouton or Sheep Key. A passage ought never to be attempted within this key: near it, on the outside, the coast is clear, and water deep. About two leagues to the southward of this island is the roadstead of *Foso*: this to the N. E. and Lamentin Point to the S. W. form the entrance of the Bay of *Port au Prince*. To the westward of this roadstead is an extensive bank, with a cluster of islets, of which the easternmost is distant about two miles from Foso Roadstead, and the southernmost three miles from Lamentin Point. There are, besides, two other islets, which lie almost in the direction of the two points of the bay, and which are four miles from Foso Road, and two from Lamentin Point.

**PORT AU PRINCE.**—The shore at the bottom of Port au Prince Bay is very foul, and has a large group of islets. These form the inner anchorage; and to gain this, the aid of a pilot is indispensable; but the *Grand Road* is without the reefs, and may be entered without a pilot.

Those bound to Port au Prince, from the N. W. after having made St. Mark's Point, may shape their course either to pass between the Arcadins and the coast, or between them and the island Gonave: the first appears to be the best route, for thus the foul grounds on the S. E. side of Gonave must be avoided: it is also to be observed that the wind in the channel is generally from the N. E. the nearer, therefore, you pass to the main-land, the more free will you run to the eastward. Again, almost every afternoon, in the rainy season, there are tornadoes in the channel, which compel vessels to lie-to, and to keep on boards or tacks, that they may not fall upon the reefs of Gonave. If you can foresee the gale, it will be best to gain an anchorage near Arcahais Point, and there ride it out.\* When past the Arcadins, your course will be about S. E. by S. to get near Lamentin Point. If caught by night to the eastward of this point, here you may anchor. From the point to the anchorage of Port au Prince, the distance is four miles; and, to make it, you must steer towards the city, and anchor about half a mile outside the islets, in 10 or 15 fathoms.

The channel between the Arcadins and coast is two miles wide, and in the middle of it you will never have more than 28, nor less than 10 fathoms. The water decreases towards the Arcadins to 6 or 8 fathoms, corally ground; at the same distance from the opposite shore is the like depth, with muddy bottom.

From Pearl Point to the entrance of St. Mark's Channel, midway between Cape St. Mark and the Island of Gonave, the course and distance are S. E.  $\frac{1}{4}$  E. sixteen leagues. This will bring you to the westward of Cape St. Mark, for which you may steer; or, you may continue the same course six leagues farther, which will lead clear of the Arcadins.

Should it be night when you enter the channel of St. Mark, you should steer S. S. E.  $\frac{1}{4}$  E. in order to clear the Arcadins and the eastern end of Gonave Island. Having run about four leagues on this track, the course will be about S. E. by E.

\* Or you may anchor to the northward of Leogane, on the south side of the channel, upon the ground extending from Gonave island, as shown in the chart.

five leagues, to make Point Lamentin, which is on the south side, to the westward of Port au Prince. You may range along this coast without fear, only avoiding the shoals of the sandy key, which lies at a short league northward of the point. Should you pass this point in the night, you would do right, after you have run a mile or a mile and a half, to anchor; you will find 12 or 18 fathoms water, the ground good, and the water always smooth.

You may be forced to turn in this channel, but you must not go so near to the Gonave as to the St. Domingo side; the latter, being safe, may be approached any where within half a league.

*The Arcadins*, as before noticed, are not to be feared; a shoal stretches out from them a mile, or half a league at most, with 5 or 6 fathoms on it: on the edge of the west and south-west sides you will have from 12 to 15 fathoms, corally ground: but there is good ground to be found in 8, 12, and 13 fathoms, coarse sand and shells.

**GONAVE ISLAND.**—The greatest length of Gonave Island is ten leagues E. S. E. and W. N. W. its breadth, which is very regular, is nearly two and a half leagues.

This island was surveyed in 1787, by M. de Lieude de Sepmanville, who has given the following description of its coasts, and the adjacent dangers.

The most dangerous reefs are those which lie to the S. E. of Petite or Little Gonave, which is situate near the S. E. point of the great island. These seem to be joined with the land of the Little Gonave, and stretch more than a league into the offing, laying at about 800 toises, or nearly a common English mile from the shore. A vessel may pass, in an urgent case, between them and the Little Gonave, but the attempt would be imprudent, especially if the wind be not well set in, as the currents are very strong and irregular. I have observed, however, that in this part, they run more generally to the N. N. E. and between the two Gonaves.

Small vessels, drawing 8 or 9 feet of water, may find a good anchorage to the west of the Little Gonave, which may be best entered from the southward.

The N. E. point of Gonave, called Galet Point, is low, and bordered with a reef, which stretches along the east coast, towards the south, and extends 1100 toises (1170 English fathoms) opposite the place called Trou a l'Eau, or Water Hole: within is a white ground, where there are from 4 to 6 fathoms of water.

To sail near this reef, which every vessel can do that draws 9 or 10 feet, you must, in coming from the east, take a channel which is opposite to a fisherman's hut. There are several other channels, which are easily known by the non-appearance of white ground. About 88 fathoms, within the reef, you may range along the coast as far as *Anse a Galet*, or Galet Cove, in case the wind should fail. There is anchorage every where, but the places to be preferred are Piron Cove, Constantin's Hole, and especially Galet Cove, which are very convenient: the hold is good, and the reefs shelter you from the swell of the sea.

The several anchorages on the north coast for boats or schooners are, L'Islet a Marc, Grand Lagoon, and Bahama Channel, where you are equally sheltered; the remainder of the coast is likewise bordered with reefs, but they are very near the shore, and you find there no anchorage.

The western part is an iron-bound coast, along which you may range pretty near; but it is not so from the S. W. point to Point-a-Retoures, where you may find a number of small detached reefs, almost even with the water. Several small vessels may anchor in that part, on the spot named *Les Baleines*, or the Whales, but not without a pilot well acquainted.

The only place where two or three large ships, such as frigates, can anchor, is *La Baie du Parc*, or Park Bay, which lies to the N. W. of Point Fantasque, the south point of the island: but coming into it is dangerous, on account of several detached reefs, which are never seen.

**ROCHELOIS.**—The reef called *Rochelois* had been fatal to many ships, and was still much feared by navigators, its true situation having never been well ascertained: it lies in the channel which separates the south coast of the Gonave from that of Hayti. M. Le Comte de la Luzerne ordered me to survey, and determine the position of that reef. I went and anchored within a cable's length of the rocks, which are above water: I landed on these rocks, where I took four obser-



vations of latitude, as well as the bearing of all the objects in sight; and, having measured the whole extent of the shoal, I found its breadth to be 2000 toises, (2130 fathoms) in a direction N. and S. nearly, and its length 3155 toises (3360 fathoms) from E. to W.

The rocks, called *Pirogues*, which are towards the middle of this reef, were already known; I found their extent to be 125 toises (133 fathoms); they are quite uncovered at low tide, but three heads only are perceived at high water. M. Le Compte de Chasteney Puysegur, who had no occasion to explore the extent of this reef, says, in his account of the navigation along the coast of St. Domingo, that the rocks, which show themselves at low water, are the only things to be feared on the Rochelois; but I have found two other shoals of very small extent, which are very dangerous, since they have only two fathoms water. They lie to the N. W. of the rocks in the middle, one at 800 toises distance, and the other at 300. There may be some other dangers on the Rochelois, but I could not make myself sure of it, having been only four days on that expedition. Prudence requires, that with a large ship you should avoid it entirely: there is more room for tacking to the north of that reef than to the southward of it: you are only to keep at the distance of one mile, at least, from Gonave, if you pass by the north; whereas, in passing by the south, you may range along the Haytian coast, which is clear and safe.

The latitude of the middle of the Rochelois, deduced from the four observations, is  $18^{\circ} 37' 20''$  N.

**PORT AU PRINCE**, to the WESTWARD.—On leaving Port au Prince, when bound to the Petite Goave, you may range along the south coast, at the distance of one or two miles, all the shore being bold and safe; as far as Point Leogane.

From Point Lamentin to Leogane Point there is no anchorage; but you will find a good bottom for anchoring between the latter point and the anchorage off the town of Leogane.

From Leogane, the coast tends to the south, and forms the bays of *Grand Goave* and *Petit Goave*, which are separated by a point and a hill, named the *Tapion* or Hummock of Goave. You enter into Petit Goave Bay, by leaving on the larboard hand an islet, which is very near the coast, and which lies to the north of the town: to the westward of this islet you may anchor in 9, 12, and 15 fathoms. Petit Goave is 10 leagues from Port au Prince, but, as you are forced to double Point Leogane, the run is longer.

**MIRAGOANE**.—From the Hummock of Petit Goave, to the *Tapion du Trou Chouchou*, or Hummock of Miragoane, the coast runs West eight miles, then W.  $\frac{1}{2}$  S. six and a half miles, to the careening island of Miragoane Bay.

To anchor at Miragoane, you come within a mile of the careening island, when you perceive a small town at the foot of a mountain, and some mangrove islands to the westward. You keep the mid-channel, between the first islet and the shore, where the village is situated, and come to an anchor within, in from 18 to 8 fathoms, sandy bottom. This anchorage ought not to be taken without a pilot; the channel is not more than a cable's length in width, and you must anchor so soon as you are within.

From Miragoane Careening Island, the coast bends in, and forms the bay of that name. It is shut in on the north by Frigate Island, a small islet, from which a white shoal extends half a league to the eastward, and nearly north to the anchorage at Miragoane, which obliges you, in coming in or going out, to keep the island shore very close aboard. From this place the coast tends west, to the village of Rochelois, which is situated at the foot of a large hummock.

From Miragoane the coast to the westward is clear and deep; and beyond Rochelois are seen the towns of *L'Anse-a-Veau* and *Petit Trou*. From the last, the coast forms a large bay, *Baradaïres*.

**BARADAÏRES BAY**.—From the village of Rochelois to the entrance of the Bay of Baradaïres, the coast runs W. 5 leagues. Baradaïres Bay is formed on the S. E. by Roitelets Point, and on the N. W. by the Bec du Marsouin, or the Porpoise Snout: these points bear from each other nearly N. W. and S. E. four miles. Near the east coast of the bay there is an island, with several islets, which send out a reef and shallow that almost joins the western coast, leaving a



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pass or channel, of only five or six cables' length in breadth. To proceed into the bay, you keep along the peninsula of the Bec, and come into from 8 to 10 fathoms. There is a good depth of water in the middle of the bay, which is of great extent; but there are several weedy shoals, which prevents your going in without a pilot, well acquainted.

**THE CAYMITES, &c.**—The northern extremity of the Bec de Marsouin, and the north part of Grand Caymite Island, bear nearly W. N. W. and E. S. E. four leagues.

The coast west of the peninsula of the Bec bends in to the southward, and forms a bight; thence, rounding out a little, it tends W. by N. as far as Point Jeremie. This bight and Great Caymite Island form a large bay, called Caymite Bay, where there is very good anchorage for all sorts of vessels. You may come to it without a pilot, and anchor under the island in what depth you choose. You may also proceed to Flamand's Bay, near the peninsula, ranging along the peninsula side, and anchor opposite a sandy beach, in what depth you please.

The Bay of Caymites presents several very fine anchorages, very easy to come at with the assistance of the lead alone; but there is not a good passage between the Grand Caymite and the shore; and you will not find more than 13 feet water upon the white shoals of the Little Caymite, or of Foucaud Islet; and then there are several coral rocks, which rise within two or three feet of the surface of the water, so that no vessel, but very small ones, ever attempt it without a pilot. These white shoals extend three leagues W. S. W. from the Grand Caymite.

**JEREMIE.**—From the north part of the Grand Caymite to the *Point Riviere Salee*, or Cape Rosa, which is one and a half league W. N. W. of Point Jeremie, is nine and a half leagues: this Salt River Point is the northernmost point westward from Port au Prince. Under Point Jeremie is the village of that name, whose anchorage is very small, and not proper for large ships; schooners and small vessels may anchor within the reef, but no ships which draw upwards of twelve or fourteen feet should ever anchor here, except in case of necessity, there being no shelter for them; in short, it is a bad anchorage which must be avoided during the norths.

*From Cape Rosa, or Salt River Point, to Cape Dame Marie, or Donna Maria, the coast tends W. S. W. thirteen miles.*

All this shore is safe and bold, within a quarter of a league; it does not present any shelter, although, in case of necessity, you might anchor in the *Anse a Claire*, or Clair Bay, which is  $1\frac{1}{2}$  league from Salt River. This bay, or rather cove, is so very small, that two ships, 100 feet long, would be embarrassed by each other: it can only serve as a shelter to very small vessels, and is easily discovered by keeping along shore.

**CAPE DAME MARIE, or DONNA MARIA.**—So soon as you descry Cape Dame Marie, by the False Cape of that name, and are half a league distant from it, you will strike soundings of from 15 to 18 fathoms, and may range along this cape, at the distance of a quarter of a league, in from 8 to 12 fathoms, weedy bottom.

*To anchor in the Bay of Dame Marie, you must keep the shore on board, steering about S. E. the wind being generally adverse; and, with your lead, you come to an anchor W. N. W. of a large white tapion or hummock, on which stands a battery, and within a musket shot of which you will find five fathoms. There is anchoring bottom all over this bay; a mile from the shore you will have from 4 to 6 fathoms; and, at two miles, from 6 to 10. You will be sheltered from the winds between the north and south, passing by the east; notwithstanding which, ships that lie in 8 or 10 fathoms will feel the swell, if there is a fresh breeze without. In entering, keep about half a mile off, but not less, in order to keep clear of a reef which extends to the length of a cable and a half to the west from the cape. Preserve this distance from the coast, until past the False Cape, to the southward of Cape Dame Marie, and which is also foul. When once past False Cape, you may haul to the wind, which is generally scant in the bay, to get the vessel's head to S. E. with which course, and keeping the lead going, you may gain the anchorage, as above.*

From *Cape Dame Marie*, the coast runs S. by W. 5 leagues, to *Point des Irois*, and forms, at that distance, several bays and coves, where vessels may anchor. In general, a frigate may run in along this coast, with her lead, and anchor in any part, there being no shoals, or any danger under water, the ground gradually increasing towards the shore.

To the S. by W. of *Cape Dame Marie*,  $2\frac{1}{2}$  leagues distant, and about half a league off *Point Ministre*, or *Minister Point*, are some rocks, called *La Beleines*, or the *Whales*. These rocks are above water, and surrounded with a white shoal which does not extend more than half a cable's length from them, and on which are four fathoms; a ship can sail between it and the shore; in the mid-channel she will have 6 fathoms, and may go as close as she pleases to take them on the off side: the sea always breaks on this shoal.

One league to the S. S. E. from the *Whales*, lies *Pierre Joseph's Islet*, where a convoy may anchor: the anchorage is very good and easy; and large ships anchor to the S. W. of the islet.

All along this western coast you have ground at two leagues from the shore, the depth gradually increasing as you leave the land; so that, in general, you will find four and five fathoms, at one mile distance; 10 or 12 at two miles, and regularly from 15 to 17, at three miles: when you get into 30 fathoms, you will lose soundings suddenly.

**POINT des IROIS**, or *Irish Point*, as the English sailors call it, is the westernmost point of *Hayti*; it is not very high, though remarkable, from a small hummock on its extremity, which appears detached from the coast, and makes like an island: this point forms the north part of the *Bay des Irois*, or *Irish Bay*: you may range very close to the land on the north side of the bay, there being from 9 to 18 fathoms, touching the shore.

The anchorage is to the N. W. of a black rock, which is seen a little way to the southward of the town; it is in from 9 to 10 fathoms, shelly ground. You may anchor likewise to the southward of the rocky islet, N. N. W. of a small hummock, towards the middle of the bay: the depth is here from 8 to 9 fathoms, sand and muddy ground.

The bay is exposed to southerly winds: there is always a great sea within, and the *Debercadair*, or landing-place, is of course a bad one. It is situated in the eddy of the currents, which set to the northward, on the west side, and to the S. E. on the east coast. Besides, the sea in the offing is alternately agitated with violence by the N. E. and east breezes, which prevail on the west coast, and by the S. E. winds that blow on the south coast. *Irois Bay* is terminated to the south by *Cape Carcasse*, which, with *Cap-a-Foux*, or *Fool's Cape*, forms a large roundish point, whose end is at *Cape Tiburon*.

**CAPE TIBURON**.—These three capes, seen at a distance, form but one, which is called *Cape Tiburon*, and is very easily known by its form and height. It is a large mountain, very lofty, whose top is rounded like the back of a dosser, or French hand-basket, and comes gradually down towards the sea.

*Cape Tiburon*, properly speaking, is five miles S.  $25^{\circ}$  E. of *Irish Point*, and forms the entrance of *Tiburon Bay*, which is to the eastward of it. Its situation is, latitude  $18^{\circ} 19' 25''$ , longitude  $74^{\circ} 27' 32''$ . You will get no ground at 50 fathoms, two cables' length from the coast, between *Cape Carcasse*, and very near *Cape Tiburon*: but off the latter, at that distance, you will have from 24 to 30 fathoms, and a little farther out, quickly lose soundings.

On the north shore of *Tiburon Bay*, the water is deep to within 2 or 3 cables' length of the rocks, and within half a cable's length you have 6 and 7 fathoms, stiff clayish ground. On the east and S. E. shores, you have 4 and  $4\frac{1}{2}$  fathoms, fine muddy ground, within a cable's length, all round. The edge of soundings runs as the bay forms, half a mile from its head. You may anchor any where in the bay; but bring *Point Burgos*, the south point, (which is foul) S. by E. and the pitch of *Cape Tiburon* W. N. W. in 4 or 5 fathoms; from that to 8 or 9 is very good ground. Wooding and watering in plenty. You may either land your casks, and roll them over a narrow neck of land, into the river, or fill them in your boats and buckets.

*Directions for making the Island Hayti, and its different Ports.**[From the Derrotero de las Antillas, &c.]*

If a vessel is bound to a port on the north coast, she may, as we have already shown, (page 255) at once get into the latitude of Cape Cabron, without making any of the Carribee or Virgin Islands; by this she will go clear of the dangerous isle of Anegada, and be sure of not getting to leeward of her port of destination. Having made Cape Cabron, no more is to be attended to than to follow the coast, at a proper distance from the projecting points, and without getting into the bays it forms, until approaching your destined port, when you may keep so near to the coast, to *windward* of it, as to make sure not to pass it. If bound to a port on the south coast, it is proper to make the island of St. Bartholemew, passing its south side, and run down by the south of Porto Rico, to make the island of Saona, if you are bound to the harbour of St. Domingo, or to Ocoa Bay; but, if not, you may proceed at once to make Beata and Alto-vela, passing to the south of them, and so directing yourself as to approach the coast to *windward* of your port of destination, in sufficient time to be certain of not overrunning it. Those bound direct for harbours on the west end of the island, ought to make the north side in the rainy season, or season of the souths, and the south side in the dry season, or that of the norths; thus they free themselves from the dangers and anxieties which the *souths* cause, in the *first* instance, and which the *norths* cause in the *second*; for, it is well known to every seaman that, not only is an off-shore wind not dangerous, but that it allows of continuing your voyage; for, though it may blow very hard, it can raise no sea, and you can regulate the sail according to circumstances.

*In navigating from leeward to windward*, this island affords the very great advantage of land-breezes. It is well known that the nearer you are to the land, the fresher these winds are, and, therefore, the farther you can run with them; thus, in this case, it answers to keep as near along shore as you can, which is sufficiently easy; and, keeping in mind the particular description of it, you need not fear.

If it be a matter of indifference to you, whether you beat up the *north* or *south* side, you ought to choose the *first* in the season of the *souths*, and the *second* in the season of the *norths*; and this is the more requisite, as, when you are running from windward to leeward, you have not the same necessity to keep near land, as when bound from leeward to windward; and it is very certain that, in the latter case, if either a north or a south catch you, when very close on their respective coasts, fatal consequences may ensue; but, if it be not a matter of indifference to you, which side you work to windward on, or that you must of necessity take one in preference to the other, notwithstanding the obstacles, the risk, at greatest, is not such as ought to thwart a navigator from this track, who knows that, in proportion to the difficulty, must be his vigilance and activity.

Relative to the currents, which may be found along the shores of Hayti, we may add that their effects may be looked upon as inconsiderable; some, however affirm, and suppose, that there are currents of a mile an hour setting to the westward; but, for ourselves, we can only say that we have no foundation for such an assertion, but rather have grounds for thinking them of little importance.

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*The Windward Channel between Hayti and Jamaica.*

By the Windward Channel is meant that channel which lies between Hayti on the one side, and Cuba with Jamaica on the other. The coasts which form it on the east and north have already been described, and the coasts of Jamaica are described hereafter. The breadth of the channel between Cape Tiburon, in Hayti, and Morant Point, the eastern end of Jamaica, is 31 leagues, in a W. S.

W. direction; and to the northward of this line is the little isle called *Navaza*, and a dangerous shoal bank called that of the *Formigas*; to the southward is a bank of soundings, but clear of dangers, and the *Morant Keys*, with their surrounding bank: these we shall describe in order.

**NAVAZA.**—This is a small uninhabited island, and bold-to all round, which lies with Cape Tiburon bearing E.  $\frac{1}{2}$  S. 12 leagues; Cape Dame Marie, N. E. by E.  $\frac{1}{4}$  E. 15 leagues; and Morant Point, Jamaica, S. W. by W.  $\frac{1}{4}$  W. twenty leagues. Its latitude is  $18^{\circ} 23'$ , and its longitude, according to the mean of several observations,  $75^{\circ} 6'$ . Under the N. W. point there is anchorage, within a quarter or half a mile of the rocks, in from 12 to 17 fathoms, sandy bottom: but there is a great swell, with strong sea breezes, and very bad landing.

The east of the island Navaza appears as if deposited in three different layers or strata; the undermost white cliff with (in some places) apparently pretty large white stones lying above it. The middle and upper strata resemble each other; but, in some places the upper is precipitous, forming small cliffs, perceptible on a close approach. The next end is of a different character, seemingly a kind of cliff from top to bottom; part of it appears in a shade.

There seems to be some scrubby brushwood on the island; on a close approach, when steering S. W. to weather the west end of the island, its appearance remained much the same, and its greatest height may be about 70 feet above the level of the sea: it is about one league in length. When about a mile distant from Navaza, it loses the appearance of three strata, and what appeared loose white stones, on the top of the low cliff, seems now to be merely the upper part of the rocks, washed bare, as far as it is subject to the action of the water in gales of wind.

When near the island, it does not appear one league in length, and is very narrow from north to south. Navaza, we have been informed, has nearly the appearance of Mona, as represented in page 248.

The **FORMIGAS**, or **ANTS**, are some dangerous coral spots, upon a sand bank, nearly nine miles in length, extending in a N. E. and S. W. direction, about ten leagues to the westward from Navaza. Its eastern part bears N. E. by N. forty miles from Morant Point, Jamaica; and, from the body of the shoal the north-east end of Jamaica bears S. W. by W. 38 miles. The eastern part is the shoalest, not having, in some places, more than 13 or 14 feet of water. The edge here is nearly steep-to, and there is, generally, a great swell upon it. In standing over the bank, when the depth increases to 7 or 7 $\frac{1}{2}$  fathoms, there will be a sudden increase to 13 and 15 fathoms, and thence no bottom at 20. On the eastern edge the bottom is dark, and not easily seen in hazy weather; but, to the westward, the water is discoloured, and appears lighter.

The centre of the bank is in about  $18^{\circ} 30'$  N. and  $75^{\circ} 40'$  W. The fall of the high land over Plaitain Garden River, which is the easternmost high land on Jamaica, bearing S. W. by S. leads directly on the bank.

**BANK of SOUNDINGS.**—This bank, which is yet imperfectly known, lies nearly on the direct route of vessels bound from the south side of Hayti to Jamaica. In the year 1805, the Renard, brig of war, passed over it, whence its breadth was computed at 16 miles. In latitude  $17^{\circ} 44'$ , at 3 or 9 leagues to the N. E. of the Morant Keys, and in the distance of five miles on an east course, was a regular depth of 13 fathoms.

The **MORANT KEYS.**—These keys, which lie at the distance of thirty-two miles S. S. E. from the east end of Jamaica, consist of four low islets or keys, situate in form of a crescent, and are surrounded by a dangerous reef. They are distinguished by N. E. Key, Sand Key, Savanna, or Bird Key, and S. W. Key. You may approach within 2 $\frac{1}{2}$  miles of any of them. The reef on the eastern side is a most dangerous ledge of coral. The keys lie between lat.  $17^{\circ} 24'$ , and  $17^{\circ} 28'$ , long.  $75^{\circ} 55'$ . To the N. W. of them is good anchoring ground, in 5 or 6 fathoms, white sand and shells. To anchor, give the N. E. Key a birth of 1 $\frac{1}{2}$  or 2 miles; and when the S. W. Key bears S. by E. steer directly for it, and you will pass close to the westward of the rocky spit, that extends to the westward from the N. E. Key, and has but little more than 3 fathoms over it. When the N. E. Key bears E. by N. or E. N. E. you may haul more to the eastward, and anchor with the



S. W. Key bearing South, or S. by W. and Savanna Key, the next to it, S. E. in from 5 to 6 fathoms, sandy bottom. As there are some spots of coral, it is requisite to ascertain that the bottom be clear.

These keys are only seven or nine feet above the water. The body of them lies from Port Morant, Jamaica, S. S. E.  $\frac{1}{2}$  E. about 11 leagues. With the keys bearing S. W. nearly four miles, there are about 18 fathoms water, stony ground, mixed with fine red speckled gravel. With them S. W. by S. about four miles, there are 16 fathoms; and when S. S. W.  $\frac{1}{2}$  W. six miles, there are 23 fathoms, with ground as above.

In order to ascertain when you are to the eastward of the keys, observe that Morant Point, or the east end of Jamaica, and the north-east end of the same, bear from each other N. W.  $\frac{1}{2}$  N. and S. E.  $\frac{1}{2}$  S. so that, when the north-east end, which is high and bluff, is to be seen on that bearing, or to the westward of it, you will be to the eastward of the keys.

Also, when coming in from the southward for Jamaica, by keeping Yallah's Hill, hereafter noticed, to the northward of N. W.  $\frac{1}{2}$  N. you will pass clear of the keys to the westward.

Be very cautious, on approaching the keys in the night, lest you be driven on them by the current.

In turning between the Morant Keys and the east end of Jamaica, there is a good eight leagues of turning ground; and, as it seldom happens that the land is not descried before night, its bearings may direct in turning or sailing.

Capt. Mackellar tells us that the coco-nut trees formerly on Morant Keys have been cut down since 1816, and there is not a shrub of any kind to be seen, except a few small coco-nut bushes on the N. E. Key. Very great care should be taken in approaching the N. E. Key, on either side, as it is foul to a great distance off; and vessels intending to anchor at the keys, ought not to come on the white water at all; that is, to the westward of the N. E. Key, until they are far enough to the southward to have the south part of the N. E. Key bearing E. by N. they may then haul up to the eastward for Savanna or Bird Key; and, when it bears S. E. and the S. W. Key S. or S.  $\frac{1}{2}$  W. anchor in 5 or 6 fathoms. If it is necessary to work up to this anchorage, with the wind east, you may stand to the S. W. Key, by your lead, not going nearer than 5 or 6 fathoms: but the reef off the N. E. Key is steep-to, and you will have 6 fathoms at one east, and the next S, or perhaps less; therefore, in working up, keep the point of the N. E. Key always to the northward of E. by N. after you are in the white water.



## CHAP. VI.

*Directions for the Windward Passages, which is the principal channel to the northeastward of Jamaica, including those for sailing to and from Jamaica, and thence to New-Providence, Havanna, Europe, &c.*

Ships from Europe, when bound to Jamaica, generally take the broad and safe channel between the islands and Guadaloupe, but they may pass with equal safety between St. Bartholomews and Saba, or St. Eustatias, and thence make the parallel of  $17^{\circ} 20'$ , to the southward of Hayti, or on the meridian of  $70^{\circ}$  W. When thus far advanced, they may continue W.  $\frac{1}{2}$  S. until they make Alto-Vela or the Little Mount, which lies off the southern point of Hayti, as already described in page 248. They will thus avoid the dangers in the vicinity of Neiva Bay, towards which there is frequently an indraught, as before noticed.

Should you happen to miss Alto-Vela, you may probably make the land of Jacquemel, or Jacmel (described in page 248) or, if not, with the next great promontory, of which *Point Abacou* and *Point a Gravois* are the extremities. (See page 252.) Jacquemel may, as already shown, be distinguished from sea by the sudden cut off, or drop of a hill, seen over another long hill at the upper part of the harbour. This mark leads directly to the harbour's mouth.

The Isle a Vache, described in page 249, lies to the eastward of Point Abacou, and forms the channel to Aux Cayes, &c. From Alto-Vela to the east end of the Isle a Vache, the bearing and distance are W. by N. 42 leagues; from the east end of the Isle a Vache to Point Abacou, W. by S. 14 miles; thence to Point a Gravois, W.  $\frac{1}{2}$  S. 24 leagues.

When off at sea, abreast of the Isle a Vache, the middle of a saddle-mountain over Port St. Louis, bears nearly N. by E. and then the eastern end of a Vache is between it and the ship. The island is low, though hilly, and lies so under the land of the main, that it is not distinguishable from it at any considerable distance. At 6 leagues off, it appears, as already said, like an assemblage of small islands. The water towards it shoalens gradually.

The saddle-mountains over St. Louis, which are called the *Grand Anse Mourtains*, are the second high range from the west end of Hayti. The westernmost, which is the highest, may be seen in clear weather 30 or 40 leagues off, on both sides of the island. Observe, however, that, after noon, the exhalation of vapour is sometimes so great as to render them invisible. Be cautious, at such times, of making the land, lest you run on the dangers of the Isle a Vache.

From Point a Gravois to Cape Tiburon, the bearing and distance are N. W. by W.  $\frac{1}{2}$  W. 13 leagues. The land about Cape Tiburon is so high as often to be seen at more than 20 leagues off.

Morant Point, the easternmost extremity of Jamaica, already noticed, bears from Point a Gravois W.  $\frac{1}{2}$  S. 42 leagues; and, from Cape Tiburon, W. S. W. 51 leagues.

In running for Jamaica, from the west end of Hayti, or the Isle of Alto-Vela, be cautious of running too far north, lest you should get on Morant Point, this point being, as already shown, extremely low. In thick hazy weather it may possibly be approached so near as to make it difficult to weather; the wind setting right on, and the current always going to leeward. By keeping the proper parallel, ( $17^{\circ} 45'$ ;) you will run down without danger, and make Yallah's Point, off which you are sure to meet with pilots, who will conduct you to Port Royal Harbour, if required.

*Sailing directions for the coast and harbours of Jamaica.*

**MORANT POINT to KINGSTON.**—The southernmost high land of Jamaica, to the eastward of Port-Royal, is *Yallah's Hill*, which is very remarkable. The middle of this hill is twenty miles to the eastward of Port-Royal Point. When the fall of this hill bears W.  $\frac{1}{4}$  N. steering W. by S. will carry a vessel a league or more to the southward of the east end of the island, which is very low. The latitude at noon will be a guide; for when Yallah's Hill bears W.  $\frac{1}{4}$  N. eleven or twelve leagues distant, the ship will be in lat.  $17^{\circ} 50'$  or  $17^{\circ} 51'$ .

Should you make the southernmost high land, bearing W. S. W. nine or ten leagues distant, when bound to the south side of the island, you must haul up S. W. to clear the east end, which will not be in sight at a greater distance than four leagues; and observe, also, that a current frequently sets to the northward around this end of the island.

From off Morant Point, or the east end of Jamaica, when bound to Port-Royal, ships should keep at the distance of four miles from shore, until past Morant Bay; as the coast from the east end to the southward of Rocky Point is lined with a reef that stretches nearly two miles outward, and over a part of which the sea generally breaks.

To the westward from Rocky Point, the coast continues rocky to about one mile from the shore, as far as Morant Bay; it is then clear to the white cliffs, called the *White Horses*, off which there are some rocks, at about half a mile from shore.

From the White Horses to Yallah's Point, the distance is one league. In running down, when the former bears north, and Yallah's Point west, you will have soundings, and frequently see the bottom in 7, 8, 9, and 10 fathoms; and, on approaching Yallah's Point, the water will be found to deepen until you lose soundings.

From Yallah's Point to Cow Bay Point there is no danger; the latter is bold-to, as well as all the coast to the westward, as far as Plum Point. The course and distance between the two points are W. by N. eight miles; but should you be three or four miles from Cow Bay Point, you must steer more to the northward.

Plum Point is the S. E. point of the Palisadoes; you may run in boldly for it, and approach its extremity within half a cable's length, having nothing to fear until abreast of it, or between it and the Middle Ground, in the entrance of the eastern channel to Port Royal.

When you have brought Rock Fort N. by E. you will come on a cross ledge without the entrance of the channel, and must then bring the leading mark on; which is, the north part of the Apostles' Battery and the magazine of Fort Charles in a line. This mark is to be kept on, until you are abreast of Lime Key. When thus far advanced, steer a little to the southward towards Rackham Key, giving Lime Key a good birth, until Port-Royal Point comes open between Gun Key and Rackham Key. Now steer in mid-channel between these keys, and, immediately after passing them, proceed directly towards Port-Royal Point, till you bring the fall of Yallah's Hill on the centre of Gun Key, which will bring you between the Knoll and Port Royal Point; you may approach the point within half a cable's length, and, by sailing close to it, you will also pass between it and the Harbour Knoll, which lies to the westward, about the length of a cable and a half, with 19 feet on it.

Having passed the point, steer to the northward, till the Admiral's Penn comes to the north of Gallows Point. This mark leads you clear of Old Port-Royal, where you may anchor abreast of the Dock-Yard, or even before you come to it. With a land or north wind, the channel between Gun Key and Port Royal is to be preferred; then the Twelve Apostles' Battery on the south angle of Fort Charles leads you clear of Gun Key reef.

Strangers, in case of necessity, may pilot their ships down to the anchorage, in the channel, even when the marks are not to be seen, as nothing is to be feared on the side of the Palisadoes, which is low and bushy. They must only keep within half or three-quarters of a mile of Plum Point, and steer down by the

Palisadoes, till they bring Lime Key to bear S. S. E. or S. E. by S. then they anchor in 15, 16, or 17 fathoms, near the middle of the channel.

**SHOALS in the EASTERN CHANNEL of PORT ROYAL.**—The most remarkable shoal in the Eastern Channel is the *Middle Ground*, or Eastern Middle Ground, which lies one and a quarter mile S. S. W. from Plum Point; it consists of two patches, rocky bottom; the east patch having 12 feet, and the west patch (about 70 fathoms to the W. N. W. of the other) having 9 feet; they are divided by a narrow swatch, 10 fathoms deep, and both break with strong sea-breezes. You may sail within the Middle Ground, or without it to the southward, as necessity requires; but to the northward is the best and safest channel. The soundings in that channel are uneven, from 7 to 19 or 20 fathoms; but, when you are past the Middle Ground, they are regular from 19 to 13 fathoms between Rackham and Gun Keys.

The first key you meet with, in steering from the Middle Ground towards Port Royal, is *Lime Key*, from the north end of which a reef stretches about a cable's length; your eye is the best mark for it, as it is generally seen: to the westward of the key lies another shoal, with 8 or 10 feet upon it.

*The knoll off Port Royal Point* is the third shoal; it is a small hard coral bank to the southward of the point, with only 16 feet water upon it. If your ship draws 12 or 13 feet water, you must be careful to keep clear of it.

*To go within the knoll*, the leading-mark is, to bring the highest bush on Gun Key (which is near the middle of it) in one with Yallah's Point; you have then 10 fathoms water, and the channel is 70 fathoms wide. The mark to strike the knoll is, the south point of Gun Key on the high hill of Yallah's, or a ship's length open of Yallah's Point: the breast-mark is, the church on the seventh or eighth embrasure of the Fort, Sandy Key just open with Lime Key, and you will have 16 or 17 feet of water.

*To go between the knoll and the Western Middle Ground*, which lies about 300 fathoms to the south-westward of it, the leading-mark is, True Land's Hummock, within Yallah's, on the southernmost part of Gun Key, or Yallah's Point well open to the northward of the north point of Rackham's Key. This channel, which is the widest, and has 12 fathoms of water, is mostly used when taken with the land-wind.

The anchorage is good all over Port-Royal Harbour; but the best anchoring for ships that are bound to sea is in 9 fathoms, with a notch on the east side of a high mountain, called the Leading Notch, a little open to the eastward of Fort Augusta, and Rackham Key in one with Port-Royal Point.

**SOUTH CHANNEL of PORT ROYAL.**—To go to sea from Port-Royal, you make use of the *South* or the *New Channel*; the small craft generally go through the East Channel, but it is to be avoided by large vessels, unless they are prime sailers, and have a strong land breeze or north, with an appearance of its lasting long enough to carry them through.

When bound through the South Channel, you should get under weigh with the land-wind, so soon in the morning as you can see the marks, observing that the current then sets most commonly to the westward. The general leading-mark is, the Leading Notch in one with the magazine of Fort Augusta, which is the easternmost building of the fort. This mark leads ships of 16 or 17 feet water clear through; but, in a line of battle ship, the notch should be kept very little to the eastward of the magazine, until Hellshire Hummock comes open with Fort Small.

To keep well to the westward of the Middle Ground, be careful not to bring the church-steeple upon the corner of the wall with embrasures, until Yallah's Hill is brought in one with Lime Key. In case you should not see Yallah's Hill Point, look out for a hummock on Hellshire, and when it is open of Salt-Pan Hill, you will be to the southward of the Middle Ground.

This Middle Ground is a large coral bank, which often breaks, with only three feet on it in the middle; the north and west sides are almost steep. On its N. W. edge lies a buoy, whose marks are, Port-Royal Tower on the fourth embrasure of Fort Charles, counting from the westward, and Hellshire Hummock on the flag-staff of Fort Small.

*When you have opened Hellshire Hummock with Fort Small, you steer out with the Leading Notch, a little to the eastward of the magazine, which carries you between the Drunken Man's Key, the Turtle Heads, and the South Knoll; or, to avoid these heads, you are to haul up so as to bring the church-steeple to the easternmost part of the fort, and continue to keep that mark until the South Key is brought on with Yallah's Point. Then you may haul to the westward, if the wind will permit. But if you should not keep up the leading-mark, and the church-steeple should come near the corner of the fort, you must then come to, or tack and stand in. The mark, when ashore on the Turtle Heads, is, the church-steeple upon the magazine of the fort and Spanish Town land just open.*

*When Maiden Key is open a ship's length to the southward of Drunken Man's Key, you will be to the southward of the South Knolls, and should bring the Leading Notch in a line with the magazine, which will bring you close to the westward of the Little Portuguese, in 8 or 9 fathoms: when Yallah's Hill comes to the southward of South Key, you are then clear of the Portuguese, and may haul to the S. E. giving South Key a birth of about a mile.*

*Drunken Man's Key is a narrow ledge of rocks just above water, covered with some loose sand, that gives it the appearance of a sand-bank. To the southward of it, about half a mile, there is a shoal which breaks with strong sea-breezes; and between it and Drunken Man's Key is a channel, having 6 or 7 fathoms of water.*

*The Turtle Heads are three dangerous spots, with 10 or 11 feet of water on their shoalest part, and deep water close to them. The South Knolls to the S. E. of these heads, are two small patches, about 70 fathoms asunder, with 23 feet water on them. And to the S. by W. of these lies One-Bush Reef, which always breaks, and is almost steep-to. The Three-Fathom Bank is a large coral shoal, with 19 or 20 feet of water, which breaks with strong sea-breezes. A small patch, about a quarter of a mile to the S. S. E. of it, has 20 feet of water; it is called the Warrior's Bank, from the British ship Warrior having lost her rudder there in 1782.*

*The Little Portuguese is the southernmost shoal on the eastern side of the south channel. It has from 22 to 39 feet water over it; and, in general, a great swell.*

*When Portland makes as an island, open about three-quarters of a point, or a point, with Hellshire, you will be to the southward of the Three-Fathom Bank and Warrior.*

*It frequently happens that the land-breeze fails before a ship can get clear of the channel; and there is, sometimes, a long interval of calm between the land and sea-breezes. Should this occur, it would be requisite to anchor so soon as the breeze fails, or there will be danger of being set by the swell on the Three-Fathom Bank or One-Bush Reef. By inattention to this precaution, there have been instances of ships slipping or cutting their cables, when the sea-breeze has come on, and running into Port-Royal to save the ship.*

*The best anchorage is within the length of the Little Portuguese, with the leading-notch a little open to the eastward of the magazine of Fort Augusta. Then, if the wind changes southerly, a ship may easily return to Port-Royal, or, with the common sea-breeze, may proceed to sea.*

*When clear of the channel, if bound to leeward, you may steer S. by W. or not farther to the westward than half a point more westerly, in order to avoid some shoal spots that lie to the south-eastward of Wreck Reef.*

*Wreck Reef always breaks. This danger lies about a mile, or little more, to the S. E. from Hellshire Point, and is about a mile in length from N.E. to S.W. There is a channel for small craft between it and Hellshire Point. About a mile to the S. W. of the reef, there is a shoal spot of  $3\frac{1}{2}$  fathoms with 7 fathoms around it.*

*To sail through with the sea-breeze.—Ships of war, or those that sail well, may safely proceed to sea from Port-Royal, if they can lay S. by E. or a little to the eastward of it, if the foregoing precautions be strictly attended to. When through the channel, soundings will be found of 10 and 11 fathoms, if steering S. by W. until Portland bears W. N. W.*



*The shoals, in general*, when the sea-breeze prevails, may be distinctly seen from the mast-head. They appear of a brownish colour, being covered with large branches of coral. The greatest part of them is very steep, having a depth of several fathoms close to them. The bottom of the channels between is mostly soft mud or clay.

**SHIPS BOUND to WINDWARD** from Port-Royal, if they can weather the Middle Ground by the time the sea-breeze comes on, may pass through the Eastern or Windward Channel, and thus they may gain 6 or 7 miles more to windward than by going through the South Channel. Small sloop-rigged vessels generally pass this way; but to others it is hazardous; because, if the land-breeze fails, with an interval of calm, a swell may come on ahead, and be extremely dangerous.

**NEW CHANNEL of Port Royal.**—The New Channel lies to the eastward of the South Channel, and almost parallel to it; it is certainly preferable, on many accounts, to the South Channel; it has smooth water till you come to South Key, with good anchoring ground, easy riding, and a facility of going to sea to the southward with the sea-breeze, as far as S. E. &c.

The leading-mark to enter this channel is, a remarkable flat hummock on the mountain to the N. N. W. of Port Royal. When the middle of this hummock is in a direct line with the White House, standing to the N. W. of Fort Augusta, it leads to the westward of the Harbour and Point Knolls, as well as between the east edge of the Western Middle Ground, and the west end of Rackham's Key Shoal. Steer with these marks on till a remarkable round hillock to the westward of Stony Hill Barracks comes open to the eastward of Gun Key.

After you have opened this hummock, you steer away to the southward, keeping it open till a saddle in the mountains to the N. W. comes in a line with Fort Small. Then you bring the same hummock on the centre or west edge of Gun Key, which marks carry you to the westward of the shoals on the east side of the channel, and about a quarter of a mile to the eastward of the Great Portuguese. So soon as Portland appears like an island, you may haul to the eastward, being clear of the reef and shoals of South Key.

*The shoals in this channel are*, 1. The Western Middle Ground, (on the east side of which there is a buoy,) and the small shoals to the southward of this ground.

2. The *Great Bay Shoal*, which has 16 feet least water, and a floating beacon in 18 feet.

3. The *Four Fathom Knoll*, a very small spot, with no less than 24 feet water on it, and deep water all round. Ships of 20 feet draught may sail over it, as the water is smooth.

Between Great Bay Shoal and South Key Breakers there are two shoals; the northernmost, at about half a mile S. by W. from the former, is steep, and a small part of it appears just above the surface of the water. This shoal almost shows itself by the rippling on it. About half-way between this and the breakers lies the second shoal, having only 16 feet of water.

The *South Key Breakers* have a buoy upon them. The marks for the west edge of this reef is the leading notch open a little to the eastward of the capstan-house, and a saddle-mountain to the N. W. and Fort Small in one.

Half a mile to the southward of these breakers is the *Eighteen Feet Reef*, remarkable by the great swell upon it. To the westward of that reef, lies the Great Portuguese, which is the southernmost shoal on the west side of the channel.\*

**OLD HARBOUR, LONG'S WHARF, &c.**—Mr. Leard's directions for these harbours are as follow: Being clear of the South or New Channels, steer to the southward, or S. by W. and give Wreck Reef a birth of two miles; and

\* The preceding Description of, and Directions for, the South Channels, may be considered as more for the use of the *pilot*, than of the general navigator. Captain Livingston has said, "I think the *Derrotero* is right in omitting directions for any of the channels at Port Royal, Jamaica, excepting the Eastern one, as directions for the Southern Channels are absolutely useless: because no one who is unacquainted ought to be fool hardy enough to attempt carrying any vessel in or out, except by the Eastern Channel, even with the most correct instructions and most accurate chart."



then edge away, and bring the fall of Braziletto Hill to bear W.  $\frac{1}{2}$  N. or W. by N. and steer for it: this will lead you to the southward of the foul ground off the Pelican Keys,\* and as you approach them, you will see Pigeon Island, which is low and bushy, in a direction with the fall of Braziletto Hill; keep it so, and pass the Pelican Keys in  $7\frac{1}{2}$ , 7, and  $6\frac{1}{2}$  fathoms; and, as you steer down with those marks on, you will see a remarkable hummock on the mountain to the northward, called Cudjoe Hill, (it is like a jockey's cap.) When this hummock comes on the west extremity of the slant fall of Goat Island, and will bear N.  $\frac{1}{2}$  W. then haul to the N. W. by N. for Old Harbour. This last mark leads you clear to westward of Dry Shoal, part of which is even with the surface of the water, and you will see it. You will have from  $6\frac{1}{2}$  to 6, or  $5\frac{1}{2}$  fathoms; and, after you have passed Dry Shoal, continue steering N. W. by N. and you will deepen your water to 8 fathoms.

And, as you approach Careening Key, will shoalen it to seven and six fathoms. You must give Careening Key a birth of nearly half a mile, to avoid a reef that runs from it to the south-east; and steer direct for the wharfs at Old Harbour, and anchor in  $4\frac{1}{2}$  or 4 fathoms, keeping clear of the reef on the south side of the Harbour, which generally shews itself.

**Long's Wharf and Salt River.**—If you are bound to Long's Wharf, in sailing to the northward of Pigeon Island, there is a small white shoal of only 18 feet on it; it shoalens gradually on the east end, and bears north from Pigeon Island, distance one mile. The south edge of Round Hill just open with Braziletto Hill, leads on it. You may sail between this shoal and Pigeon Island, in 8, 7, 6, or 5 fathoms; but to the northward is the straightest course. After passing Pigeon Island, steer to the northwest, and bring the top house about one third from the north side of the large opening or gap in the mountains: this mark leads between the reefs to the anchorage at Long's Wharf, in 4 or  $3\frac{1}{2}$  fathoms.

**Salt River Anchorage.**—If you are bound to Salt River, after passing Pigeon Island, keep the south part of Braziletto Hill open a little on your larboard bow, which will lead you close to Salt Island; you may go either to the northward or southward of Salt Island, but the north passage is the best. You may pass within a cable and a half's distance of Salt Island, on the north and west part: on the south part is a reef, which shows itself, and is steep close to it. There is a reef, extending along on the east side of Long Island, which you see; and also a reef extending from the Salt River shore to the eastward, which sometimes breaks. Therefore, steer round the north end of Salt Island, at about two or two and a half cables' distance from it; and then steer towards the entrance of Salt River, until you bring the south edge of Pigeon Island almost in a line with the south edge of Salt Island: keep them in that direction, and when you are in  $4\frac{1}{2}$ , 4, or  $3\frac{1}{2}$  fathoms, anchor according to the size of your ship. If you are in a low vessel, it will be necessary to go a little up the shrouds, to see Pigeon Island over Salt Island. The south end of Pigeon Island a little open to the southward of Salt Island, leads on the edge of the Salt River reef. There is good anchorage under the west part of Salt Island, in five fathoms and a half, good holding ground.

**Peake Bay.**—To sail into this bay, give the reef that runs off Rocky Point a birth of a cable's length or more, and steer towards the north part of the Sandy Beach, and anchor in  $4\frac{1}{2}$ , 4, or  $3\frac{1}{2}$  fathoms, good holding ground. The reef off Rocky Point, and the reef on the south side of the bay, are nearly even with the surface of the water, so that you generally see them. There is a great sea in this bay, with strong sea breezes.

**West Harbour.**—The entrance into this harbour is between two coral reefs, that

\* The most frequented and best channel for entering into this great bay is between Pelican and Bare-Bush Keys; and, to take it, those who come from Cow Point, must steer W.  $\frac{1}{2}$  S. W.  $\frac{1}{2}$  W. 9 leagues, and until the slope of the Braziletto Mountain bears W. by N. With this mark and bearing you proceed to Pigeon Island, &c. The Braziletto Mountain cannot be mistaken; it being the northernmost of the two, which are seen to the west, and the southern is of a round shape. The opening which these mountains form is the point to be used as the leading-mark bearing W. by N. as above.—*Derrière, &c.*

are nearly even with the surface of the water; and the heads of coral frequently show above water. The channel between the reefs is above half a mile wide, with 6 and 6½ fathoms in it. There is very good anchorage, with smooth water, just to the westward of the north reef, in 5½, 5 or 4 fathoms, good holding ground. The land to the westward does not show any mark that I could find to guide you into this anchorage, but it is not difficult. As you go to the westward in the west harbour, the water shoalens to 8 or 9 feet. It is also shoal on the south side towards the mangroves, and smooth water.

*Going to sea from Old Harbour, Long's Wharf, &c.*—Ships generally get under way with the land wind, so as to get clear of the reefs near the anchorage, before the sea breeze comes on. Being clear of the reefs, you may turn out with the sea breeze, and may go on either side of Pigeon Island. The channel between Pigeon Island and the reef of the Half-Moon Keys is two miles wide, with deep water; but the smoothest water is to the northward of Pigeon Island. You may stand towards Goat Island and Cabarita Point by your lead; the soundings are gradual, and tack when you come to 5 or 4½ fathoms. If the sea breeze should be very strong, you may anchor under Dry Shoal, and wait for the land wind. But, with moderate sea breezes, any ship may turn out between the keys and reefs. Being as far to the eastward as Dry Shoal, and in standing to the southward, your leading mark for the channel between Bare Bush Key and Morris' Shoal, is Cudjoe Hill, on the slant fall of Goat Island, the same as for Dry Shoal; keep it so until the Half-Moon Keys come in one; then you are to the eastward of Morris' Shoal, and may edge away a little, keeping the Cudjoe Hill about a large sail's breadth on the lower part from the slant of Goat Island, which mark will lead you along the white water on Bare-Bush side to sea. But if, in standing to the southward from Dry Shoal, you find that you cannot weather Morris' Shoal,\* which you will know by the fall of Cudjoe Hill not being within a sail's breadth of the fall of Goat Island; in this case you must tack to the northward, when Bare-Bush Key bears E. S. E. or when a saddle hill to the northwest of Pigeon Island is just coming on the north end of Pigeon Island. And, in standing to the northward, tack when the fall of Braziletto Hill comes on the centre, or near the north end of Pigeon Island; you may approach the white water on the side of Bare Bush to 5 fathoms. There is a good channel between Morris' Shoal and Half Moon Keys, but it is dangerous to approach the latter on the southeast side, for you will have from 6 or 7 fathoms to 12 feet in one or two casts of the lead. To the E. S. E. and S. E. of Bare Bush Key, distance about one mile, are some spots of coral, with from 3½ to 5 fathoms on them, and 7 fathoms close to them. And to the southward and S. S. E. of the Portland Keys, distant about two miles, are some spots of 3½ and 4 fathoms on them. After you have passed those keys in sailing to the westward, come no nearer Portland than two or two and a half miles, or 7 or 8 fathoms; for the reef off Rocky Point, which is the west part of Portland, extends nearly two miles from the point to the southward.

**PORT ROYAL to PORTLAND.**—In proceeding towards Portland, observe that Wreck Reef, which is a large shoal, composed of dry rocks and breakers, lies about half way between Port Royal and Old Harbour, at the distance of more than a mile from the shore. This danger, which appears in the day, consists of two parts, having between them a channel of 4 fathoms water. Ships passing in the night should approach no nearer than in 12 fathoms, or come to an anchorage until morning. Within the reef there is good shelter, and tolerable anchorage in 4 and 5 fathoms, bottom of sand, with shells and mud. Here vessels occasionally ride during the prevalence of a breeze, &c.

\* It is said, that about thirty years ago, ships sailed over this shoal; if so, it must have grown fast, for there is not at present, more than nine or ten feet on the north edge of it, and a great swell in general. Marks for the east end of it: Cudjoe Hill, about half way from the fall of Goat Island, upon the low and bushy land towards the rising to the westward (this rising is commonly called Little Goat Island); and the Half-Moon Keys about four degrees open, and north part of Bare Bush Key bearing E. & S. Marks for the west end is, Cudjoe Hill, on the afore-mentioned rising of Little Goat Island, and Bare-Bush Key bearing E. & S. It is in length little more than a quarter of a mile, and in breadth about one-sixth of a mile; and shoalens too sudden for your lead to be a guide in standing towards it.

From Port Royal to Portland, the distance, on a circuitous course, is 9 leagues. In this track, when clear of the South Channel, give Wreck Reef a birth of two miles.

There are soundings outwards so far as with the easternmost land of Hellshire bearing N.  $\frac{1}{2}$  E. and Rocky Point, or the southernmost land of Portland, N. W.  $\frac{1}{2}$  N. With these bearings, soundings have been found of from 17 to 23 fathoms, and the next east no ground at 80 fathoms, although not at a ship's length from the former.

**PEDRO SHOALS.**—From Portland S. S. W. thirteen leagues, lies the Portland Rock, which is a single key, a little higher than Drunkenman's Key off Port Royal, and having small bushes on it. This rock is in latitude  $17^{\circ} 7' N.$  longitude  $77^{\circ} 29' W.$  Sixteen leagues S. W. by W. from this, on the southern edge of the Key is a rock, 5 feet above water; between this and the Portland Rock lie a number of dangerous shoals and keys, which are delineated on the Chart of the West Indies, published by E. & G. W. BLUNT.

The Pedro Shoals (Bivora Bank of the Spaniards) have been regularly surveyed, and the representation of them in the Charts is to be relied on. Of the Cascabel, or *Rattlesnake*, which is supposed to distinguish the N. W. end of the Pedro Bank, it does not exist, as there has been an accurate survey of the Bank, and it was not to be found.

**CARLISLE** or *Withy-Wood Bay*, to the west of Portland, is an open bay, winds from W. to S. E. Its S. E. extremity is the rocky point of Portland, from which a spit, of 12 feet of water, extends about three quarters of a mile to the S. W. Westward of Rocky Point is a bank, called Robertson's Shoal, on some part of which there are only 2 feet at low water. The outer edge of this shoal is one mile and a half west from Rocky Point. The form of the shoal is nearly oval, from E. to W. Its breadth, N. and S. is three quarters of a mile.

To sail into the bay, bring a remarkable round hill to bear nearly north, and steer for it, until Rocky Point comes almost on with the east point of Portland. Hence, rounding Robertson's Shoal, you may come to an anchor in from 5 to 4 fathoms. With the hill above-mentioned N. by E. there is a spot of  $3\frac{1}{2}$  fathoms, at about  $2\frac{1}{2}$  miles from the beach. With the fort N. E. or N. N. E. is the best place to anchor in for loading, because your boats can sail both ashore and aboard with the sea-winds. No tides here, but a strong westerly current generally runs in the offing. Var.  $6^{\circ} 50' E.$

Along the coast to the westward, to the distance of nearly twenty miles from Carlisle Bay, at a mile or a mile and a half from shore, there is a regular depth of 4 and  $4\frac{1}{2}$  fathoms.

**ALLIGATOR POND KEY.**—Alligator Pond Key is a key just above the surface of the water, with a reef all round it. Its distance from the shore is about four miles, and vessels may approach it by the lead, or on seeing the breakers. There is good anchorage for small vessels along shore, between it and the main, in 3 and 4 fathoms.

**BRUNE BANK.** a small bank, having on it little more than 4 fathoms, with 12 or 13 close to it, lies six miles S. E. by compass, from Alligator Pond Key. The shoal is about a mile and three-quarters in extent, from east to west, and one mile and a half in breadth; it has from 4 to 6 fathoms water on it, and the outer edge is about eight miles from the shore.

**PEDRO BAY, &c.**—In Pedro Bay, to the westward of Pedro Bluff, there is good anchorage for any vessels, but it is open to southerly winds. The lead is here the best guide for anchoring. The coast hence to the westward, nearly to Parratee Point, is bold-to. Off Parratee Point is a small reef; and to the N. W. of this point is Black River, which is formed by extensive reefs. To clear these reefs, keep Pedro Bluff open with Parratee Point.

The entrance of Black River is between two reefs, and has not more than 18 feet water. To sail into the river, when advancing from the eastward, keep Pedro Bluff open of Parratee Point, till you bring the church on with a gap in the high land, or to bear N. E. then steer directly in for the church, which will carry you into the best of the channel. It is full of heads of coral rocks.

**PORT ROYAL to BLACK RIVER**, by Mr. Town, 1817.—On leaving the South Channel of Port Royal, when bound to the westward, you may clear Wreck Reef by keeping the magazine of Fort Johnson open of St. George's Rocks, until Portland bears west; thence you may alter your course along the land, as there are no dangers to be apprehended, until you approach Alligator Key, about four miles S. E.  $\frac{1}{2}$  E. from which is the Brune Reef, already described.

*Pedro Bluff* is very remarkable, and may be known from any other land on the coast. At 4 or 5 miles to the eastward of the Bluff, there is a remarkable white spot in the cliff, called the White Horses; which, when you first make it from the eastward, appears like a schooner under sail, close to the land.

From Parratee Point to Luana Point, the bearing and distance are N. W. by W.  $\frac{1}{4}$  W. nine miles. The coast between forms the Bay of *Black River*, which is obstructed by a number of reefs, all of which lie within the line of the two exterior points, and a course N. W. by W.  $\frac{1}{4}$  W. will, therefore, lead clear of them. The bay does not appear to have been regularly surveyed. The main channel, which is between two reefs, has only 18 feet of water.

If going to *Black River*, or its Bay, when advancing towards Parratee Point, take care not to approach the point nearer than one mile, as there is a reef extending off, to the S. W. nearly a mile. Your leading-marks into this bay, to the anchorage where merchant-ships load, will be the church just open to the eastward of a large cotton-tree; run in with this mark, until you are within half a mile of the town, and anchor in about 18 feet. Large ships, that cannot approach so near the town, should anchor under the eastern shore, in 8 or 9 fathoms. Your best mark for anchoring is, *Pedro Bluff* shut in about a cable's length of Parratee Point, in  $9\frac{1}{2}$  fathoms, with the town bearing about N. E. by E.  $\frac{1}{4}$  E. There is a very dangerous reef lying on the western side of this bay, with only 4 feet of water on the shoalest part; there is, also, a coral bank, nearly in the middle of the bay, with only  $2\frac{1}{2}$  fathoms over the shoalest part.

From *Luana Point*, the coast continues clear for a league and a half to the N. W. but it thence becomes foul, and so continues to Bluefield's Bay, &c. The direct course and distance, clear of danger, from Luana Point to South Negril, the S. W. end of Jamaica, are W. N. W.  $\frac{1}{4}$  W. nearly ten leagues.

\* **BLUEFIELD'S BAY**.—This part of the coast is environed by reefs; and the anchorage here for large ships is without a rocky ledge, which stretches from Crab Pond Point to the west of Bluefields, and joins the reef of Savannah la Mar. Vessels, coming from the eastward to anchor in the bay, must keep down by the outside of the reef, or keep the land to the eastward open of the point, until the leading-mark is brought on, which is the overseer's house a little open to the eastward of the tavern, bearing N. E. by E.  $\frac{1}{4}$  E. For anchoring, bring the overseer's house and tavern in a line, N. E. by E.  $\frac{1}{4}$  E. and the easternmost point E. S. E. Ships, drawing 16 or 17 feet of water, may sail over the rocky ledge, in  $3\frac{1}{2}$  or 4 fathoms, with the overseer's house and tavern as above, until over the ledge, which may be known by finding a sandy bottom, and a depth of  $5\frac{1}{2}$  or 6 fathoms. The watering-place is to the northward of the Bluff Point, on the lee side of the bay: water may also be obtained at a stream off Bluefield's River, near the tavern.

In steering in, keep the lead going, and be ready to anchor, as the water shoals rather suddenly.

**SAVANNA LA MAR**.—The coast from Bluefields to Savannah la Mar is rocky, in some places to the distance of two miles from the shore. The entrance to Savannah la Mar is very narrow, and lies between a small reef, called the Middle Ground, (on which there is a depth of only 4 feet) and another reef having 7 or 8 feet over it. In the channel there is a depth of 19 or 20 feet. The leading-mark in is, a large gap on the high land, called the Dolphin Head, in a line with a remarkable large tree on the low land, to the eastward of the town, and bearing N.  $\frac{1}{4}$  W. This mark leads close to the Middle Ground, which will

\* South, four leagues from Bluefields, lies a rocky bank, discovered in 1821, with from 13 to 20 fathoms on it.



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be seen. After passing the latter, haul to the eastward, and anchor in 17, 18, or 15 feet of water. This channel should never be attempted without a pilot.

A mile and a half to the westward of the former channel, is the *Great Channel* of Savanna la Mar, which is a mile in breadth, and has a depth of 24 to 19 and 15 feet towards the shore. To sail through, in mid-channel, it is only requisite to bring the fort on, bearing N. N. E.

On the southern extremity of the bank extending from shore, between Savanna la Mar and John's Point, the British ship *Monarch* struck, in 1782, upon a bottom of coral. This extremity lies with John's Point bearing N. W. by W. ¼ W. and will be avoided by keeping one-half of the high land of South Negril open to the southward of John's Point.

In traversing hereabout, it is necessary to be very particular in the use of the lead; for the bank, which extends along the front of Bluefields, and thence to opposite Savanna la Mar, &c. is rocky, and has, on its edge, from 20 to 24 feet of water; and on it, as on the White Banks, there are many shoals, with little water on them, some of which uncover, and many have breakers. Without the edge of the reef, and very near to it, are 5 fathoms of water, which augments to 13 fathoms, at three-quarters of a mile from the edge of the bank; the depth, therefore, is the best guide, for, when you get from 2 to 10 fathoms, you will be from one-third to half a mile from the edge of the reef; and when you get 13 fathoms, you will be three-quarters of a mile from it; and, pursuing your route, you should not keep in the depth of 8 to 10 fathoms, but in that of 13 to 15; for only in the vicinity of the anchorage they are for taking, should vessels get into the first of these depths. The anchorage of Savanna la Mar is of the same nature as that of Bluefields: large ships must anchor outside the reef, and, in such a situation, they will not be sheltered from the sea, from east round to S. by W. It seems probable that such will very seldom come to this place, because they here run much risk of losing the anchor, as, the instant there is the least appearance of the wind freshening, they must make sail. Such vessels as do not draw more than 12 or 13 feet of water, may anchor upon the bank, and behind (or in the lee of) the reefs, in 15 or 16 feet of water, with the town bearing N. N. W. ¼ W. nearly three-quarters of a mile distant. You may cross over the edge of the bank so soon as the wharfs at Savanna la Mar bear N. W. by W. which will be three-quarters of a mile to windward of the Eastern Channel, (that is, if the vessel is on the edge of the reef, or near it) and sending a boat, to be placed to the westward of the Middle Ground; it will serve for a guide and buoy; and then you have only to shave close to the boat, as the mean to keep clear of the reef to leeward. The boat may proceed with the leading-mark as above, or may steer northerly until she comes to the edge of the reef, which runs along to the east of the anchorage; and, keeping along the southern edge of this reef, she must thence steer N. W. ¼ N. so soon as the wharf of Savanna la Mar bears on that rumb; with this course she will pass over the rock.

**WESTERN END of JAMAICA.**—From St. John's Point to South Negril, the coast is bold-to, or high and steep. The indent between South and North Negril is called Negril or Long Bay, and affords tolerable anchorage. Close to the south side of North Negril is Negril Harbour, a small harbour, with good anchoring ground for small vessels; and, to the north, are Orange Bay and Half-moon Bay, places fit for Droggers, &c. Six miles to the N. E. from North Negril is Green Island Harbour, and, about 2½ miles from the latter, is Davis' Cove. These are places seldom resorted to, but by those who go thither on purpose to load, and have pilots.\*

Between Negril and North Pedro the coast is bold, excepting at Green Island, which is low, and environed by a reef, nearly even with the water. From Pedro Point to the harbour of Lucea, vessels may stand within a mile of the shore.

Mr. Town says, a ship being off the west end of Jamaica, and bound to any port on the north side, should endeavour to round the points, called South and North Negril, as close as she can; for the current, in general, sets to the N. E.

\* A rock, with 24 feet water on it, was seen some years since by one of the ships in a convoy lying-to, about, as well as I can recollect, 40 miles west of Negril Point, Jamaica; and I am pretty certain it was in lat. 18° 24'. It was noticed in public orders at Port Royal.



If proceeding for the Harbour of Lucea, you may know its entrance by a remarkable notch in the mountain, called the Dolphin-Head. At a little to the westward of the harbour there is, also, a remarkable white spot in the land, which may be seen eight or ten miles off.

**HARBOUR of LUCEA.**—This harbour is one of the best on the north side of the island. It is safe, there being little danger in sailing in or out. The N. E. point is called Lucea Point, and, on the western point, stands the fort. Vessels, having opened the harbour, steer directly in, only giving the Fort Point, on the western side, a birth, as a reef stretches from it, on the extremity of which there is, generally, a buoy. To sail in, bring the remarkable mountain, called the Dolphin Head, open to the westward of Barbara Hill, which has a house on the top of it, and is on the east side of the harbour, bearing nearly S. by E. Continue on, in this direction, until the fort bears West, when you will be within the Fort Reef. Hence proceed towards the town, on the west, and anchor in 5 or 6 fathoms, muddy bottom, with the fort bearing from N. by W. to N. N. W. and Lucea Point, at the eastern side of the entrance, from N. N. E. to N. N. E. 4 E.

Those approaching this place from the *eastward*, must observe to keep at least three miles from shore, until passed Buckner's Reef, which lies off Mosquito Cove, and sometimes breaks. It is also to be observed that, around Lucea Point, and to the north-eastward, there is a rocky flat, extending out to a considerable distance.

Within the point, the reef extends to a cable's length from shore. It is nearly steep-to, and the heads of coral sometimes appear above water.

For passing clear of the edge of the eastern bank, the mark is, Malcolm House, which stands on a small hill or rising at the east end of Lucea Town, brought on the east end of the fort, and kept so until you bring the Dolphin Head, as already mentioned, to the westward of Barbara Hill. This mark leads through 8, 7, and 6, fathoms, then deepening to 13, and shoaling again into the harbour.

**MOSQUITO COVE**, an excellent harbour, lies three and a half miles to the eastward of the harbour of Lucea. Here a hundred sail of merchant-ships may lie securely from all winds. The channel, at the entrance, is little more than a cable's length in breadth, but widens inward, to where the harbour has from 7 to 4½ fathoms. The bottom, in general, is muddy. To sail in, you may pass to the eastward of Buckner's Reef, or over its eastern end, in 5½ or 6 fathoms. The course into Mosquito Cove is nearly S. E. by S. but it should not be attempted by a stranger without great caution, as the entrance is much contracted by a reef from the eastern side.

**MONTEGO BAY.**—The northern point of Montego Bay lies in latitude 18° 32'. This is a good bay with the wind from N. N. E. to the eastward and southward; but it is open to the north and west; and the northerly wind, in December and January, has frequently driven vessels on shore.

To sail in, from the eastward, give the point, on coming down, a birth of two miles, in order to avoid a reef, which extends from it, and which may be distinctly seen from the bows, when in 4 or 5 fathoms. When you open the town, you may approach the reef, which is pretty steep, into 10, 9, or 8, fathoms, and will see the bottom. You now haul round towards the town, but must not venture to anchor, until you have well shut in Sandy Point (without the bay on the north) with Old Fort Point. For, with Sandy Point in sight, there are from 35 to 30 fathoms, and the bank is so steep that the anchor will not hold. If a ship drives off, she will, with a sea-breeze, be in danger of grounding on the lee reefs. The mark for the best anchorage is the barracks upon the hill in a line, or nearly so, with Ledwick's Stone Wharf, on the N. E. side of the bay. The ground here is good, in 11, 10, and 9, fathoms. On entering from the westward, with a fair wind, the church bearing east, leads directly to the anchorage.

The following description and directions are those of Mr. Town:—*Montego Bay* affords good anchorage for 20 or 30 vessels; except during the prevalence of strong north winds, which generally commence in the beginning of November, and end in the latter end of February. With the general trade-wind, which is from the N. E. to the E. N. E. ships will ride here with perfect safety. There is a small harbour, or cove, in the N. E. part of the bay, which will hold from

10 to 14 vessels. This is the only safe place for ships during the strong north winds.

On coming into this bay with the sea-breeze, which is from N. E. to E. N. E. you should endeavour to get well to the eastward before you attempt to run in.

The leading-mark for clearing the Old Fort Reef, which extends from the anchorage in the bay to the northward of the northernmost point, is the Boge Road end on, bearing South, or South a little westerly. Proceed with this mark until Montego Church comes open of Old Fort Point; then haul in for the S. E. part of the town, and when Sandy Point is shut in with Old Fort Point, you may anchor in from 17 to 10 fathoms, fine sand and mud. The reef off and to the northward of Old Fort Point lies nearly one mile and a quarter from the shore; advance, therefore, no nearer to the point northward of Old Fort Point than two miles.

About 5 miles to the westward of Montego Bay is a small creek, a bay without, which is called *Great Roads*. In this bay merchant-vessels lay to load; there being a shoal extending nearly the whole of the way across, which affords good shelter for ships lying here during the north winds.

All ships, lying either in Montego Bay or at Great Roads, pay harbour dues, at the rate of one shilling per ton, register tonnage; and, in the event of any ship's going into the Inner Harbour, at Montego Bay, she is charged one half-penny per ton, for every day that she may lie in this harbour, in addition to the fee that is paid for anchoring in the bay.

If bound from Montego Bay to the eastward, I would recommend leaving the bay in the evening, so soon as the land-wind comes off, which will generally run you clear of the bay, and in a good offing for the sea-breeze. It is generally recommended to beat to windward close to the land, in order to have the advantage of the eastern currents; but I am of opinion that the only advantage you have by keeping in shore is, that you meet the land-wind, which sometimes will carry you well to the eastward during the night; for the current sets to the westward as often as to the eastward. If your destination be Falmouth Harbour, endeavour, if by night, to keep the shore close aboard; and the land-wind will lead you to the eastward.

**PEAK or TARQUINO.**—*In working hence to windward*, in clear weather, when Cuba is visible, a remarkable hill will be discerned. This is the *Pico de Tarquino*, the highest land on this side of Cuba, which bears from Montego Point N. E.  $\frac{1}{4}$  N. distant thirty-five leagues; from St. Anne's Bay, N. by E. twenty-eight and a half leagues; and from the east end of Jamaica, N. N. W. forty leagues, by which you may judge how far you are to windward on any other bearings. The Peak of Tarquino, &c. have already been described in page 222.

**FALMOUTH HARBOUR, or MARTHA BRAE.**—This harbour, which lies six leagues to the eastward of Montego Bay, is a bar-harbour. Its channel, or entrance, is very narrow, not more than 16 or 17 feet in depth, and too intricate to be attempted without a pilot. The town of Falmouth is situate on the western side of the harbour, throughout the greatest part of which there is a regular depth of from 5 to 10 fathoms.

**MARABONA BAY.**—At about three leagues to the eastward of Falmouth is Marabona Bay, which is very remarkable. It has a low pleasant plantation close to it; and on the hill over it, is a large house or castle, formerly the residence of Brian Edwards, Esq. the historian of the West Indies. Within a league to the eastward of this is the small harbour of Rio Bueno.

**RIO BUENO and DRY HARBOUR.**—*Rio Bueno*, which lies nearly four leagues to the eastward of Falmouth, is a bay, exposed to all winds between N. and W. N. W. and has but indifferent anchorage, the bank being steep. It is seldom visited by other than merchant-vessels, which go there to load. From the entrance to the place of anchorage, the distance is about two miles. The harbour is formed by two reefs. A ship may lie with the point N. N. W.  $\frac{1}{4}$  W. in 8, or 7, fathoms. *Dry Harbour*, which lies three miles more to the eastward, is, however, a good harbour for small vessels, although its channel be narrow, and has a depth of only 16 feet.

**ST. ANNE'S BAY.**—The entrance of this bay lies in lat.  $18^{\circ} 31'$ , long.  $77^{\circ} 15'$ . It is narrow, and lies between two reefs, which have on their ridges 3 and  $3\frac{1}{2}$  fathoms, deepening abruptly in the channel to 10 and 11 fathoms. The entrance is less than half a cable's length in breadth, and lies with the barracks, on the rise of the hill, bearing nearly S.  $\frac{1}{2}$  E. but it is not to be attempted without a pilot. With a northerly wind, a stream of considerable strength sets outwards through the channel: this is occasioned by the great quantity of water thrown over the reefs by the swell. In passing in, as the water is clear, vessels generally pass close to the western reef, on the starboard side.

Mr. Town says, St. Anne's Bay lies about twelve miles to the eastward of Dry Harbour. This bay may be known by its having a very regular row of cocoa-nut trees around it, close to the water's edge, and the town of St. Anne, which stands on the side of a hill on the S. E. side of the bay. The houses stand close to the water's edge on the western side, and the plantations are, in appearance, in a state of cultivation much superior to any westward of this place. The harbour of St. Anne is small, and is close to the town. You may anchor here, in from 6 to 9 fathoms, good ground.

**OCHO RIOS**, which lies seven miles to the eastward of St. Anne's, is an anchorage open to north and N. W. winds. To enter, you sail by a reef which spits off from the eastern side of the bay, hauling up and bringing the westernmost part of it N. N. W.  $\frac{1}{2}$  W. to N. W. in 7 fathoms. There is another reef to the southward, but as the water is very clear, it will be seen. This is a small harbour, frequented by merchant vessels only, which go there to load.

**ORA CABECA**, 10 miles to the eastward of Ocho Rios, is another anchorage, exposed, like the former, to N. and N. W. winds. To sail in here, when advancing from the eastward, first make Galina Point; in order to which, when off at sea, bring the westernmost high land of the Blue Mountains S. S. E. which, thus kept on, will lead to the point. To anchor, give the small reef on the east side a birth, and when the westernmost bluff point bears west, or W. by N. anchor in  $5\frac{1}{2}$ , 6, or 7, fathoms.

Captain Livingston says, it is not generally known that, in **ALLAN'S HOLE**, which is formed by reefs level with the water on the one side, and the eastern shore of the bay on the other side, vessels, drawing from 10 to 12 feet, may be as secure as in any harbour in Jamaica. When once inside the reefs, the bottom is quite clear, and the reefs completely break the sea off. Vessels drawing not more than 12 feet of water may warp into this place. At the north end of the reef is an islet, with bushes on it, divided from the main land by a narrow and shallow channel. Allan's Hole has two entrances; one through the reef, which is extremely narrow, and one by the point of the reef; but neither ought to be attempted without a pilot.

**GALINA POINT** lies four miles to the eastward of Ora Cabeca. This point is low, but the land to the southward of it is high; and, in making it from the westward, a remarkable round hill, that stands within the point, will, on its first appearance, form the point; but, on a nearer approach, the land slopes off to the northward to a low point.

**PORT MARIA.**—The entrance of this harbour lies in lat.  $18^{\circ} 27'$ , and long.  $76^{\circ} 53'$ . Its anchorage is open to N. N. E. north, and N. W. winds. In coming in, the high island, named Cabarita Island, must be seen, and its northern part should have a birth of two cables' length. You may haul into the bay, and anchor with the N. W. point of the island N. E. or N. E. by N. at the distance of about a cable or a cable and a half's length. Small vessels, drawing 10 feet of water, may anchor between the island and the main. The bottom is foul in the outer part of the bay, and many ships have injured it by heaving over their ballast. There is not room for more than 10 or 12 vessels to lie here, as the foul ground extends nearly over the whole harbour.

From Port Maria the coast tends E. S. E. six miles, to Blowing Point; thence it continues S. S. E.  $\frac{1}{2}$  E. about five miles, to Anotta Bay.

**ANOTTA BAY**, which lies about eleven miles to the S. E. of Port Maria, has its anchorage open to north and N. W. winds. To sail in, give the reef on the eastern side, which is called the *Schoolmaster*, a sufficient birth; then steer

down until you bring the tavern, a building easily known, S. by W. or south. When advanced within the Schoolmaster, haul a little to the eastward, and have the anchor clear, the bank being steep and narrow. The first sounding will be 10 or 9 fathoms. Let go in 7 fathoms, which is about a quarter of a mile from shore, with good holding ground. Be cautious of anchoring on the western edge of the bank, as it will not hold, and you may be in danger of getting on shore to the westward.\*

Of Anotta Bay, Captain Livingston says, "This is the wildest road I ever saw. No vessel ought to enter it, without being uncommonly well found in ground-tackle. They ought, by all means, to have chain cables. The following is from memory only: The reef off Gibraltar Point, the *Schoolmaster*, is much more dangerous than is generally supposed. The late Mr. Angus M'Donald, the harbour-master, informed me that it extends fully four and a half miles out; and some places have only from 6 to 9 feet of water, while there are gaps, or gat-ways, through them, with as many fathoms."

PORT ANTONIO, which lies about eight miles from the N. E. end of Jamaica, was formerly a king's port where there are still to be seen the remains of a carbening wharf, &c. It is formed by nature into two harbours, divided by a peninsula, on which stands the town of Titchfield, to the north and N. W. of which lies the island called Navy Island, extending east and west, and about half a mile in length.

To sail into the eastern harbour, first bring the eastern part of the Blue Mountains to bear about S. S. W. and steer in that direction until you approach near Folly Point, the east point of the eastern harbour. Next bring the church (which is a large square building on the side of a hill in the S. W. part of the bay) on with the second wharf from the westward, bearing S. by W.  $\frac{1}{2}$  W. and you will thus pass safely into the harbour. But observe that, on approaching the fort, (which stands on the western side, upon the point of Titchfield Peninsula) to open the church to the eastward of the wharf. When the fort bears N. W. you may anchor in 8, 9, 10, or 11 fathoms, good holding ground. The bottom is, indeed, so stiff, that it is rather difficult to get up the anchors.

The preceding directions must be particularly attended to, in order to avoid a reef, which stretches from the eastern end of Navy Island, as well as from the point of the peninsula. The eastern side of the harbour is shoal; and there is a reef nearly in the middle, having over it only 8 or 10 feet of water.

To sail into the western Harbour, after having brought the church well open to the eastward of the fort, proceed, under easy sail, into the entrance of the channel between Navy Island and Titchfield, bringing a long building, which is a store-house, standing on a hill to the westward, open of the south-western point of Navy Island. This mark is to be kept on until the church appears open to

\* A brig of war was lost on the outer reef, a few years ago. I have often heard her name, during my residence at the bay, but it has escaped my memory. She was so far out, that no one had any suspicion that she was in the least danger; and it was only in consequence of her loss that they discovered the reefs lay so far out. Mr. M'Donald, harbour-master and senior-pilot at the bay, surveyed the reefs; but he informed me, his survey was forwarded to Port Royal, to be produced at the trial of the officers of the brig which was lost. What I have stated above was from his information.

The earthquake felt in Jamaica, in 1811, was particularly severe at Anotta Bay. Part of the bottom of the bay, about one-quarter of a mile from the shore, sunk; and where vessels used to anchor, there is now no bottom to be found; or, at least, I have been assured none has been found, though I heard somebody at the bay say that it has been, at 170 fathoms. When this spot sunk, a vessel was riding, with a kedge out in that direction, to steady her; in an instant, as an eye-witness assured me, she seemed as if going down stern foremost, and then suddenly rising again, swung round at once. This, it was soon discovered, was occasioned by her kedge being swallowed by the bottom of the bay when it sunk, and the sudden rise of the vessel again was caused by the hawser, bent to the kedge, giving way, or the timber to which it was attached, yielding.

Anotta Bay is an extremely unhealthy place; so is Port Maria; But Ora Cabega is a tolerably healthy situation.



the westward of the peninsula; then haul round to the S. W. and anchor in from 7 to 4 fathoms, where there is good ground.

A channel, called the Hog Channel, leads directly from sea into the western harbour, from the west end of a long reef that extends from Navy Island; but it is crooked and narrow, has only 13 or 14 feet of water in the western part of it, and is therefore used only by small vessels.

The tides here are not regular, being influenced by the winds. The variation in 1771 was  $7^{\circ} 15'$  E. and it is still nearly the same.

Of Port Antonio, Mr. Town says, the western harbour is the best; the eastern being open to the north winds. When entering the port, with the sea-breeze, keep as nearly in mid-channel between Navy Island and the main as you can. Run in with the leading-mark on, and anchor in about 6 or 7 fathoms. If in a small ship, anchor in 4 or 5 fathoms, as the ground without the latter depth is foul.

**PORT MORANT.**—This is a good harbour, but the reefs extend to the distance of half a mile from shore, on each side of the entrance; and the breadth of the channel between is only a cable's length and a half. As the direction of the entrance is N.  $\frac{1}{2}$  W. it can be attempted only with the sea-breeze, or between the hours of ten and two in the day. To sail in, a ship must lie north or N. by E. until the leading-mark is on. This mark is a remarkable house, which stands upon a hill, in a line with the east end of the easternmost red cliff, bearing N.  $\frac{1}{2}$  W. With this mark you may sail into the bay with safety. Take care not to approach too near the reefs, but bring the marks exactly as described. You will thus have 9, 8,  $7\frac{1}{2}$ , 7, 6 $\frac{1}{2}$ , 6, 5, and quarter less 5 to 4 fathoms of water. There is anchorage in 8 $\frac{1}{2}$  and 7 fathoms, with the leading-mark on, and Pero Battery, which is on the eastern side, bearing E. S. E.

### *The Islands called the Caymans, with the neighbouring Shoals.*

The CAYMANS are three islands, lying between the meridians of  $70^{\circ} 30'$ , and  $81^{\circ} 35'$  W. and parallels of  $19^{\circ} 10'$ , and  $19^{\circ} 45'$  N. The larger and westernmost is named the *Grand Cayman*, the second, the *Little Cayman*, and the easternmost, the *Cayman-brack*.

The *Grand Cayman* was regularly surveyed by Mr. George Gauld, in the year 1773; but that gentleman ascertained neither its true latitude nor its longitude. Captain Livingston, however, by observations taken 5th August, 1817, proves the key near the S. W. point to lie in  $19^{\circ} 14'$  N. and the longitude of the east end has been determined by more than one observer; it is  $81^{\circ} 5'$  W. hence we gain that of the S. W. key, by survey,  $81^{\circ} 29'$ .

\* Observations by Captain James Wallace Montecath:—"In latitude  $19^{\circ} 13'$ , the N. E. point of Grand Cayman, bearing N.  $20^{\circ}$  W. S. W. point, S.  $84^{\circ}$  W. and Eastern Reef, north, true.

"Longitude of ship, in time,  $81^{\circ} 5' 45''$ : by lunars,  $81^{\circ} 3' 1''$ : mean longitude of the East Reef,  $81^{\circ} 3' 53''$ . Longitude of the east end of the Cayman, by Captain Wilson, of Greenock,  $81^{\circ} 5'$ : by chronometer,  $81^{\circ} 3'$ : Mean longitude, by Captain Wilson, as in Nautical Almanac,  $81^{\circ} 4'$ .

"After these observations were made, the ship ran on a west course for 15 minutes, at the rate of four knots, 6 fathoms; which gives nearly one and a quarter mile departure; equal to  $1^{\circ} 20'$  difference of longitude; which, added, places the east end of the island in  $81^{\circ} 5' 13'$  W."

Captain Montecath repeated his observations in latitude  $19^{\circ} 13'$ , when the easternmost point of Grand Cayman bore north; and here his lunars and chronometer exactly agreed. Again, in latitude  $19^{\circ} 15'$ , with the east end of the island bearing W. by N. five miles, the results of four sets, lunar and chronometric, gave a difference of only  $2' 52''$ . The longitude of the Caymans may, therefore, be considered as finally settled.

"At the time the positions of these points were ascertained, the atmosphere in general was clear; the barometer and thermometer stood, on an average, from 29.15 to 30 inches, and from  $60^{\circ}$  to  $70^{\circ}$ , from which maximum the corrections for refraction were made, the instruments being excellently adjusted."



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The GRAND CAYMAN is about eight leagues long, and two and a half broad. The S. E. end lies in latitude 19° 16' N. and the N. E. point in latitude 19° 22'. The eastern end is surrounded by a reef, extending a mile and a half from shore, which thence extends along the north and south coasts. Off the S. W. point there is, also, a key and reefs, to which a good birth must be given. The N. W. or west point is three leagues from the S. W. point, and between is the spot called the *Hogsties*, where there is a small village, off which you may anchor, in from 12 to 7 fathoms, by bringing the southernmost house to bear E. by S. at half a mile from shore. The bottom is rocky, but you may see the ground, where you let go, as the water is very clear; it will, however, be proper to buoy up the cables, and steady the ship with a small anchor.

Captain Dalzel, in some observations on passing the Grand Cayman, has said, "The island is low, covered with coco-nut and other trees, and of greater extent than people who never saw it generally imagine. The north side forms a bay, across the mouth of which runs a reef of sunken rocks, which may be readily seen in the day-time, before you are near enough to run any kind of risk. It is totally impossible for any thing but small craft to anchor on this side, for there are no soundings close to the reef, and the deepest water over it is 8 feet, although there are 2 or 3 fathoms within it. The small vessels of the island go in here, as they do, likewise, on the south side, which is also foul, and not to be approached by strangers.

"The west end of Grand Cayman, which is best inhabited and mostly resorted to, is the only place where large vessels can come to; though, even here, it is but indifferent anchorage: for, without the utmost care, you are in danger of getting your cables cut by the rocks; or may, perhaps, let go your anchor in a place where it cannot be purchased. Our anchor got under the shelf of a rock, and we had two days hard work to purchase it; nor could we have weighed it at all, if we had not borrowed a small anchor, (we rode by our only anchor) and backed with a swivel. This luckily hooked another shelf: we hove upon the cable that was fast to it, and then with much difficulty purchased our own anchor from under the rock. We came to in 11 fathoms, but most of the inhabitants say that 8 fathoms is the anchorage.

"Your first soundings going in are about 17 fathoms, three-quarters of a mile off shore; after which you shallow your water 2 or 3 fathoms, every ship's length, till you get into 8 fathoms, where you may come to in one of the white holes. These holes are patches of sand among the rocks, which you can easily see when looking over the side. Let a careful person look out forward, to pick a large hole, and be sure you let go your anchor well towards the weather side of it, that, when you veer away cable, it may not come upon the rocks. If it should come to blow, and you are in danger of dragging your anchor towards any of the shelves, you must heave it up again. You can plainly see your anchor as often as you please, and you can easily distinguish the rocky bottom from the white holes, by its blackness. Observing the above directions, you cannot get amiss: perhaps you will do best not to take a pilot, as they are not over careful.

"The west end forms a kind of double bay; the southernmost is the road. Give the middle point a good birth, as some rocks lie off it; you need not heave the lead until you see the bottom, for you will get no ground till then."

The Grand Cayman is inhabited by many persons, descended from the old buccanniers, exclusive of negroes. The climate and soil are singularly salubrious; the people are vigorous, and commonly live to a great age. They raise various produce for their own use, and have some to spare. As navigators, their chief employment is to fish for turtle, and to pilot vessels to the adjacent parts.

Refreshments may be obtained here; as fowls, turtle, yams, plantains, coco-nuts, &c. but no beef nor mutton. Water is procured by filling a bucket about twenty yards from the beach, the well bearing N. N. E. or N. by E. from the anchoring place.

From the S. W. end of the Grand Cayman to Cape Corrientes, the true bearing and distance are N. 47° W. 74 leagues; and, to Cape Antonio, N. 51° W. 84 leagues.

Of the Little Cayman and Cayman-Brack, we possess no particular description, more than they are low, resorted to by the turtlers, &c. and separated by a good and deep channel. From the N. E. point of the Grand Cayman, the west end of the Little Cayman bears N.  $76^{\circ}$  E. true, 19 leagues.

#### Albion Bank, Misteriosa, &c.

Of the several shoals lately discovered in different parts of the West Indies, one of the most remarkable lies between Jamaica and the coast of Yucatan, and was discovered in 1816, by the ship Albion, of New-York, commanded by Geo. Randall, then on a voyage from Liverpool to New-Orleans. Captain Randall's description is as follows:

On the 8th of November, 1816, (nautical account) at noon, the latitude  $18^{\circ} 52'$  N. the mean of three observations, and longitude  $83^{\circ} 18'$  W. by lunar observations taken by me, at 16, 12, 2, Nov. 7, nautical account, the angular distance being measured between the moon and the star Regulus, with a sextant I have used for several years, and found correct. At 0h. 40m. P. M. discovered a bank; at one P. M. the ship went off its west extremity; tacked ship, and steered E. N. E. found the bank extending from W. S. W. to E. N. E. 2 leagues. My soundings commenced on its east extremity, and continued to its west. The depth of water ran thus: 25 fathoms, 20, 17, 15, 11, and 10, for three miles; thence boldened to 13, 17, 19, 25, 35, and then no bottom at 60 fathoms. This bank I think proper to denominate the Albion Bank. On the two extremities of it, the bottom exhibited coarse white sand, mixed with broken shells, and the body of the bank, for three miles, coral rock, with a small admixture of green moss, &c. The appearance of this bank, throughout its whole extent, was strikingly singular, presenting the semblance of a marble sky; insomuch that, after I discovered it, the passengers and officers were doubtful, for a moment, whether it was not the reflection of what is called, in the sea-phrase, a *mackerel-sky*; in from 10 to 15 fathoms, the bottom is so very plainly to be seen, that a person would imagine there was not more than 5 fathoms of water. The position of the V. S. W. part may be depended on, as the lunar and meridional observations were carefully taken and worked.

*Maud's Bank* was discovered on the 21st of May, 1757, by Captain Joseph Maud, on his passage from the Mosquito shore to Jamaica; on the 19th of that month, Swan's Islands were in sight at N. N. E.  $\frac{1}{2}$  E. 3 leagues; next day, at noon, latitude observed  $18^{\circ} 21'$ . At 8 A. M. on the 21st, saw a "*Dry Sand-Bank*", about a mile in length; at the same time saw the ground under us: sounded ground from 12 to 14 fathoms, fine white sand. At 7 A. M. sounded, no ground. This bank lies in latitude  $18^{\circ} 35'$  and longitude from London,  $83^{\circ} 12'$ . At noon, latitude observed,  $18^{\circ} 48'$  N. If Maud's position be correct, the two banks are 5 leagues apart N. by W. and S. by E. on a true bearing, or about N. by W.  $\frac{1}{2}$  W.

The Spanish officers say that the Misteriosa Bank was found by Don Tomas Nicolas de Villa, when sailing from Truxillo to Bataviano, in April 1787, he having sounded in 13 fathoms, on white sand and rock. He inferred, from his latitude observed at noon, that the bank lay in latitude  $18^{\circ} 48' 42''$ , and he deduced his longitude from that of the Punta de Castilla, of Truxillo, as previously given by Don Tomas Ugarte, which, with a requisite correction, gives for the longitude of the bank  $83^{\circ} 47'$ . Again, in April 1805, Don José Maria Merlin, commanding the merchant ship *La Flecha*, (the Arrow) sounded on this bank on his voyage from Cadiz to Vera Cruz. He found 10 and 14 fathoms in lat.  $18^{\circ} 52' 42''$ , and long.  $18^{\circ} 58' 36''$ . His longitude he deduced from the eastern edge of the Seranilla Bank, latitude  $15^{\circ} 46'$ , on which he sounded in 16 fathoms; and he gives the longitude, after corrections for current, &c. as  $83^{\circ} 57'$ . The mean longitude, it will be observed, according to the preceding descriptions, is  $83^{\circ} 52'$ ; but the corrected longitude of Punta Castilla (eight miles more east) gives  $83^{\circ} 44'$  W.

## CHAP. VII.

## THE ISLAND OF PORTO RICO.

This island is thirty leagues in length; and throughout this extent from east to west is a chain of mountains, with branches diverging to the north and south, and extending to the coasts. The whole are covered with wood, and in the intervals are fertile valleys and plains, watered by more than fifty rivulets, in the sands of which gold-dust has been found. The highest summits of the mountains are called the *Peaks of Layoonita*. They are often covered with snow, and may be seen from a great distance.

The capital, *St. Juan*, stands on the western part of an island on the north side, which forms a good harbour, defended by a citadel, called the *Morro Castle*, and other works. The town is populous and well built; the see of a bishop, and the residence of the governor.

The northern coast, which extends like the southern coast, nearly east and west, is but imperfectly known. It is rugged and uneven, having many rocks and islets, on which the sea breaks heavily. Fifty miles north from Porto Rico, Capt. Baxter, in brig Robert, struck on a rock, and remained several hours. The town of *St. Juan*, which stands at the distance of 9 leagues from Cape *St. Juan*, is the N. E. point of Porto Rico.

There are no large bays either on the northern or southern coast, and a vessel may generally run along the former without any risk, at the distance of three miles, and along the south coast at five; only observing, in the latter case, to give a sufficient birth to the small isle called *Dead Chest*, which lies about half way between the S. E. and S. W. points of Porto Rico.

The Harbour of *St. Juan* is very capacious, and the largest ships may lie there with the utmost safety, in 5, 6 and 7 fathoms. The entrance is along the island on which the town is erected, and between the *Morro Point* and three islets, called the *Cabras* or *Goat Islands*. South of the latter is a smaller islet, occupied by a little square fort or castle called the *Canuelo*, which defends the western side of the harbour. The channel is generally buoyed.

The western and southern sides of the harbour are flat and shoal. The western side of the entrance is rocky, but in the channel the ground is generally of gravel and sand, with a depth of 5, 6, 7 and 8 fathoms. From the south side of the town, a low point of land extends to the southward, and is surrounded by a shoal. Ships generally ride to the eastward of this flat, and out of the wash of the sea, occasioned by the trade-wind, which commonly sets directly into the harbour.

If you make the harbour with the wind southerly, you must run into the channel with all the upper sails well set, in order to preserve your way, when you come under the lee of the *Morro*, and have a boat out for towing, or to carry out a warp, both of which are frequently necessary. It is high water in the harbour at 8h. 21m. on the full and change, and the greatest rise is about one foot and a half.

Off the *Eastern Coast of Porto Rico*, are numerous keys and rocks which cannot be approached by large vessels, and therefore serve as a rendezvous for smugglers, &c. Before these are the isles *Culebra* and *Vieque*, or *Snake* and *Crab Islands*. The passages among these isles and rocks are generally deep; but no one may venture in who is not intimately acquainted with the place.

S. W. of Thomas Harbour, 7 or 8 leagues, and 8 or 4 south of Great Passage Island, lies *Crab Island*, so called from the great quantities of crabs found there; is of a moderate height, has a rich soil, and is nearly covered with trees. The west end, on the N. E. side is low and smooth; but towards the S. W. are hills, and from those hills westward, low broken hummocks.

From the west end of Little Passage Island to the east end of Crab Island, the course is S.  $\frac{1}{2}$  W. 5 leagues,  $5\frac{1}{2}$  fathoms one mile from the shore. In going to Crab Island, be sure to run down the south side of it, for the north part of it is foul. You may sail within two or three miles of the shore all the way down, till you come to the west end, and then you will see a low sandy point; anchor on the south side of that point; you will not have above  $3\frac{1}{2}$  or 4 fathoms, 2 miles off. You may run in till you bring that low sandy point to bear N. by E.  $\frac{1}{2}$  E. and the south point of the bay S. E. then you will be one and a half mile from the shore, in 4 fathoms water. Here is plenty of fish to be caught with a seine on the north side of the low sandy point, in the morning, and good wood of different kinds: water is to be had about half a mile to the southward of the low sandy point, a little way from the west side.

Crab Island is about 5 or 6 leagues long, and 2 broad, and lies about 5 leagues from Porto Rico.

CALHOUN, or SERPENT'S ISLAND, sometimes called the *Great Passage Island*, is more than six miles in length. It has numerous reefs and keys about it, which require a large birth, when passing. Off its eastern side is *Culebrita* or *Little Passage Island*, from the south end of which a dangerous reef extends to the S. S. W. and S. W. three miles. To the west of the southern part of this reef is the harbour of *Culebra*, which is two miles in extent from the entrance. There are two channels into this harbour, which are divided by a bed of rocks, and bordered with reefs, but the interior is clear and secure. Great caution is required when entering; but a pilot lives in the port. Plenty of wood, water and fish, may be obtained. The neighbouring keys are famous for the great number of tropic birds which breed here.

The course through the Virgin's Passage, on the east of Vieque and Calrit, is N. W. by N. or rather N. N. W. in case of a calm and lee-current; the western side being foul, and without wind, it is dangerous. Continue on this course until Cape St. Juan, the N. E. point of Porto Rico, bears W. by S. or W. S. W. and you will be clear of all danger.

THE SOUTHERN COAST.—The following remarks have been abstracted from the journals of Captain *Hester*, and of the *Iris*, French frigate, in 1769, &c.

"At about four miles from the coast, half way down the island, is the small, but remarkable and conspicuous isle, named *Caxa de Muertos*, or the *Coffin*. From a certain point this isle appears like two great flattened balls, separated by a broad valley. The shore of the isle towards Porto Rico, is flat and sandy; the south side is high and stony; there is no fresh water on it, nor trees of any kind, but for fuel. Father Laval has, however, remarked, that by digging the sand a little below the mark of the highest tides and surf, fresh water might be found here, as in the other sandy bays. Caution must be observed in not digging too deep, as, at too great a depth the water is brackish. The fresh water thus found is supposed to be rain water, which having strained through the sand, has been kept by its specific gravity, above the sea water, which is always found when the bottom of the hole is on the level with the ocean. This is a good place for fish and turtle, as the latter lay their eggs in the great sandy bays. The island is much frequented by the inhabitants of Porto Rico.

Ships sailing along this coast are exposed to sudden calms, as the island intercepts all breezes between the north and east.

If you are bound down the south side of Porto Rico, observe you will see the S. E. point of that island when lying at anchor at Crab Island; it bears from thence S. W. by W.  $\frac{1}{2}$  W. or W. S. W. about  $4\frac{1}{2}$  leagues, and is called *Pasqua* or S. E. Cape. You may run down till you come abreast of that cape, within three or four miles off it, and then steer W. and by the time you have run three leagues down past the cape, and it bears N. E. you will see a large breach, or shoal, two or three miles in length, which lies three or four miles from the coast.



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By keeping a mile or two without the breach, in running down, you will descrie a small building by the water side, which is a guard-house: and, by running down, as directed, until the guard-house bears N. or a little to the eastward of that bearing, you may haul in N. or N. by E. for it, and anchor in 4 fathoms, with the house bearing N. or N. by E. one mile distant, and the west end of the breach S. by E. This place is called *Guayamo* or *Yamma Bay*, and is much frequented, though there is no other shelter from the effects of sea breeze than the reef. In going in, although you give the west end of the reef a good berth, you must keep the lead going; the soundings are irregular, from 5 to 7 or 8 fathoms, whence it shoalens gradually in shore. The land by the water side is low; but up in the country high and uneven as before explained. In going out of *Guayamo Bay*, run S. S. W. or S. W.

From *Guayamo Bay*, the next trading place is *Salinas*, a good place to lie in. The *Caja de Muertos* or *Dead Chest* may be seen from, and is a guide to it. When at the distance of from two to three leagues from *Guayamo Bay*, you may steer W.  $\frac{1}{2}$  S. passing several keys to the northward, which lie near the shore; then having run to a sufficient distance, haul in for the western end of the outermost of these keys, and about a mile or a mile and a half off that end is a reef, or sunken key, which cannot be seen, but the sea breaks over it; leave this to the westward, and run with the weathermost key on board, within a cable's length; this key is bold-to, but shoaler to leeward towards the breach. The guard-house is three or four miles from this key, and may be seen before you get within; you may run in boldly for two miles towards the guard-house, and anchor within a mile of the same, in 4 or 5 fathoms, good ground, and moor to the N. W.

When at anchor at *Salinas*, with the guard-house bearing N.  $\frac{1}{2}$  E. there is a good watering place close to the water side, a kind of lagoon which will be about N. by W. from the ship, and half a mile to westward of the guard-house. The water appears white to nearly a league without the key: the soundings are from 12 to 7 fathoms, very gradual, and there is no danger.

Within the key above-mentioned, there are several other keys a little to the eastward of it; and in running in, you will see, at about three leagues to westward, two small keys at a little distance from each other, one appearing double, the other single: you leave them to windward.

In quitting *Salinas*, steer outward in the same way as you entered. When without the key, steer S. S. W. until the *Dead Chest* bears west: you may then run down boldly, giving that isle the birth of a mile. There is a small key about a cable's length from the S. W. end of the *Dead Chest*, to which a birth of a mile and a half should be given. You may then haul in, and anchor under the lee of the isle, at pleasure, in from 7 to 12 fathoms. With the west point of the small key S. by E.  $\frac{1}{2}$  E. one mile and a half distant, and the north end of the *Dead Chest* N. E.  $\frac{1}{2}$  E. there are 10 fathoms of water, at a mile from shore.

In proceeding, on a west course, towards *Cape Roxo*, that cape, when first seen, appears low, gray, and like two keys. A shoal, called the *White Grounds*, encompasses the cape, and extends to the S. W. At two or three leagues to the eastward and westward of this cape, there are 10, 12 and 15 fathoms. It is a coral bank, and close to the outer edge no bottom is to be found. The southern extremity bears from the cape S. W.  $\frac{1}{2}$  W. eight or nine miles.

The schooner *Dick*, Capt. Miles, of and for *Baltimore*, from *La Guayra*, with a cargo of coffee, struck on the *Morillos* rocks, south side of *Porto Lico*, at midnight, on the 13th of June, and was totally lost.

Nearly half way between the *Caja de Muertos* and *Cape Roxo* is the small but secure *Harbour of Gugama* which is described hereafter. Four leagues more to the east, is the village and road of *Ponce*, of which we possess no particular description.

To enter *Maya* (Porto Rico) bring the island of *Zacheo* to bear W. N. W. and steer E. S. You may approach the island within 50 fathoms. There is

\* The tracks and soundings on this shoal are those of the U. S. frigate *Congress*, Charles Morris, commander, and may be depended on.



a reef which begins about  $1\frac{1}{2}$  mile from Zacheo, and extends to Cape Roxo, forming a chain with only 10 feet water, and not to be attempted but by small vessels. In steering E. S. E. you will perceive a gully running from the mountain, made by frequent rains, without a tree or bush on it.

To anchor in *Mayagua Bay*, bring the island of Zacheo to bear W. N. W. then steer E. S. E. which will bring you in sight of the town. Going in, you will see a reef on your starboard hand; when abreast you will have soundings in 13, 12, and 10 fathoms; you may run into 7 fathoms and anchor; the extreme points of the bay will bear from S. by W. to N. W. the east part of the reef about N. W.  $2\frac{1}{2}$  miles: there is a good river for watering.

*Extract from the Journal of an experienced Navigator, along the south side of Porto Rico, and in the channel between Porto Rico and St. Domingo, &c.*

"May 19th, at 5 o'clock, P. M. we thought we desiered to N. W. and N. W. by N. the little island of Boriquem (Crab Island) situated near the S. E. end of Porto Rico. At 11, we saw the land on the larboard hand; I supposed it to be the east point of Porto Rico, which bore from us N. W. and N. W. by N. distance about 3 leagues: I steered west to run along its south side.

"May 20th.—At half past 5, A. M. we saw Porto Rico, and the Dead Chest, which is a small Island detached from the main one, and having the form of a coffin. It lies very near the middle of the south coast, and I have been assured that there is a passage for the largest ships between it and the main land.

"I ran along the land, with an offing of 3 or 4 leagues, to fetch Cape Roxo, the westernmost of the south coast of Porto Rico, and which forms, with the S. E. point of St. Domingo and Saona Island, a channel from 15 to 20 leagues broad.

"About 10 A. M. we saw the water discoloured; we were upon a shoal called the White Grounds, which encompasses Cape Roxo, and extends 3 or 4 leagues to the S. W. and 2 or 3 leagues to the eastward and westward of this cape. You have there 10, 12 and 15 fathoms. The sand at the bottom is of such a shining white, that it pierces through the water. We caught plenty of fish with the line.

"At 11, we distinguished a cape, which lies a little to the eastward of Cape Roxo: it is terminated to the south by four little islands, which seem to be one league distant from it. To the east of this cape is a small bay, called in Van Keulan's chart, by the name of Porto Guonica. The West India sloops can moor there; we saw two of them at anchor. This cape is low, and appeared at first as a detached land, but we soon discovered the low land by which it is connected with the main island. Cape Roxo, which you soon descry to the westward of this, and which is the westernmost point of the island, is still lower than the former. Between the two you distinguish a flat and very white sandy shore; it consists of the same sand that composes the White Grounds, through which you may sail, but you must not come nearer the coast than two leagues.

"In the western part of the channel, between Porto Rico and St. Domingo, and near mid-channel, are two small islands; the easternmost, which is likewise the southernmost, is called Mona: the second to the N. W. of the former, distance about  $2\frac{1}{2}$  leagues, is called Monica. You must pass, if possible, to the windward, that is to the eastward of those two islands, in order to double with more facility Cape Enganno, that forms the going out of the channel, to the west on the side of St. Domingo. When you have doubled Cape Roxo, you descry to the northward of Zacheo, a little island lying 8 or 9 leagues to the N. E. by N. of Mona. You leave Zacheo to windward, to pass between it and the small island of Mona, very near mid-channel: there is no danger but what you can see. When the wind comes from the E. S. E. or only from the east, you are not obliged to tack, you cross the channel with a quarter wind. It is sufficient to steer N. W. by N. to fetch Cape Raphael, which is the N. E. point of St. Domingo, or even Cape Samana, that lies about 8 leagues to the N. W. of the former. Samana Island, whence this cape takes its name, extends from east to west, 12 leagues: it is so near St. Domingo, that it appears to be joined with it.

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"At noon, Cape Roxo bore N. by W. distance  $3\frac{1}{2}$  leagues. It was not possible, on account of the cloudy weather, to take the meridian altitude of the sun. We steered N. W. by N. to enter the channel.

"At half an hour after 12, I could see Zacheo very plainly; I continued the same course to run along it, at one or two leagues distance. This island appears to be 800 or 1000 yards long; it is nothing more than a green mountain, on several parts of which you see some woods. I was too much to windward to see the islands of Mona and Monica, from the deck, but they could be perceived from the mast head. The wind kept to the S. E. till 4 o'clock. It is very seldom that, in sailing through the channel of Porto Rico, you go before the wind as I did."

### Description of Porto Rico, from the "Derrotero de las Antillas," &c.

"This island is 31 leagues in length from east to west, and 11 leagues in breadth in the broadest part. The N. E. point of it is named *Juan*, (St. John's head) where the range of mountains called *Luguillos* commences. The highest part of these, *El Yunque*, or the Anvil, may be seen at the distance of 68 miles. The range continues to the westward, with many intervals or openings, until it ends at the hill named *Silla de Caballo*, (Horse's Saddle,) which is to the southward of Arrecibo.

The harbour of San Juan requires a pilot. The harbour of Arrecibo is about  $9\frac{1}{2}$  leagues more to the west; it has a small town on its western side, and a good river, but is little frequented, being open to the north winds. From Arrecibo the coast tends nearly true west to the N. W. end of the island. The land here is generally low, until it reaches *Punta de Pena Agujereada* (or Point of the Holed Rock) where a kind of cliffy high land begins, which tends S. W. rather more than a mile to Point Bruguén, the north-westernmost point of Porto Rico. The coast again declines in height, and forms a convex bow to *Punta de Penas Blancas*, (Whitestone's Point) the north point of Aguada Bay.

**AGUADA BAY.**—From the Point Penas Blancas, the little town of Aguada bears S. S. E. 2 miles. In the bay before the town, or rather village, is anchorage for the largest ships, with shelter from the sea-breeze. This bay may be entered at any hour of the day, with facility and safety, but not at night, as the breeze then dies away, and a calm ensues. There is excellent water to be obtained at a rivulet which passes through the middle of the village. The situation of the latter, as given by the Spanish officers, is lat.  $18^{\circ} 25' 55''$ , long.  $67^{\circ} 0' 20''$ .

This bay is much frequented by vessels bound from Europe to Cuba, both on account of the facility with which they can procure refreshments, and because pilots for the Bahama or Old Channel may always be found here. If intending to anchor in Aguada Bay, after rounding Point Bruguén, keep about three cables length from the shore, in order to give birth to a shoal which spits out from *Punta de las Palmas*; whence to that of Penas Blancas you may approach the coast nearer, as it is very clean; and at half a cables' length from the shore, you may find four fathoms of water.

To anchor, bring Point Aguada N. N. W. 2 or 3 miles; the church tower E. N. E. the island of Zacheo W. by S. when you will be in 10 fathoms water, about three cables' length from the shore; there is a good river of fresh water; the sea in general smooth, with usual trade wind; but should the wind incline to the northward, avoid anchoring, or weigh as soon as it sets in.

At S. W. by W.  $7\frac{1}{2}$  miles from the village of Aguada, is *Point St. Francisco*, with various rocks about it. All the coast between has a beach, with many shoals formed by the rivers that empty themselves into the sea. At two cables' length from the coast are 4 fathoms of water, with bottom of rocks and sand; but there is no anchorage. At S. W. by S. rather less than half a mile from Point St. Francisco, is *Point Guigero*, the westernmost point of Porto Rico, otherwise called *El Rincon*. About it the ground is shoal, with many rocks.

*Remarks on Aguada Bay, &c. by Capt. John Mackellar, R. N.*

"The town is in latitude  $18^{\circ} 24' 57''$ , and long.  $67^{\circ} 8' 15''$ . In proceeding for the anchorage from the northward, you may run round the N. W. point of the island, about S. W. or S. S. W. within a mile of the shore; your depth of water will be 20 or 25 fathoms. Point Bruguen, the N. W. point, is a high steep cliff; about a mile to the southward of it, is *Point Palmas*, a low sandy point, covered with trees. The latter forms the north side of the bay; and in rounding, you must give it a birth of a mile, as a reef stretches off to that distance. Having rounded this reef, with the bay fairly open, you will see the town, lying in the N. E. side of the bay, with straggling houses to the S. W. for two miles. The anchorage is before the town, and near the shore. The whole of the bay is perfectly clear with the exception of the white reef (*Penas Blancas*) extending from Point Palmas; and you may stand to a quarter of a mile from shore any where, for the depth of water will not be less than 7 or 8 fathoms. The marks for anchoring are, a large house standing by itself, about a cable's length from the north end of the town. Between it and the town is a small battery of three guns. Bring this house to bear N. E.  $\frac{1}{2}$  N. the church steeple E.  $\frac{1}{2}$  S. and the north point of the bay N. by W. Here you will have 18 fathoms, and very good bottom, at about half a mile from shore. The anchorage is very good farther in shore, in from 10 to 15 fathoms. If you moor, lay your anchor in 10 fathoms, and outer one in from 15 to 18. There is also good anchorage in from 20 to 24 fathoms, but there you are more liable to drive off the bank. In shore, the anchorage is so extensive, that you can hardly err in anchoring any way before the town. The winds are frequently variable, and render it difficult to get up to the anchorage. At times the sea-breeze blows fresh over the land from the N. E. then you may beat in with ease.

In the winter months, when the north wind blows strongly, there is a heavy swell into the bay, and great surf on the beach. Large ships ought not then to anchor farther in than from 23 to 25 fathoms; they will thus have room to get under weigh, and work out in the event of its coming on to blow; and, as the west point of the bay bears from the anchorage S. W.  $\frac{1}{2}$  W. a ship will lay out with the wind at N. W. and may run through between Zacheo and the S. W. point of the island.

"Ships coming from the southward for Aguada, may also pass between Zacheo and the island, and when Zacheo bears W. by S. they will have the bay fairly open, and may work up as above; taking care to keep the west point of the island bearing to the southward of East; for off it there is foul ground all the way to the southward, as far as Cape Roxo, but all clear to the northward.

"From Point Guiguera (says the Derrotero) the coast tends S. E. by S. three and a half miles to *Punta de la Cadena*, having one small bay, named *del Rincon*, which although well sheltered from the sea-breeze has a very unequal bottom, and is full of rocks. After *Punta de la Cadena*, follows that of *Algarroba*, which lies S. E.  $\frac{1}{2}$  S. from the former. Between these points lies the *Bay of Anasco*, fit for vessels of any size, in which they will be completely sheltered from the Norths, or north winds. The coast is all beach, and the bank or shallow water which extends from it, about half a mile, is probably formed by the river Anasco, which disembogues at this place.

"The *Punta de Algarroba* is the north point of the Bay of Mayaguez and lies nearly N. by E. and S. by W. with the south point, named *Punta de Guanagivo*: the distance between them being about four miles.

"The Anchorage of Mayaguez is well sheltered from the Norths, and fit for brigs and ships, provided they are not very large; but a good knowledge of its entrance is necessary, in order to avoid a shoal, which stretches out about half a mile from *Punta del Algarroba*. It is necessary also to give a birth to the *Puntilla* or *Little Point*, for a reef stretches out about two cables' length from it.

"To the westward of *Punta del Algarroba*, and about a large mile from the coast, there is a rocky shoal named *las Manchas*, with 4 fathoms of water on it: but vessels may pass very well between it and the shore.



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"A little without the line of the two points, and about half way between them, is a rocky shoal, stretching nearly N. and S. Its length is about half a mile, and its greatest breadth not much less: it is named Baxo de Rodriguez, (Roderego's Shoal.)

To anchor in the part of the bay which is best sheltered, having rounded the Little Point (Puntilla) place your vessel in such a situation that when the island Desecheo is directly astern, you will have the highway of the town of San German exactly ahead. St. German is upon a hill which is pretty high and pointed. The highway is of red earth, and winding like a snake, and there can be no danger of mistaking it, as there is no other. Run thus until being something to the southward of the Little Point, you may luff up and anchor within it, in either 3 or 4 fathoms, as you may think proper. The river of Mayaguez runs into the sea at the bottom of this bay, and in it the schooners and sloops for the most part winter, as it is the best anchorage on the west coast of the island.\*

"South from Punta de Guanagivo, about 5½ miles, is Puerto Real de Cabo Roxo: its figure is almost circular, and the extent from west to east is about three-quarters of a mile. At its entrance are three fathoms of water, and in its middle 16 feet. The entrance is by a very narrow channel near the south point of the harbour, and from the north point, a great reef stretches out, which, doubling *Cayo Fauduco*, ends at *Punta de Varas*.

"S. S. W. from this port, at the distance of two miles, is the *Punta de Guaniquilla*, which is the north point of a bay named *del Boqueron*: this is so full of reefs as not to allow anchorage. *Punta de Melones* (Melon Point) which is the south point of the bay, is distant from the first (Guaniquilla) about two miles and a half, or a little more; and nearly west from this point, at about six and a half miles distance, is the *Baxo de Gallardo* (Gilliard's Shoal), of which we shall speak hereafter. Along the whole of the west coast the *Monte* (or Hill) *de la Atalaya*, may be seen. It is the highest and most northerly peak of the two, which are seen on the highest part of the mountain range, and which stands S. E. by E. true, from the Punta de San Francisco, and which does not alter the appearance of its shape even when you are to the southward of the isle Desecheo."

**SHOALS OFF THE WEST COAST.**—Besides the shoals on this coast already noticed, there are several others, which we shall now describe.

"1st. That denominated *Baxo Negro* (Black Shoal) which is a reef of very small extent, and upon which the sea always breaks. It is distant from the nearest coast, about 3½ miles, and lies W. S. W. ½ W. from Punta Guanagivo, and S. ½ E. from Punta de Guiguera.

"2d. That called *Media Luna*, (Half Moon) which is a reef of about two-thirds of a mile in length, north and south, and about two and a half cables' length. The sea always breaks upon it; it is about five miles from the coast: half a mile from it, about E. N. E. there are three rocks which show above water, and on which the sea always breaks. The northern extremity of the reef is nearly S. W. by W. from Punta de Guanagivo, and south from Punta de Guiguera.

"3d. That named *las Coronas*, (the Crowns) which are shoals of sand, on which at times the sea breaks, and the extent of which, in all directions, is scarcely a mile. It is about three and a half miles distant from the coast, and bears nearly S. W. by S. from Punta de Guanajibo, and S. ½ E. from Punta de Guiguera.

"4th. A shoal which lies to the westward from *Punta de Guaniquilla*, at the

\* The following is a former description of the *Bight of Mayaguez*: On the western side of Porto Rico is the *Aguada Nueva*, one of the finest roadsteads for shipping in the West Indies, being sheltered from the trade winds by the island. Here the galleons and flota generally anchored and obtained refreshments when they came from Spain. Ships may anchor in the road in from 23 to 8 fathoms, good ground. In 23 fathoms, soft oozy ground, the northernmost point bears N. N. W. 3 miles, the other point S. by E. about two leagues, and a small village among the trees is distant about one mile. In coming into this road from the northward, you may sail within a mile of the shore to the southward of the north point; there being 10, 12 and 15 fathoms of water; and, having passed that point, you will have 25 and 30 fathoms, soft oozy ground. Some part along the ground is flat and rocky, but you may sail all round within half a mile of the shore.

distance of two miles. It may be about two cables' length in extent, and there are 5 fathoms of water upon it: the bottom is rocky. It bears S. by W.  $\frac{1}{2}$  W. from the Punta de Guanagivo, and S.  $\frac{1}{2}$  E. from Punta de Guiguera.

"5th. *Baxo de Gallardo*, which is almost due west from Punta de Melones, and six miles and a half distant from it. Its extent is about three cables' length, and the least depth of water on it is 5 fathoms, with rocky bottom. It lies with the isle *Desecho* bearing N. by W.  $\frac{1}{2}$  W. Monte de Atalaya S. by W.  $\frac{1}{2}$  W. and the southern extremity of the Morillos E. S. E."

*The South Coast, from west to east.*—From the Morillos or Little Hills, in the S. W. to Cape Malapasqua, which is the S. E. extremity of the island, the coast is of double land, and is very foul, with reefs, islets, and shoals, which stretch out from it. In the middle of it is the island *Caza de Muertos*, or Coffin Island, distant from the coast four miles, and foul both on its N. E. and on its S. W. sides.

On this coast the best anchorage is in the harbour of *Guayama*, five leagues to the eastward of the Morillos: it is fit for vessels of all classes, with from 6 $\frac{1}{2}$  to 8 fathoms of water, which latter depth is found in its interior. The bottom is of sand and gravel. The mouth of this harbour is in the middle of a bay, formed by the point and cliff of *Brea*, (Pitch Point) on the west, and that of *Picua* on the east. In the neighbourhood of this last are two islets, and from them to *Punta de la Meseta*, which is the east point of the entrance of the harbour, there is a reef, which reaches out from the coast about a mile, and nearly forms a circle, uniting at one end with the islets, and at the other with *Punta de la Meseta*.

Between *Punta de Brea* and *Punta de los Pescadores*, (Fisherman's Point) which last is the west point of the mouth of the port, the coast forms another bay, of which the mouth is shut by a reef that, running out from *Punta de Pescadores*, ends on the south side of the bay, about a mile within the point and cliff of *Brea*. It is necessary not only to give a birth to the reef which runs from *Punta de Picua* to *Punta de la Meseta*, but, also, to a rocky shoal, which stretches out a short half mile from it.

To enter this harbour, you must steer on the outside of these banks or reefs. To do this, bring the *Punta de la Meseta* exactly in one with one of the Paps of *Cerro Gorda*, which are at some distance inland. If you run in with the point in one with the western Pap, you will shave the bank very close, but will have 10 fathoms of water: but, if you run in with *Punta de la Meseta* in one with the eastern Pap, you will pass without any risk whatever. You will have passed the shoal when the islets at *Punta Picua* bear E.  $\frac{1}{2}$  N. or perhaps a little sooner.

If you advance to the harbour by *Punta de Brea* or Pitch Point, you may pass this point or bluff at a cables' length, and thence steer to within the *Punta de la Meseta*, passing it, if necessary, at a quarter of a cable's length, and thence proceeding for the interior of the harbour, only observing that you may make bolder with the south than with the north side of the entrance. You may anchor where you please in 4 or 5 fathoms of water.

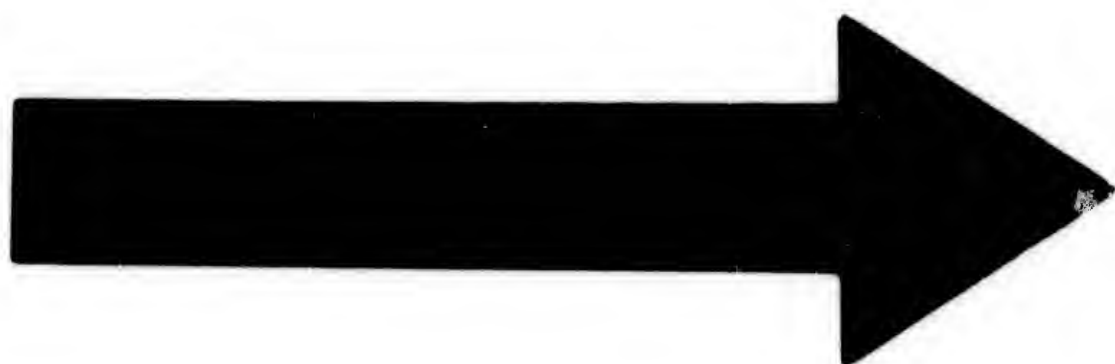
### *Directions for making Porto Rico, &c.*

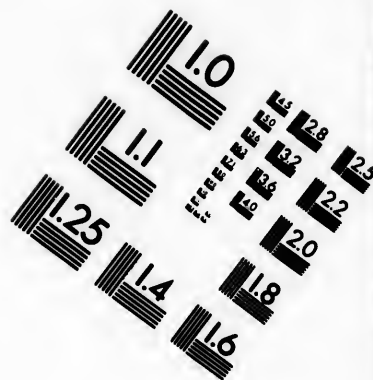
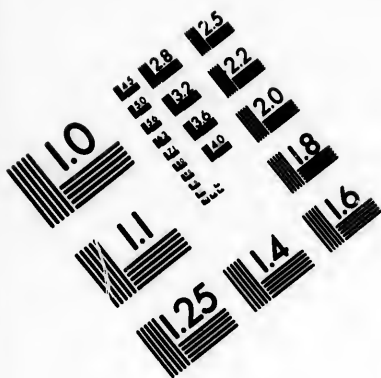
By those advancing from the eastward, and bound to Porto Rico, every precaution must be taken, so as to avoid the dangers of *Anegada*, described in page 303. This island, the last of the Virgins to the N. E. is so low, that it may be considered rather as a dangerous shoal, than as an island. If navigating with care, and with certainty of the situation of the vessel, nothing is easier than to cross the meridian of *Anegada* on a parallel above  $19^{\circ}$ , and so to run down afterwards on Porto Rico, as to make the land to windward of your destined port: thus you will not be obliged to beat up again for a distance overrun, at the expense of both time and labour. But as it may happen, among the multitude of those who navigate, that some one may be misled by an erroneous reckoning, and find himself in this predicament, we recommend it to such, in order that they may avoid the dangers of *Anegada*, and also avoid overrunning Porto



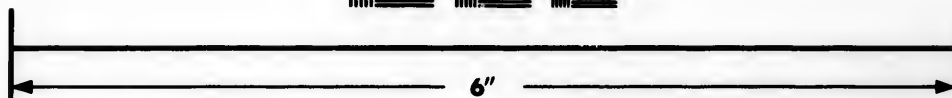
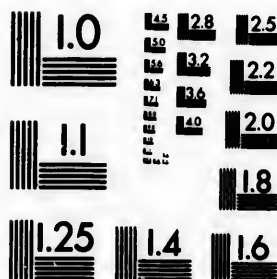
Rico, that they, at all times, shape a course to make the islands of St. Bartholemew and St. Martins, (or the parallel of  $18^{\circ}$ ) because these islands are high and clean, and there is no danger of being wrecked on them, although sailing by night, or in thick weather, so that you have a league of horizon; for that distance here affords time, either to steer so as to take some of the channels, or in case you prefer it, to haul by the wind, and wait for day-light, or for clear weather. Neither is there a risk of passing them without seeing them; and even if by a combination of circumstances, which will be very strange, this should happen, they could not fail, on the following day, to see some of the Virgin Islands, by which the situation of the vessel might be rectified. In choosing either of the channels between St. Bartholemew and St. Martin's, or between the latter and Anguilla, we should prefer the latter, because it has no detached islets lying off from the principal lands; and, therefore, running through it, even at night, it is not so unsafe. Having run through any of these channels, the course must be made to the south of the Virgins, and thence to the N. W. so as to make the Cape of St. Juan of Porto Rico, and having recognized this, you have only to run afterwards as may best answer for your port of destination.

From the Island of Porto Rico you may escape from the region of the general or trade winds, into that of the variables, merely by steering to the north; and, as this island is so far to windward, it is easy to gain all the easting that is necessary for going to the lesser Antilles or Caribbee Islands. You may gain thus to windward, and beating with the breeze without being under the necessity of running into high latitudes to catch the variables. On Porto Rico you cannot count on land-breezes to facilitate the getting to windward, for on the next coast, the utmost is, that the breeze calms at night, but no land-breeze proceeds. Lastly, from this island, you may, on one stretch, catch any point of the Colombian Main, from Laguayra to leeward.





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## CHAP. VIII.

## WINDWARD AND LEEWARD ISLANDS.

Under the denomination of Windward Islands, we include the whole range from the Virgins to Trinidad; and, under that of Leeward Islands, the range which exists between Trinidad and the Gulf of Maracaybo.

The windward islands appear at a distance as if united together; but there are many deep channels between them, through which these acquainted, sail with safety.

The *Passage Isles*, which are dependencies of Porto Rico, and the Isle of St. Croix, or Santa Cruz, which lie to the southward, were originally included, under the general name of the *Virgin Islands*.

The western division (*Danish*) includes the islands of St. Thomas and St. John, with the numerous islets, as those of St. James, Montalvan, or Little Saba, Savanna or Green Island, the Brass Isles, Hansnetic, and others. The eastern division (*British*) includes Tortola, Virgin Gorda, Anegada, Jost Van Dyke's Isles, the Thatch Isles, Normand's, Peter's, Salt, Cooper's, Ginger, Beef, Cananua, Scrub, and Guana Isles, with a number of islets in their vicinity. The whole group, Anegada excepted, is high, craggy, and mostly bold-to.

*Tortola*, a few miles to the N. E. of St. John, is the principal of the English Virgin Islands; it is near 5 leagues long, and 2 broad, but badly watered, and has the name of being unhealthy. The entrance is wide, with plenty of water.

The town is situated on the south side, at the bottom of a bay, 2 miles deep, with a pretty good road at the entrance, with 12 fathoms water, good ground.

*Virgin Gorda*, that is, the Great Virgin, or Penniston, more commonly Spanishtown Island, lying to the eastward of Tortola, is formed of elevated land, and is watered even worse than Tortola. This island has two good harbours, the largest of which is that called *East Bay*, on the northern side, wherein you may anchor very safely in from 5 to 10 or 12 fathoms, to leeward of the island called the *Pickly Pear*; but the entrance is narrow, being obstructed by a reef on each side. The next harbour is that called the Great or West Bay, which is to some degree sheltered to the west by the islets called the *Dogs*; the roadstead here has very good holding ground, of sand and ooze, in 8 to 10 fathoms of water. In the smaller bay, called Thomas Bay, more to the S. W. vessels may anchor before the town, in 6 or 8 fathoms; but there is a reef in the middle of the bay, which stretches north and south; and there are, likewise, many rocks in the bottom, which choke the cables.

The course from Saba to Virgin Gorda is N. W. by W. northerly, above 20 leagues. When Virgin Gorda bears about you N. W. by N. 7 leagues off, the Virgins appear like three islands, with a great many small ones about them; the middlemost is the longest, and when you come within 3 leagues, they seem as if they were joined together.

The best mark for Virgin Gorda is an insulated hill, of moderate height, standing near the middle of it, and which is easily known by its being alone. This hill, in clear weather, may be seen at the distance of seven leagues.

Mr. Lockwood, who surveyed these seas, says that, under the lee of Virgin Gorda, the ground is so clear, that 500 sail might anchor in the space between the Dogs and the Valley. The North Sound, he adds, is a perfectly secure



port, and of great capacity; the entrance between the two reefs is not difficult to discover.

*Anegada*, or the *Drowned Island*, which lies to the northward of Virgin Gorda, is of equal magnitude, but so low that its coasts are inundated at high tides, and it has not even the smallest hummock on its surface. You may discern over it two high hills on Virgin Gorda, which appear like a great hummock. There is good water on the low part, near the south point.

The whole of the windward side of *Anegada* is bordered with a dangerous reef which thence continues under the name of the *Horse Shoe*, about four leagues to the S. E. and terminates at E. N. E. 7 miles from Point Pejaro, the east end of Virgin Gorda. There are swashes in the reef, but on many parts only two to six feet of water. On approaching the isle, from the north-eastward, the hill on Virgin Gorda will appear over it like a great hummock, and by this mark the relative situation of a vessel may be known.

On the reef which borders the windward side of the island, with the *Horse Shoe Reef*, which stretches from it to the south-eastward bay in 1811, are the remains of the following wrecks:—Four American schooners, wrecked in 1800 and 1809; an American sloop, with candles, cordage, &c. 1808; a Spanish brig, with dry goods, 1799; a French sloop privateer; an American brig, 1792; the *Astrea* frigate, 1808; a Spanish felucca, 1808; an English schooner, a Spanish ship, 1810; an English brig, 1792; *Ship Ocean*, and a brig from London, 1812; on the leeward side of the N. W. end, an American brig, 1811. This statement will surely be a sufficient caution to those approaching, especially from the N. E. The wreckers of the island are stated to be constantly on the alert, and traverse with their shallops the narrow passages of the reefs with an astonishing celerity. While actuated by the hope of plunder, they have saved many valuable lives. The currents in the neighbourhood generally tend to the westward, and the stranger should never lie-to, particularly in the night, to the eastward of the island.

**FALLEN CITY, or OLD JERUSALEM.**—A very remarkable cluster of broken rocks, to the southward of Virgin Gorda, bears this name. They appear to have been thus left by some great convulsion of nature. To the southward of these is a large bluff rock, called *Round Rock*, next to which follows *Ginger Island*. Between the two latter is the general entrance into *Sir Francis Drake's Channel*, which is called the *King's Channel*, it being the best passage inward for those bound to the Road of Tortola.

#### Directions for Tortola.

The following directions for sailing through the *King's Channel* to *Tortola* have been communicated by Mr. Backhouse.

"To run through *Sir Francis Drake's* or the *King's Channel*, between the *Round Rock* and *Ginger Island* towards *Tortola*, so soon as you make the land of Virgin Gorda, steer for the S. W. end of it, W. N. W. northerly, and when you are within six or seven leagues of it, you will raise the high land of *Tortola*, and also the highest keys and islands to the eastward and southward of it; that is, beginning with the easternmost or *Round Rock*, *Ginger Island*, *Cooper's Island*, and *Salt Island*, *Dead Chest*, *Peter's Island*, and *Norman's Island*.

Having these keys in sight, steer for the south end of *Round Rock*, which you cannot mistake, for within three or four leagues of *Round Rock*, you will raise the low keys called the *Broken City* or *Old Jerusalem*, which keys extend from the S. W. end of Virgin Gorda, in a S. S. W. direction, to within two cables' length of the north side of *Round Rock*: these keys are the more remarkable, not having the least earth or verdure on them, but are merely heaps of large stones, resembling the ruins of a city or island.

When at the distance of two or three leagues to the eastward of these keys, having the *Round Rock* N. W. westerly, steer for the south side of the rock,

keeping it on board as you run through; that is, keep about one-third of the breadth of the channel from it towards Ginger Island: this caution is necessary in case of light winds, when strong leeward currents may hurry you close to Ginger Island. The course through is nearest N. W. by W. by compass. The Round Rock is a barren slate rock, and the eastern cliffs of Ginger Island are, also, full of slate. The channel is about half a mile over: you may pass safely within a cable's length of Round Rock, at which distance we sounded 14 and 15 fathoms, no ground.

Having passed Round Rock to the W. N. W. of you, on the island of Tortola, you will see a negro-town, a white dwelling-house, and a fort. Keep to the westward of this mark, steering W. by N. and west. As you run down towards Tortola, the easternmost point of Tortola Road bears nearest west, by compass, from the Round Rock, and makes as shown in the plate. You may see with a glass, at the same time, the fort and flag-staff on the west point of the harbour, from which extends a dangerous reef: the eastern point is a craggy bluff, with a foot-path, a road winding around it. The first soundings in running down (with the haul) were found abreast of the east end of Ginger Island, 15, 13, 13 fathoms; the course from W. to W. by S. which soundings continued nearly to the eastern point of the road.

*It is particularly to be observed, that there is a bay to the westward of Road Harbour, called Sea-cow or Rogues' Bay, which, by strangers, may be mistaken for the road, as the points make alike. Therefore, when drawing near the eastern side of Road Harbour, if you have any doubt, look to the S. W. quarter, and you will see four remarkable perpendicular rocks, called the Indians, off the N. W. end of Normand's Island, and bearing S. W. by S. (See the Plate.)* At this time the easternmost point of Tortola Road will bear nearest to W. N. W. & W. With this bearing on, we sounded, and had 8 fathoms, about half a mile from Tortola. Come no nearer. We found no ground, after 8 fathoms, on the next cast, with 14 fathoms of line; and, thinking it bold, we borrowed to the shore, haying the point N. N. W. but again found that it had suddenly shoaled to 4 fathoms, then at 3 cables' length from the shore. Hauled out W. S. W. and deepened in two or three casts to 7 fathoms; and, at the fifth cast, no ground at 15 fathoms. Be cautious to keep at least half a mile from the point.

*You now open the Road of Tortola, and keep your eye on the easternmost or weather shore of the bay. On the third bluff point in you will descrie a battery, (Fort Shirley) abreast of which ships of war anchor. Keep to the westward, until you open the next point to the northward of this, on which stands Fort George, or the citadel, with a flag-staff: bring this citadel (see the plate) north; westerly, then haul in, and steer for it.*

*As you steer in for the citadel, on the above bearing, keep in 10 fathoms of water; indeed the mark will lead you in 14, 12, 10 fathoms. You anchor abreast the point of the first battery, with the battery bearing N. E. but the mark for letting go the anchor, is the flag-staff of the battery on the west point of the bay in one with the south end of the guard-house, which is close behind the battery; depth 10 fathoms, and about one cable's length from the shore. The western battery will bear nearest S. W. by W. westerly. Moor with your stream to the N. N. E. because the ground is foul; and, should you part your bower, your stream will check you into the bay, and clear the reef off the western point of the road.*

*The merchants' anchorage is in from 10 to 13 fathoms, on the western side."*

*In proceeding outward, from Tortola, you sail outwards through the southern channel between the west end of Normand's Island and the east side of Flanagan, or between the latter and the east end of St. John's Island."*

*Mr. Lockwood says, in the passages, and also in Drake's Channel, the current, running quick over the foul ground, causes a ripple, which wears the appearance of danger. The anchorage at Tortola is not good; and, when the convoys rendezvoused in that neighbourhood, experienced masters of merchantmen usually anchored under Peter's or Normand's Islands, both of which have good bays."*

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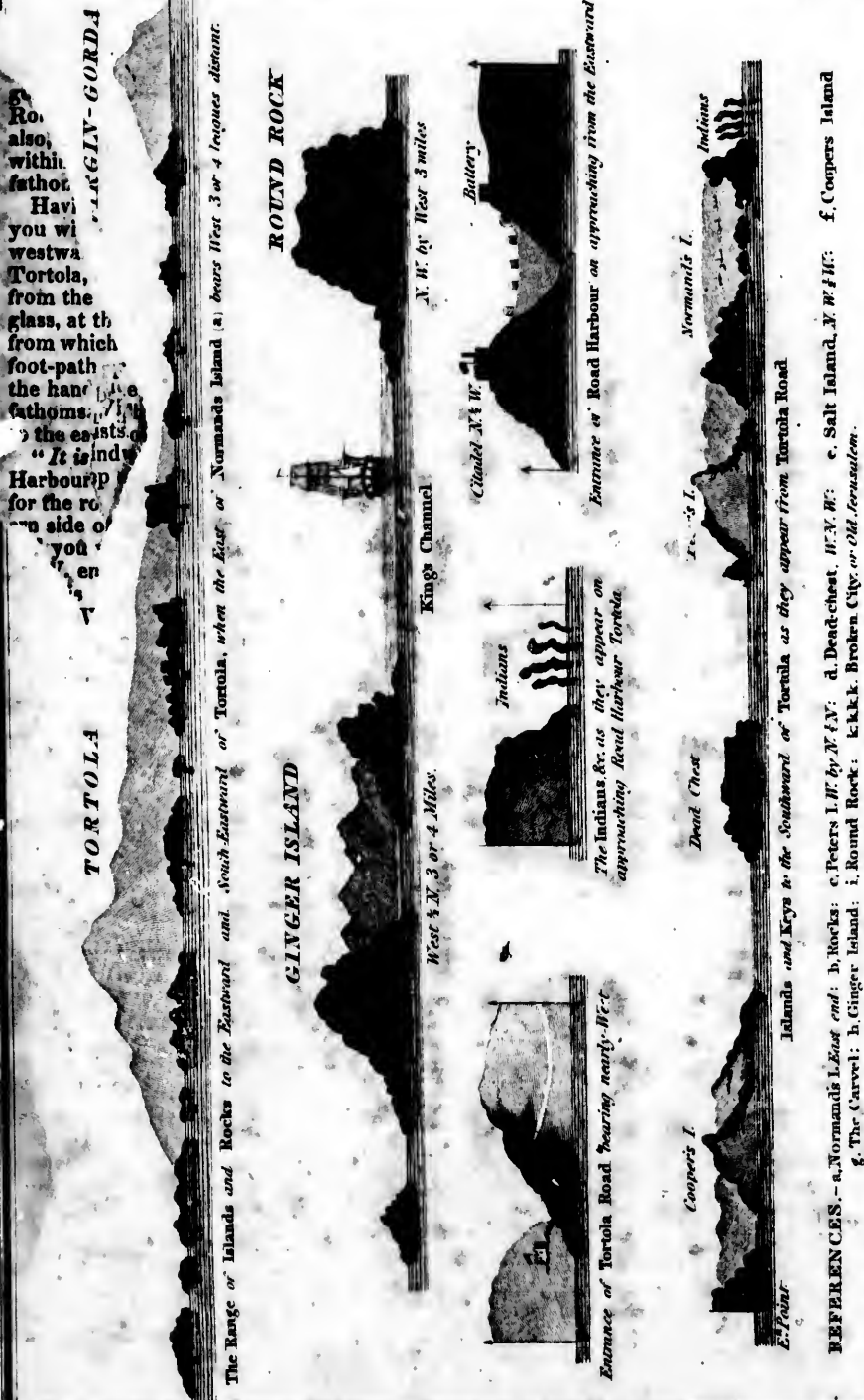
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## REFERENCES.-a.

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leave these keys to the southward of you\* about one mile, and then steer N. W. when you bring them S. E. and continue that N. W. course about two or three miles till you bring the harbour open; then haul in for the town N. by W. or N. N. W. giving the east shore all along a good birth, and run within half a mile of the fort, which is white, and plainly seen at the east of the town. You anchor in 5 fathoms water, fine clear ground; it is a fine harbour, where you are land-locked from all winds, but from the S. by W. to S. E. by S. which part lies open to the sea; but the wind seldom blows in unless it is in the hurricane months. There is a rock above water in the harbour's mouth, (called Prince Rupert's Cliff) which you leave to the eastward of you; you may make bold with the west side of it, but there is no passage within.

From St. Thomas' harbour, if bound to Porto Rico, being in the offing, steer by N. till you come down the length of the west end of the island, which is about 5 leagues from the harbour. You will see a small island called Little Passage, about 4 or 5 miles to the westward of the west end of Little St. Thomas. Little St. Thomas is a small island, that almost joins with the west end of the main island; there is a small opening between them, but of no note. There is likewise a channel of small importance between Little Passage and Little St. Thomas; but there are two other islands before you come down to the west end of that island. The easternmost, just to leeward of the harbour, is called Water Island, and almost joins with the main land; about two or three miles to leeward of that, is a rocky island, about half a mile round, which lies a mile from the shore, and is called Little Saba; it is full a ground, and must have a good birth. All the shore along these islands must be kept on your starboard hand. In running down till you pass Little Passage, you have soundings all the way, but deep in some places.

W. St. W. 1 S. from the mouth of St. Thomas' Harbour, above 4 leagues, and S. W. by S. 7 miles from the west point of the island, lies a remarkable rock in the middle of the channel. It is round, rugged and double pointed, as high as Peachy Head, and may be seen 5 or 6 leagues off, being all white; it appears at some distance like a sail, whence it has been called St. Thomas' carvel, or St. Thomas' hoy. This rock is bold to all round, and appears at some distance like a sail, and may be seen 5 or 6 leagues off.

### *Remarks on the Passage in general, from the "Derrotero de las Antillas."*

The straits between the Dogs' Isles and Virgin Gorda are all excellent, and are passed by which the entrance into Drake's Channel is made from the northward. The channels to the southward are, that between Salt Island and the Dead Chest or Peter's Island; that between Peter's and Norman's Islands; and that between Norman's Isle and Flanagan Key. The pass between the Dead Chest and Salt Island, when used for going out of Drake's Channel, requires the breeze to be

\* The channel between the main island and Back Island is but one and a half mile broad, and at the entrance, in the full way, lies a sunken rock, called *Peachy Rock*, which is a hard white rock about the S. W. point of which is from the flag-staff on Muchless's battery, (the eastern battery at the entrance of the harbour) 3 1/2° N. 2120 fathoms, and from the northern, or nearest point of Back Island N. 30° E. 1120 fathoms distance.

This sunken rock or shoal extends from the S. W. point to a depth from 6 feet water E. N. E. upwards of 18 fathoms in length to 51 feet—in the centre the depths 9 feet. From 54 feet water it inclines a half point to the north, upwards of a quarter cable's length, with a depth of 12 and 9 feet water.

The whole shoal is consequently little above 30 fathoms in length, and has a direction of S. 61° E. N. by E. and W. S. W. its position being one-third the distance from St. Thomas to Back Island. The passage between this sunken rock and Back Island is perfectly free, with good soundings from 10 to 14 fathoms. The way to clear this shoal is to keep Back Island close on board.

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steady, that it pass not from E. S. E. toward S. for otherwise you will be apt to get entangled with Peter's Island, as the water sets strongly towards the strait which it forms with the Dead Chest, and the swell also aids (which is likewise heavy, when there is a fresh wind) as it diminishes the vessel's way, and increases her lee-way.\*

Vessels which navigate by the south of the Virgins, commonly pass between Bird's Key or Frenchman's Cap, and Buck Island; and all those who run from the southward of the Virgins for St. Juan's Head, in Porto Rico, pass through the channel between the Sail Rock and Savanna, or Green Island.

The sea along the whole of the west coast of Virgin Gorda is tranquil during the time of the breezes, and you may anchor along the whole length of it, in the certainty of not having more than 16 fathoms, nor less than 8 fathoms, at a mile from the shore, and the quality of the bottom is commonly sandy.

On the west coast of Norman's Island there is a harbour, *Men of War Bay*, which is much better sheltered and more secure, than that of Virgin Gorda; for in it, and as far as Flanagan Islet, the sea, during the breezes, is as calm as a bath. Within this harbour they do not experience gusts of wind, and it also appears that the breeze in it is light when it is fresh outside. As the interior of the harbour is to windward of its points, and it is not more than half a mile wide, large vessels cannot enter except at low water, and therefore when these come from the north, it is necessary that they should shave the point, and luff up and anchor in about the middle of the harbour's mouth, warping or towing in afterwards, if they have to make a long stay; for if not, they will be very well at the very mouth, if it be not in the hurricane season. On coming in from the south, they must prolong the line to the north, in the certainty that they will find no unseen danger; and when far enough, they must heave about to manœuvre, on the south tack, as already directed. If the wind with which you run to take this harbour, should be from the north, you may run farther in, and lie as if in a dock; but it is necessary to furl your sails smartly: for with norths there are drafts of wind which might cause you to drive, and there is no room for manœuvring. Keep in mind that about a league to the S. S. E. of the S. W. point of Norman's Island there is a rock of small extent, which has not more than nine feet water on it. On this rock the frigate *Santa Monica* struck, and consequently foundered. The situation of this rock is not well ascertained: for, though the brigantine under the command of Don Cosme Churrua made every exertion to find it, they never could succeed.

## ST. CROIX, or SANTA CRUZ.

St. Croix or Santa Cruz is the southernmost of the Virgin Islands, and lies 140 miles N. from Sandy Point in St. Kitts, 56 leagues. It is not very high, though full of hummocks, two of which, on the western side, are higher than the rest. At the S. W. end of the island, there is a flat extending outwards to the distance of a mile; and the whole of the south side is bordered with reefs, which make an approach dangerous to a stranger. The island is scantily watered, and without wood, which can be procured only at a high price.

There are two towns, one on the north, and the other on the west side. The first and chief is *Christiansted*, the capital of the Danish West India Islands, lying on the south side of a harbour, protected to seaward by a narrow reef, and on the land by a fortress.

The chief town called *Christiansted* is situated at the bottom of a bay on the north coast, under the cannon of a fortress which defends the principal harbour. The other town named *Frederickstad*, lies on the west side, about half way up

\* But it is to be noted that, at about half a mile to the E. N. E. of the Dead Chest, is a rock, having over it only 12 feet, and on which the *Blonde* frigate, and several vessels have struck.

on the middle of a spacious bay, wherein ships may anchor at pleasure, in from 5 to 10 fathoms.

From the town of Christianstad to the S. W. point of St. John's Island, the course is N. by E. about 10 leagues. In the channel, about six miles S. by W. of this point, lies a remarkable round rock, called Bird Key, which is about one quarter as large as Redondo, near Montserrat.

The harbour of Christianstad is difficult of access, and shoal in several places. It is defended by the fort of Louisa Augusta, situated on a neck of land, which tends from the eastward, and by that of Sophia Fredrica, situate on Loot's Key, an islet north of the town, under the guns of both of which vessels must pass to the anchorage. This is one of the handsomest towns in the West Indies: its principal streets being wide, long, and straight, and intersect each other at right angles.

The greatest length of St. Croix from E. to W. is 20 miles. On advancing, its north side presents a chain of eminences, almost like those of the Virgin Islands. At about a league to the W. N. W. of the East Point, and half a league from the north coast, there is an islet named *Dikken* or *Goat Island*, which appears at a distance like a part of the coast. Between this island and St. Croix there is a passage, but it is bad and little frequented. The east point of Goat Island sends out a reef, a mile and a quarter to the E. S. E. there are others stretching to the N. and N. W.

The west coast of St. Croix is clean; the south coast is very foul, and requires much practice either to navigate near it, or to enter into its bays, of which there are two, as shown on the Chart.

To enter the port of Christianstad much practice is required, and therefore a pilot must be taken.

### *The Island of Sombrero.*

Between the Virgin Islands and that of Anguilla, lies a small rocky island, about two miles in length: it consists of a very flat eminence, without any hummock upon it, covered with birds from the southward. You cannot decry this island farther off than 5 or 6 leagues at most.

This wretched island is rugged, steep and barren; a little camphor and grass are the only vegetable production that appears on its surface; the little water that lodges in the cavities of rocks during rains, soon evaporates. You may anchor on the west side of it. The cliffs are steep-to, and are from 40 to 15 feet high. In 1791 an American brig ran against it, and her crew crept from her yard arms to the cliff top. The brig disengaged herself, and drifted down to Virgin Gorda, where the hull and cargo became a prize to the workers.

The latitude of Sombrero is  $18^{\circ} 38' 13''$  and its longitude  $66^{\circ} 30' W.$  Two leagues off Sombr. 6, when it bears from E. N. E. to E. by S. is found from 35 to 22 fathoms, uneven ground and rocky bottom. It lies about 14 leagues E. by S. from the island of Antegada, and 12 leagues due east from the reef lying off the S. E. end of it. In going between the two you have 5, 6, 7, 8 and 10 fathoms of water. The course from Saba to Sombrero is N. W. by N. 1 N. distant 50 leagues.

The passage leeward or windward of Sombrero is very clear and safe: there is no swell. The winds are generally favourable for going out, and when once you are past Sombrero, all obstacles are at an end.

### *Anguilla, and the Islets in its vicinity.*

Anguilla lies E. by N. 1 N. and W. by S. 1 S. above two leagues to the north of St. Martins: it is a low, flat and withered island, without any mountains, so that it cannot be seen farther off than 4 or 5 leagues. The anchoring ground is good.



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on the south side, because the current there has no force, on account of a long ledge which stretches off S. E. from the east point. On the south part of the west point there lies, about one mile from the shore, a small island, not above 100 fathoms in length. To the N. W. by W. of the west point of Anguilla, distance about 4 leagues, lie several small islands, the principal of which are Dog and Prickly Pear Islands, between which is a good channel. The first is the easternmost; the second, which is the largest of all, lies farther than any of them to the west, save a little rock that is almost joined with it on the west side. It is about one mile in length, and has a few inhabitants. All these islands are very low, and cannot be seen farther off than 4 or 5 leagues.

*Bearings taken and remarks made in sailing between the above mentioned islands, by an experienced Navigator.*

"When we came to sail so far out, I found that the highest top of St. Eustatia came even with the top of Brimstone Hill, and that the two southernmost points of St. Kitt's and St. Eustatia were in one, and bore N. W. by N. At the same time Fort Tyson bore N. E. easterly, when Sandy Point, and Tumble-down-dick, or the northernmost part of St. Eustatia, came in one, and bears W. N. W.

"The direct course from the west end of St. Kitt's is N. N. W. to St. Martin's west end, and so through between the Dog and Prickly Pear. For when you are within half a mile of the west end of St. Martin's, the southernmost land of St. Bartholomew comes in one with the southernmost land in sight of St. Martin's, and they bear S. E. by E. and then Saba will bear S. by W. westerly. By the aforesaid bearings of St. Bartholomew and Saba, if you see either of them, you may by them know how to direct your course for the west part of St. Martin's.

"The west part of St. Martin's and the west end of Anguilla, bear N. W. W. northerly. When the N. E. part of Anguilla, the north side of Prickly Pear, and the middle of Dog Island, bear all in one, it is E. and W. Three miles N. of Dog Island, observed at noon, and found the lat.  $16^{\circ} 26' N.$  and the variation  $29^{\circ} 50' E.$  At the same time St. Martin's showed itself beyond Anguilla, from E. S. E. to S. by W.

Island N. N. E. about two leagues.

The following particulars of Anguilla, are from the "Description des Antilles."

Anguilla is situated to the north of St. Martin's, and separated from it by a channel of which the least width is four miles; it is extremely low, and has neither the smallest hill nor prominence; its soil is very sandy and sterile, and both fresh water and wood are very scarce. The town is on the east side, near the N. E. end; it is very small, and has no commerce. The bay is shut almost entirely with reefs, and is therefore of very little value. To the N. E. of the E. end, there is an islet, which is still much lower; it is very clean on its south side, and has 12 fathoms water on the side of the channel which separates it from Anguilla; which channel is nearly half a mile in width. On passing here, when running from windward to leeward, Anguilla seems part of Anguilla, and the trait between them cannot be seen until you are to the westward of the meridian of the former. Off the east end of Anguilla are four rocks, on which

the sea breaks with violence, but they do not lie farther out than two cable's length, and at less than a mile there are 24 fathoms, on sand, gradually increasing to 30 fathoms at 4 miles.

The channel between St. Martin's and Anguilla is excellent, and fit for any class, or number of vessels; for it has not less than 13 fathoms of water, and the depth is, in general, from 15 to 20 fathoms of sand and gravel; and near both coasts it does not decrease to less than 7 fathoms. The only thing which is to be avoided is the *Spanish Rock*, lying within a mile from the N. E. end of St. Martin's, on the south side.

### *The Island of St. Martin's, &c.*

St. Martin's is divided from Anguilla by the channel above described. It is divided between the Dutch and the French, and contains a great number of hills, or rather huge rocks covered with heath, which may be seen above 10 leagues off. The shape is very irregular, and the western coast is comparatively low. Rains very seldom fall here, and as the soil of the plains and valleys is sandy, they are, consequently, unfruitful. The island, destitute of rivers, has fountains and cisterns, which afford good and drinkable water for the planters. The air is very healthy, the shore full of fish, the sea rarely disturbed, and the anchorage safe every where about the island, especially with a N. E. wind. Wood is scarce and dear.

The principal town, *Philipsburg*, lies on the S. W. side in a harbour called *Great Bay*, which has 8, 9 and 10 fathoms, good sandy ground. Near it are three salt ponds, where a great quantity of salt is made. This is the chief place of the Dutch quarter, the French quarter being to the north.

The *Derrótero* says, St. Martin's has many heights and hollows, but no mountain of consequence. On the S. W. side in *Philipsburg Bay*, vessels anchor more commodiously than in any other in the island. The town, the capital of the Dutch part, extends in the direction of the shore. On the south side of this harbour, stands an eight-gun fort, called *St. Peter's*, and on the N. W. point is *Amsterdam Fort*. These two forts defend the entrance. The harbour has from 3 to 4 fathoms of water, on fine sand, but on the line between the two exterior points, it is from 8 to 9 fathoms, and vessels of a large draught go no farther inward than this line. About a mile to the S. W. of this bay, is a rock named the *Man of War*, which has only 10 feet of water on it, and is about 24 cables' length in circumference. The point of it on which there is the least water, may be found by bringing the S. E. point of *Simson's Bay*, which is to the N. W. of *Philipsburg Bay*, on with the high point of the westernmost mountain in St. Martin's; and on the opposite direction, by bringing the flagstaff at the Governor's house, which is at the eastern end of the town, on with another large house which stands on the top of the hills to the north of the bay. The last house may be known by its standing to the east of a great tall old tree, which is insulated and separated from the other trees. In addition to these marks it may be kept in mind that the shoal is exactly 389 W. true from the *White Point*, which is the western point of the bay, and 62 30 E. true from *Fort Amsterdam*. At a third of a cable's length around this rock, or shoal, 6, 7 and 8 fathoms, with rocky bottom, are found.

On the N. W. coast there is a bay named *Marigot Bay*, open to N. W. winds, and having a depth of from 4 to 7 fathoms, on sand; at the bottom of it stands the town of *Marigot*, which belongs to the French, and which is defended by a fort to the north of it.

To the east of the N. E. end of St. Martin's is an islet named *Hat Island*, which is very bare, and surrounded by reefs close round it; the channel between it and St. Martin's is a mile broad, and passable. The shoal named the *Spanish Rock*, lies nearly two miles to the W. N. W. of *Hat Island*. This is a very small rock, the least water on which is 3 feet. When passing to the north of *Hat Island*,



and near to it, in order to steer to the N. W. be careful to give a sufficient birth to the rock. The strait between this island and St. Bartholomew's, is 10 miles wide; it is without shoals, sunken rocks, or any other invisible dangers; but those bound through it, and not destined for any of these islands, ought to leave to the south all the islets to the N. W. of St. Bartholomew's, and to the north all those of St. Martin's. The navigable channel is thus reduced to a league and a half in width. The ordinary depth, until touching the islets, is from 15 to 20 fathoms, but almost always upon rocks, and you may safely run within half a mile of the islets. The navigation of this channel is excellent, not only for those going from windward to leeward, but also for those bound from leeward to windward; but attention must be paid to keep clear of the rock, called the *Man of War*, before described.

### *The Island of St. Bartholomew.*

St. Bartholomew's S. W. and bears from Sandy Point in St. Christopher's N. E. distance ten leagues. It lies E. and W. and is five or six leagues long. The middle part is very high land: its shores are extremely dangerous, chiefly on the north part, where there are many rocks above and under water, and the approaching them requires an experienced pilot; but it enjoys the advantage of having a very good harbour, of an excellent hold, in which ships of any size are perfectly sheltered from all winds. The island of St. Bartholomew appears at first almost round, and can be seen nine or ten leagues off. E. N. fourteen leagues distant from the island, lies a large bed of rocks, about 20 yards square. On the west side of it is a small rock, sharp pointed, and sometimes covered when the sea falls; it is about 4 feet dry.

On the western side of the island there is a good harbour, with excellent holding ground, in which ships of any size may lie perfectly sheltered in all winds. This harbour is called *Le Ombre*, and on it is situated the town named *Gustavia*.

About the island of St. Bartholomew the flood, at new and full moon, runs S. E. and it is then high water at 10h. 50m. P.M. while the sun is farthest to the north of the equator, but comes about two hours sooner in the following months, till the sun gets furthest to the south, when it is high water at 10h. 50m. A. M. and it runs afterwards in the same proportion back again. The winds, which are of long continuance, sometimes make a trifling difference. The horizon is also lowest at the time when the sun is furthest to the north of the line; and so to the contrary. The greatest difference in the ebbing and flowing is 12 inches; but, in general, only 10 inches.

### *Saba and St. Eustatius.*

The island called *Saba* belongs to the Dutch. It is very high, and its shores bluff and steep. On the S. W. part is a small town, built in a plain, but hid from the sea by very high hills, except to the southward. A very high mountain constitutes the centre of the island. The island appears like a steep rock, of a round form; it is about nine miles in circumference, accessible only on the south side, on which there is an intricate and artificial path leading to the summit which admits only one man at a time.

It is said that the bottom may be seen all round. On the N. W. side there is a rock, called the *Dreadnought*, standing at about a musket-shot from shore, and which appears afar off like a sail. There is an extensive bank of soundings, extending seven leagues to the southward and S. S. W. of the island, as shown on the chart, having on it within that distance, from 12 to 17 fathoms. Beyond these soundings, to the south, no bottom is to be found. At four miles to the



ing off to the distance of nearly half a mile, which, of course, must also be carefully avoided.\*

The Narrows, or straits between St. Kitts and Nevis, is rather more than half a league broad, and lies N. E. and S. W. Nearly in mid-channel, at the eastern end, there is a remarkable high rock, called *Booby Island*; and nearly one mile and a half to the S. W. of this island are two others, called the *Cows*. The channel, which has a depth of from 3 to 12 fathoms, is between these rocks and St. Kitts, for on the southern side there are several shoals.

An extensive shoal, from a mile to a mile and a half in breadth, and five miles long, from N. W. to S. E. lies without the eastern end of the Narrows. The passages in are, therefore, between its north end and St. Kitts, and between its south end and Nevis. The southern half of the shoal, which is the broadest, is rocky, and has not, in some parts, a greater depth than 10 feet. There is also a dangerous patch of 18 feet of water, near the north end.

In sailing up to the Narrows, between this bank and the Isle of Nevis, bring Booby Island W. N. W. and keep it so until the Cows bear S. W. by W. This leads clear of the reef, whence you may proceed as shown hereafter. In sailing in from the northward, before arriving at the Narrows, Booby Island will be seen nearly in midway of the channel. In sailing downwards, that isle is to be kept on the larboard side, keeping over towards the shore of St. Kitts. The south part of Nevis, kept open to the westward of Booby Island, will clear the reef. The Cows are also to be left on the larboard side, keeping over to the shore of St. Kitts, in 4, 5, or 6 fathoms, good ground.

The *Road of Nevis* is on the west side of the island. In approaching it from the southward, give the Fort Point near Charleston the birth of a mile, to avoid a shoal which lies to the southward of that point; then luff up and anchor in from 10 to 7 fathoms, good ground, with the fort bearing S. E. the S. E. part of St. Kitts N.  $\frac{1}{4}$  E. distance off shore about one mile.

In running from Nevis to Basseterre, you will cross a bank, on the shoalest part of which there are 5 fathoms, or quarter less 5. It is not quite a mile over, and its middle lies S. by W. westerly from the Nag's Head, or the south end of St. Kitts, two miles.

**ST. KITTS.**—The centre of this island is occupied by a great number of high and barren mountains, intersected by rocky precipices, almost impassable, and among which there are several hot springs. *Mount Misery*, which is an exhausted volcano, whose head is hidden in the clouds, is the highest of all these mountains, its perpendicular height being 3711 feet.† The assemblage of hills makes the island appear, on an approach from the sea, like a huge mountain, covered with wood: but advancing nearer, the coast becomes less abrupt, and the ascent of the mountains, rising one above another, will be seen cultivated as high as possible. The S. E. side, on sailing along at two leagues distance, appears like several detached islands. The N. W. part is the highest, but declines gradually to the sea.

The principal town is that of Basseterre, on the south coast, situate at the mouth of a river, which opens into the bay called *Basseterre Road*. *Sandy Point Town*, towards the N. W. is also a town of consequence. There is no harbour whatever, and, on the contrary, a surf continually beats on the shore, which is sandy, and prevents any tree or wharf being erected upon it, and also makes landing always inconvenient, sometimes dangerous. Owing to this, the inhabit-

\* The Derrottero reports that there is a shoal off the windward coast of Nevis, the situation of which has not been made known; all that is known of it being that an English sloop touched on it, at two leagues from the shore. It is added that an English ship of the line also touched upon a rock, nearly two miles S. S. E. from Nevis. This may probably be the same.

† The bottom of the great crater of Mount Misery is a level of fifty acres, of which seven are covered with a lake, and the rest with grass and trees; amongst the latter is the mountain-cabbage. Streams of hot water, impregnated with sulphur, still issue from the fissures.

ants are under the necessity of landing and shipping heavy goods in the manner practised at Montserrat, as described in page 320.

**SOUTHERN SIDE OF ST. KITTS.**—In sailing off the southern coast of St. Kitts, the following lands are to be particularly noticed, namely, the *Nag's Head*, or south end of St. Kitts, on which there is a high hummock; the high lands on each side of *Frigate Bay*, the bay at the northern end of the isthmus which connects the northern and southern parts of St. Kitts; *Monkey Hill*, a high mountain to the northward of the town of Basseterre; and *Brimstone Hill*, another high mountain, with a square fort on it, to the eastward of Sandy Point Town in the west.

In proceeding from the southern side of Nevis towards Basseterre, you may cross a bank lying off the Narrows, on which the least depth is about 4 fathoms. It is rather more than a mile in breadth, and its middle part lies nearly two miles S. S. W. westerly, from the Nag's Head, above mentioned. Advancing towards Basseterre, and having passed the south end of Nevis, the course will be N. W. by N. When off Frigate Bay, run in until the Nag's Head appears to the southward of the mountain in Nevis, or until the hummock on the Nag's Head appears on with the southern part of the top of the same mountain; keep this mark on until a single tree on the green ridge behind the town of Basseterre comes on with the edge of Monkey Hill, or begins to shut in behind it; you may then anchor in 10 or 9 fathoms, mud or clay, with the fort, on the east side of the town, bearing north, about half a mile distant, and the west point of the bay W. by N. Vessels from the westward, when bound for the road, may run in with the single tree above mentioned just open to the eastward of Monkey Hill; and, when the points of high land on each side of Frigate Bay begin to shut in on each other, the water will be found to deepen from 7 to 10 fathoms, after having passed over a rocky ridge into clean ground.

The following remarks on sailing from Nevis to Basseterre, have been made by Mr. Backhouse. "In sailing past the island of Nevis for Basseterre Bay, give the S. W. point a birth of a mile and a half, and steer N. N. W. and N. W. by N. and there is no danger. You may anchor in 7, 8, or 9 fathoms of water, coarse sandy bottom, with Fashion Fort bearing N. E. the Half Moon Battery N. W. by W. and the town N. N. W. You cannot wood nor water here.

*Old Road* lies five and a half miles to the westward of Basseterre. In sailing close along shore to this place, the embrazures of the low battery on Stony Point (the eastern point of the bay) will first appear. The town on low ground will then come in sight, with its houses intermixed with trees. The anchoring-place is nearly midway between Stony Point and the town. In sailing to this spot, run first so far to leeward as to fetch it upon a wind, or nearly so; and then stand in under easy sail, directly for the gully to the eastward of the town; and when the church of St. Thomas, standing nearly a mile to the westward, is brought on with the flag-staff on Brimstone Hill, you may anchor, at about a cable's length from the beach, in 9 or 10 fathoms, stony, but good ground. Fresh water here is obtained by the casks being landed and rolled about 100 yards, then filled at the running gullet, and floated off to the boat. There is a great surf on the rocky shore.

The remarks made by Mr. Backhouse on *Old Road* are as follow: "Give the eastern point a small birth, and anchor a little to the eastward of a red house, abreast of a large gully, in 10, 11, or 12 fathoms of water. If you go abreast of the town, you will soon be off the bank. The mark for anchoring is *Old Road Fort* by the *Red House* N. by W. half a mile, and the extreme points S. E. and W. N. W. You cannot wood here, but watering is extremely convenient."

*Sandy Point Town* lies a mile to the westward of Brimstone Hill. Off this town, and to the eastward of it, the bank is narrow, and the ground rocky; the anchoring-place is consequently to the westward, at about a cable's length from shore, in from 9 to 15 fathoms, and the mark for anchoring is, the street extending from the landing-place, through the middle of the town, end on. In running along shore to the anchorage, you must cautiously avoid a reef, stretching half a mile from *Charles Fort Point*.

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*Remarks made in Basseterre Road and Old Road.*

In Basseterre, which is a large open bay, the marks of the anchorage are as follow: The long point of Nevis S. S. E. Nag's Head S. E. Bluff Point, W.  $\frac{1}{2}$  N. the town of Basseterre, north, distance off shore, half a mile, depth of water 7 fathoms, wood purchased, water better and easier got at Old Road, about one and a half league from hence, tides none.

In Old Road the following are the marks of the anchorage, viz: the Long Point of Nevis, S. E. southerly; Stony Fort, E. S. E. the westernmost point of Old Road, N. W. by N. Stony Point, S. E.  $\frac{1}{2}$  E. Depth of water where the anchor lay, 10 $\frac{1}{2}$  fathoms, one-third of a cable out—wind off the land; 13 fathoms under the stern—west distance off shore, two thirds of a mile. You land your casks, roll them about 100 yards, and fill them at a running gullet; then float them off to the boat. A great surf and a rocky shore.

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*The Island of Barbuda.*

The greatest extent of Barbuda, from S. E. to N. W. is 15 miles. Its highest land cannot be discerned at more than six leagues off. The greater part of the coasts of this island are very foul and dangerous. In its proximities, it is not uncommon to sound with 50 or 60 fathoms at the prow, and have only 4 or 5 fathoms at the stern; the reef extends several miles to the S. E. from the island, and the rocky soundings continue to the south as far as mid-strait between it and Antigua, where 9 fathoms, on the same kind of bottom, have been found. To the N. and N. W. the reef extends outward to the distance of 5 miles, and here lie the wrecks of the British ship Woolwich, and of a brig, which was under the convey of that ship.

There is anchorage in a well sheltered road on the western side, where ships may ride in 9, 12 or 14 fathoms of water; or within the reef in 3 $\frac{1}{2}$  fathoms, four miles above Palmeto or the S. W. Point. There is also anchorage off the S. W. coast, in 5 $\frac{1}{2}$  fathoms, sandy bottom, with Palmeto Point N. W. by W. three miles, and Cocoa Point, the south point of the island, E. by S. 4 miles distant.

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*The Island of Antigua.*

Antigua has, in general, a rocky shore, and is surrounded by many dangerous reefs. The climate of this island is commonly hotter, less healthy, and the hurricanes more frequent than those of Barbadoes. There being no rivers, and but few springs, and those brackish, the inhabitants are obliged to preserve the rain water in cisterns. Excessive droughts frequently impede and destroy vegetation.

Antigua, however, derives considerable advantages from the circumstance of having several excellent harbours, particularly English Harbour on the south side, which is capable of receiving the largest ships of war in the navy; here also is a dock-yard, with stores and all other materials and conveniences for repairing, heaving down, and careening ships. To the westward of English Harbour is the harbour of Falmouth, and to windward is *Willoughby Bay*. At the eastern end of the island is *Nonsuch Harbour*; and, on the north side, is the town and harbour of *Parkham*, &c. The coasts are, in general, very foul, especially on the N. and N. E. whence many reefs extend out to the distance of more than a league.

The town of St. John, on the N. W. side, is the capital. This town is situated on the harbour of the same name, in which there is a sufficient depth for merchant vessels, and perfect security in all winds. Ships from the eastward generally make for the S. E. coast of the island.



**WILLOUGHBY BAY.**—The first harbour on the S. E. side is that called Willoughby Bay, on the western side of which is a little island, called Sandy Island, environed to a short distance by sunken rocks. From the eastern side of the bay a long narrow reef extends, more than two-thirds over the entrance, and to within half a mile of Sandy Island. The passage in is therefore between the island and the reef; and even in mid-channel between, there is a shoal having only 9 feet over it, called the Weymouth, which lies only half a mile from Sandy Island, on which the Mail Packet Maria was lost, and 20 persons drowned, in March, 1826. Between Sandy Island and this shoal, there is a depth of 4 fathoms; between it and the west end of the reef there are 7 fathoms, and the channel is wider. At a mile within the entrance there is good anchorage, in 4 and 5 fathoms; in going up, it is recommended to borrow towards the larboard shore.

**ENGLISH HARBOUR.**—This harbour is perfectly safe, and lies close under the west part of the easternmost high land, so as to afford a shelter in all winds; and ships of war commonly lie here during the hurricanes. In the bay without the harbour, ships may anchor in 5, 6 or 7 fathoms. They must warp in, and cannot lie excepting N. N. E. There are, generally, flutterings of wind from the high land.

In entering the harbour, give the *Old Horse Shoe*, or low battery point, on the starboard side, a good birth, and keep as nearly as possible in mid-channel, between that and the opposite point, on which stands Fort Barclay, until you get into the bay on the eastern side, called *Freeman's Bay*. In this bay there are moorings for shipping, and good anchorage hence up to the store-houses on the western side, in 3, 4 and 5 fathoms. The water is generally smooth. It is not, however, perfectly safe for a stranger to conduct a ship in, as the entrance is narrow, and rather shoal. When you are off the harbour, a pilot, or the master attendant, will come on board.

Large ships lie at proper moorings, but small ones lie with one anchor to the E. S. E. and the other made astern, on shore. There are four moorings for ships in Freeman's Bay, just within the harbour's mouth, the best bower to the westward, and the moorings on shore to the eastward.

Wood and water are not to be obtained here. You may, however, obtain the latter at Falmouth, about a mile and a half to leeward. It is not very good, being soft, muddy and brackish.

**FALMOUTH HARBOUR.**—To sail into this harbour, run close in towards the western point, called Proctor's Point, and you will pass clear of a ledge of sunken rocks, called the Bishops, which lie toward the middle, just within the entrance, and terminate a shoal extending from the eastern point, on which there is a redoubt for the protection of the harbour; beyond these rocks there is good anchorage in from 3 to 6 fathoms of water. There is a battery on an islet within, for the defence of the town, on the western side of the harbour; beyond which there is a spring of fresh water.

Vessels bound to St. John's Harbour, from the south side of the island, on approaching westward, must give the coast a birth of three or four miles, until they come abreast of Johnson's Point, (the S. W. point of the island) in order to avoid the dangerous reefs which lie about 2 miles from shore, eastward and north-westward of that point. If bound to the north-westward from English Harbour, the course to abreast of Johnson's Point is first W. by S. or W. S. W. about 8 miles; then hauling towards the N. N. W. and keeping the lead going, still keeping at the above mentioned distance from the island, steer for Sandy Island, the little island lying to the westward of St. John's Road, and about seven miles N. by W. from Johnson's Point.

Or, in sailing from off English Harbour, to the westward, when to leeward of Falmouth Harbour, keep the small battery on the eastern side of the entrance of that harbour open with the western point of the same, until you are off Carlisle Bay, or Old Road. The bluff land of English Harbour being then kept open without that of Old Road, will lead clear of Johnson's Reef, in a depth of about 16 fathoms.

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On the western side of Antigua, at about half way up, and nearly a league to the southward of Sandy Island, is a large harbour, called *Five Islands Harbour*, and so called from a cluster of five remarkable little islands, which lie nearly in a line, about half a mile east and west, off the point on its south side. About three quarters of a mile to the northward of the harbour, and close in-shore, is another conspicuous little island called the *Hawk's Bill*. When you have approached so far to leeward with the mark above mentioned, namely, the bluff of English Harbour kept open without that of Old Road, as to have the Hawks' Bill open to the westward of the Five Islands, you will be clear of the reefs, and may tack up towards Sandy Island. In approaching this island, keep it on your starboard bow, in order to avoid several shoals extending to the distance of a mile from shore, to the N. W. of Five Islands Harbour.

Should the wind permit, you may run within Sandy Island; but it is better for strangers to go to leeward of it, at the distance of not less than two cables' length, so as to avoid a reef which stretches from its southern side to the S. W. Be careful not to stand above three miles to the northward of this island, lest you be caught by a lee-current, or touch on the shoals, which lie to the northward. By keeping in 15 fathoms, you may pass clear of the island in the night.

**ROAD of ST. JOHN'S.**—This roadstead lies about one mile and a half east, a little northerly, from Sandy Island. It lies in latitude  $17^{\circ} 10'$ , or very nearly so. The western point, on the south side, which forms the bay, is called the *Ship's Stern*, at about a mile north of which there is a dangerous ledge of rocks, with not more than three feet water over them, called the *Warrington*. Here are breakers in a wind.

The road lies to the southward of the Warrington Rocks, and has a depth of from 6 to 10 fathoms. The anchorage, which is two or three cables' length within the rocks, lies with the Ship's Stern S. W. by W. Fort James on the north point of the entrance of the harbour, E. S. E. and the Warrington N. by W. or with the flag staff of Fort James on with the north side of the island in the harbour, called *Rat Island*, where there are from 5 to 7 fathoms water, and good holding ground.

The middle of the Warrington Rocks lies with the northern part of the buildings on Fort James on with Rat Island above mentioned. Close to the westward of them, in the depth of 9 fathoms, the largest of the Five Islands appears open to the westward of the Hawk's Bill. The western part shoalens about a cable's length from the breakers, but the eastern part is bold-to.

Ships bound to the Road stand on upon a wind for half a mile above Sandy Island; then tack, and run close in to the Ship's Stern; but be sure not to get farther to windward than to open the Hawk's Bill without the land, or to bring it in a line with the easternmost of the Five Islands. When thus far in, if standing to the northward towards the Warrington, you must tack so soon as the flagstaff of Fort James appears on with the middle of Rat Island.

To sail up within Sandy Island, bring the westernmost of the Five Islands N. by E.  $\frac{1}{2}$  E. and keep them open on the starboard bow, which will lead clear of danger.

At the distance of a mile from the westernmost of the Five Islands, you will be in the channel; keep Sandy Island, as before mentioned, on the starboard bow, until you open the Hawk's Bill, and then luff. The eastern side of Sandy Island is nearly bold-to, and in the day, the shoalings may be seen. The Ship's Stern is bold-to; after the Hawk's Bill bears E. by S. you may haul up as near to it as you choose, there being 11 fathoms of water close to it. In steering for the harbour, keep along the south shore, which is all clear.

There is a bar at the entrance of the harbour, which stretches from the north side S. W. to the land on the south side. The deepest water, 14 feet, is on the southernmost part of the bar: the depth on the northern part is about 12 feet.

**NORTHERN SIDE of the ISLAND.**—The northern and western coasts of Antigua are environed by numerous reefs, (as shown on the chart) between which and the land there is, however, a good channel for shipping. At the N. E. part there are also a number of small islands, of which two or three of the outermost are called the *Bird Islands*; the whole are encompassed by reefs, which

render them inaccessible to shipping. Of the latter, the northernmost is a narrow ledge, part of which is sometimes dry: this ledge stretches N. E. about a mile from the northernmost Bird Island. A shoal of 3 fathoms lies about three-quarters of a mile to the northward of the end of the ledge, between which and the Bird Islands Reef there is a clear channel of 8 and 6 fathoms. The white water from the shoal may frequently be seen at the distance of a mile and a half.

The HARBOUR of PARHAM lies at the distance of two miles westward of the Bird Island's ledge. This harbour, though large, will admit small vessels only. The town is situated on the south side of the harbour.

A little island, called the *Prickly Pear*, lies off the west point of the entrance of Parham Harbour, and about 4 miles due west from the north end of the Bird Island's ledge. In advancing towards this island, and thence to Boon's Point two miles to the westward of it, be sure not to get over to the northward, as the reefs on that side are extremely dangerous, and in some parts, not more than a mile from the coast.

From Boon's Point to go clear of the Warrington Rocks, on the northern side of St. John's Road, the course and distance are W. S. W. southerly 4 miles.

The NORTHERN LEDGES, off the north coast of Antigua, commence with the rock called *Addison's Rock* on the east, and terminate with the reef called the *Diamond Reef* on the west. Addison's Rock is a shoal, having on some part only 4 feet of water, and lying nearly north of the fort on Barnacle Point, upon the western side of the entrance to Parham Harbour. It has a depth of about 3 fathoms around it. Within a short distance N. by W. westerly, from Addison's Rock, there are two other shoals of about 3 fathoms; and, half a mile thence, west, is a reef, sometimes above water, and called the *Horse-Shoe*. This reef bears N. one mile and a quarter distant from the *Prickly Pear*, close to the westward of the *Horse-shoe*, and between it and the great cluster of reefs which stretch to the westward, there is a channel of 5 fathoms.

At a short distance to the westward of Beggar's Point (the point to the southward of the *Prickly Pear*), there is a windmill; and, at the distance of one third of a mile to the S. W. there is another. These mills form the mark for sailing through the channel on the western side of the *Horse-shoe*; and steering S. by W. between them, will lead a vessel through.

A small shoal of only 5 feet of water, lies S. W. by W. at the distance of nearly a mile and a half from the *Horse-shoe*, and nearly at the same distance N. W. by W. from the *Prickly Pear*. There is also a shoal stretching half a mile from the western side of the *Prickly Pear*, which may be seen during the day.

Captain *Bradshaw* has observed, that there are so many shoals and rocky spots without the great reefs above mentioned, that it is dangerous to come too near. That, in particular, called the *Diamond*, lies a mile to the west of the reef, and in the channel between you have 6 and 5½ fathoms. You will be in this channel whilst you keep the western side of the leeward *Sister* in a line with the flag-staff of James Fort. The *Diamond* is of a circular form, and one mile in extent: the depth of water over it is from one to nine feet. To avoid it, when coming in from the N. W. bring the Ship's stern to bear S. by E. before you haul up with the fort, and then look out for the Warrington Rocks. If the wind will serve, you may pass close to the westward of the westernmost sister, and you will thus weather the Warrington, which bears north, above a mile, from the Ship's Stern. The westernmost part shoalens from the breakers a full cable's length, but to the eastward it is bold-to."

### *Remarks on the Coast of Antigua.*

[From the *Derrotero de las Antillas*.]

On approaching Willoughby's Bay, upon the S. E. coast, great caution is required, in order to avoid its Rocky shoals, and a Pilot will be requisite for strangers who enter here.

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From this bay the coast to the westward continues very clear, and in it you will soon find **ENGLISH HARBOUR**, which is an excellent port, having a dock-yard and careening-place for vessels of any size. The strait of this harbour is about a cable's length in width, and in the middle of it there are from 4 to 5 fathoms, and 3 fathoms at a quarter of a cable from the Points. After English Harbour, that of **FALMOUTH** follows, and thence the coast begins to be foul, sending out, to more than 2 cables length from it, very dangerous rocky reefs. Thus it continues to **CARLISLE BAY**, or the Old Road. From Carlisle Bay to *Johnson's Point*, the S. W. point of the island, the coast extends to the north, but has a rocky shoal of the length of  $2\frac{1}{2}$  miles, which lies at a mile and a half from the coast. Between this shoal and the coast there is a passage fit for any vessel, but it ought not to be attempted without a pilot.

From *Johnson's Point* the coast continues to the north, to the **FIVE ISLANDS**, on the south side of the harbour of that name: and another shoal of rocks and sand extends between these points, which lies out about a mile and a half from the coast: the depth between is very unequal, and the navigation therefore dangerous.

From the Five Isles the coast forms a great Bay, named *Five Islands Harbour*, of which the north point is called *Pelican Point*. At about two miles to the N. N. E. of this point, is the point called the *Ship's Stern*, which is the S. W. point of *St. John's Bay*. Between the two points is a sand-bank which extends out above a mile from the coast, and its edge is nearly on the meridian or south of Sandy Island, an islet two miles to the west of the *Ship's Stern*. A reef surrounds Sandy Island, and is three-quarters of a mile in extent from N. E. to the S. W.

Two miles to the N. E. by N. of the *Ship's Stern* are two islets, named the *Sisters*, which are three-quarters of a mile N. W. by W. from *Corbizon's Point*, on which there is a fort.

Between the two Sisters and Sandy Island, and just within this line of direction, is the rocky shoal called the *Warrington*, which has in its shoaler part, not more than 3 feet of water.

The town of *St. John*, situated at the bottom of a bay of the same name, is the capital of the island, and centre of its commerce. We, therefore, give directions which may guide any one to the anchorage. The north coast of this island is very foul, as already noticed; it is, therefore, more advisable, on advancing, to make the island on the south side, and direct your course so as to pass about two miles to the south of its southernmost points, and continue steering true west, but nothing to the north, until the westernmost part of the Five Islands bears north, when you may luff up to N. N. W. with which course you will pass about a mile from the outermost part of the Irish Bank, a shoal of sand and rock, and you will follow it until the Five Islands bear east, when, if the wind allows, you will steer so as to pass about two cables' length from the S. E. side of Sandy Island, taking care not to pass to the eastward of N. E. by N. that you may keep clear of the sand-bank, which extends from the coast between Pelican Point and the *Ship's Stern*, until Sandy Island bears north, when you may luff to the wind all you can; and, if you can, place the vessel's head towards the *Ship's Stern Point*, which is very clean, and follow on towards the Road within, and anchor in 5 or 6 fathoms water, nearly south from the *Warrington Shoal*. If, when passing between Sandy Island and the coast, the wind will not permit your approach to the *Ship's Stern Point*, you may follow the tack until *Fort Hamilton*, which is the middle one of three standing on the coast to the north of the town, bears east; then go about on the other tack, and continue beating, taking care not to prolong the north tack more than until *Hamilton Fort* bears east; or go about even rather sooner; but the south tack you may follow until you are within a cable's length of the shore of *Ship's Stern Point*, for it is very clean.

If, when to the west of the Five Islands, the wind will not permit you to pass to the S. E. of Sandy Island, you must steer to the north until the north point of Sandy Island bears east, southerly, and then you will haul by the wind, and prolong the stretch until you can weather Sandy Island on the other tack, and



having weathered it, you will beat in as above stated: that is, on the north tack, until you are nearly west of Fort Hamilton, and on the south tack, to within a cable's length of the coast, near the Ship's Stern.

To proceed to the northward, from the road of St. John, it is necessary to give a birth to the rocky shoal called the *Diamond* and others, which extend west almost to the meridian of the Warrington, and the northernmost part of which is nearly five miles distant from the Ship's Stern Point. To effect this, you must steer from the anchorage about N. W. by N. but nothing to the north of that, until Sandy Island bears from south towards east, and then you may steer north, which you will continue until the Sisters bear S. E. by S. when you may haul to the wind, and pursue your route, according to destination.

If, having made the north part of *Antigua*, you wish to anchor at St. John's, you ought to steer true west, passing outside of all the shoals; that is, avoiding the north coast by about four miles, until Sandy Island bears South, a little easterly, when you may steer towards it, until you are due west from the northernmost land of *Antigua*; thence steer for Ship's Stern Point, and so run, until, being something to the south of Fort Hamilton, you may haul by the wind, or shape the most convenient course to gain the anchorage.

The Channel between *Guadaloupe* and *Antigua* is most excellent, and does not offer the least danger.

The Channel between *Antigua* and *Barbuda*, on the contrary, is, at times, dangerous, particularly between May and November, during which season no one should pass through it, because there are many calms in it, alternating with very heavy squalls of wind; and, as the depth of the channel is so unequal, and the bottom frequently rocky, an anchor cannot be let go when the calms come on, and the risk is incurred of being driven upon the rocks, either on one side or the other, by currents that may occasionally prevail here.

### Montserrat and Redondo.

There is no harbour in the island of *Montserrat*, and the greater part of the coast is so encompassed with rocks, as to render riding dangerous, in case of a hurricane or tornado. The principal roadstead is off the town, and there are two others, shown in the chart, namely *Old Road* and *Ker's Bay*; but in all these a surf beats continually on the shore: large heavy goods are therefore landed and shipped by means of a boat, called a *Moses*, manned by expert rowers, who, when they see what is termed a *lull*, or abatement of the surge, push ashore, and lay the broad-side of the *Moses* on the beach, so as to roll out or admit the hogsheads, &c. Cotton, rum, and other commodities, which will bear the water, are generally floated off or ashore.

It has been recommended to those who lie near this island, when the state of the atmosphere indicates an approaching tornado, to get under way for *Antigua* or St. Christophers, according to the wind and other circumstances.

The Spanish description says, "*Montserrat*, which lies nearly S. S. E. and N. N. W. is a great rock formed by two mountains: the N. E. part is remarkably high, scarped or cliffy, and clean. The island has not the smallest bay, nor any breakers, except the break upon the very shore, which you may come so near as almost to touch it without the least risk, the N. W. point is also high and scarped, (or cliffy) and bluff. The highest parts of the island may, in clear weather, be seen at the distance of fifteen leagues. The S. E. part is higher than the N. W. but it has a gentler declivity, and where it joins the sea, is rather low: the south part is also very clean; but, when the breeze south-easts, the sea breaks upon it with much force. The road is an opening of some depth, which affords shelter only when the breeze is N. E. This renders it impossible for large vessels to anchor in it, and none frequent it but some small ones, to carry away the produce of the island, which they take to *Antigua*."

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Montserrat, is a very high, round, barren, and uninhabited rock, having the appearance of a hay-cock, and which may be seen from the distance of nine or ten leagues. There is anchorage on the west side of it, in the depth of 11 fathoms. You may approach the isle on either side, it being steep-to. On the S. E. side is a little islet, called the *Pinnacle*, which is nearly joined to the land.

### Aves or Birds' Island.

This little solitary isle, which takes its name from the multitude of sea-fowl, with which it is always covered, lies, according to the Spanish chart, in latitude  $15^{\circ} 50'$  and long.  $63^{\circ} 43'$ . It is extremely low, and surrounded by a sandy beach: in the middle it is somewhat higher than at its extremities, and has some trees. There are reefs on its S. E. and N. W. sides, which extend out to a short distance, and on which the sea always breaks. The length is about three cables, from north to south, and nearly the same from east to west. The height is about 12 or 15 feet above the level of the sea. At the western part of it there is good shelter from the sea, where a vessel may anchor in 10 or 12 fathoms of water, on a sandy bottom. This island may be seen, in a clear day, at three and a half or four leagues off, but the flight of the birds, at the setting of the sun, will always point out its situation.

Father *Laval* says, that there is anchorage on the S. W. side, at half a pistol-shot from shore, in 34 fathoms, white sand. He adds, there is neither pond nor spring of fresh water on the island: but it is supposed that, by digging at the distances of 150 or 200 paces from the shore, water might be found.

On the west and N. W. sides, are two islets or barren rocks, white with the dung of birds, which resort there. These islands are connected to Aves by shoals and breakers, which may be seen.

Mr. James Finlaison (M. R. N.) describes the Isle of Aves, as follows:—"The Island of Aves lies in lat.  $15^{\circ} 40' N.$  long.  $63^{\circ} 33' W.$  variation  $4^{\circ} 20' E.$  it is a low small island, about three-quarters of a mile in length; you will not see it farther off than six or eight miles; broken water extends from both ends of the island, about half a mile from it. Ships must be careful that they do keep near the parallel, in the night-time, as it is impossible to see it, being so very low; there is a slight covering of grass on the top."

The position of Aves, as given in the French Tables, is  $15^{\circ} 50' 38" N.$  and  $63^{\circ} 58' 17" W.$  The mean of the three statements is  $15^{\circ} 40' N.$  and  $63^{\circ} 38' W.$  A positive determination seems to be still *desideratum*.

### The Island of Guadaloupe.

The form of Guadaloupe is very irregular, as shown by the Chart, and the land is divided into two parts by an arm of the sea, called the *Riviere Salee*, or Salt River; a stream diminishing in width from 50 to 15 fathoms, and of which the soundings are in some places deep enough for a ship of five hundred tons, whilst, in others, there is scarcely water enough for a bark of fifty. The length of this strait is about two leagues, and no scene can be more pleasant than the passage; the water being clear and still, and the banks on each side lined with mangroves and palmettos, which afford excellent refreshment, and shelter from the heat.

The western division of the island, which is the most important, is divided into two parts by a ridge of very high rugged mountains, extending north and south; so high indeed, that the continual cold suffers nothing to grow but fern, and some useless trees covered with moss. Towards the south point there appears, in the

middle region of the air, a mountain called *La Souffriere*, or the *Sulphur Hill*, which is about 5,500 feet in height, above the level of the sea. This mountain exhales a thick black smoke, mixed with sparks, visible in the night. From the mountains flow many streams, that carry fruitfulness into the plains, and attemper the burning air of the climate.

The eastern division of the island, distinguished by the name of *Grande Terre*, has not been so much favoured by nature as the western part; indeed it is less rough, and more level, but it wants ~~any~~ and rivers; the soil more sandy is not so fertile, nor is its climate so ~~any~~. Its principal town, *Port a Petre*, or *St. Louis*, is a place of considerable trade.

The chief town of *Guadaloupe* is that named *Basse Terre*, situated on the west side, near the south end of the island.

The English ship *Temple*, being at anchor at *Basseterre Road*, had the westernmost part of the *Saintes* and some part of the western side of *Dominica* in one, bearing S. E. by S. *Montserrat*, at the same time, bore N. W. northerly, and the westernmost part of *Basseterre Bay* N. W. by N. distant one mile.

The *Flore*, French frigate, being moored N. N. E. and S. S. W. in this road, in 1772, in 7 fathoms, sandy ground, and the small anchor in 37 fathoms similar ground, had the following bearings by compass:—The fort to the S. W. of the town S. E. by E. the church N. E. the N. W. end of the town N. by W. *Point Irois* N. N. W. and the southernmost point of *Dominica*, S. E. by S.

Should you be bound from the road of *Basseterre* to *Antigua*, the best way is to weigh at night, and sail at such a distance from the shore as to keep the land wind, that it may carry you to the northern part of the island by morning, where you will have the sea wind to carry you across. Should you act otherwise, you may be caught by the baffling winds from under the high lands.

Off the N. W. point of *Guadaloupe*, there is a small but remarkable high rock, called *Tete de Anglois*, or *Englishman's Head*; it appears gray, and particularly distinguishes this coast, and there is no passage within it.

### Remarks on *Guadaloupe*,

[From the *Derrotero de las Antillas, &c.*]

This island, the mountains of which may be seen, in clear weather, at the distance of twenty leagues, is divided into two almost equal parts, by a channel navigable solely for boats and canoes. The eastern part is named *GRANDE TERRE*, and the western part is subdivided into two, by the mountains: the east being named *Cabes Terre*, and the west *Basseterre*. The capital of this island is *St. Louis*, or *Point a Pitre*, on the western part of *Grande Terre*, and at the south entrance of the *Rivierre Salee*, or channel, which separates it from *Cabes Terre*. The anchorage of *Point a Pitre* is sheltered, and vessels which have to remain at *Guadaloupe* winter in it. In the hurricane season, it is necessary to have a pilot to take this anchorage. If bound to it, you proceed toward the town of *St. Louis*, taking care not to get to the west of it, but keeping to the southward and eastward: that is, you must make it to the north-west of you.

On the S. W. point of *Basseterre*, stands the town of the same name, which is the most considerable in the island, and the centre of its commerce; this is the reason why it is generally resorted to. The anchorage here is a very inconvenient unsheltered roadstead, where there is a constant swell: its bottom, at the edge, is so steep, that at two cables' length from the shore, there are 80 and 100 fathoms. The ground is not good, and these circumstances make it necessary to keep close to the shore, and let go one anchor in 20 or 30 fathoms, on clay, and hang to it, without letting go another, that you may be ready to make sail the moment that winds from the S. E. quarter come on.

From the anchorage of *Basseterre* you may approach as near to the west coast as you choose, so far to the northward as the hill named *Gros Morne*, which is the N. W. extremity of this part of the island.

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Every one bound to Guadaloupe ought to make the south part of it, for the principal commercial ports are on it: if bound to Point a Pitre, you ought to approach within two miles of the south coast of *Grande Terre*, and continue at that distance to the Point and Bay of Fergeaut, on which is the town of St. Louis, whence you ought to take a pilot to carry you into Point a Pitre.

On this coast there are two roadsteads, with towns at them, the first, called *St. Francois*, and the second *St. Anne's*: between the last and Fort Louis, there is another town, a little island, named *Le Gosier*, which is nearly north from an island of the same name; from this islet to the west, in about two miles of the coast, are 6 or 8 fathoms of water.

If bound to Fort Royal, or Basseterre, direct your course so as to approach *Cabes Terre* about Point St. Sauveur; then follow the coast, at the distance of a mile or thereabouts, and pass about half a cable's length from *Point du Vieux Fort*, or Old Fort Point, which is the southernmost point of *Petit Terre*, and run up immediately when round it, in order to keep at the same distance, of half a cable's length from the coast, until you are opposite the town, where you must anchor.

It ought to be observed that, when sailing either to the northward or southward, to leeward of Guadaloupe, you ought to keep within two miles of the shore, as, by doing so, you may have the advantage of a light land-breeze, which will be almost always sufficient to pass it before day; but, getting farther off the coast, it is no uncommon thing to be four or five days absolutely becalmed. Any one who is not able to get near the land of Guadaloupe, that is, within the distance of two miles, must positively pass at seven or eight leagues from it to avoid the calms.

### The Saintes, Marie-Galante, Desirade, &c.

These Islands are dependencies of Guadaloupe, from which Island, *Marie-Galante*, the principal is eleven miles distant. The channels between them are generally clear and deep.

**THE SAINTES.**—The assemblage of little islands, called the Saintes, or All Saints, were so denominated from having been discovered by the Spaniards on All Saints' Day. They are all bold-to, and so happily arranged as to form as fine a road for shipping as any in the neighbourhood.

The two largest islands are called *Terre d'en Haut*, or the *Upper Land*, and *Terre d'en Bas*, or the *Lower Land*. The first is the easternmost, and contains the town or rather village, which is situated about half way down, on its western side. Between this town and a small island to the N. W. is the anchorage, which is nearly half a mile broad, and has a depth of 13 to 14, 16, and 6 fathoms. On the *Terre d'en Bas* is a neat wooden church, with two convenient creeks for anchorage and landing.

The islands have constantly a fresh breeze, let the wind blow from what quarter it may.

On the S. W. side of the upper island is a mountain, called *Mount de Filles*, the summit of which is 815 feet above the level of the sea; and which is therefore, a proper station for a signal-post. To the N. W. of this mountain, on the north coast of this island, is a remarkable promontory, called the *Sugar Loaf*, which serves as a guide to ships coming in from the northward; for, bearing S. W. by S. it leads between a rock, called the *Whale*, and a bank lying more to the north-westward, at the entrance of the channel, within which ships may haul round to the road.

In passing out hence to the westward, keep over towards the south shore, in order to avoid a shoal which lies at the distance of a cable's length from the south point of the island to the north-westward.

It is said that there is a shallow rock lying a mile and a half to the northward of these islands, of which the particulars are unknown.



**MARIE GALANTE.**—The land of Marie Galante is of moderate height, and it rises gradually towards the north. On the south and eastern sides are several sunken rocks and dangerous reefs, some of which extend nearly a league to sea; but the western side is a fair shore, with good anchorage in several places. The town, Basseterre, which is protected by a fort, stands on the S. W. point of the island.

Along the eastern shore are lofty perpendicular rocks, that shelter vast numbers of tropical birds. The western shore is flat, and the ground, in general, is proper for cultivation. It has several large caverns, where crabs are found, with many little streams and ponds of fresh water.

**DESIRADE or DESEADA.**\*—This is a small rocky island, destitute both of wood and fresh water, but whereon some cotton is cultivated. The island lies nearly E. N. E. and W. S. W. shaped like a galley, the eastern end making like the head or prow, and the western end like the tilt. But, on advancing towards the north side, some white broken patches will appear, like heaps of sand with red streaks in them. On this side there are some rocks under water.

There is anchorage off the S. W. part, at a mile and a half from some houses standing near the shore. You may anchor in from 5 to 7 fathoms of water, taking care to look out for a clear spot, as the ground is rocky. When at anchor, Petite Terre will bear south, easterly, and Point Chateaux W. by S. The latter is the easternmost point of Guadalupe, and may be known by a hummock on it. Between it and Desirade there are 22 and 25 fathoms of water.

**PETITE TERRE** is a small sandy island, divided into two parts by a shallow channel. It lies directly in the fair-way, or in a line between the eastern coast of Marie Galante and the isle Desirade. Captain Bishop has said, "There is pretty good anchoring by Petite Terre, to the westward, at two miles from shore, in 7 fathoms of water."

### *The Island of Dominica,*

Has, properly speaking, no harbours, but there is good and safe anchorage along the western side, all of which is bold. Ships are, however, exposed to westerly winds, as in the other islands; but those winds prevail only in the winter months.

The chief town is that called *Roseau*, or Charlotte Town, on the S. W. side of the island. In its road vessels may anchor in from 15 to 25 fathoms, good holding ground.†

Between three and four miles from the north end lies a noble bay, called Prince Rupert's Bay, from the famous Prince Rupert's anchoring there; which, besides its safety, its magnitude, the depth of water, and the goodness of the anchorage, has the advantage of three fresh rivulets running into it. Fleets destined to other parts of the West Indies commonly come to anchor in this bay, for the purpose of supplying themselves with wood and water, for which there are excellent conveniences.

Scot's Head, or *Point Cachacrou*, the south point of Dominica, is a high rock, having a flagstaff on it, which, from a distance, appears like an island.

The town of Roseau is about six miles to the northward of Scot's Head, and will be readily discerned when sailing along shore. Merchant-ships generally anchor in the bay off the south end of the town, but ships of war in the smaller bay to the northward, called Woodbridge Bay, abreast of a gibbet erected near the beach, and appearing on with the middle of a large cane-field. To come to

\* Properly *Desiderada*: it was the first land which Colombo made on his second voyage to America, and he gave it the name of the *Desired Island*, because he had for a long time before been beating about in this vast tract of waters, without seeing any thing but sea and skies.

† This is the description formerly given, but Mr. Backhouse describes as follows: "There is no danger in going in, and there are 6 and 7 fathoms at half a cable's length from shore. You may anchor in 7 or 8 fathoms, the other in 40 fathoms, very bad grounds. The anchoring mark is to bring the fort N. E."

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The course and distance from Roseau to Prince Rupert's Bay are nearly N. N. W. seventeen miles. The coast between is generally bold and steep.

**BARBADOES to DOMINICA, &c.**—If you are bound to Dominica from Barbadoes, you must steer N. N. W. till you have passed Martinique, and a N. W. course will then carry you to the northward of Dominica. Leaving Marie Galante on the starboard side, haul up close in with the north point of Dominica; you will see a round bluff making like an island, at some distance; go round that bluff, and you open the bay; turn into the north part, and anchor in 7, 8, or 9 fathoms. You will see the mouth of a large river, which anchor to the northward of, half a mile, and you will be opposite to a small river, which you water at, the best in the bay; the great river is brackish. There is another river to the southward, where you may anchor in 6 fathoms, clear ground; but in 10 fathoms you will have coral rocks.

The north point, above referred to, is that called *Cape Melville*; and the bluff is Prince Rupert's Head, which forms the north side of the bay.

When turning into the bay, its southern side will be in sight; which is a low point, with a remarkable high hill over it, called *Rolla's Head and Hill*. Prince Rupert's Head, on the north side, is distinguished by two fortified hills, called the *Cabrits*, which are connected to the main by a low marshy neck. At the bottom of the bay, which is a mile deep, is the town of Portsmouth, consisting of houses irregularly placed; westward of Portsmouth, on a rising ground at the inner part of the marsh which connects the Cabrits to the main, there is a small plantation, called *Cotton Hill*, with a few small houses. Over the town appear two high sugar-loaf hills, to the southward of which is a high mountain, whose summit is involved in clouds. To the southward of Portsmouth, at the distance of nearly a mile and a half, and on low ground near the beach, is a plantation, called *Picarde Estate*; and nearly midway between Picarde Estate and Rolla's Head is a fine plantation, called that of *Mount Allen*.

Nearly midway between Portsmouth and Picarde Estate, in the valley on the southern side of the two sugar-loaf hills that appear over the town, is the river called *Indian River*, which falls into the bay.

When working into the bay, you may stand boldly over, from side to side, which is a distance of nearly three miles. The bay is rather more than a mile deep. Prince Rupert's Head and Rolla's Head are both so steep, that either may be approached to the distance of a ship's length. When off Mount Allen, you may stand towards it so as to bring a single tamarind-tree, which stands to the northward of the middle of Portsmouth, on with the highest land behind it. You may stand towards Picarde Estate, until a little hill to the west begins to open with the cultivated part of Mount Allen Estate, without the western edge of Rolla's Hill. When standing towards the marsh, between the Cabrits and Cotton Hill, you should tack in 5 or 7 fathoms, according to the ship's draught.

From the inner part of the Cabrits, round the bay to the western side of the cultivated part of Mount Allen Estate, a shelf stretches from the beach, which is, in general, a cable's length broad; off Indian River it is a cable's length and a half; at about that distance there are 3 fathoms of water; thence it gradually deepens to 5, 7, and 10 fathoms, and then suddenly to 15, 20, and 25 fathoms. The clearest ground is in the shoal water; for without the depth of 10 fathoms, it is rocky. The best anchorage is off the tamarind-tree, as above mentioned, and the coast seen over the low land within the Cabrits on with the western part of Cotton Hill, or on with the drain at the western end of it. Should you be to the southward of the tamarind-tree, you must run in until the highest ground on the western side of the cultivated part of Mount Allen Plantation is open without the western side of Rolla's Hill. With either of these marks the ground is muddy, and the depth is from 9 to 7 fathoms. There is anchorage farther out, in from 12 to 20 fathoms, fine dark sandy bottom, at from one to three cable's length from shore, with the tamarind-tree E. N. E.

There is good fishing and good hauling for the seine throughout the bay. The water of the small rivers is to be preferred, that of the larger being brackish.



*Remarks from the Derrotero, &c.*

The Derrotero says, that Dominica is the highest of all the Antillas: it has much wood and is very fertile. All its coasts are clean, and you may approach within less than a mile of them. On the west coast they experience great calms, which extend six miles out to sea; and here it is necessary to navigate under moderate sail, and with much caution, on account of the heavy gusts that abruptly proceed from the openings and valleys of the mountains; for, if caught, you may sustain serious damage from them. This island has neither harbour nor secure anchorages; the best are those of Roseau, on the south part of the west coast, and Rupert's Bay, in the northern part of the same coast; in both roadsteads they anchor at less than two cable's length from the shore, and in front of the towns: there is no need of instruction for going to them, for there is no hidden danger.

After what has been said of the calms and gusts of wind on the west side, it seems that the best way to avoid them will be for those bound to Rupert's Bay to make the north part of the island; and for those bound to Roseau, to make the south. The channel between Martinique and this island offers no danger whatever, and the currents set to the N. W. but they are of little importance.

*The Island of Martinique.*

Martinique is about twelve leagues in length, and lies N. W. by N. and S. E. by S. Its breadth is extremely unequal, and scarcely any where more than four or five leagues; and if you include the promontories, which project in many places one or two leagues beyond the rest of the island, its circumference will include above 30 leagues. The land is very uneven, and every where intersected with large hummocks, in the form of sugar-loaves. Three mountains rise above these innumerable hummocks, the highest of which has been a volcano; it appears like the crown of a hat, and may be plainly seen from every side of the island.

The principal towns are those named *St. Pierre* (St. Peter,) and *Fort Royal*, both on the western side of the island. The latter which is very advantageously situated, near an excellent harbour, and under cover of a peninsula entirely occupied by a fort, is the residence of the Governor. It stands on the north side of a deep bay, called *Qui de Sac* or *Royal Bay*, and is situated to the N. W. of the fort. A little harbour on the east of it is called the *Garenage*. Here are all the conveniences for refitting ships of war.

On every side of the island are large bays containing good harbours and sandy coves, but some of them do not afford protection during the hurricanes.

The DIRECT and TRUE course from the north end of Barbadoes to *Point Salines*, the south point of Martinique, is N. W. distance 31 leagues; but the course to be taken should be N. W. by N. to allow for a lee-current. *Point Salines* is low, and has off it, three rocky islets; when these bear west, you may see between them and the point. To the westward of the islets, there are several dangers.

The *Diamond Rock*, which lies off the S. W. point is, according to the description of Captain *Hester*, about twice the size of the cupola of St. Paul's in London, and nearly as high. To the N. E. of it is Great Diamond Cove. There is no sailing within the rock, but on the south side it is bold.



Martinique: the Diamond bearing W. by N. and Point Salines distant 2 or 3 leagues.

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*Having made the Diamond*, the course thence to *Port Royal Bay* is N. N. W. 3 leagues. The tract is free from danger, and the shores bold. When you see the bay open, haul up, and the fort will be in sight; turn up towards it until it bears N. by E. or N. when you may anchor on a bank in 8 fathoms, or off the bank in from 14 to 17 fathoms, which is the best ground. The bank has coral on it, but is not rocky.

Although the harbour off Port Royal is included among the best harbours in the Caribbee Islands, yet it is so impeded by several keys or shoals composed of hard gravel, limestone, and coral, that no stranger should attempt to sail among them in a large ship. There is a ground nearly in the middle of the harbour, the lower end of which lies a mile and a half below the fort, whence it runs to a considerable distance above it. The least water on this bank is 3 fathoms, but on either side are from 10 to 20. Below this ground ships may stand over from side to side. To anchor, you may bring the church to bear north, as above-mentioned; but steer directly in, as a bank of not more than 6 feet of water lies off the fort. The watering-place is River Monsieur, to the eastward of the fort. The tides are not regular, but they never rise above 17 inches.

Between the *Diamond Rock* and *Port Royal Harbour*, there are three small coves, the southernmost of which is called Little Diamond Cove, and the others Grand and Petite Ance d' Arlet, or Arlet Coves. At the S. W. corner of the harbour there is a small green islet, strongly fortified, called *Islet Aux Ramiers*, or *Pigeon Island*, from which the fort bears nearly N. by E. In working into the harbour, by keeping the lead going, and having weathered Pigeon Island, you may anchor at pleasure.

On the South Side of Pigeon Island there is a little roadstead for small vessels. In order to gain this place, those who are well acquainted go round the N. E. point of the islet, and turn in. The south shore is steep. The anchorage lies with the western part of the isle bearing North, N. by W. or N. N. W. in 7, 8 and 9 fathoms, clear ground. Be cautious of approaching too near the eastern shore, as a bank stretches from it, which breaks with a great swell.

**PORT ROYAL to ST. PIERRE.**—The N. W. point of Port Royal Harbour is low, though bold; and has a masked battery on it. To the N. W. of this point, distant about 2 miles, there is a rivulet of fresh water, and a village called *Case des Navires*, off which there is excellent anchorage, from abreast of its westernmost houses to abreast of a battery east of it. The anchoring-ground, or bank, reaches only to the distance of a cable's length and a half from shore. Within half a cable's length of the beach the water is shoal, deepening thence to 3 fathoms on the outer part, and to 5, 7, 10, 15, 18 and 25 fathoms, at a cable's length distance; off the battery the ground is clean, softening to soft mud abreast of the westernmost houses. Without the depth of 24 fathoms, the ground is hard and gravelly.

In order to anchor in this road, you must turn to windward, before you stand in, until the easternmost cluster of houses in the village appears on with the middle of the valley behind them; then steer in with this mark. When the point between Case des Navires and the next village, called *Case Pilote*, opens without the land to the N. W. you will be entering on the bank in 43 fathoms; then steer so as to have the westernmost house of the cluster, above mentioned, on with the middle of the valley; and with *Le Grosse Pointe*, on the south side of Port Royal Harbour, shut in behind Point Negro, you may anchor a large ship in 18 or 20 fathoms. Small vessels may stand farther in, with the same mark, to the depth of 9 or 7 fathoms.

**ST. PIERRE, (St. Peter)** the trading town of Martinique, lies about 4 leagues to the N. W. of Port Royal. It is built partly upon the rising grounds at the foot of a ridge of hills, and partly along the shore of a spacious circular bay, which forms an open road to the southward and westward.

The best anchoring-place, called the *Frigate's Anchorage*, lies in the southernmost part of the road, (when you see some steep cliffs and rocks) in 7 fathoms, gravelly ground. If you bring the highest steeple of the town N. 4 E. and *Point Carbet* (on the south side of the road) south, you will have 7 fathoms, cozy ground.

The French frigate *La Flore*, being moored in this road, in 1772, with one anchor in 25 fathoms, fine sand, and the other in 4 fathoms, same ground, had the following bearings by compass. The variation at the same time was 5° 52' E.

*Point Precheur*, N. W. by N.  $90^{\circ}$  N.: the *Galley's End*, N.  $90^{\circ}$  W.: the *Black Friar's Tower*, N.  $90^{\circ}$  W.: the *Negroes' Chapel*, E.  $20^{\circ}$  N.: *Point Carbet* S.  $40^{\circ}$  W.

If you intend to stay some time in this road, it is proper you should lie with the anchor close to the shore, to the S. E. or E. N. E. (or even on shore) and the other to the N. W.

In the hurricane months, that is, from the 15th of July to the 15th of October, ships cannot lie with safety in this road, and the French ships are generally obliged to leave it on the 15th of July at farthest. If they are to remain for a longer time at *Martinique*, they retire into *Port Royal Bay*, where they lie secure against the hurricanes; they may also find shelter in *Trinity Bay* to the windward, and on the north side of the island.

Mr. *Backhouse*, in his description of the Road of *St. Pierre*, has observed that there are 30 and 40 fathoms at two cable's length from the shore: but farther off than that you will be off the bank. They generally lay one anchor in 25 or 30 fathoms, and the other in 12. The marks with which we anchored were the fort S. by E.; the great church N. off shore one cable's length, in 24 fathoms.

In sailing from *Case Navires* to *St. Pierre*, you will pass the village and battery of *Case Pilote*, and those of *Port Capet* and *Carbet*. Between the latter is the promontory called *Morne aux Beufs*, which bears N. N. W.  $\frac{1}{2}$  W. distance 5 leagues, nearly from the *Diamond Rock*.

**NORTH-EASTERN SIDE OF THE ISLAND TO ST. PIERRE.**—Ships advancing from the eastward, off the north side of *Martinique*, generally take their departure from *La Caravelle*, or the *Carcel*, a remarkable rocky islet, lying about 1½ mile off the N. E. point. In running thence along the coast, you must cautiously avoid the effect of hurries, or sudden and partial gusts of wind, which frequently proceed from the narrow openings of the mountains; and if the top-gallants are up, you must keep a good look out after the ballards. For it is to be observed, generally, that the mountains intercept the course of the trade-wind, and consequently occasion calms and variable winds to leeward.

This side of the island is well cultivated: you will distinguish the plantations to the very summit of the hills, which are themselves covered with trees and grass excepting only the *Mont Pele*, or *Red Mountain*, the highest of those hills, and the only one that is barren.

*Point Macouba*, the northernmost point of the island, is distinguished by a waterfall, or kind of torrent, falling into the sea, from the top of a high rocky coast. About 5 miles to the W. S. W. from *Point Macouba*, lies a round rock detached from the land, called the *Pearl*, to the southward of which are the little isles, called those of *Precheur*, or *Preacher*. Next follows the point of the same name. Soon after, *Point Precheur* presents itself, which ends in a flat hummock, with a plantation on it: then the town of *Le Precheur*. Beyond *Precheur Point* you will discern two others in a line: namely, the *Morne aux Beufs*, before mentioned, to the southward of the road of *St. Pierre*, and the *Diamond Rock*, to the southward of *Port Royal*.

Between the north end of the island and *St. Pierre* there are several villages, protected by batteries. The coast is very steep and clear of danger.

Having doubled *Point Precheur*, you will descrie the ships which lie at anchor in the Road of *St. Pierre*, as they all have awnings to protect them from the intense heat of the sun. They would take them at first sight for so many white houses, whose roofs are built like a terrace; you cannot come to anchor close-hauled; for the wind, which always prevails from the E. and E. N. E. will compel you to traverse up to the road.

### *Remarks on the Navigation about Martinique, from the Derrotero de las Antillas, &c.*

The land of this island is high and rocky, and may be discerned at about 15 leagues off. Its eastern part is full of bays, but they afford little shelter, and are frequented by coasters only. From the South Point, or *Point Salines*, along the western coast, to the North Point, *Point Macouba*, you may approach within a mile of the coast without any danger.

The principal anchorages of Martinique are those of Port Royal and St. Pierre. That of St. Pierre is an open roadstead, which affords shelter from the general breezes only; and vessels that are obliged to remain in Martinique during the hurricane season, go to Port Royal to pass it over. The Fortress called Port Royal, is on a tongue of land, which runs nearly half a mile to the south into the sea; from the S. W. part of this tongue, a shoal of sand and rock stretches out, but it may be easily discovered by the colour of the water. By the eastern side of this point is the harbour and arsenal, where vessels anchor in the greatest safety; but they enter into it only in the season of hurricanes, or for the purpose of careening: its bottom is excellent, with a depth of from 6 to 10 fathoms. The city is about one-fourth of a mile to the north of this point, and at the sea-side, on the west part, in Flamingo Bay, which is therefore the anchorage for merchant vessels; and, indeed, generally, for all vessels which are not to remain long at Martinique.

*If you approach Martinique, on the north side, and mean to anchor in the Road of St. Pierre, you may haul in as close as you choose for Macouba Point, and should run along the coast afterwards so as to pass outside of the *Ilets du Seron*, which lie on the N. W. point of the island; and from these you must shave the *Point du Precheur* (Preachers Point) within half a cable's length, in order to run and anchor in front of the town of St. Pierre, or a little to the south of it; keeping in mind that the coast is so steep, that at half a cable's length from it, you will have 4 or 5 fathoms water, and 35 or 40 fathoms at 3 cable's length. Vessels moor with two anchors, one to the west, in 35 or 40 fathoms, and one to the east in 4 or 5 fathoms; it is, however, better to have a cable on shore in place of the anchor to the east, that you may not drag with the strong gusts of wind which come over the land.*

*If you are bound to Port Royal, you will steer from Pointe Precheur to Morne aux Bœufs, which is the south point of the Bay of St. Pierre; and from it you will sweep along the coast to shave *Point des Negres* (Negro Point) from which you must haul to the wind all you can, in the understanding that, from the said Point to Flamingo Bay, you may shave the coast without any risk.*

As it is necessary to beat up from Negres Point to the anchorage, keep in mind that the shoal, which runs out from Port Royal Point, extends to the west as far as the meridian of a brook which runs into the sea, to the westward of the city; and thus, when you mark the said brook at north, you must not prolong the south tack further than to bring Port Royal Point a little to the northward of east, but ought rather to go about before you bring it to bear east, and anchor on the other tack opposite the city. If you have to enter the harbour, it is advisable to take a pilot.

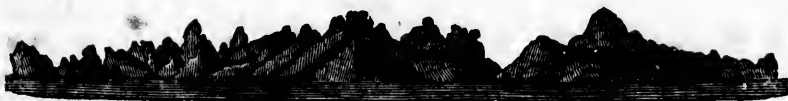
*Those approaching Martinique from the southward, must steer so as to pass close to the Diamond Rock and Point, and shave Cape Solomon, where the course is nearly north, but nothing to the east of it, until Pointe Noire bears east; from this situation you will haul by the wind to take Flamingo Bay, or enter into the harbour as may be requisite, it being well understood that you can anchor in any part of the great bay.*

*If coming from the south, and bound to St. Pierre, you must steer from Solomon's Cape to Morne aux Bœufs, hauling in to anchor to the S. W. of the town as already directed.*

It is almost a matter of indifference what part of Martinique you make: only, in case of the winds being free from the N. E. you may consider it preferable to make the north side.

The strait between St. Lucia and Martinique is clear of all danger; the breeze is always steady in it, and its current is scarcely perceptible.



*The Island of St. Lucia.**St. Lucia bearing N. W. by W. 3 or 4 leagues*

About a mile and half to the west of the Sulphur Hill, on the sea-shore, stand two high peaks, called by the French *Les Pitons*, and, by the English, the *Sugar-loaves*: they lie very near each other, but between them there is opening enough to distinguish both, on coming from the southward.

On the western side of the island, at the distance of about three leagues from its northern cape, is *Port Castries*, or the *Carenage*, one of the harbours in the Windward Islands, having deep water and good ground all over it. These careening-places have been formed by nature, which require no wharfs, and only a capstan to turn the keel above ground. Thirty line-of-battle ships might lie securely here, unmoored during the hurricanes. No ships can enter without warping in; but there is always a breeze to carry them out: and, in less than an hour, the largest squadron may be in the offing. The shores are so bold, that a first rate man-of-war may approach within six yards of them.

Nearly a league to the southward of the Carenage, lies the *Grand Cul de Sac*, or *Grand Bay*: and, nearly two leagues to the northward of the same, is the Bay of *Gros Islet*: these places form excellent roads for ships of war.

When bound from the northward to the Carenage, you will see a bluff two leagues to the leeward, which may be approached boldly; you must haul close in to see the harbour, then run into it as far as you can fetch and warp in. When the sun shines all the dangers may be seen.

Should you have occasion to anchor off the south coast, you may do so in Old Fort Bay (*Anse de Vieux Fort*) under the S. E. bluff, unto which you may turn till you bring Point Moulacique, the southern Point, to bear S. S. W. and then anchor in 7, 8 or 10 fathoms good ground. At the north part of this bay there is a river, which runs into the sea. If you water here, it must be by proceeding half a mile up with the boat; unless after great rains, when you may fill at the entrance.

*Remarks on St. Lucia.*

[From the *Derrotero*, &c.]

The Island of Santa Lucia shows high, and in detached hills, with various peaks sufficiently visible: in particular two, at its extreme S. W. part, called the *Pitons*, which may be seen at the distance of sixteen leagues; they are black, and covered with wood.

At the N. W. point of this island there is an islet, named the *Gros Islet*, which is rather more than a mile distant from Point Salines, to the S. W. Between Salines Point and the Gros Islet, there is a rock named *Burgaux*. To the south of the islet is the Bay of *Gros Islet*, or Roadstead of St. Croix, with excellent anchorage for every class of vessels, having a depth of from 17 fathoms down to 5 fathoms, which are found at half a mile from the coast; between the coast and the Gros Islet, there is a passage for small vessels only, it being impeded by a shoal, on which there are only 2 fathoms of water. The Gros Islet is foul, and you ought not to approach nearer to it than two cables' length.

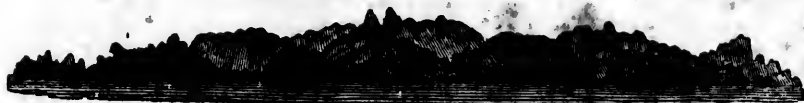


Near *Brelotte Point*, to the south of Gros Islet Bay, there is an islet, which forms a strait, practicable for any vessel, it having 7 fathoms of water in it. This islet is, like the Gros Islet, foul, and you must not approach nearer to it, than two cables' length; the coast, on the contrary, is clean, and a rock, which is also clean, lies about a cables' length out from it. On all this coast, there are from 8 to 10 fathoms, at half a mile from it, and you may anchor in any part, though the safest anchorage is in the road of St. Croix, where there is good shelter from the sea.

About a mile and a half to the S. by E. of Brelotte Point, there is a rocky shoal, extending nearly in that direction, which is a mile in length and about two cables in breadth; its distance from the coast is more than half a mile. This is the only danger on all the western side of St. Lucia, on which there are excellent anchorages, but principally in the Carenage, which is two leagues to the S. by W. of the great islet, and the best harbour in the Lesser Antillas, with excellent anchorage, very clean, and three natural coves in the interior, and such steep shores, that they might serve as wharves, or moles, at which the largest men of war may be hove down. This harbour has, however, the disadvantage that you cannot enter it except by towing or warping, it being impossible to beat in, on account of its narrowness; but, in exchange, it is easy to get out of it even with a large squadron; as you must enter either by towing or warping, it is sufficient to say that the south point sends out a very shallow tongue of sand to the N. W. and that the North Point is deep and clean, and you may approach within a quarter of a cable's length of it without giving a birth to more than the rocks which are seen.

The strait between this island and St. Vincent's is subject to tornadoes, and strong currents to the W. N. W. and as Port Castries and the Bay of St. Croix are towards the northern extremity of the island, it is advisable to make the land, when bound to them, from the northward.

### *The Island of St. Vincent's.*



*St. Vincent bearing S. by W. about 4 leagues.*

From Bequia to St. Vincent's, the course is north about two leagues. The channel between these two islands is very good to come through, if bound from Barbadoes to the Salt Tortuga, or the Spanish Main; and there are small trading vessels which work up through it. St. Vincents is about five leagues long, and lies nearly N. and S. and E. and W.—the north end which is much higher than the south part, is inhabited by about 2000 natives or Caribs. On the north end there is a volcano, called La Souffriere, or Sulphur Hill, near Spanish Point. On the west side of the island, which is bold, are several bays, having all of them fresh water rivers, and on the S. W. side you make good anchorage, as near, or as far off, as you please, especially in Kingston Bay, where the chief town is situated. But the best bay of the island is Balair Bay; when you turn up between St. Vincents and Bequia, you will see a large bluff of land, and just to windward of that is Balair Bay or Calliaqua; the shore is bold on each side; run into 10, 20 or 15 fathoms and anchor: there are two rivers which run into the sea.

The course from Carlisle Bay to the south end of St. Vincents, is W. northerly thirty-three leagues. If you intend to anchor in Kingston Bay, you will see

a small high peaked island, called Young's Island; pass the bay to leeward of this island, and go round a long sloping point; you may borrow within pistol shot; but if the wind takes you short, you may anchor in 35 fathoms and warp in. There is a small ledge of rocks close on the weather shore, within 6 fathoms.

On the west side of the island, which is bold, there are several bays, all of them having fresh-water rivers; and on the S. W. side, ships may anchor at pleasure, especially in Kingston Bay, on which the chief town of the island is situated.

The best bay, however, for shipping, is that called *Calliaqua*, or *Tyrrel's Bay*, at the south end of the island: this may be known by a high bluff, which will be seen when turning up between St. Vincent's and Bequia, and which lies on the leeward side of the bay. The shore is here bold on each side: run into 19, 20 or 15 fathoms, and anchor. There are two rivers, which run into the sea.

Kingston Bay is completely open to the S. W. and is more than a mile in breadth. The town is at the head of the bay, close to the water-side; the anchorage good, and the soundings regular, with a bottom of dark sand, apparently clear, and forming a good holding ground. The water is deep on each side of the bay, and you may round the eastern head, called the *Old Woman's Point*, as close as you please, there being 20 fathoms at not more than 200 feet from the shore. The best anchorage for a frigate is with the Court-House bearing north, in 19 or 20 fathoms, not more than a quarter of a mile from the beach. There is a light current setting along the bay, but it is not regular: the tide rises about 4 feet. Fresh water is good and easily obtained.

**PRINCESS or BARAWALLY BAY.**—This little bay lies 5½ miles to the north-westward of Kingston, and its north side is formed by rocks called the *Bottle and Glass*, between which and the main there is a passage for boats. There is no danger in going in; and, in coming from the northward, you may haul close round the Bottle and Glass. When round this point, luff up as much as possible, and you will open the town-barracks, bearing N. E. by E. ½ E. which may be kept thus until the Bottle and Glass Point bear N. W. you will then be in about 22 fathoms, with sandy ground.

All along the Bottle and Glass side, is rocky, but the bottom of the bay all sandy and good ground. If you moor in and out, which is usual for ships of war, you may warp in, and lay your inner anchor in 12 or 13 fathoms of water, and your outer anchor will be in 32 fathoms. Moor a cable each way.

### *The Granidines, or Granidillos.*

The Granidines form a chain of innumerable rocks and barren spots, good for little, which extend to N. E. by N. for about 16 or 18 leagues. Some, however, are of considerable size and value, particularly Cariuacou and Bequia, both inhabited, and producing good coffee and cotton. Cariuacou lies about 6 leagues N. by E. ½ E. from the N. W. of Grenada; it is of a circular form, of about 6 miles in length and breadth, and has a commodious harbour.

Bequia, called also Little Martinique, is the northernmost of the Grenadines, and lies about 2 leagues S. from St. Vincents; on the W. side it has a very good sandy bay, where you may ride occasionally; and wood is to be got there, with plenty of fish, but no water. The little islands to the southward of Bequia, are very fair, and near them you may stand boldly, having neither rocks nor dangers you need to fear.

N. by E. course from Point Laurent, or the N. W. point of Grenada, will carry you clear along the Grenadines.

Observe that, towards the south part, it is rather dangerous to come near in the night.

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### The Island of Grenada.

There is good anchoring ground along the coasts, and on the eastern and western sides are several small bays and creeks, commodious for vessels, as well as for the landing and shipping of goods.

The principal town is that of St. GEORGE, in the S. W. quarter of the island, which is situated on a bay of the same name, formerly called *La Grand-Bay*. This bay is formed by a point, called *Molenier's Point*, on the north, and *Cabrit* or *Goat Point* on the south. The distance between these points is 3½ miles. The space between is not entirely clear, as a coral reef extends out to a considerable distance from *Point St. Eloi*, which lies a mile to the south-eastward of *Molenier's Point*; and there is a sand-bank, of only 17 or 18 feet of water, on which coral is beginning to grow, at some little distance off the fort point, on the north side of the entrance to the harbour.

The chief bay, on the eastern side of the island, is that called *Greenville Bay*, which is open, and protected by extensive reefs.

The town of GREENVILLE is a port of entry, having its distinct custom-house establishment. The villages are generally on the shipping bays around the island.

On the south side of the island, immediately on the western side of the Point of Fort Jedy, and 2 leagues to the eastward of *Salines de Point*, lies the harbour called *Calavine*, or *Egmont Harbour*, which is very deep, and where, it is said, sixty men of war could ride in safety, without anchors. The entrance is nearly half a mile in breadth. Within, its peculiar conformation is such, that it may be considered as forming two harbours; namely, the Outer and Inner Ports. The entrance into the latter is narrow, and its length rather more than half a mile. The depth in the greater part is 7 fathoms, with excellent holding ground, being every where a soft oozy bottom. The ships may here lie along side of the warehouses, and take in their lading with great ease and convenience; after which, they may, with very little trouble, be towed into the outer harbour, which enjoys this peculiar advantage, that ships can sail in or out with the common trade-wind.

In sailing off the south side of the island, there is little danger until you get to the westward of Fort Jedy Point. But thence to the rocks named the *Grampuses*, it is necessary to keep a good offing, as the ground in-shore is very foul, and full of reefs. The *Grampuses* lie about three-quarters of a mile off the land, with the Point called *Pirogue Point* bearing N. ½ W. they appear just above the surface, and there is a passage within them, but it is not deemed safe.

Off the north side of the island, in the channel between it and Redonda, or Round Island, there stands a remarkable rock, called *London Bridge*, (from its having a natural arch in it) and from the south side of which extends a reef. This rock may be easily avoided by keeping over to the north side of the channel. Hence, and along the west coast of the island, the shore is bold, all along, to the point of *St. Eloi*, whence a coral reef extends, as before explained.



Islets off the North End of Grenada.

**ST. GEORGE'S BAY.**—When sailing into St. George's Bay, from the northward, give *Molenier's Point* a small birth. You may run within half a cable's length of it, in 8 or 9 fathoms. The point is low, with some straggling trees on it, and makes like an island. When near the point you will see St. George's Fort, bearing S. S. E. Keep your luff for the fort, and, when you cannot fetch

near enough to anchor, with the fort bearing east, tack; or you will be in danger of running on the three-fathom bank, before noticed. The soundings are very regular from Moleniers Point,—some casts 20, 13, 9 and 12 fathoms; and inshore, towards the fort, from 9 to 5 fathoms, the bottom is foul.

To sail within the three-fathom bank or middle ground, you may be directed by *two white houses*, over the town, about half way up the hill. Keep them open with the north end of the fort, and run directly in, until you see a single tree to the southward, upon a little hill, open a good sail's breadth to the northward of a large tree close to the shore; you will then be within the bank, and may pass the fort point, at the distance of half a cables' length, in 4 and 5 fathoms. In the mouth of the harbour there are 15 fathoms of water, but it shoalens very fast to the southward.

*The best anchoring ground in St. George's Bay*, is off the mouth of the harbour, at about a cables' length from the fort, with the two white houses, above mentioned, open to the southward of the fort; but, if you anchor in the bay, off the town, the houses must be open to the northward of the fort and bear E. S. E.

*In advancing towards St. George's Harbour from the southward*, it must be observed that, after passing Point de Salines, there is a very dangerous coral reef lying between that Point and Goat Point, with only 2 or 3 feet over it, in the shoalest part. This bank lies with the signal-staff of Fort St. George in one with a house that has two little turrets or pavilions, situated on the top of a hill a little to the eastward of the redoubts on Hospital Hill. With this mark you will be in a line with the reef, and must give it an offing. The bank is about a mile in length, lying parallel with the shore; within it, there is a narrow channel, through which small craft frequently pass.

*In running from the eastward*, towards Point de Salines, you will see islet *Ramieur*, a very small island lying rather more than half a mile from the nearest shore, and nearly a mile from the point. Give that islet a birth of a mile, and do not attempt to pass within it, as the passage is shoal. To Point de Salines it is sufficient to give a birth of half a mile, as at that distance, there are 7 fathoms water. So soon as you pass the point, the bay will be open. You must now carefully avoid the bank, above described, which you will have passed, when a remarkable house, like a summer house, upon a high point close to the end of the reef, bears S. E. On the bank, the sea frequently breaks.

*To sail into the harbour*, you leave the three fathom shoal, as before directed, on the starboard hand, and run in close under the fort; and then warp up. The ground is all clear, and the harbour capable of containing, with the utmost safety, a large fleet of ships of the line.

You will generally, be obliged to work up into the bay, as it lies open to the westward, and the trade-wind blows directly outward. The true entrance of the port is from W. S. W.

**GRENVILLE BAY.**—This port lies about half way down the island, on the eastern side, and all those bound for it must be very cautious, and not go to leeward of it; for, if they do, they must pass round Point de Salines, and turn to windward, on the other side of the island; as the current sits so strongly to the southward, that, with the prevailing winds, the fastest sailing vessel cannot lead up. They should heave to a little to windward of the Grenville Rock, which lies to the north-eastward, (off Telescope Point,) and is round, pretty high and steep on all sides. Upon firing a signal, a pilot will come off, and take charge of the ship.

The marks for going in, are two white beacons, formed at the head in shape of a diamond. One stands at the head of the bay, and south end of the town, at high-water mark; the other a little inland on the side of the road leading over the mountains. They bear, when in a line, N. 74° W. By keeping them thus you may run directly in, under an easy sail. Be careful to steer very small, as the channel between the rocks is very narrow, not being a ship's length across. After you are through the narrow, if your ship draws more than 18 feet, you must come-to at the mooring-chain, and lighten.

This harbour, to those acquainted with it, is safe and commodious, being sheltered from all winds. Yet it is impracticable to a stranger, the lead being no



guide; and, if you once get too near the rocks, the current sets so strongly that you cannot get off again.

### Remarks on Grenada,

[From the *Derrotero de las Antillas, &c.*]

Any part of Grenada may be safely approached to within less than two miles. On its western coast are many bays fit for anchoring in, but the principal is that in which stands the town and harbour of *St. GEORGE*, or *Port Royal*. This bay is about one league from the *Salines* or the *S. W.* point. Between that Point and *Fort St. George*, there is a rocky shoal, and banks of sand, with coral. The rocky shoal is half a mile in extent from *N. E.* to *S. W.* and its greatest breadth is two cable's length; on all its edges there are 6 and 7 fathoms; it bears *N. 25° E.* true, three quarters of a mile distant from *Point de Salines*, and the northernmost part of it lies nearly west, or *W.* by *N.* from *Goat Point*, at about three cable's length. *Goat Point* is the southernmost point of *St. George's Bay*. The first sand-bank is a mile in extent, *N.* by *E.* and *S.* by *W.* and its greatest breadth is 3 cable's length: the least water on it is  $3\frac{1}{2}$  fathoms, and close to it are 6 and 7 fathoms; between it and the coast the depth increases to 10 fathoms. The western extremity lies nearly north from *Goat Point*, and at the distance of half a mile. The second bank, on which there is not more than 3 fathoms of water, lies *S. 59° W.* true, from the *Fort*, at the distance of half a mile; the greatest extent of this bank is three cable's length.

Behind the point on which the fort stands, is the *Harbour*, which is only three cables' length in depth, and into which vessels go to load and unload, or to be careened: this place is as well sheltered as the best harbour can be, and vessels of the greatest burthen can haul along-side the shore, in a depth of 8 or 10 fathoms.

Grenada may be seen at the distance of seven or eight leagues; and as the principal harbour is by the *S. W.* point, the best way is to make and haul in for its south side.

To the south of *Point Pirogue*, on the south coast, there are some rocks even with the water's surface, which are called the *Grampuses*, and which lie out about two-thirds of a mile from the point. At night, it is necessary to be certain how you run, that you may keep clear of them. To the westward of *Pirogue Point*, nearly half a league, there is an islet named *Glover's Island*, which is very clean, and has  $4\frac{1}{2}$  fathoms of water, at a cable's length from it. To take *St. George's Bay*, you ought to pass about a mile without *Glover's Island*, and at half a mile with *Point de Salines*; steering to the north so soon as you have passed the latter, until *Goat Point* bears east; then luff to the eastward, and place the prow to *Point St. Eloi*, which is about a mile to the northward of the *Fort St. George*. Thus you will pass safely outside the shoals. So soon as the point on which the fort stands bears east, you will have passed the last shoal, and may beat up between it and *Point St. Eloi*, taking care neither to prolong the tacks to the south of the fort, nor within less than two cable's length of *St. Eloi's Point*, which sends out some rocks to the west.

The anchorage is to the west of the town, at a quarter of a mile from the coast, where you may let go an anchor, in 6 or 9 fathoms. The bottom is very various, for you may equally find clay, sand, or rocks. Vessels intending to make a short stay only, bring-to in this place, with only one anchor; but those which have to make a stay and unload, go into the harbour, where they moor with four.

Some charts depict a bank and shoal to the *S. W.* of *Point de Salines*, with 13 and 45 fathoms. In the strait between Grenada and Tobago, the water has been found to set *S. 70° W.* with the velocity of a mile and a half in an hour.



*The Island of Barbadoes.*Barbadoes bearing *W. N. W.* about 6 leagues.

*Barbadoes*, which lies out of the line, and to windward of the Caribbee Islands, is of moderate height, and generally level, although there are a few hills, of easy ascent. The island may be seen in fine clear weather ten or eleven leagues off. The east end is much lower than the other parts; but, on coming from the eastward, or when the north end of the island bears *W. by N.* and the *S. W.* point about *W. S. W.* then the eastern part appears the highest. From the eastern part to the southward, the land is even, and declines towards the sea; but between the eastern and northern points, it is uneven, rugged and broken.

The *S. E.* coast, from South Point to Kitriages on the eastern point, is enclosed by a ledge of rocks, called the *Cobblers*, from one of the most remarkable among them. They extend about a mile from shore, and you must be careful to avoid them in the night. At South Point, where the rocks terminate, there is a flat spit, which must have a birth, as it runs off above a mile to the *W. S. W.* In the day-time you may see how far it extends by the white water.

The principal town of *Barbadoes* is that called *Bridgetown*, situated at the mouth of a little rivulet on the north side of Carlisle Bay, upon the *S. W.* side of the island.

Those bound to *Bridgetown*, should always endeavour to make the south side of the island by sailing on or near the parallel of  $13^{\circ}$ . In the latitude of *Barbadoes*, at about seventy or eighty leagues to the eastward, you will find the water discoloured and thick, as if there were soundings, though there are none: by this indication, if met with, your situation will be nearly ascertained. When you approach the island, you may run along within three miles of the shore, until you advance towards Needham's Point, which forms the south side of Carlisle Bay. You may haul up and anchor in *Osten's Bay* to the westward of South Point, by avoiding the spit above described, where you will find ground in 7, 8, 9, or 10 fathoms water. This bay is rocky; but the best ground, which is tolerably good, lies with a mill close by the water-side, at the head of the bay, bearing *E. by N.* or *E. N. E.*

In Carlisle Bay, also, the ground is foul, and apt to chafe the cables. In hauling in for this place, give Needham's Point a birth of a quarter of a mile, to avoid a reef which stretches from it, and always breaks. You may then run in till you bring Charles Fort, on Needham's Point, to bear *S. E.* and the steeple *N. N. E.*

There is, also, anchorage in this bay, in 25 fathoms, the sandy bottom, with Needham's Point *S. E.*  $\frac{1}{4}$  *S.* the church *N. N. E.* and the *N. W.* point of the bay *N. W. by W.*

The long mark for the reef of Needham's Point is a house standing upon the hill above the north end of the town, open with the outermost or southernmost flag-staff on Needham's Point; and the thwart-mark is the three flag-staffs in one. With the above-mentioned house on the hill open to the northward of the church, the ground is foul, but to the southward it is more clear; and with that house just open to the southward of the church, there is an anchorage in about 12 fathoms; the other marks for which are, a road to the eastward of the town directly open, the fort *S. S. E.*  $\frac{1}{4}$  *E.* and Pelican Point *N. W. by N.* The tide is almost imperceptible.

On the leeward side of the island, *N. N. W.* from the northern part of Carlisle Bay, are several shoals, called the Pelican and Half Acre Shoals, the outermost of which lie about three-quarters of a mile off.

Before Speightstown, which lies between eight and nine miles to the northward of *Bridgetown*, and which is defended by three forts, vessels occasionally ride

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There is a bank lying about three hundred miles to windward of Barbadoes, called *Glassionieres*, from the name of the French Admiral who first reported it, but subsequent information confirms it to 1808.

### *The Island of Tobago.*

Tobago, like Barbadoes, lies out of the line, and to windward of the Caribbee Islands. The land in the northern part is so high as to be seen, in clear weather, at the distance of fifteen leagues.

Though Tobago does not possess any harbours, properly so called, yet it has several good bays, which, considering that, from their southern latitude, they are never exposed to dangerous gales of wind, are equally convenient and secure to shipping. From this reason, the men of war stationed at the Caribbee Islands frequently repair hither for safety in the hurricane months.

The principal towns are *Scarborough* and *Georgetown*, situated on the south side of the island, and its best roadstead is in Man of War Bay, on the north side. The vertical rise of the tide, on the full and change, is only four feet. The currents near the island are very strong and uncertain, especially between it and Trinidad. The N. E. trade-wind prevails all the year round.

The course, usually taken from the island of Barbadoes to the S. E. side of Tobago, is south, rather easterly, so as to allow for the current, which sets most frequently to the N. W. and so as to get several leagues to windward of the island.

If you make Tobago towards the evening, and are afraid of running in with it, you must not, by any means, lie to, but stand to the southward under an easy sail; otherwise the current, which always sets either to the N. W. or N. E. may occasion your losing sight of the island; and it is possible that a N. W. current may carry you so far to leeward as to render it difficult to regain it.

*Ships bound to the bays on the N. W. side*, should always endeavour to make the north end of the island, which is bold and clear. A cluster of large bold rocks, called *Melville's Rocks*, lies off the N. E. point. Of these the westernmost is very remarkable, having a large hole in it, from north to south. You may run as near to these rocks, as you choose, and along the coast hence to Man of War Bay.

**MAN OF WAR BAY.**—This bay is not only the best in Tobago, but is one of the best harbours in the West Indies, having sufficient depth for the largest ships close to the shore. The distance from Melville's Rocks to North Point on the N. E. side of this bay, is about three miles. In sailing in, haul round this point, when you will have the bay open, and you must be careful not to be taken aback, the wind being very fluttering under the high land.

You will find no soundings until close up in the bay, and then from 40 to 10 fathoms. Having entered, turn in and anchor as far to windward as you can. After you are shut in, you will see the little bay on the eastern side, called *Pirate's Bay*; get as near to that bay as you can: you will find all clear ground, and may anchor in from 12 to 14, 16 or 17 fathoms. If you cannot turn in, you may anchor in 35 or 40 fathoms, and warp up. In *Pirate's Bay* is the watering-place in the rainy season.

On the south shore of the bay you may anchor in 16 or 18 fathoms, at a quarter of a mile from shore; and have good water at all times, half a mile from the anchorage; but there is a great surf, which makes watering hazardous.

The western side of the bay is a good place for fishing; but there is a small shoal called the *Cardinal*, lying within half a mile of the shore on that side, about half-way down the bay.

Nearly two miles to the westward of *Point Corvo*, the western point of Man of War Bay, are some bold rocks, called the *Brothers*; and in the same direction, at a league and a half from that point, are some others of the same description, called the *Sisters*, close to which there is a depth of 40 fathoms. All the

coast hereabout is bold-to. From abreast of the rocks, the south-west end of the island, which is low and sandy, may be seen.

**COURTLAND BAYS.**—The first bay from the northward, on the western side of the island, excepting a few for small vessels, is that called *Great Courtland Bay*, the northern point of which, called *Guana Point*, lies thirteen miles to the south-westward of the Sisters. To this point a birth must be given, as a rock, called the *Beef Barrel*, which breaks at low water, lies just off it. There is anchorage in 6 fathoms, but good fishing in 9 or 10 fathoms, either with the seine, or with the hook and line. The ground is clear, only that there are a few stumps of trees close up to the mouth of the river. If the wind hangs to the southward of east, you will ride very roughly, and if at N. E. will roll very much. In the bay you will have the common trade-wind all day, and an off-shore breeze during night. If you arrive in the night, and do not care to push for the bay, you may find very good anchorage to windward of the cliff, in from 6 to 20 fathoms, regular soundings.

To the southward of Great Courtland Bay is *Little Courtland Bay*, having very good anchorage within the windward point, which is pretty bold. Vessels ride more safe and smoothly here than in the former.

Between Man of War Bay and Courtland Bay are the bays called *Bloody Bay*, *Paletuvier's Bay*, *Englishman's Bay*, and *Castana Bay*, which have safe anchorage for vessels of one hundred and fifty tons.

At the S. W. end of Tobago is *Sandy Point Bay*, in the bottom of which ships may anchor in 6 fathoms. When you weigh for this place, be sure of a breeze to carry you without the reef, called the *Buckoo*, which extends from Little Courtland Bay to Brown's Point, and is dry, in some places, at the distance of two miles from shore. If it be calm, the current may set you on this reef. At the distance of two cables' length from the breakers you will be safe. To enter Brown's Point Bay, haul close round the reef, and having passed the point, anchor as above.

**EASTERN COAST.**—About three and a half miles S. S. E. from Melville's Rocks lies the small island called *Little Tobago*, near which there are several islets and rocks. Within these is the bay called *Tyrel's Bay*, in the bottom of which vessels of 150 tons may anchor in 7 fathoms. The ground between Little Tobago and the main is very foul, and the currents very strong and uncertain. In sailing off this part of the coast, ships must, therefore, keep well to the southward, allowing for a N. W. current, which almost constantly prevails about Little Tobago.

At the distance of three and a half miles to the southward of Little Tobago is *Pedro Point*, and rather less than two miles from Pedro Point, lies a high rocky islet, called *Queen's Island*. Between these points is the bay called *King's Bay*, which has good anchoring-ground in every part within the windward point, in from 6 to 20 fathoms of water. The land on the eastern side, being high, intercepts the trade-wind, and the swell from the eastward is apt to set a vessel down to the leeward point; the best time to sail out is early in the morning, about day-break, when the wind blows fresh from the land on the northward.

South-westward from Queen's Island at the distance of a league, lies a similar islet, called *Richmond Island*; and, one league and a half from the latter, in the same direction, is a lesser islet, called *Smith's Island*. These islets, being situated off projecting points of the coast, are conspicuous. Nearly a mile west of Queen's Island is a large dry rock, called the *Roxburg*, and between lies the bay named *Queen's Bay*. Between the *Roxburg Rock* and *Richmond Island* is *Hog Bay*, in which the ground is foul. To the N. W. of *Richmond Island* is the little bay called *Halifax Bay*, which is noticed hereafter. From *Halifax Bay*, extending nearly to *Smith's Island*, there is a dangerous bank and reef, half a league broad, called *Great River Shoal*, on which the depth, in several places, is only three fathoms.

In running down for Queen's Bay, which lies within Queen's Island, as above mentioned, give the latter a good birth until you open a large house, having a gallery on a rising ground fronting the quay, which is the only one of that description in the bay. Continue on this, without borrowing, until you bring this

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house in a line with one on the hill above; and keep this mark on, if the wind permits, until you are two cables' length from the shore; then haul your wind, and anchor at about 150 fathoms from shore in 5 fathoms, fine ground, abreast of the watch-house on the beach. Should the wind be adverse, you must let go an anchor, and warp up. In sailing outward, attend to the same mark as is in sailing in, without getting over to windward.

The dangers are so numerous, from Queen's Bay to the west end of the island, that no stranger should venture without a pilot. The most accessible bays are those described as follow.

*Halifax Bay*, to the N. W. of Richmond Island, as before mentioned, is a good bay for vessels of 150 tons, but a shoal lies in the middle of the entrance. The next is called *Barbadoes Bay*, and lies to the leeward of Smith's Island. To avoid Great River Shoal, in sailing for Barbadoes Bay, or to the westward of it, keep Little Tobago open without Richmond Island, with Smith's Island bearing N. W. you may luff up for the bay, on cautiously avoiding a reef of coral rocks, which stretches to the distance of a cable's length from Granby Fort Point, on the windward side. Within this reef, before Georgetown, there is a good ground in from 12 to 7 fathoms; particularly with a silk-cotton-tree on the beach in a line with the flag-staff on the top of the hill.

*Rockly Bay*, on which the town of Scarborough is situated, is a deep bay, generally safe; but a heavy swell rolls in with the breeze, especially when it is to the south of east. It lies five and a half miles to the westward of Barbadoes Bay. In sailing towards this place, keep Little Tobago open of Richmond Island, as above directed, to avoid Great River Shoal: and next observe, that the Chesterfield Rock is a danger which must, also, be cautiously avoided. This is a sunken rock, having only 7 feet over it, and on which the sea frequently breaks. It lies at half a mile from shore, about two and a half miles to the southward of Granby Fort Point, and at the same distance to windward of the east side of Rockly Bay. You may sail clear within it, with Richmond Island open between Smith's Island and the main; and without it, by keeping Richmond Island open without Smith's Island; for Richmond and Smith's Islands, in a line, lead directly on it.

When past the Chesterfield Rock, you haul in for Scarborough Point, which is a bold bluff point, with a fort on the hill. There is no danger, provided you keep the weather-shore well on board, till you open the main street, which extends directly up the hill. With this mark you may anchor, in from 7 to 9 fathoms being the only clear part of the bay. It is requisite, even here, to buoy up the cables. No stranger should attempt to leave the harbour without a pilot, as it would be extremely hazardous. The channel between Scarborough Point and the reefs is less than three-quarters of a mile in breadth, and the dangers extend thence to the end of the island.

In the Channel, between *Tobago* and *Trinidad* is a bank or shoal, on which  $5\frac{1}{2}$  fathoms have been found, and the pilots assert that there are places on it with still less water; it has been sounded with great care, but less than  $5\frac{1}{2}$  fathoms have not been found. It is, however, advisable to run with caution; for it is not impossible that there may be some rock, of small extent, which has escaped notice. In this channel or strait, the current runs to the westward at the rate of two miles per hour; but so that, when approaching Trinidad, the direction of the current is towards the N. W. and near Tobago, towards the S. W. On the N. E. part of Tobago the current sets to the north-westward with more velocity than is stated above.

### *The Island of Trinidad.*

There are four ranges of mountains on the island; exclusive of which the soil is generally very fertile, and abundantly produces sugar, coffee, indigo, ginger, cotton, and maize.



The land in the northern part is high, and almost covered with woods, said to be incorruptible, upon a range of high mountains extending nearly across the island. Near the centre are two remarkable mountains, of which that named *Tamanaco* or *Tamany* is the highest.

The most elevated summits on the northern coast have been estimated at about 3000 feet in height, and some peaks of the interior are supposed to be still higher.

The *Principal Harbour*, which is one of the finest in the world, is called *Chaguaramas* or *Port Royal*, and is situated under the north-western peninsula of the island, where there is a space of about 70 square miles, on which ships may anchor; the depth of water throughout being from 12 to 5 fathoms, and the latter, in some parts, only one mile from shore. The landing-place, or port, is that called *Puerto Espana*, or *Port Spain*, on the N. E. side of Chaguaramas Bay, and the capital, *St. Joseph*, stands on the bank of a small river, about 7 miles to the eastward of the port.

The current sets very strongly from the S. E. upon the southern and eastern coasts of the island, and is particularly rapid in the strait between the southern coast and the continent, through which it sets into the Gulf of Paria; another current sets along the northern coast from the eastward, through the channel between Trinidad and Tobago, in a W. by S. direction. The effect of these currents is an accumulation of water, which seeks an escape to the northward from the Gulph of Paria, and which must naturally be increased in the rainy seasons by the influx from the surrounding lands.

As the water seeks its escape through the Bocas to the northward, it meets the westerly current from the north-eastward, which so far opposes it as to cause a perpetual agitation of the sea. It was from this circumstance that Colombo called these passages *Bocas del Drago* or *Dragon's Mouths*.

Shipping in general, bound for the port, formerly ran down to the northward of the island, with the advantage of wind and current, for the BOCA GRANDE, or DRAGON'S MOUTH, passing to the westward of the Isle of Chacacharreo. This passage is more than 5 miles broad, with a depth of not less than 100 fathoms. In entering this way you must be very cautious not to get too far to leeward; for otherwise the current may be so strong as to render it impossible for you to gain the port. It is therefore recommended that you haul round the western side of Chacacharreo, not however within the distance of a mile from the south-westernmost land. Having passed the rock\* laid down in the Chart, and now called the *Diamond*, make a long board to the S. E. and then as the wind permits, to the N. E. for the road, wherein you may anchor, at pleasure, in 3, 4 or 5 fathoms. The ground in general, is good holding ground, covered with mud.

The best, shortest, and most convenient passage, for ships bound inward, is that called BOCA DE HUEVOS, or *Egg Passage*, which is sometimes called the *Umbrella Passage*, from the appearance of a remarkable tree upon a rock, which is said to resemble an umbrella, and which stands on the lee side.

The BOCA DE NAVIOS or *Ship's Passage* is considered as the best channel for ships sailing outwards. It is about one mile and a half broad, and steep-to on each side. Here, as in the Boca Grande, it is proper to keep the eastern land on board. To ships which may attempt this passage, from the northward, the wind will be favourable until within the head, but flaws from the high land may then be expected.

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\* The *Diamond Rock*, which lies to the S. W. of Chacacharreo, is about 40 yards in circumference, and is said to have only 9 feet over it, on the shoalest part, at low water. On the morning of the 26th of June 1809, the ship *Samuel*, Capt. Sughree, of London, drawing 17 feet of water, struck upon it, and remained fast upon it for several hours. While this ship was aground, two others passed, one on each side without touching, although not at 25 fathoms distant, the water being very deep all round. The bearings by compass from the ship were, Chacacharreo, S. W. point, E. N. E. El Pato, or Goose Island S. W. by W.  $\frac{1}{2}$  W. the S. E. point of Cumana or Paria W. by S. The current was setting very strongly from the southward, with light variable winds.



The **BOCA DE MONAS**, or *Apes' Passage*, is the Boca next to Trinidad. This passage is narrow, and dangerous in several places; yet there is ground, in which ships may anchor in 25 fathoms. The currents are here strong and irregular, and the winds generally scant.

In all cases, those who come into the Gulf of Trinidad must be attentive to hauling the wind in time: for, otherwise, with a light wind and northerly current, they may be whirled round, with the stream, and forced back to sea.

If a ship within the bay should happen to drive from its anchors, she will go on shore upon soft ground, and may be gotten off without damage. The best ground is in the N. W. part of the bay. The town, Port Spain, has a stone jetty, and is defended by batteries; a white half-moon battery, just above the town, on the brow of the hill, is a good mark for the bay, and may be seen a long way off. Large ships should bring this battery to the northward of N. N. E.

The Harbour of Chaguaramas is capable of receiving the largest ships of war, its depth being from 4 to 40 fathoms. The shores are bold and steep; the bottom is gravel and ooze. There is good riding within half a mile of the eastern shore, in from 20 to 5 fathoms. The carenage is shallow, having only from 2 to 4 fathoms, and therefore adapted to merchant-ships only. It is high water at Port Spain, on full and change days, at half-past four; spring tides rise 6 or 7 feet.

Having arrived within the Bocas, and well into the Gulf of Paria, you will see the harbour of Port Spain and the shipping, which opens to the southward of the isle Gaspar Grande. When in the harbour, you will see *St. David's Tower* or citadel, which is of white stone, and was built by the late Governor Picton, in the interior of the fortifications upon *Abercromby Heights*. In sailing up, with the tower about E. by N. you will see the forts on Gaspar Grande and Punta Gorda which protect the carenage and Chaguaramas Harbour.

The Gulf of Paria is so abundant in fish, as to be capable of supplying the greater part of the West India Islands. It has plenty of shell-fish, particularly oysters, together with lobsters, crabs and prawns. The southern entrance of the Gulf, called **BOCA DE SIERPE**, or the **SERPENT'S MOUTH**, is eleven leagues broad at the eastern entrance; but on the west is impeded by an island, with some rocks, called **SOLDADO**, or the **SOLDIERS**. Ships never attempt an egress from the Gulf by this channel, because the current from the eastward sets so strongly through, as to render a passage impracticable.

Off point Ikaque lies a rock on which a Brig from New London struck in 1824, called **ROCK LOO**. It is almost round, 90 feet in diameter, and lies from 1 to 1½ mile from the point. You may find a good channel inside or outside of this rock of about five fathoms, and 10 fathoms within 30 or 40 feet of it. In passing either side of this rock, you must keep a good look-out, as you cannot see it a great distance even in smooth sea. Off point Cedee you find the rock called **BARREL OF BEEF**, which is also round and but 6 or 8 feet in diameter having a floating **BUOY** on it, bearing south-westerly ¼ of a mile from point De Bray, with 5 fathoms water inside, but the outside passage is preferable. Port Spain bears about north from Point De Bray.

### Description of and Directions for the Gulf of Paria and Island of Trinidad;

[From the "*Derrotero de las Antillas*," &c.]

Between the Island of Trinidad and the Coast of Colombia there is a great gulf, named the **GULF of PARIA**, which offers safe shelter to vessels, because they may anchor in any part of it without the least risk, and in the depth of water which suits them. This gulf has two channels, one to the north, and the

other to the south. The northern channel is divided into various branches by some islands, and, in the southern, there is an islet, from which extends some dangerous rocky shoals. In the whole circuit of this gulf there is no other European establishment than that of PUERTO ESPANA, (Port Spain) on the western coast of Trinidad, of which it is the metropolis: and here centres the whole of both the import and export trade of Trinidad. It is, therefore, the place to which almost all those who enter the gulf are bound, and whence they subsequently direct their course.

Nothing would be more easy than to enter the Gulf of Paria, either from the north or south, and to navigate in it were it not for the *currents* which are experienced in it; these emanate not only from the general current, which runs to the westward, along all the coast of Guyana, but also from another produced by the tides, which offer some obstacles, that should be provided against by a knowledge of the effects which the currents cause in the different parts of the gulf.

From July to November is here the season of the rains, in which the *breezes* or general winds are very light, and are from E. S. E. and S. E. In the other months the *breeze* blows fresh from N. E. or E. N. E. This, and the having two entrances into the Gulf of Paria, induces a preference to be given to the southern channel in the rainy season, and to the northern in the dry season; it is, therefore, proper to make the land of Trinidad according to the season in which you go there; viz. from December to June, you ought to make *Punta de Galera* or N. E. point; and from July to December, you should direct your course for *Punta de Galeota*, the S. E. point; these two points may be easily and certainly recognized.

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### Description of the Exterior Land of Trinidad, and of Marks for knowing it by.

The Cordillera, or branch of elevated mountains which extend all along the north coast of this island, from East to West, is highest to the northward, nearly on the meridian of *Las Cuebas*, and to the eastward near Point Salive.

Although from the parallel of the middle of the Island of Tobago, on the east side, the Island of Trinidad may be seen distinctly in clear weather, the *Punta de Galera* (Galley Point) cannot be recognized at more than the distance of 3 leagues, it being low, and projecting from the coast; but, on coming from the east, the *mountains* near *Punta de Galera* may be seen at 11 or 12 leagues. All the rest of the eastern coast, from Salive to *Punta de Galeota*, is about two-thirds lower than the former, except near *Punta Manzanilla*, (Manchioneal Point,) whence four mountains rise to the W. S. W. and between a part of *Manzanilla* Point may be seen at from 8 or 9 leagues; and this part is named the *Barrancas* of *Manzanilla*.

POINT GUATARO may be known, from 5 or 6 leagues off, by its stretching out to sea, and by the almost equal height of the tongue which forms it; and *Cape Galeota* may be distinctly seen at the distance of 6 or 7 leagues. From the last the mountains again begin to rise, along the whole of the south coast; and the largest is situated a little to the westward of the *Punta de Casa Cruz*; in the S. E. they diminish so considerably from near *Punta de Herin*, or *Erin*, to *Punta de Yacos*, the S. W. point, that the last is a low beach.

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### The Interior or Western Coast of Trinidad.

All the western coast of Trinidad is low: the mountain of *Naparima* is the only one on the whole of it. This mountain may be seen at the distance of ten leagues on clear days; it is high and round, and may serve for a mark when you are within the Gulf.

*Coast of Colombia, within the Gulf.*

The coast of Colombia is low, wet, and divided by a great number of channels and rivers, which discharge their waters into the Gulf. Of these the deepest and most frequented, is that of Guarapiche, in the west; for by it the commerce of the interior of Cumana is carried on, and it is fit for the largest schooners and balahoos.

*Tides, Anchorages, and Watering-Places.*

The best anchorages on the northern coast of Trinidad are the bays of *Toco*, *Rio Grande*, *Punta de Chuparas*, *Las Cuebas*, and *Maracas*, and to leeward of the Point of *Marabaral*, in which water may be procured, and there is a beach which facilitates the obtaining of it. Along the whole coast, and for three leagues outside, the water runs to the N. E. or east with the ebb-tide, and N. W. with the flood-tide. Out of these limits the current sets always to the N. W. but with more rapidity during the flood than during the ebb; and it follows the same direction in the channel between this island and Tobago.

On all the east coast there is no watering-place, for the large rivers discharge themselves into the bays of Manzanilla and Guatara; yet the bars at their entrances will not allow even a canoe to pass. On all this coast the current sets constantly about north, but with much less force during the ebb than the flood: there is on it, also, always a heavy swell, caused by the breeze, and which renders it very difficult to approach.

You can obtain water only, and that at the expense of some labour, on the south side, to the west of the point of Casa Cruz, and about a mile from it, where a torrent, precipitating itself from the mountains, falls into a well, or hole upon the shore. The current on this coast (the south) runs always nearly west, and its ordinary velocity is two or two and a half miles.

On the western coast there are many places where you may obtain water. From *Punta Ycacos* to *Punta de Brea* or *Pitch Point*, the flood-tide sets to the southward and westward, and the ebb to the northward and eastward. From *Punta de Brea* to *Puerto Espana*, it follows the direction of the coast with very little difference; that is, the flood-tide sets south, and the ebb-tide north.

*To make Trinidad.*

The soundings, which extend to the distance of seventeen leagues from the eastern coast of this island, offer a secure means of rectifying the situation of any vessel bound to it, and renders it unnecessary to lie-to or use the other precautions to which recourse is generally had at night, or in thick weather; for when placed in the parallels of Trinidad, you will find soundings without more trouble than that of casting the lead at every twenty miles, as you advance, when in the proximity of it; for it is very certain that the soundings and the latitude will give you the ship's place, and, this known, you have only to shape your course for *Point Galera* or *Point Galeota* to enter the Gulf either by the north or south channels, according to the season; but, if it should so happen that two or three days pass without being able to obtain a meridian altitude, it is very possible that, while the mariner believes himself on the parallels of Trinidad, he may find himself on those of Tobago, or even of Grenada; for the waters run with violence towards the N. W. and therefore it is very necessary to omit no opportunity of observing the latitude, whether by the stars or by the sun, when not on the meridian; and it is also better always to make the point to which he directs his course, from the southward rather than from the northward, because the currents always favour the getting to windward to the north-

ward; and you will go with more facility, and in less time, to the N. E. from Point Galeota to Point Galera, than you can from the latter to the former, though there is generally no difficulty in doing this also. One or other of these points being recognized, you must direct your navigation towards the Gulf as follows:

From Punta de Galera you ought to run along the coast at the distance of two miles. It is all clear, and you may keep within half a mile of it, if necessary, as far as *Punta de Corozal*, where it is advisable to approach the shore, in order to enter the Bocas or mouths with greater facility.

The Bocas or Mouths are four: the first is called *Bocas de Monas*, (or Ape's) which is formed by the N. W. extremity of Trinidad and the *Isla de Monas* (Ape's Island); the second is *Boca de Huevos*, (Eggs) formed by the *Isla de Monas* and *Isla de Huevos*; third, *Boca de Navios*, (Line-of-battle ship's Boca) formed by the islands of Huevos and *Chacacharreo*; and the fourth *Boca Grande*, (the Great Mouth) is formed by the island of *Chacacharreo* and the coast of Colombia.

In the Boca de Monas the waters run out with the ebb-tide, at the rate of from one to two miles an hour, and something less with the flood-tide, but the water always runs out of it. As this passage is much exposed to calms from the height of its shore, as it is the most crooked, the longest, and narrowest of all the passages, as well as being full of whirlpools, and the only one of the mouths which has shoals, we recommend it to every person to give the preference to any of the other passages, although this be the farthest to windward. In this passage the tide flows at 3h. 50m. on the days of the full and change.

The water runs out from the Boca de Huevos during the ebb-tide, with something less velocity than it does from the former; and with the flood it is almost stationary. As this passage is the shortest of all, as it is to windward of the two following, and as it is perfectly clean, we consider it as the most proper to enter the Gulf by; in doing which it is better to keep near the *Isle de Huevos* than the *Isle de Monas*, because the current inclines to the N. E.

In the Boca de Navios the water always runs out, during the flood-tide, at the rate of a mile and a half, but, during the ebb, it runs almost four miles an hour. It is high water here on the full and change days of the moon, at 3h. 39m. The entrance of this mouth is accessible at high water only; but, in exchange it is the best to sail out through.

In the Boca Grande the ebb-tide runs with less velocity than in any of the other three, and with the flood-tide the water is almost entirely at rest. It is very clean, and being of such amplitude, it allows of working through, if necessary; but as it is to the leeward of all the others, those only enter by it who have been unable to make the island.

In none of the mouths can you find bottom with 100 fathoms in mid-channel, and a ship of the line may run so close to any of the isles, as almost to touch the shore with its yard-arms; except at those points marked on the charts with projecting stones or reefs.

After what we have said relative to the Bocas, it will be known that the second, or Boca de Huevas, ought to be preferred for sailing inward, and you ought to calculate so as to enter it with the flood-tide, and with a breeze that will ensure the vessel's being under command; but, if the wind is such that you can lie through it on one stretch, and that you can run more than four miles an hour, there is no necessity to wait for a favourable tide. At night, if it be clear, there is no inconvenience or risk in entering this Boca, excepting that of running foul of some of the islets, and that is next to impossible; but if calm, or little wind, or the tide does not suit, or the night is obscure, or from an excess of caution, though it may be clear, you resolve to wait for a more fit or adequate opportunity to enter, you can anchor about two-thirds of a mile from the shore in 22 fathoms, unless the wind be at N. E. which heaves in much sea; and it is better to keep your situation by making short tacks upon the same coast, along which, from Punta del Toco to Punta de Chupara, the bottom is of mud; to the southward of that it is of fine gravel and coarse sand; and, from the west of that, to the Bocas, it is of green-coloured mud. These differences of bottom will ve-

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ry well enable any one to know the part of the coast on which he is. So soon as you are within the Bocas, you ought to haul by the wind on the larboard tack, both to get away from the Bocas, and to get nearer to the coast of Trinidad; and in general, this tack ought to be followed while the flood-tide lasts, and take the starboard tack so soon as the ebb begins, when you will, to a certainty, fetch into the anchorage, or want very little of getting into it.

It may appear to some better to work tack and tack, after you have entered the Gulf, especially if the tack to larboard is not the most favourable: but it ought to be remembered that the currents always run strongest opposite to and near the straits; and, thus, having begun to tack very near the Bocas, it will not be strange if the ebb-tide carries them out again, or that they may be obliged to anchor, to present this; or, if neither of these happen, they will meet with the ebb-tide, which is against getting into Port Spain. But on the contrary, having prolonged the tack well into the Gulf, even if necessary, to the parallel of *Mount Naparima*: from that situation the ebb-tide will be most advantageous to the starboard tack, so that they may either proportion their course, so as to fetch the anchorage, or will gain it by making a short tack. Whenever it is calm, or the wind is so light, that you can gain nothing, come-to with your kedge, which will be sufficient to hold you against the strength of the tide. When you possibly can avoid it, always avoid using your large anchors, because they take such a hold of the clay, that it is difficult to purchase them again. In Puerto Espana you anchor in the S. W. of it, in 4 or 5 fathoms water, according to the size of your vessel, and moor with your bowers N. W. and S. E. and a stream-cable and anchor out astern.

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*The Navigation from Cape Galeato to the South-Channel, and from that Channel into the Gulf, and thence to the Anchorage at Puerta Espana or Port Spain.*

Having recognised Cape Galeota, run along the coast at two miles off, where you will have from 8 to 10 fathoms of water, free from all risk; and although you may observe a change in the colour of the water, particularly to the eastward of Point Erin, and near to it, you need not be alarmed, for this is caused by the current. So soon as you pass *Punta Quemada* (Burnt Point) run along within a quarter of a mile of the shore, without fear, and take the channel which suits you best according to circumstances.

The **FIRST CHANNEL** is that formed by *Punta de Ycaos*, and a shoal which lies to the west of it, at the distance of half a mile. This shoal is about two cable's length in extent, from east to west, and there are 9 feet of water on it, over rocks. This channel has a depth of 10 fathoms; and *Punta de Ycaos*, which is a tongue of sand, stretching into the sea, in a circular form, is so bold that, at half a cable's length from it, there are 3 and 9 fathoms of water. The current in this channel runs to the S. W. with the flood-tide, at the rate of  $2\frac{1}{2}$  miles; with the ebb-tide it sets to the N. W. and with the velocity of 3 or  $3\frac{1}{2}$  miles an hour.

The **SECOND CHANNEL** is formed by the above-mentioned shoal or rocks, and by another shoal of gravel and rocks, which lies to the N. W. of it, and on which there are 4 fathoms water. This shoal lies from *Punta del Gallo* S.  $68^{\circ}$  W. true, distant 3 miles, and from *Punta de Ycaos* N.  $73^{\circ}$  W. true, two miles distant; the greatest extent of it is three quarters of a mile in the direction of N. W. and S. E. The currents in this channel take almost the same direction as in the former; and the channel is a mile in width.

The **THIRD CHANNEL** is formed by the said shoal, and the islet *De Soldado*, (Soldier's Island,) with its reefs and shoals to the South and S. E. This channel is two short miles in extent, from E. to W. At two and a half cable's length, from the reefs of the eastern part of the *Soldado*, 7 fathoms of water are found; in the middle of the channel, 9 fathoms; and near the shoal, 6 fathoms.



With the flood-tide the waters run W. by S. at the rate of 3 and  $3\frac{1}{2}$  miles; and with the ebb they run N. W. and W. N. W. with the velocity of 4 and  $4\frac{1}{2}$  miles per hour.

The **FOURTH CHANNEL** is formed by the *Islet del Soldado*, with its reefs and shoals to the south of it, and the coast of Colombia. It is 4 miles in extent; the current in it always runs N. W. or W. N. W. at the rate of  $4\frac{1}{2}$  or 5 miles an hour; in the middle of the channel, and near the *Soldado*; but at half a mile from the Colombian coast its velocity is only  $1\frac{1}{2}$  mile.

To **ENTER BY THE FIRST CHANNEL**, you have only to round Punta de Ycaos at less than a cable's length, luffing up in proportion as you double it, until you are close hauled; or steer to the north to pass at a convenient distance from the Points of Coral and Gallos. This channel cannot be dangerous either by day or night, especially with the ebb-tide, the current of which aids you in passing the shoal to leeward. You can anchor, if necessary, and can never run any risk of getting ashore, leaving the shoal at least 3 cable's length from the vessel.

To **ENTER BY THE SECOND CHANNEL** it is necessary, after you have made Punta Quemada, and run along the coast at a quarter of a mile, to steer towards the Soldado; and keep on the same course until the whole of Point Gallo is open past Coral Point, when you may luff up; but not higher than to the N. N. E. until you are E. and W. with Point Coral, when you may haul close to the wind, to near the coast of Trinidad.

To **ENTER BY THE THIRD CHANNEL**, you must steer towards the Soldado, as if to enter the second channel, and continue that course until Punta del Gallo bears N. E. by  $\frac{1}{2}$  E. after which you may luff North, until the south front of Punta de Ycaos bears E. S. E.  $\frac{1}{2}$  E. and Punta del Gallo E. by N. and then haul up to fetch the coast of the island.

To **ENTER BY THE FOURTH CHANNEL** you must steer so as to pass two miles to the southward of the Soldado; and when it bears N. E. luff up North, and run afterwards, luffing up successively, by little and little, until you haul by the wind to gain the coast of the island. Much care should be taken not to get nearer to the Soldado, than the two miles above mentioned; giving much consideration to the current, which will hurry you, with great force, towards the N. W.

From all that has been stated it results that, at whatever time you can enter into the Gulf by the **SOUTHERN BOCAS**, and even by night, if it be clear, that the first Boca is the best; not only because it is to windward, but also because, by simply luffing, you pass all the danger in your way, especially with the ebb-tide; indeed there can be no danger if you keep an anchor ready to let go, in the event of its suddenly falling calm; or any other accident happening, which might drive the vessel towards the shoal. By night none of the other Bocas can be so easily taken as this, because you have to pass at less than a cable's length from the point; at any rate, this renders the obscurity of the night of little importance, as it is well known that you can see with sufficient distinctness at so short a distance.

But if, notwithstanding the facility of entering the Gulf by some of these mouths, circumstances should occur to oblige you to defer it, be it from calms or to wait for day-light, you can anchor on the south coast of Trinidad; but do not have recourse to lying off and on; for, with the current, which always runs in, it would be difficult to maintain your ground at any determinate point.

The channel once passed, and finding yourself *within* the Gulf, shape your course to gain the west coast of the island, which you may coast along, at the distance of 2 or 3 miles, to Cabo de la Brea, or Pitch Cape. From this cape Puerto Espana is scarcely distant 9 leagues, and by steering N. N. E. you will very soon see the buildings in it. In case you cannot steer that course, you must beat up, tack and tack; but do not stand closer in than three miles, as there is shallow water along the coast; and if you choose to prolong your tacks into the bay of Naparima, you must tack at four miles from the coast and give a wide birth to two shoals which are in it: the one W.  $\frac{1}{2}$  S. from the Mount, about two

and a half miles; and the other W. S. W.  $\frac{1}{4}$  W. from it, at the distance of four miles.

From the Island of Trinidad, where the easterly variation is about  $4^{\circ}$ , that variation is found to increase to the eastward. By observations in 1816, at Cape Vela, and thence to Chagre, from  $6^{\circ}$  to  $6\frac{1}{2}^{\circ}$  E. in the Bay of Honduras; at Vera Cruz about  $9^{\circ}$  E. and at Tampico,  $8\frac{1}{2}^{\circ}$  east.

### *General Directions for the making of, and navigating among, the Caribbee Islands.*

[From the Derrotero de las Antillas.]

As to choosing the north or south part of any of these isles for making your land-fall, you ought to consider, *firstly*, which point is nearest to the port or road to which you are destined; and, *secondly*, the season in which you go. In the dry season, it is to be remembered that the winds are generally from the north-eastward, and in the rainy season they are often from the south-eastward. Thus, in the dry season, it is best to make the north side, and, the wet season, the south, but without losing sight of the first consideration.

There can be no mistake in recognising any of the Antillas; and, in making *St. Bartholomew's* and *St. Martin's* alone, can there be any doubt on seeing at once the eminences or heights of various islands. That this may not mislead any one, they must remember the following instructions:

When in the parallel of *St. Bartholomew's*, at less than four leagues off, if there be no fog or haze, the islands of *St. Eustatius*, *Saba*, *St. Kitts*, *Nevis*, and *St. Martin's* appear plainly.

The mountain of *St. Eustatius* forms a kind of table, with uniform declivities to the east and west: the top is level; and at the east part of this plain a peak rises, which makes it very remarkable. To the west of the mountain seems to be a great strait, in consequence of the lands near it being under the horizon, (or seeming drowned,) and to the west of that there then appears, as it were, another long low island, the N. W. part of which is highest; but it is necessary not to be deceived, for all that land is part of the land of *St. Eustatius*. From this station *Saba* appears to the N. W. it is not so high as *St. Eustatius*, and apparently of less extent than the western part of *St. Eustatius*, which is seen insulated.

The N. W. part of *St. Kitts* is also seen, formed by great mountains, in appearance as elevated as *St. Eustatius*, with low land to the east; to the eastward of this low land *Nevis* will be seen apparently higher than all the others.

The lands of *St. Martin's* are notably higher than those of *St. Bartholomew's*; and this island appears also when you are some leagues farther distant from it than from *St. Bartholomew's*.

When there are any clouds which hinder *St. Martin's* from being seen, there may be some hesitation in recognising *St. Bartholomew's*; and thus it is proper to notice that the latter, seen upon its own parallel, appears small, and with four peaks, tending north and south, and occupying almost its whole extent; and, if you are not more than eight leagues from it, you will see, also, the appearance of an islet to the north, and another to the south, at a very short distance. As this island has neither trees, high mountains, nor thickets, it is not subject to fogs; and it may therefore be seen oftener than *St. Martin's*, *St. Kitts*, *Nevis*, *St. Eustatius*, and *Saba*; it is therefore advisable to keep its appearance in mind.

At eight leagues to the east of *St. Bartholomew's* you may see *Nevis*, very high; from it to the west the strait called the Narrows, and then the lands of *St. Kitts*, appearing to rise out of the water, and which continue increasing in height to the westward, so that the westernmost of two mountains, which are at the west part of it, is the highest. This mountain, which is higher than that called *Mount Misery*, has, to the west of it, a gentle declivity, terminating in low land; and it cannot be mistaken for any other. To the west of this you may also see

the large strait towards St. Eustatius; but, from this situation, you will see only the high S. E. part of that island; or, rather, its mountain, in consequence of which it appears like a very small island, while its mountain seems to be lower than Mount Misery; but it is easily known from the *table*, which its top forms, by the uniform declivities to the east and west, and by the peak on the S. E. part of it. Saba seems, from this situation, equal in size to the visible part of St. Eustatius; but it shows only an eminence without peaks, with uniform declivities, and almost round.

If a small islet appears to the west of, and very near to, St. Eustatius, that must not confuse you; for it is the N. W. extremity of that island: and, on getting nearer, you will perceive the land which connects it with the S. E. part. *Mount Misery*, on St. Kitts, which has a very high and sharp peak, on the eastern part of its summit, seems at a distance to be the summit of Mount Eustatius; but it cannot be mistaken for such, if you attend to its surface being more unequal than the table-land at the top of St. Eustatius; and that there is another less elevated mountain to the east, and with gentle declivities, which show much land to the east and west of the high peak.

On no part of Mount Misery can any resemblance be traced to a man carrying another on his back; and which, according to a saying, was the reason why Colombo named this island *St. Kitts*.

When you are six leagues to the east of St. Bartholomew's, its N. W. extremity appears insulated, and has the appearance of a pretty large island; on the top of which there are four small steps, (like steps of stairs, *Escalones*,) with a considerable strait to the south, between it and the principal island: in the middle of this strait you may also see a smaller islet: this is really one of the islets which surround the island; but the first is only the N. W. point, to the north of which you will see also some islets; all these are much nearer St. Bartholomew's than St. Martins.

*Finally*, to navigate from one of the Antillas to another of them, there is no more trouble than what a simple navigation requires; but it is something greater when you have to get from leeward to windward; yet this will be reduced to a trifling consideration, if the navigation is made by the straits which are to the north of Martinique, and in which the currents are weakest; but the same does not follow in the southerly straits, in which the waters set with more vivacity towards the west; and it would be impracticable by the straits of Tobago, Grenada, and St. Vincent, in which the waters run at the rate of not less than two miles an hour.

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## CHAP. IX.

*The Coast of COLOMBIA, from the Gulf of PARIA to CARTHAGENA.*

Having already described, in Chap. VIII. under Windward and Leeward Islands; (pages 302 to 348) the navigation of the Island of Trinidad and Gulf of Paria, we now proceed with the Continental Coast, from Trinidad westward.

*The Coast from Trinidad to Cape Codera.*

The Boca Grande, or Great Dragon's Mouth, is formed by the Island of Cachacares and the coast of Paria. The N. E. point of that coast is a high, scarped or cliffy islet, named the *Morro*, whence the coast tends W. by S. eighteen miles, to the cove of *Mexillones*, thence west to *Cape Tres Puntas*, (Three Points) which is about fifty miles from the Morro Islet. All this land is very high and hilly, and the coast is remarkably clean: you may run along it at half a mile distance, and at a mile from the shore, you will have from 20 to 40 fathoms of water, with muddy sand.

CAPE THREE POINTS is the most northerly part of all this coast, and from it the bottom, which is equally clean and deep as the former, extends for two miles to the cove of *Unare*.

THE ENSENADA or COVE of UNARE affords good anchorage and shelter from the sea-breeze; and to enter it, you must steer a mile from its N. E. point, around which a rocky shoal extends out half a mile. Directing your course afterwards for the interior of the bay, you may anchor in 5 fathoms, on a sandy bottom, so soon as you have well rounded the point. A small river runs into this cove; and to the eastward of it, upon a small hill, there is an Indian village, named *San Juan de Unare*. The S. W. point of this cove has also a reef, which stretches out half a mile, and has some islets on it. By passing outside of these, at about two cable's length from the westernmost, you will go safe from all danger.

From *Unare* the coast tends nearly W. S. W. four and a half leagues, and afterwards turns gently towards the north, for the space of eight miles, to *Cape Malapasqua*. All the coast between Cape Three Points and Cape Malapasqua is clean, and you may run along it, at the distance of a mile, at which distance you will have 8 fathoms of water, on a sandy bottom.

From *Cape Malapasqua*, the coast tends W.  $\frac{1}{2}$  S. eight miles, to the Morro or hill of *Puerto Santo*. This Morro is united to the main land by a low sandy tongue. On the west of the Morro, and very near to it, is the islet of *Puerto Santo*: and about the connecting tongue above-mentioned, there is anchorage, sheltered from the sea-breeze, in 5 and 6 fathoms of water, the bottom of sand and mud. You may approach the northern part of the Morro and its islet, within two cable's length, if requisite; and then, to take the anchorage, steer S. or S. by W. and after having passed the islet, you may anchor in 5 or 6 fathoms, so soon as you see that you are sufficiently sheltered. Take good care not to get

to the eastward of the western meridian of the islet, for there is a shoal of 9 fathoms to the south of the Morro. About two leagues inland, there is a mountain named *Monte de Puerto Santo*.

From the Roadstead of Puerto Santo, the coast tends W. S. W. and a shoal of little water stretches along it, which, opposite the point of *Hernan Vasquez*, reaches about half a mile out to sea. This point of Hernan Vasquez forms a little bay, with anchorage in 6 or 7 fathoms, sheltered from the breezes. A river, from which water may be procured, runs into this bay; and in the bend of the west point, in which there is a small islet, is the village of *Carupano*, to the westward of which, at the distance of two miles, is the point and morro of *Salinas*, or *del Tarro*, which has also an islet close to it. This bay of Hernan Vasquez has two shoals, rather to the northward of the true parallel of the point of that name, and to the westward of the meridian of the village of Carupano; there is also a place of little depth, extending out about two-thirds of a mile from the west part of that village.

From the Point and Morro of *Salinas* the coast is clear; but there are some rocks, almost joining the shore, as far as *Morro Blanco*, which is about three miles from Morro de Salinas. The Mountain of San Jose, (St. Joseph,) which is three leagues inland, nearly on the meridian of the Morro Blanco, may hence be seen.

A shoal stretches out to the westward of Morro Blanco (White Hill); it has so little water, that it is unsafe to approach the coast hereabout nearer than two miles. On this coast you see, 1st, the Point and Morro of *Patilla*, which may be known by an islet and cluster of rocks, that lie out a very short distance from it: 2d, the Point and Morro of *Taguien*, which lies a little more to the northward than the former, and which has also some islets close to it: 3d, the Morro of *Lebranche*, which is united to the main land by a low and wet tongue of land and sand: and, 4th, the Morro of *Esmeralda*, which is an islet, separated from the main land by a little channel, of about half a cable's length in width.

Between *Lebranche* and *Morro Esmeralda*, at a considerable distance from the coast, are some islets named *Garrapatas*, between which you cannot pass, on account of rocky shoals; and, although there is a good passage between the southern one and the coast, yet it is adviseable always to go outside of them; especially with a large vessel.

Between *Morro Blanco* and *Esmeralda*, the distance is 11 miles; and, about 4 leagues inland, to the southward of the last, (*Esmeralda*), there is a mountain, named *Redondo*, or the Round Hill.

To the westward of *Morro Esmeralda* is the *Ensenada*, or Bay, of the same name. This is obstructed by a shoal of very unequal depth, which, stretching out from the middle of the Morro, and lying, as it were, N. and S. extends along the coast about one-third of a mile. In this bay, or cove, and upon this shoal, there are three little islets, which lie nearly E. and W. and are called the *Casabel*, or *Rattle-Snake Islets*. To anchor in this bay, it is necessary to steer, as close as you please, to the N. W. part of the Morro, and to anchor under the shelter of it, at about two cable's length from it, in 6 or 7 fathoms of water; the bottom there being of mud, mixed with sand.

From the *Ensenada de la Esmeralda* the coast tends to the west, about 5 miles, to the Point and Morro of *Manzanilla*; and the shoal, which stretches out from *Esmeralda*, extends along it, at the distance of about a third of a mile. *Punta Manzanilla* forms a cove, but it is completely shut up by the shoal of which we have spoken, and which ends at the first scarped point to leeward of this, and at the distance of three-quarters of a mile. The shoal lies so that it not only prevents entering into the cove, but it hinders one from keeping any thing to the southward, until to the westward of this scarped, or cliffy point. To the westward of it the coast is very clean, for eight miles, to *Point Guarapoturo*, at which begins a shoal, which stretches out from the coast about two-thirds of a mile.

To the N. E. of *Point Guarapoturo*, at about a mile's distance, there is a rock, covered with water, to which it is necessary to give a wide birth. Something to the eastward of this point, and at about a league inland, a peaked mountain rises, named the *Pico del Este*, or Peak of the East.



Three miles west from Point Guarapoturo is the *Point del Escudo Blanco*, (White Shield), and the coast between is clifty and high, but, thence tending about N. W. it is very low and swampy, for 2½ miles, to the *Morro of Chacopata*, which forms a point extending out to sea almost two miles. From this point the coast tends south, forming a great bay, in which, at about a mile and a half to the westward of the middle of the Morro, there is an islet, named the *Caribes Isle*; west from this islet, at about a mile, there is another very small islet, named *Lobos*, or *Wolves' Islet*, and which has a rock (*farallon*) lying close to its eastern end.

The reef, or shoal, which we have already mentioned, as running out from Point Guarapoturo, borders all this coast; and, stretching out from the Morro Point, about the third of a mile, continues thence to Caribbee Islet, from which it inclines towards the south, and nears the coast so much, that, at the Point and *Morro de Cayman*, which is the S. W. point of this bay, it does not reach farther out than half a mile.

From the Point and *Morro de Cayman*, the coast tends nearly west; it is moderately level, and without any other points than that of *Tuna*, which is a mile and a half distant from the former, and the Point and *Morro del Castillo*, (Castle Point,) which is two miles westward from Point *Tuna*.

From *Punta de Castillo* the coast bends little towards the north, as far as the Point and *Morro de la Pena*, which is about four miles distant from the former; and it thence inclines something towards the south, to *Punta Gorda*, whence it forms a bay; the shores of which are beachy and low, to Point *Guachin*, or *Guaranche*. Point *Guachin* is formed by a spot of land, high and clifty, which rises above this low land, and is insulated by it. In the bottom and middle of the bay there is a small scarped point, of very little extent, named *Punta de las Minas*. From *Punta Gorda* to Point *Guachin*, nearly west, the distance is 6½ miles.

From Point *Guachin*, or *Guaranche*, the coast is a low beach, to *Point Escarceo*, which rises a little, and is 3½ miles distant from the former. Point *Escarceo* forms a front for about half a mile about it; and the west part of this cliff is named *Point Cardon*, from which the coast, which is a very low sandy beach tends S. W. about two miles, to *Punta de Araya*, upon which there are some small houses, wherein the people, who look after the salt-ponds, live.

All the Coast, from *Point Cayman* to *Point Escarceo*, has a reef extending along it, at about half a mile from it; but, opposite the latter point, it extends to the westward, about four miles, and forms the shoal, named the *Shoal of Araya*. The southern edge of this shoal is about half a mile to the southward of the Point of *Araya*; so that, by keeping the most southerly houses upon its bearing E. ½ N. you will go perfectly safe and clear of the shoal, and may run along the shore, at two cable's length, if necessary; for, although the shore is a low sandy beach, you will have 8 fathoms of water at that distance. This beachy shore continues S. S. E. two miles, to *Punta de Piedras*, which is formed by the extreme western part of the mountain of *Guaranche*.

*Point Piedras* forms a cliff, or precipice, for half a mile, and then unites itself with the high land of the mountain, on the south part of which there is a sanctuary, named *Sanctuario de Nuestra Senora de Agua Santa* (Sanctuary of our Lady of Holy or Good Water.) The coast still tends S. S. E. to *Point Barrigon*, which is, at first, a low sandy beach, and thence scarped or clifty; but it is all clean, and you may run along it, at the distance of a cable's length. This coast forms the little *Bay of Araya*, on the south point of which, where the scarped shore of *Barrigon* begins, there is a castle. From *Point Barrigon*, the coast, which is scarped and clean, tends about S. E. two miles, to *Point Caney*; it then turns to the E. S. E. for a long mile, to *Punta de Arenas*, (Sandy Point,) which is the most southerly point of this coast, and the northern point of the entrance of the *Gulf of Cariaco*.

To anchor at *Araya*, it is necessary to give a birth to the shoal which extends, as already noticed, about 2½ miles to the N. W. of *Punta de Araya*. This may be done by taking care to be more than three miles from the point before you run at all to the southward; or, what is the same, not to steer at all to the southward until you have lost soundings: but, if you wish to guide yourself by land-marks,

to take care not to cross the parallels of Punta Escarceo until the last peak on Margarita, to the westward of four, which the mountain of Macaneo forms, bears to the eastward of North; understanding that, when that peak bears North, you will pass half a mile from the edge of the shoal.

The Island Cubagua may, also, serve as a mark; for, when the west point of it bears true N. E. you will pass two miles from the western edge of the shoal.

To what has been already stated, we add, that he who goes to Araya, coasting the mainland, and running between it and the islands of Coche and Cubagua, ought to pass about a mile to the northward of Punta Escarceo, and then steer west until the western point of Cubagua bears N. E. and then steering true south, he will pass at two miles from the edge of the shoal: or, if one wishes to pass nearer it, in order to avoid getting so far to leeward, he need only steer west until the western peak of Macaneo bears north, or something more to the eastward, when he may steer S.  $\frac{1}{2}$  E. and pass the shoal at the distance of a mile, keeping that course until abreast of the southernmost small house upon the Point of Araya, and then haul by the wind to approach the little Bay of Araya, which may be known, not only by the castle at the south side of it, but also by the *Sanctuario de Nuestra Señora de Agua Santa*, already noticed, and which is in the north part of it, and upon the south cliff of Guaranche. In all this bay, as well as along all the coast to *Point Arenas*, you may anchor in the depth which is most convenient, and, if you choose, within a cable's length of the shore.

In the same way, all those who have to double Punta Araya from the northward, that is, from Cubagua, or *Margarita*, ought not to cross the parallel of Punta Escarceo, without attending to the preceding directions. If, by any accident, you get within the proper marks before you arrive at the place, you must immediately steer in the opposite direction, until you are due west from Punta Escarceo, when you may steer to the southward; and, so soon as you are abreast of the southernmost small house on Punta Araya, (before described) you may haul up. The soundings may also guide those who come from the northward, taking care either to keep out of soundings, or not to shoalen the water to less than 35 fathoms, until they have crossed the parallel above prescribed.

A shallow bank and reef stretch out about half a mile to the south of Punta Arenas, which, as already stated, is the north point of the *Gulf of Cariaco*.

**GULF OF CARIACO and PORT OF CUMANA.**—This gulf, which is about thirty-five miles in length, and, in general, about eight miles wide, may be considered as a large and secure harbour; for you may anchor in any part of it, the deepest water being 40 fathoms. The shores of it are very clean, and you may run along them, at the distance of half a mile, or even less, with the exception of the vicinity of *Cumana*, where a shallow shoal stretches out, two-thirds of a mile from the river. On the north coast are two harbours, named *Laguna Chica*, and *Laguna Grande*: the latter is also called *Laguna de Obispo* (the Bishop's Lagoon.) The first is very small; and the second, which is spacious enough, has from 9 to 20 fathoms of water, and is so very clean, that to navigate it, you have only to keep clear of what you see.

Within the gulf there is no town of any consequence, nor is there any motive for vessels entering it, as the point to which all of them direct their course is *Cumana*, situated on the south point of the mouth of the gulf. This point is of sand, and very low; and a shoal stretches out W. by S. from it, which is so steep-to, that, from 11 fathoms, you get at once into 5 fathoms; and, from the latter depth, you may be immediately aground. The edge of the bank, (which is, literally, of little depth) running out from it to the east, keeps almost E. and W. with the point, and tends along, about four miles, to *Punta Delgada*, whence it tends to the S. E. the same as the coast, and nears the coast in the vicinity of *Monte Blanco*, where it is clear.

The edge of the shoal extends to the south-westward from the point of *Cumana*, very close to the coast, and forms with it the mouth of the *River Manzanares*. On the low land, and nearer to the shore, there is an Indian town, which is separated from *Cumana* by the river. The anchorage is in front, and to the westward of the mouth of the river.

To sail to the anchorage of *Cumana*, steer from *Punta del Caney* towards the

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*Escarpado Roxo*, (Red Cliff) but not more to windward until clear of the shoal which extends out from Punta de Arenas: having passed the latter, you may haul by the wind for the mouth of the river, on the south point of which there is a fort. Keep the lead constantly going, and, when you find the proper depth, let go your anchor, and afterwards moor with your kedge ashore. But, should the wind be scant, or the current drag you to leeward, so as to render it necessary to beat up to the anchorage, it is proper, in order to keep clear of the outer point of the shoal, not to prolong the tack to the southward more than to bring the castle of San Antonio (which is the highest building you see in the town of Cumana) to bear east. Upon the tack to the northward, you may stand as long as you think advantageous, and on it there is no danger whatever.

To the south of the *Escarpado Roxo*, and a little to the eastward of *Punta de Piedras*, the River *Bordones* disembogues.

From Point *Piedras* the coast tends almost W.  $\frac{1}{2}$  S. in some places scarped, and at others, having beaches and sand, for three and a half miles, to *Puerto Escondido*, (Hidden Port) which is an inlet formed by the coast. It is about half a mile in depth, and the entrance is about three cables' length in width. In the middle of it there is 5 fathoms of water, with a sandy bottom; but, near its shores, not more than 2 or 3 fathoms. There are some rocks lying off the west point of it; and, to avoid them, it is necessary to give the point a birth of rather more than a cable's length.

From the west point of *Puerto Escondido*, the shore tends W.  $\frac{1}{2}$  S. one mile and a quarter, to *Punta del Campanarito*; this point is scarped and clean, without any other danger than a sunken rock, which lies out about half a cable's length from the shore, and about two or three cables' length to the westward of the west point of *Puerto Escondido*.

**MOCHIMA.**—From *Punta Campanarito* to the *Morro* and *Vigia* (Look-out) of *Mochima* is three-quarters of a mile; and between the two is a large and handsome bay, with from 18 to 6 fathoms, which you will find at less than a cable's length from the shore. The whole of this bay is remarkably clean, except that, N. by W. from *Punta del Campanarito*, there are a few rocks, which do not even lie out half a cable's length. It is, however, advisable to pass at least a cable's length from the point.

A small tongue of land, stretching out from the *Morro* and *Vigia* of *Mochima*, forms the east point of the entrance of the harbour, which is large, handsome, and well sheltered. Within are various coves, which form natural docks. The depth of water is so equal, that, in no place, does it exceed 15 fathoms; nor is there less than 5 fathoms, at a cable, or a cable and a half's distance from the shore. The greater part of it has very clean ground. Take care to pass a cable and a half's length from all that is visible, and you will be safe from all danger. These advantages, added to the circumstance that its entrance lies so as enables vessels either to enter, or sail out with the regular breeze, render this the best harbour in all this part of America, and, indeed, one of the best in the world.

**PUERTO MANARE.**—About a mile to the westward of *Mochima* is the harbour of *Manare*, which is also very fine. Throughout you will find from 15 to 5 fathoms of water, which latter depth is found at half a cable's length from its shores, and these are very clean. As its entrance is wide, a vessel can sail in or out with the regular breeze, at any hour.

The west point of *Puerto Manare* is called *Cape Manare*, and from it the coast tends about W. S. W. nearly a mile and a half, to *Punta de Tigrillo*. A reef extends around this point, to about a cable's length from the shore. The coast hence inclines to the south and eastward, two and a half miles, when it turns to W. by S. five miles, to *Punta Gorda*, which terminates the bay of *Tigrillo*. There is a small channel, by which *Puerto Mochima* communicates with it. On the north of *Tigrillo* Bay are three islands: the first, or eastern one, is named *Venados*; the second, or middle one, *Caraca del Este*; and the third, *Caraca del Oeste*: all the shores of the bay, as well as of these islands, are very clean; only, at the north point of *Isla de Venados*, which is called *Punta Campanaria*, a rock lies out at about a cable's length; and the western front of the same island

has, also, at the same distance from it, a small shoal with but little water on it. All the passes or straits between these islands, and that between them and the main land, are safe for any class of vessels; and, although some are rather narrow, yet the soundings in all of them are such, that an anchor may be let go in case of need. All that is particularly to be regarded is a rocky shoal, named *Baxo del Caracas*, which lies to the north-westward of the *Eastern Curaca*, and at a long mile's distance from it: this shoal is about half a mile long from E. to W. and presents no risk; for, if you want to pass between it and the *Caraca* isles, you have only to keep near to the latter: and if you want to go outside of it, keep to the northward of *Punta Manare*, and you will go clear of it.

**GULF OF SANTE FE.**—To the south of *Punta Gorda* is the point of *Red Cliff* (*Escarpado Roxo*), and these two form the mouth of the *Gulf of Santa Fe*, which extends in, to the eastward, about 6 miles. All its coasts are very clean, and at the entrance only, about a third of a mile from the north coast, is there a foul rock which you ought to keep one and a half, or two, cable's length distant from. This gulf has from 20 to 30 fathoms of water, on a muddy bottom.

From the point of *Escarpado Roxo* the coast inclines to the southward, and afterwards to the westward,  $2\frac{1}{2}$  miles, to *Point de la Cruz*; thus forming a bay, which makes a clean and excellent anchorage: this is called the *Ensenada de la Cruz*.

At about one mile W. N. W. from *Punta de la Cruz*, is the easternmost of the little islands named *Arapos*, which are about half a mile in extent, in that direction; they are very clean, except in the strait between them, which cannot be passed, on account of the reefs and shallows which unite them. The passage between the eastern isle and the coast is very clear, and without danger; there are two small rocks which lie out from the west part of the western islet, but they are also very clean.

From *Punta de Cruz* the coast tends to the westward, about four miles, to *Punta Comona*, and it is all clean, with a good depth of water. You may run along it at the distance of two cable's length without any danger.

To the westward of *Punta Comona*, at the distance of two short miles, is the *Punta de Pertigalete*, and between the two is a handsome bay, in which there are 13 fathoms of water, at a cable's length from the coast. The bottom of this bay is a sandy beach, and two little rivulets run into it. All of it is very clean, except the eastern part, which has a reef about a cable's length from the shore.

In front of this bay, and at about three cable's length to the north, from *Punta Pertigalete*, is the south shore of the *Isla de Monos*, or *Guaraco*: all the sides of it are very clean, but, at about two cable's length from the north part of it, there is a rock, which is foul, with a reef, and it must not be approached nearer than to half a cable's length. The strait between this rock and *Isla de Monos* is clean, and has 28 fathoms of water; and, to pass through it, you must keep nearest the island. The passage between the island and the main land is also very clean, and has 50 or 55 fathoms in its middle, and nearly the same depth close to the island, which it is best to keep near to, unless you wish to pass in the middle of the strait.

At a mile and half west from *Punta Pertigalete* is *Punta de Guanta*, and between them is the *Cove of Pertigalete*, in which are various islets, and a rivulet runs into it. In case any one wishes to anchor in this bay, it is necessary to avoid the western part of *Point Pertigalete*, passing, at least, a cable's length from it, to clear a reef which stretches from that part. It is, also, needful, to beware of a reef and shoal that project out in the centre of the bay: and you will be safe from it so long as you do not get any thing to the westward of the first islet to the northward. Attending to this, you may anchor to the north of the mouth of the rivulet, in 5 fathoms of water, about a cable and a half's length from the eastern beach.

Westward from *Punta de Guanta*, and at the distance of three miles, is the *Punta del Bergantin*: between the two, and at about a mile from the first, is the *Cove of Guanta*, in the mouth of which are several rocks and islets, forming very narrow passes, although with deep water, and quite clear. Within the cove there is from 18 to  $9\frac{1}{2}$  fathoms of water, which is found at half a cable's length from the



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shore. On the western front of the cove there is a reef, which stretches out about two cable's length; to avoid it, you have only to run along the eastern shore, which is very clean.

The *Punta del Bergantin* is foul, with a reef, which stretches out about a cable's length, and extends to the south nearly a mile: at its S. W. part there is also an islet, which is foul all round, and which does not allow a free passage between it and the point. From the latter, the coast tends on to the westward, making the *Ensenada*, or Cove, of the *Bergantin*, the east side of which is very foul, with a reef and shoal that continue to border all the coast as far as the *Morro of Barcelona*.

**BARCELONA.**—The *Morro of Barcelona* is high land, stretching N. and S. about a mile, and it is united to the main-land by an isthmus, or narrow tongue of sand, which is a large mile in length. The distance from the *Morro of Barcelona* to the *Point of the Bergantin* is about  $4\frac{1}{2}$  miles; and the coast, which turns to the southward, forms a great bay, named that of the *Pozuelos*. Along all this part of the coast, which is a sandy beach, and very low land, the shoal extends about a mile out to sea; and, therefore, it is advisable, when sailing along it, to steer direct from *Punta de Bergantin* to the north part of the *Morro*, which is clean and steep-to, and which you may pass at a cable's length: or, if wishing to enter the bay, you must keep the lead going, and take care not to get into less water than 8 fathoms, with a sandy bottom.

The western coast of the *Morro of Barcelona* is foul, and ought to be avoided by about two cable's length. From the north point of this *Morro* to *Punta de Mangles*, (*Mangrove Point*), which is to the south of it, is about four miles; and the coast, which is a low sandy beach, turns to the east, and in it the river of *Barcelona* disembogues its waters, forming a great shoal of sandy clay. At about a mile and a half inland, upon the left bank of the river, is the *City of Barcelona*.

To anchor in this bay, the lead is the only guide: for, being very shoal, every one may anchor in that depth of water, which will best answer the vessel's draught.

**CHIMANA and other ISLES.**—Off the coast, between Cape Manare and Barcelona, besides the islands already noticed, there are various others, which are named the *Picudas*, the *Chimanas*, and the *Borrachas*. The *Great Picuda* lies to the westward of the *Western Caraca*, with which it forms a channel of a long mile in width, and so clean that you have only to beware of a sunken rock, which lies about two cable's length east of the east point of the *Picuda*. This island lies S. W. and N. E. in which direction it is rather more than a mile in length: its coasts are very clean, but to the northward of its extreme east point there are two rocks, the first of which lies out at about one cable's length, and the second about three.

At about S. W. by W. from the *Great Picuda*,  $3\frac{1}{2}$  miles, is the second *Picuda*, an islet of a circular figure, and about three cable's length in extent, and clean all round. One mile from it, about S. S. E. is the *Chimana del Este* (Eastern *Chimana*), which is another islet; and, though less than the former, it is equally clean. West from it, at the distance of two miles, is the east point of the *Second Chimana*, which lies East and West, and is about  $1\frac{1}{2}$  mile in extent. It, also, is very clean. Off its east end are two small islets; the nearest at a cable's length, and the farthest at five cable's length, from it. Off its west end there is, also, a very small islet, at a cable's length distance.

At two cable's length from the western point of the *Second Chimana*, is the eastern part of the *Great Chimana*, which island is of a very irregular figure, and its greatest extent, nearly east and west, is  $3\frac{1}{2}$  miles. To the west of it, at the distance of one-third of a mile, is the *Western Chimana*, which is united to the *Great Chimana* by a shoal of rocks and sand, stretching out to the northward, a large half-mile from the north part of the *Great Chimana*: upon this shoal, in the middle of the strait, is a very small islet; and there is also another, at a very short distance from the western part of the *Western Chimana*. Finally, to the south of the most easterly part of the *Great Chimana* is the *South Chimana*, the greatest extent of which is about two miles N. E. and S. W. This island forms two channels; one to the northward of it, with the *Great Chimana*, a cable's length



and a half in width, and perfectly clean, with a depth of 22 fathoms, muddy bottom. The south channel lies between the island and Point Bergantin; it is half a mile in width, and also very clean: for, you have only to be sure that you are clear of the reef, which lies out to about a cable's length from Point Bergantin, as already noticed. Various very small islets lie between the Great and South Chimanas, but they are all very clean.

It will be seen, from what has been said, that the Picudas and the Chimanas are very clean, with deep water around them. There are no other dangers among them, than the rock which is to the east of the Great Picuda, and the shoal which lies in the strait between the Great and West Chimanas. All the other channels among the islands and islets are navigable; and, although some of them are not very free, on account of their narrowness, especially for large vessels, the mariner must judge of this for himself, and he has only to take care to keep clear of what is visible.

The *Isla Borracha* (Drunken Woman's Isle) lies about three miles to the west of the Western Chimana. It is about two miles in length, from north to south, and about  $1\frac{1}{2}$  mile in its greatest breadth. The N. E. side of it is very clean, but the N. W. very foul, with a rocky shoal, which is very shallow, and upon which there are various islets. On the outside of these islets it is always necessary to pass, and at about two cable's length from the westernmost.

The south part of this island sends out (*despide*,) to the S. S. E. a great shoal of sand, on which rises an islet named *El Barracho* (the Drunken Man,) and two very little islets named the *Borrachitos*; the latter lie two long miles from the *Borracha*, and you ought always to pass to the south of them, keeping three cable's length from the *southernmost*; for, between them and the *Borracho*, and almost in the middle, between the latter and the principal islet, there is very little depth of water.

From the anchorage of Barcelona the coast tends W. by S. 32 miles, to the *Morro of Unare*; and it thence inclines W. by N. and W. N. W. 57 miles, to *Cape Cordera*. All this coast is low, and upon it are seen the *Morros of Piritu* and of *Unare*, which are distant from each other about 8 miles. The water along it is shallow, but the shore is clean; so that, in running along it, you require no other guide than the lead. Off it are only two isles, named *Piritu*, which are 10 miles to the westward of the anchorage of Barcelona, and three long miles out from the shore. These isles lie nearly east and west; they are low, as the coast, and have a reef, which stretches out, to about the length of a cable and a half, from them. There is a passage between them, but it is incommoded by reefs, which stretch from both islands, and which leave a clear channel of only two cable's length in breadth, with a depth of 6 fathoms. The channel between these isles and the coast is fit for any class of vessels; and to take it, no other guide than the lead is required.

### Particular Description of the Coast of Cumana, &c.

The Northern Coast of *Cumana* appears, in general, like a continued Sierra, or range of mountains, approaching to the sea. These are very barren, and the soil is impregnated with nitre.

Of the *Gulf of Cariaco* the navigation has been described. This gulf is formed by the low peninsula of *Araya* on the north, and on the side of the main it is surrounded by high mountains. The City of *Cumana*, at the entrance of this gulf, was built by the Spaniards in the year 1520, and is the most ancient town of the main-land in these parts. It stands on a sandy soil, in a healthy situation, upon the River *Manzanares*, as before shown, at about a mile from the sea. The river admits boats only, and vessels anchor within a mile to the west of the river's mouth.

BARCELONA, to the westward of Cumana, was founded in 1634. The town is, or was, very disagreeable. It is situated on the west bank of the River

Neveri, at the distance of two miles from the sea. The bay, or road, terminates on the south by a low point, called Point Maurico, and on the north by the Morro, connected to the main by a reef and neck of sand. These bear from each other N. by E. and S. by W. 3 miles distant : hence the bay is entirely open to the west. Its depths are from  $3\frac{1}{2}$  to 2 fathoms.

The PIRITU ISLES, or *Dispirited Keys* of the sailors, are low sandy keys, with some mangroves upon them, but no fresh water. From off the N. W. end of these keys you may run inside, in 6, 7, and 8, fathoms water, one-quarter of a mile from shore, good ground, and land-locked from all winds.

PIRITU ISLES to CAPE CORDERA.—The coast between these two places is so clear, all along, that you may run down within 2 leagues or less, from it, until you arrive at the entrance of *Carenero Bay*, which is 2 leagues to the S. S. W. of Cape Cordera. Here you may anchor in what water you please, with good ground. It is usual to run so far in as to bring Cape Cordera bearing North or N. by E. where there are 5 fathoms of water, at 2 miles from shore. When at anchor with these bearings, there will be a lagoon to the W. S. W. where good fresh water may be obtained. With a table-land on the main bearing W. S. W. or S. W. by W. you may run into that bay by the lead, and anchor at pleasure. The inland country is very mountainous, though the water-side or shore is low. The country abounds in cacao.

### The coast from Cape Cordera, to Carthegena.

*Cape Cordera*, a well-known head-land, is a round hill, on the north of which, and at the distance of a mile out, extends a tongue of low land, but which is so clean that, at half a cable's length from it, there are 10 fathoms of water with a sandy bottom. This tongue forms to the westward a very excellent anchorage, named *Corsarios* or *Privateer's Road* ; and to enter this you have only to double the west point of the tongue, which has a rock above water very close to it, and then anchor so soon as you find you are sheltered from the wind, in a convenient depth ; understanding that, at two cables' length from the shore, you will have 8 fathoms of water, on a sandy bottom. In the south side of this bay, you will see a piece of shore, with a low wet sandy beach, of about three cables' length in extent, whence the coast, towards the west, is foul, having a reef which stretches out about half a cable's length from it. The western point of this bay, named *Punta Caracoles*, has a rock off the north part of it, very close to ; and a reef extends about a cable's length out from it.

From *Cape Cordera* you begin to see the mountains of Caraccas, which extend east and west for many leagues.

CENTINELA or SENTRY ROCK.—To the northward of Cape Cordera, at the distance of thirteen and a half miles, there is an *islet* which resembles a ship under-sail ; it is very clean except on its north part, from which, at the distance of a musket-shot, there are some sunken rocks ; between these and the *islet* there is a very deep channel.

From *Point Caracoles*, the western part of *Corasios Bay*, the coast tends W. N. W. ten and a half miles, to *Point Maspa* : whence it continues about W. by S. two and a half miles, to *Point Chuspa*, and it is not advisable to run along it nearer than two miles.

The Anchorage of *Chuspa*, westward of the point, is excellent : from *Point Chuspa*, which is the N. E. point of it, the shore tends about S. W. a mile and a half, to the mouth of the *River Chuspa* ; on the east bank of which, at about two cables' length from the beach, is the town, or village of the same name. From the mouth of the river, the coast rounds towards the west, a mile and a half, to *Point Curuau* : to the south of which, at about a third of a mile inland, is the town, or village, of *Curuau*. All the shore from *Point Chuspa* to *Point Curuau*, is so clear, that to enter into this anchorage, you need no other guide than the lead ; but from *Point Curuau*, a reef, which stretches out about two cables'

length, renders the shore foul; and it continues the same to *Punta del Trayle* (Friar's Point,) which has, at about a cable's length from it, a rock of the same name. This point is about four miles distant from Point Curuau: and between the two points there is a cliff stretching out to the northward, named the *Fronton de Sabana*. North from this there is a shoal, the south edge of which lies out a long mile from the shore, and its greatest extent is a mile N. W. and S. E. It is rocky, and although, in general, it has from 9 to 5 fathoms of water on it, yet there are some spots of it on which there is not more than 3 and 4 fathoms, and therefore it should be avoided. It is three miles distant from the anchorage of Chuspa; and to enter that anchorage, it is necessary to approach the Point of Chuspa, which you need not be afraid of; for by this you will always shun the shoal, if you take care to be clear to the north of Point Chuspa before you cut the meridian of Curuau.

From *Punta del Trayle*, the coast which is high, tends to the westward, inclining something to the south, twenty-nine miles, to the anchorage of *La Guayra*; and along the whole of it you may anchor at half a mile from the shore, or even at the distance of a musket-shot.

### *Directions for entering the Port of La Guayra.*

Vessels from St. Thomas, Barbadoes, &c. in running for this harbour, should shape their course so as to make either *Blanquilla* to the east or *Orchilla* to the west. Both these islands are tolerably high, and may be seen six or seven leagues off. From a fair birth between them, steering down, they ought to endeavour to make in with the main land six or seven leagues to windward of *La Guayra*, and run along shore for the roads.

The land in the neighbourhood of the port is very high. It rises gradually from *Cape Cordera* to the famous *Silla of Caraccas*.

*La Guayra*, in every direction from the sea, appears to be immediately beneath the *Silla*. The town and fortifications, (which are white) may be seen distinctly at five or six leagues distance.

*Cape Blanco*, about four miles to the westward of *La Guayra*, is only a small tongue of land; and strangers approaching *La Guayra* must not depend upon making it as a cape, without they are close in shore, and within three or four leagues of it.

The land between *Cape Cordera* and *Porto Cavello* may be approached without the least danger, within two miles during the day; but from sunset to eight or nine o'clock in the morning, during which time there is no breeze, vessels should give it a wide birth, say six miles, lest the swell and current, both of which have a tendency to the shore, should drive them on the rocks. It is highly necessary to observe this, as instances are not wanting of ships driving past the harbour in the night.

Vessels making *La Guayra* in the evening, should haul their wind in time, for fear the wind should fail them, before they come to an anchorage.

The town of *La Guayra* is situated on the easternmost part of a small bay. Goods are landed and shipped by means of canoes or boats, holding about two tons, from a wooden pier, which runs out from the middle of the town. This operation is sometimes difficult, and often very dangerous, on account of the surf.

Vessels bound to the anchorage must be careful to have as many of their square-sails furled as they can possibly spare, and a good scope of both cables in readiness, as the regular breezes are generally very strong, and the ground in many places foul. Chains are to be recommended.

From *La Guayra* the coast tends W. by S. twenty-six miles, to the little harbour of *La Cruz*: it is so clean that you may run along it at a mile's distance. The port of *La Cruz* is a little bay, which is about a cable and a half's length wide at the mouth, and two cable's length in depth: it is uncommonly clean

throughout, with such deep water, that, at half a vessel's length from the shore, on all sides of it, you will find 5 fathoms of water. In the south part of the interior of this harbour, a river runs into it; and the east point, which is named *Point La Cruz*, has a rock lying close to the point. This would be an excellent anchorage if it were larger; but, as it is, small vessels only can use it.

From this port the coast tends W. by S. twenty-three miles, to the *Cove of Cata*; it is all very clean, and you may run along it a mile's distance, or even at less, if you choose. At two leagues to the east of the Bay of Cata, and five miles inland, is a mountain, named *La Meseta* (the Little Table;) and, at true south from Cata, and the same distance inland, is another mountain, named *Ocumare*, which may serve as a landmark either for the cove of Cata, or that of Ocumare, which is the first inlet to the west of Cata.

The *Ensenada* or *Cove of Cata* is about half a mile wide at its entrance, and about the same in depth. The east point of it has an islet, almost joined to it, whence the coast tends to the south, to the bottom of the cove, where a river disembogues; and there is a shallow place extending from the mouth of the river, rather less than a cable's length. The rest of the cove has very clean ground, with from 27 to 5 fathoms of water. The latter depth is found within a cable and a half's length of the shore.

To the westward of the western point of Cata, at about two-thirds of a mile from it, is the eastern point of the *Cove of Ocumare*, which has, also, a very good anchorage. To the N. W. of the east point of the Ocumare is an islet, between which and the point, is a strait of half a cable's length in width, quite clear, and the least water in it is 7 fathoms.

To enter the anchorage of *Ocumare*, steer close to the islet, and then to the southward until you are sheltered; when you may anchor in 7 fathoms, on a sandy bottom, to the southward of the islet, and about a cable's length, or a little more, distant from it. This bay is shallow, and the lead is a good guide for it; but take care, as the anchorage has but little extent from north to south, and a large vessel may easily get aground, if she does not luff up, and deaden her way in sufficient time. At a little south from the islet a rivulet runs into the sea, and upon its banks are some fishermen's huts.

Two miles and a half from the islet of Ocumare is the east point of the inlet, called the *Cienaga of Ocumare*, which is little better than a swampy opening of the land; in which, between two shallow parts of the reef, there is a channel of about a cable or a cable and a half's length in width, and which has from 13 to 5 fathoms of water. The western point of this bay is formed by an insulated hill (*Morro Aislado*) which rises on the low land. This anchorage is very bad, and fit for coasting vessels only.

**PUERTO TURIAMO.**—At a mile and a half west from the *Morro* of the *Cienaga* is *Puerto Turiamo*, which is an excellent harbour, fit for any class of vessels. Between the two outer points of it the opening is a mile wide, and within it narrows to two-thirds of a mile. It is two miles deep, from north to south, and throughout the whole of it are 20 fathoms of water, on a bottom of mud and sand. All the shore of it is bordered by a reef, which extends out about one-third of a mile; and, if you take care not to approach nearer than to half a mile, you will go free from all danger. At the bottom of the bay, which is a sandy beach, the river of the same name disembogues, and, at a cable's length off the N. W. part of the outer eastern point, there is an islet, called the *Ile de Turiamo*.

**PORTO CABELLO.**—To the westward of *Port Turiamo*, at the distance of nine miles, is *Porto Cabello*. This part of the coast is all clean, and you may run along, at a mile from the shore. Along it are several detached islets; to sail among which you need only consult the particular chart of this harbour, in which these islands are represented.

*Porto Cabello* is a harbour formed by several islets and low tongues of mangrove-land. To steer in, you must proceed by the eye. The largest vessels are here made fast alongside the Mole, and you need neither plank nor board, in order to get on shore. The entrance of the channel leads into a very spacious bay, which is sheltered from the regular breeze, and has excellent depth of water,



from 12 to 5 fathoms, the bottom of mud and sand. In 5 fathoms, you are near enough to the shore, which is not very good, there being some rocks. The best anchorage lies E. and W. with the entrance of the harbour, and is about three or four cable's length from it.

Porto Cabello has heretofore been the careening-place of all the Spanish vessels trading to La Guayra, and the place where they wintered, after having discharged their cargoes at La Guayra, in order to be more secure, to make what repairs were necessary, and take in part of their return-cargo, with which they returned to La Guayra, to finish loading, and complete their manifests.

The only thing which ships of war can require to enter *Porto Cabello* for is, to careen, or give their bottom any repairs which may be needful: but for this they ought to anchor in the bay, as it is not only unnecessary to go in to the harbour, but is very prejudicial.

*The Coast to Leeward, or West, of Porto Cabello*, forms an extensive bay, called *Bahia de Tucacas*, or *Golfo Triste*. In this bay are several islets, and the regular breeze blows right into it, which render it rather dangerous; and, as vessels which go from Europe have no call to enter it, they ought to shun it.

The north point of this bay, named *Point Tucacas*, bears N. W. by N. from the entrance of *Porto Cabello*, and is twenty-five miles distant from it: thus, those who, from *Porto Cabello*, are bound to the westward, ought to steer N. by W.  $\frac{1}{2}$  W. until they are abreast of *Point Tucacas*, or N. N. W.  $\frac{1}{2}$  W. if they wish to go near that point, and take the anchorage named *Chichirivichi*.

*Point Tucacas* is a low swampy mangrove point, which extends out, about a mile, from the high-land. To the east of it there is a key, named *Cayo Sombrero* (Hat Key) which is about a mile in extent N. W. and S. E. it forms a channel with the shore of a short half-mile in breadth, which, although there is a depth of 12 fathoms in it, is obstructed by shoals; and the reefs extending from the shore render it also more dangerous. The N. E. part of the key is also surrounded by a reef, which extends out two cables' length, and it is not advisable to approach nearer it than to a mile.

From *Point Tucacas*, or that point which is to the west of the most northerly part of *Cayo Sombrero*, the coast tends about N. W. low and foul, with a reef, which stretches out about half a mile from it to the mouth of the harbour of *Chichirivichi*, which is three miles distant from the point.

*The Harbour of Chichirivichi* is formed by low mangrove lands; and, although well sheltered from all winds, and with 7 fathoms of water, and a clay bottom, it is difficult to take, being obstructed, at the entrance, by shoals and reefs. Its east point named *Chichirivichi*, is steep to nearly a mile; and a reef extends from it to about three cables' length. Upon this reef are some islets, which you must pass on the outside. To the north of them is a key named *Peraza*, the whole of which is foul, being surrounded by a reef that stretches out half a cable's length from it. This key, and the islets at the point, form a channel of two cables' length in width, and having more than 8 fathoms of water. Three cables' length to the west of *Cayo Paraza* there is another key named *Chichirivichi*, which is larger, and is also equally surrounded by a reef which stretches out to half a cable's length: between these two there is a channel of two long cable's length in width, with a depth of 7 or 8 fathoms. In this channel, however, there are two shoals, which have not more upon them than 2 fathoms of water.

To the north of *Cape Chichirivichi*, at less than half a mile from it, there is a larger key, named *Cape de Sal*, (Salt Key,) on account of the salt-ponds which are on it. This key is surrounded by a reef, which stretches out to a cable's length from it, except on the S. W. side. Finally, about N. by E. and at the distance of a mile and a half from *Cape de Sal*, lies *Cape Borracho*, which has so bad a reef, that, off its N. E. and south points, it extends half a mile out. All the coast hereabout is so shoal, and the bottom so equal, that, at half a mile, or a little more, from the shore, you find 7 fathoms, and deepen the water so gradually that, at two miles north of *Cayo Borracho*, you will get 15 fathoms, mud and sand.

To enter the port, after you are abreast of the northernmost part of *Cayo Sombrero*, outside of which you must always pass, steer towards *Cape Peraza*.



in order to pass through the middle of the strait between it and the islets off the point, and then steer to the westward until Cape Peraza bears N. E.  $\frac{1}{2}$  E. when you must run S. W.  $\frac{1}{2}$  W. which course you will change to south, so soon as the largest islet of those at the point of Chichirivichi bears E.  $\frac{1}{2}$  N. and with that course you can run in, and take the shelter of the point; or, if you choose, you may alter the course to S. S. E. and anchor in 7 fathoms, on clay.

From the Harbour of Chichirivichi, the coast tends about N. N. W. eighteen miles, to Punta de San Juan, (St. John's Point,) and continues all so shoal that you may find 15 fathoms of water at four miles from the land. Along it there is no other danger than a shoal, of very short extent, which lies four miles to the southward of Punta de San Juan, off a little point named *Punta Manatie*; but it does not extend from the coast more than a mile.

The Point of San Juan is the western point of a bay, which is so shallow that, at a mile from the coast there is not more than 3 fathoms. To the N. W. of the point there are two keys: the first, which is at the distance of half a mile, is named Cayo de San Juan; and the second, which is about two miles from the former, is called the N. N. W. key. A reef stretches out about two cables' length from the N. W. part of Point San Juan, and the key of St. Juan is also surrounded by a reef, which extends out a cable's length. The other key is also shut in by a reef, which projects from its S. E. point, about half a mile, and upon which reef rise numerous keys and islets. The anchorage is to the S. W. of San Juan's key; and, to go into it, you must pass to the N. W. of that key, and anchor in that depth which suits the vessel's draught of water. We say that you ought to pass outside the key of San Juan, because small vessels only can pass through the channel between it and the point; not only because it is narrow and foul, but also because the deepest part of it has only  $3\frac{1}{2}$  fathoms of water.

From Point San Juan, the coast tends about W. N. W. 19 miles, to Punta del Ubero, and is all shallow and very clean. To the westward of Point Ubero it forms a short bay, which, on account of the shoalness of the water, will hardly allow large vessels to run in far enough to be sheltered from the breeze. About N. N. W.  $\frac{1}{2}$  W. from this point, at the distance of a mile and a half, there is a shoal, the least water on which is 5 fathoms: it has some loose stones on it.

From Punta de Ubero to Punta de Zamuro is twelve miles, the coast tending in the same direction as the former. From Zamuro Point the coast, to the distance of forty miles, forms various bends (*senosidades*) to the bay of *La Vela de Coro*: all of it is shallow and clean, and you may coast along it, at the distance of half a league, keeping the lead going. On this coast rise various high mountains, which are plainly seen from the sea.

VELA DE CORO.—In the bay *La Vela de Coro* there is anchorage; and, to direct yourself to it, all that is necessary is the lead; for the bottom is shallow and clean. On the east side of this bay is the town named *La Vela de Coro*; and, at about two miles inland, and to the eastward of it, is an Indian village, named *Carrizal*. At a mile and a half to the westward of the town of *La Vela de Coro*, the River *Coro* discharges its waters. From this river the coast turns suddenly to the northward, forming a chain of sand-hills for nineteen miles, when it unites with the *Peninsula of Paraguana*.

PARAGUANA.—The eastern coast of the Peninsula of Paraguana tends N.  $\frac{1}{2}$  W. fifteen miles, to Punta *Aricula*, which lies N. N. W.  $\frac{1}{2}$  W. from the Bay of Coro, thirty-one miles. All this coast is very shoal; and, at ten miles from shore, the depth is only 20 fathoms.

From Punta *Aricula* the coast tends about N. N. W. seventeen miles, to the Point of Tumatey; from which, to Cape St. Roman, the northernmost point of the peninsula, the distance is four miles, and the coast here tends nearly W. N. W. A mountain named that of *Santa Anna*, rises in the south-eastern part of the peninsula, and is seen many leagues out at sea.

From Cape St. Roman the coast tends nearly S. W. twelve miles, to Punta Macolla, which is the middle point of a head-land, of which Punta del Medano is the north, and Punta del Bergantin the south point. The distance between the extreme points N. E. and S. W. is two miles. It is shallow and clean, and you may safely run along it by the lead. This point (Macolla), and that named Punta de Espada, (Sword Point,) which lie about fifty miles distant from each

other, nearly true East and West, form the entrance of the Gulf Venezuela, or of Maracaybo.

**GULF OF VENEZUELA.**—In the south part of this Gulf are the mouths of the Great Lagoon or Lake of Maracaybo, lying in a delta; of these mouths one only is navigable, and that not for vessels drawing more than 12 or 13 feet of water, it having a bar upon which there is not more than 14 or 15 feet.

Although no survey of the coasts of this Gulf have been taken, nor the position of the Bar accurately determined, yet it is well for the mariner to know the course which he ought to steer, in order to gain it, whether from Punta Macolla, or Punta de Espada. The Hydrographic Commissioners, under the command of Don Joaquin Fr. Fidalgo, surveyed the eastern coast of the Gulf, from Punta de Macollo to *Punta de Arenas*, which is to the eastward of the Bar, and the course may be gained by inspection of the Chart; and as the water is shallow, but without shoals or detached islands, the lead will be the best guide. The same remark applies to the west coast, which, though not surveyed, has been explored and examined, and you may, with safety, approach it into 5 or 6 fathoms of water, in every part. Those who enter this Gulf have generally no other object in view than to go into the lake to load cacao, tobacco, and other articles; therefore we now direct our attention to giving some directions, by which they may make it out.

Being four leagues to the west of Cape St. Roman, and thence steering S. S. W.  $\frac{1}{2}$  W. you will proceed so as to sight the *Mesús of Borojo*, which are some level hillocks, or heaps of sand, situated to the eastward of the bar;\* from this situation the course to the bar will be nearly west, keeping at the distance of two leagues from the coast, and in from 5 to 6 fathoms of water, until you gain sight of the castles of *Zapara* and *San Carlos*, which defend the entrance of the Lagoon, and are placed, the first on the eastern point, and the second on the western. You will not then be on the bar, but considerably to the south of it; for it is formed by the shoals which stretch out, from two and a half to three miles, to the W. N. W. of the *Bajo Seco* (or Dry Shoal.) On all these shoals the sea breaks, and the deeper water is easily distinguished by its having no breakers. To find this, you have only to keep at a cable and a half's length from the outermost breakers off *Bajo Seco*. The last is an islet of sand, which is about a cable and a half in every direction; it lies one mile and a half N. N. E. from *San Carlos*' Castle, and, at about E.  $\frac{1}{2}$  N. from it, you will see another, named *Zapara*. The islet of this name has some very high mangroves; and, outside of it, in 6 or 7 fathoms, the bottom is of hard mud, mixed with sand; and this is where you ought to anchor, in case of necessity; observing that you ought to come to with good ground-tackle, as the breeze blows very fresh at this place.

If bound to the Bar, and being off *Espada Point*, and at the distance of two leagues from it, steer S. S. W. with which course you will make to the N. E. of the islet, named *Bajo Seco*.

On this course, as well as the former, the depth diminishes very regularly as you advance to the south; and it will be adviseable not to approach the Bar by night, but to run out again, or keep on short boards or tacks, about four leagues from it, until day-light comes on. The breezes in this gulf are fresh, and from N. N. E. which cause a heavy sea upon the bar, and all the south shore; so that the risk of getting aground is considerable, and must be guarded against.

High-water on this Bar takes place, at full and change days, at 5 $\frac{1}{2}$ h. in the afternoon; and, with spring-tides, the waters rise from 2 to 2 $\frac{1}{2}$  feet: the least water on the bar, at high-water, in the time of the breezes, is 15 feet, and 17 feet in the rainy season, which is in August, September, October, and November.

You cannot go over this bar without a pilot; and, therefore, so soon as your vessel is nearly N. and S. with the castle of *San Carlos*, and in 5 $\frac{1}{2}$  fathoms of water, you ought to alter your course to the west, until you gain 4 $\frac{1}{2}$  fathoms, when you will see the sea breaking on the shoals in a line, about W. N. W. In the said depth of 4 $\frac{1}{2}$  fathoms, you will continue to the west, luffing or keeping away, as may be necessary, so as to keep the same depth until you are abreast of the last breakers, which will be near the mouth; and heaving-to, on the starboard tacks,

\* It appears, from the Spanish Chart, of 1817, that the *Punta* and *Rio Borojo* lie about 18 leagues from the Bar, to the eastward

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or, what is better, maintaining yourself in your situation by short tacks, you must wait for a pilot.

Steering with a course for the bar, the first thing you will discover, on account of its being the highest thereabout, will be the *Isla de Todos*, which lies nearly south from the castle of *St. Carlos*; and you ought to steer toward that island until you discover the castles and the *Bajo Seco*, when you must act as already directed.

It is very necessary to know that the situation of the mouth of the bar is to the west of the meridian of *San Carlos*; for, without so knowing, every one would think it was between *Bajo Seco* and the Eastern coast, where *Zapara Castle* stands; under this mistake they might be cast away on the shoals; or, if attempting to enter, it would be a prodigy if every person on board did not perish; for this, in several instances, has been the case.

Vessels, drawing from 10 to 13 feet of water, ought to calculate so as to enter at high-water, that they may evade all danger of even touching; as, if a vessel should lose her rudder, shipwreck would be inevitable, on account of the narrowness of the channel.

You ought to take a pilot on going out, over the Bar, until you are free from the shoals; after that, no particular instructions are necessary for sailing out of the gulf; for, although you must beat out, yet every mariner knows how to regulate his tacks, so that they may be more or less favourable; and in this gulf he may prolong either tack without any other guide than the lead. Those who proportion these with most judgment, will advert to the circumstance, that, at four or five o'clock in the evening, the wind generally comes to north, or nearly north, which renders it advantageous to be near the western shore about that time, in order to get a long tack to the E. N. E.: and, so soon as the wind again rounds back to the eastward, it will be advisable to tack, not only to gain northing by it, but also to get over on the western shore, before the wind again hauls to the northward.

**PUNTA ESPADA to CARTHAGENA.**—It has already been shown, that *Punta Espada* is the western point of the entrance of the Gulf of Venezuela. From it the coast tends about N. W.  $\frac{1}{2}$  N. 13 miles, to *Cape Chichibacoa*, and is all so clean and shallow that the lead is a good guide; and, although the coast is low, there are various peaks and mountains which rise inland, the highest of which are named *Sierras de Acente*.

**LOS MONGES, or the Monks.**—Nineteen miles E. N. E. from *Cape Chichibacoa*, are the *Monges del Sur*, (Southern Monks,) which are two very small and perfectly clean islets, that you may pass at the distance of half a cable's length, without any fear. About E. N. E. from them, at the distance of three miles, there is another, named *Monge del Este*, (Eastern Monk,) which is also very clean; and, at N.  $\frac{1}{2}$  W. from the first, eight miles distant, is another group, called *Monges del Norte*, (Northern Monks,) which are foul, with a reef; and it is not proper to approach them nearer than a mile. The passages which the Northern Monks form with the Eastern and Southern Monks, as well as with the mainland, are so free and clear, that no class of vessels run any risk in passing them.

**CAPE CHICHIBACOA to BAHIA HONDA.**—From *Punta Chichibacoa* the coast tends nearly W. N. W. 25 miles, to *Punta de Gallinas*, which is the northernmost part of the whole of it. From *Punta de Gallinas* the coast falls to the southward to *Punta de la Aguja*, off which the water is shoal to a mile out to sea. At *Punta Aguja* the coast bends to the southward, forming a small bay, named *Bahia Honda Chica*, (Little Bay Honda,) which has very shallow water, and affords no shelter: next follows the harbour of *Bahia Honda*, the eastern point of which is four miles from *Punta de la Aguja*.

*Bahia Honda* is a bay of great extent, and its mouth is three miles wide. In entering this bay, you have only to keep clear of a shoal which is in the mouth of it, and in a line with the two points of the entrance, and which lies a mile from the west point, and a mile and two-thirds from the east point. This bank, of which the greatest extent lies about E. and W. is about a third of a mile in length, or perhaps a little more, and the least water on it, which is at its eastern end, (*cabeza*,

literally head,) is only *one* foot; and, with very little wind, the sea always breaks upon it.

This bay is so shallow and clear, that no other guide than the lead is necessary for any one choosing to anchor in it. The coast from *Cape Chichibacoa* to this place is low and bare, but clean and shallow, so that you may run along it by the lead.

**BAHIA HONDA to CAPE LA VELA.**—From the western point of *Bahia Honda* the coast tends about S. W. 11 miles, to a bay, named *El Portete*, the entrance of which is remarkably narrow, and the depth of water in the interior admits small vessels only. From *El Portete* the coast tends W.  $\frac{1}{4}$  S. 14 miles, to *Cabo la Vela*. The coast is clean, and from *Bahia Honda* the land begins to rise higher. One league before you come to *Cape La Vela*, there is a small hill, in the shape of a sugar-loaf, against which the sea beats, and which projects about half a mile to the northward of the rest of the shore. From this hill the land continues pretty high, and rounds to the south to the *west point*, which is that properly called *Cape La Vela*: to the westward of this, at the distance of two cable's length and a half, there is an islet or rock, very clean, round, and steep-to, and you may pass within a ship's length of it, if you please. The strait between this islet and the cape is sufficiently clear, and there is no risk in passing it, but it is better to keep nearer the islet than the cape; for, close to it, you will find 6 fathoms of water, and immediately 4, or even only 3, fathoms. The land at *Cape La Vela* is very sterile; and, S. E. from it, at about seven miles inland, rises a mountain, named *Sierra de Carpenteros* (Carpenter's Mountain.)

From the Cape the coast turns to the southward, and forms a large bay, where there is shelter from the breezes: to anchor in it you need no other guide than your lead, as the whole bottom is clean, and so shallow, that, at two miles from the coast, you will find 6 fathoms, and from that it very gradually shoals towards the land.

**CAPE LA VELA to RIO DE LA HACHA, &c.**—The coast from *Cape La Vela* tends South and S. W. 23 miles, to *Castilletes Point*, on which there is a grove, or clump, of mangroves. From this point it tends W. S. W. 14 miles to *Manare Point*, and between the two forms a slender bay, with several projections.

At 13 $\frac{1}{2}$  miles, nearly W. S. W. from *Manare Point*, is the *Punta de la Cruz*. The intermediate coast is nearly straight, although the points of *Almidones*, *Pajaro*, and the *Fronton de Jozote*, stretch out a little. Between the two latter, at a mile and a half to seaward, lies the *Pajaro*, or Bird's Shoal, having two fathoms over it, with sandy ground.

From the *Punta de la Cruz*, at four miles S. W.  $\frac{1}{4}$  W. is *Vela Point*; and, at seven miles from it, S. W.  $\frac{1}{4}$  S. are the city and river of *La Hacha*. The coast thence stretches S. W. by W. and S. W.  $\frac{1}{4}$  W. to *Punta Dibulle*, which is 31 $\frac{1}{2}$  miles distant from the city of *La Hacha*. From *Dibulle Point* the coast tends West and W.  $\frac{1}{4}$  N. to *Cape San Juan de Guia*, which is 38 $\frac{1}{2}$  miles distant from *Dibulle Point*. All this coast, from *Cape La Vela* to 12 miles to the east of *San Juan de Guia*, sends out a bank of soundings, (as is shown in the new Charts,) but it is dangerous, on account of several shoals on it, which extend considerably out to sea. The first shoal, already noticed, is that called the *Pajaro*; the second is named the *Navio Quebrado*, (or Wrecked Ship,) and is situated at 2 $\frac{1}{2}$  miles from the coast between the *Laguna Grande* and the *Laguna Navio Quebrado*, in latitude 11° 26' 15", and longitude 73° 15'. Vessels should not approach the coast nearer than four leagues; and care should be taken not to get into less than 10 fathoms of water.

This coast is generally low; but something to the west of the city of *La Hacha*, the celebrated *Sierres Nevadas* (Snowy Mountains) of *Santa Martha* begin to rise inland. These mountains are well known, not only from their great elevation, but because the summit terminates in two peaks, like sugar-loaves, which are always covered with snow. These mountains extend to the west, and end in the meridian of *Cape Aguja*.

Although we have said that it is not advisable to approach this coast, but to make a direct course from *Cape La Vela* to *Cape Aguja*, and that no vessel should get into less than 10 fathoms; nevertheless, vessels bound to *La Hacha*

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must approach it; and it becomes necessary to give some rule by which they may do this with safety. To take the anchorage, at the city of La Hacha, and being near the rock (*farallon*) at Cape La Vela, it is necessary to steer S. W. W. with which course you will run in sight of the coast; and, having run 51 miles, you will be to the north of the city of La Hacha, in 6 or 7 fathoms, on sandy bottom, and may direct yourself for the anchorage without more attention than the chart shows to be necessary. Large vessels ought to effect this to the N. N. W. of the city, in 5 or 6 fathoms; and, when they make sail from it, they ought to follow this course until they are three leagues out.

The taking of the anchorage off Rio Hacha, as well as all others which have no secure distinguishing marks, demands some vigilance; and, as a case may happen in which a vessel may pass it, the bank of 5 and 5½ fathoms, on a bottom of gravel, sand, and rock, which lies 15½ miles to the west of the city of La Hacha, may serve for ascertaining a vessel's situation. The snowy mountains of Santa Martha may also be useful marks.

From Cape San Juan de Guia the coast tends W. N. W. west, and W. S. W. twelve and a half miles, to the north point of the islet of Cape Aguja, which forms a prominent front of high hilly land, scarped or precipitous, and with deep water nearly close to, with various coves or bights, or small bays, and good anchorages. The islet of Cape Aguja forms, with a cape, a strait of three-tenths of a mile in breadth; but the passage is very narrow, as reefs extend out both from the cape and the south part of the islet, so that, though there is water enough for any vessel, none should attempt it, as, by doing so, they would run the risk of being lost.

To the N. W. of the islet of Cape de la Aguja there are three rocks (*farallons*) very near each other; and the largest, which is also the one that extends farthest out, is at three cables' distance: there is another to the westward of the west point, which is higher than either of the former; this, also, is at only a short distance. They are all clean and steep-to.

From Cape Aguja the coast tends S. S. W. ¼ W. three and a half miles, to *Beitin Point*; which is the north point of the bay of Santa Martha, and the south point of the Cove or Bight (*Ancon*) of *Taganga*. The coast is high and precipitous, with some beaches and indents.

SANTA MARTHA, &c.—The Harbour of *Santa Martha* may be considered as one of the best on this coast. At about half a cable's length to the west of its northern point there is a small but high rock, which is very clean, so that you may pass it within half the length of a line-of-battle ship, if you choose: between it and the point are from 5 to 8 fathoms of water; but we advise that no one should attempt a passage which is so very narrow, and offers no advantage. At from four to five cables' length more to the westward of the same point, there is an islet, named the *Morro*, also very clean, as you may pass within half a cable's length of any part of it: upon this islet there is a fortification, which, with other batteries on the shore, defends the harbour and city. The strait between the *Morro* and the rock off the point is very open, clean, and with a depth of from 14 to 30 fathoms. The bay is also very clean, and has a good depth: and the only thing to keep clear of, or give a birth to, is a bank, which stretches out about half a mile in front of the city; but, as the depth at its edges diminishes gradually, no one can incur any damage from it, if the hand-lead be kept going.

The best anchorage is to the northward of the city, running in, as far as you can, into the basin; and, to do this, you should endeavour to run in, about half a cable's length from the rock off the north point, and steer so afterwards as to pass at the same distance from some rocks, which stretch to the south of the point; and, so soon as you are past them, luff all you can, and anchor where it suits you best; being on your guard against the edges which extend from the coast and the points. On entering into this anchorage, be particularly wary as to your sails, &c. for the gusts of wind which come off the land are very heavy. The River *Manzanares* disembogues a little to the south of the city; and, though it is not large, its water is good.

MAGDALENA RIVER.—From *Gaira Point*, which is the south point of Santa Martha, the coast tends south, thirteen and a half miles, to the *Cienaga*,



which is a lagoon, formed by some of the branches of the River Magdalena. From this Cienaga it tends to the west and W. by N. thirty-four miles, to the western mouth of this celebrated river, which is named the *Boca Seniza*, leaving at eight miles to the eastward another Boca, that of the *Rio Viejo* (or Old River.). These streams form an island, in the form of a delta, of six miles from N. to S. and eight miles from E. to W. which is named the *Isla de los Gomez*.

By the two directions which the coast takes from Santa Martha, it forms a very large bay, the bottom of which is the *Cienaga*. All this coast is low, and has a bank along it; and, from the Cienaga towards the west, it forms the *Isla de Salamanca*, the western extremity of which is formed by the *Rio Viejo*; the waters of the Cienaga, and those which form this island, communicating with the Magdalena by several small channels.

The current of this great river is of such force, that, at more than five leagues out at sea, it causes the water to appear green, as if you were sailing along a shallow bank. You may run along all this bay by the hand-lead, for it is all clean. The east part of the *Isla Verde*, (Green Island) and the west part of that of the *Gomez*, form the *Ceniza Mouth* of the River Magdalena; and, in the middle of this mouth, there are two keys.\*

The *Isla Verde* stretches from E. to W. five miles; and, to the south of it, there is another, of greater extent, named *Sabanilla*. At the S. W. end of the latter is the harbour of the same name, with 5, 6, and 7 fathoms of water, on sand and ooze, or mud.

From the *Isla Verde* the coast tends S. W.  $\frac{1}{2}$  W. thirty-three miles, to the *Galera de Zamba*, or Zamba Point; and the shore between forms a bay, of from five to six miles in depth, all of it having a bank; for, at three leagues from the shore, you will find 26 fathoms, on ooze or mud. On this bank are *Cascabel* and *Palmarito* shoals: the first very near the coast, in the little bay formed by the *Morros* (hills, or rather round hills) of *Damas* and *Inaseo*; the second is more dangerous, for it lies, at a league off shore, N. W. by N. from *Morro Pelado* (or Bald Hill.)

The *Galera de Zamba*, or Zamba Point, is so low, that, when the breeze is fresh, the sea washes over the greater part of it. To the West, W. N. W. and N. W. of its western extremity, and at the distance of two miles from the part of it which extends farthest out, there are four small banks, of different sizes, with 6 fathoms of water, on black sand: between these banks, and between them and the coast, there are 7, 8, and 9 fathoms, on black sand. The *Galera de Zamba*, which extends out to sea about eight miles, forms to the south an anchorage, sheltered from the breezes; but, in taking it, much caution is required, on account of the banks

\* NOTES, by Captain Livingston.—“The land between Santa Martha and the Cienaga is mountainous; but, between the Cienaga and *Isla Verde*, it is very low.

“A considerable trade is carried on between Santa Martha and *Mompox*, a city about 140 miles up the Magdalena, in pirogues, or large canoes, by the Cienaga and river. The Cienaga is so shallow that they push the canoes along with poles.

“I have seen the sea discoloured (in the month of June, 1817) more than 20 leagues from the mouth of the river, but the hue is rather a dirty whitish colour than green; it really looks very alarming to a stranger. At the time I saw it, many large trunks of trees, &c. which, I presume, had come down the river, were floating about, and kept me very uneasy lest the vessel (a schooner of 100 tons) should strike on any of them in the night.

“At about three miles north from *Isla Verde*, we found no bottom with 20 fathoms of line. The quantity of water this immense river discharges is prodigious; and I have heard it disputed by intelligent persons, who knew both rivers, whether it or the Mississippi, discharged most water. Mr. Eckhardt, an English gentleman, and Mr. Paulien, a French one, both of whom knew both rivers well, assured me they thought that, on account of the superior depth and rapidity of the Magdalena, they were of opinion that the quantity of water discharged by it was greater than that of the Mississippi; while Mr. William Davy, an English gentleman, who has been to a great distance up the Magdalena, and I believe as far up the Mississippi as New-Orleans, considered it much inferior to the Mississippi. Mr. Eckhardt is naturalized at Carthage; has long resided in that part of the country, and is very intelligent; and Mr. Paulien is a young man of superior education, and resided for some time at Barrancas, on the banks of the Magdalena, as well as at Carthage.”

in it, and the *Isla de Arenas*, (Sand Island,) which lies in the middle of the bay; therefore every one attempting to enter this bay should pay great attention to the hand-lead.

At S. by W.  $\frac{1}{2}$  W. 14 $\frac{1}{2}$  miles, from the point of *Galera de Zamba*, is the Point of *Canoas*, which is low at the water's edge, but has hilly ground very close to it: between the two points the coast is of moderate height; and, at about one-third from Punta de Canoas, rises a hill, which forms a kind of table at its top, and has several barrancas, or reddish-coloured scars, or ravines, upon it.

This hill is named the *Bujio del Gato*. On the intermediate coast there are several dangerous spots: of these, the *Cascajal Islet*, being the first, bears S. by E. from *Galera de Zamba Point*, and lies at the distance of six miles from that point, being one long mile and a half distant from the shore. N.  $\frac{1}{2}$  W. from the same islet, at the distance of one mile and three-tenths, is a little bank, with 2 fathoms; at N. by W. eight tenths of a mile, is a similar one of 4 fathoms; and there is another, of equal depth, at N. W. by W.  $\frac{1}{2}$  W. from the *Cascajal*, at the distance of two short miles. At S.  $\frac{1}{2}$  W. from the *Galera de Zamba Point*, and at the distance of seven short miles, is the west rock of *Bujio del Gato Shoal*, which extends a long mile from N. to S. At about N. by E.  $\frac{1}{2}$  E. from its north end there is another rock, called the N. E. Rock, or *Unia del Gato* (Cat's Claw:) the depth, on the outside of this shoal, is from 7 and 8 up to 16 $\frac{1}{2}$  fathoms, at the distance of 2 $\frac{1}{2}$  miles. There is also a bank of 5 fathoms, on a rocky bottom, at the distance of 3 $\frac{1}{2}$  miles, N. E.  $\frac{1}{2}$  N. from *Canoas Point*, which lies in the middle of *Bujio del Gato Bay*.

At nearly S. W. from *Canoas Point*, and at the distance of one long mile and a quarter, there is a shoal, named the *Negrillo*; it is a quarter of a mile in extent, and is composed of three rocks, at no great distance from each other, lying in a triangular form, with from 2 to 5 feet of water on them. Round these rocks, and very near to them, there are 6, 8, and 9, fathoms of water, on a bottom of rocks, small gravel, and sand; and the channel between the shoal and the coast would be practicable, were it not for three sunken rocks, which render it difficult to pass. From the *Negrillo Shoal*, the hill of *La Popa*, above *Carthagena*, bears S.  $\frac{1}{2}$  E. distant 7 $\frac{1}{2}$  miles; and this bearing may, if necessary, serve to guide you clear of it. At S. W. a short mile from the southernmost Morrito, (Little Hill,) is the *Cabeza Shoal*, with 2 feet of water on its shoalest part.

CARTHAGENA, &c.—From *Canoas Point*, the coast tends to the eastward for a long mile, and thence to the south three miles; then rise some little hills, named the *Morritos*, whence the coast which is low and covered with mangroves, tends S. S. W.  $\frac{1}{2}$  W.  $\frac{1}{2}$  W. 5 $\frac{1}{2}$  miles, to the city of *Carthagena*, which is built upon the western part of this humid land. At about a mile and three-quarters from the city, to the east, rises the hill of *La Popa*, on the summit of which there is a convent of Augustines, and the Sanctuary of *Nuestra Senora de la Popa* (Our Lady of La Popa.) This hill may be seen, in a clear day, at 10 leagues from the quarter-deck of a line-of-battle ship.

The little tongue of land on which *Carthagena* is built, extends S. by W.  $\frac{1}{2}$  W. two short miles from the city; it then turns to the east, and, with the main land, forms a basin, which is the anchorage or harbour, and which is as well sheltered as the best dock. At one mile south from the outer part of the little tongue of which we have just spoken, is the north point of the island, named *Tierra Bomba*, and the pass between the two is named *Boca Grande*: it is artificially shut, so that boats and vessels only, which draw very little water, can enter by it. *Tierra Bomba* is about four miles from north to south, and its south point is the north point of *Boca Chica*, which is the only entrance to the harbour of *Carthagena*. The southern point of this entrance is the northern one of another large island, called *Baru*, and which is separated from the main land only by the creek called *Pasa-Caballos*, and which is navigable by canoes only. On both points of the *Boca Chica* are castles, which defend the entrance: the one on the north side is called that of *San Fernando*; and the southern one, *San Josef*: the mouth or entrance is rather more than two cable's length in width; but there are places in which the bank and shallow water, stretching from the southern castle (San Josef's,) narrow it one-half.

By this entrance you come first into a large sheltered bay, where there is a depth of 14 and 16 fathoms of water. On the north side of this, the east coast of Tierra Bomba inclines towards the main land, and leaves a channel of a mile in width; at the entrance of which, and in its middle, are some shoals, which lie to the westward of an islet, named *De Brujas*, (Witch's Island,) and which is very near to the main land.

Having passed this strait, you enter into a second bay, which is opposite to *Boca Grande*, and in which there are also 15 and 16 fathoms of water. To the north of this second bay there is a passage of about half a mile in width, defended by other castles, and which conducts into the harbour. This channel, or entrance, has a shoal in the middle, which forms it into two narrow channels, but of sufficiently deep water, as there are from 9 to 13 fathoms in them: while, over the whole of the harbour, you will not find more than 10 fathoms.\*

From *Punta de Canoas* to *Boca Grande* there are soundings all along, which diminish gradually, and you will find 9 fathoms, at four miles, or something less, from the land. The bank of soundings along shore is called the *Playa Grande*, and you may anchor on it, in 7 or 8 fathoms of water, on a bottom of spotted sand, in front of the city. After you are abreast of the north part of *Tierra Bomba*, the depth augments to 20, 30, and 40 fathoms. To the westward of *Tierra Bomba*, and at four leagues distance from it, there is a shoal, named the *Salmedina*, which has been much spoken of, on account of the loss of ships which it has caused. This shoal, which is a mile and a half in extent, from north to south, and a little less from east to west, lies with the following marks and bearings:

*From the North Edge of the Shoal.*

The Castillo del Angel† bears . . .	E. S. E. $\frac{1}{2}$ E.
The Mountain of La Popa . . .	N. E. by E. $\frac{1}{4}$ E.
N. W. Point of Tierra Bomba . . .	E. N. E. $\frac{1}{4}$ E.
Punta de Canoas . . .	N. N. E. $\frac{1}{4}$ E.

*From the South Edge of the Shoal,*

The Tower of the Cathedral bears . . .	N. E. $\frac{1}{4}$ E.
Mountain of La Popa . . .	N. E. $\frac{1}{4}$ E.
N. W. Point of Tierra Bomba . . .	E. N. E.
Punta de Canoas . . .	N. N. E.

In addition to these marks, which will surely direct you clear of it, you may recollect that the north end of it lies nearly true west from the north part of *Boca Grande*, and that, in running from *Playa Grande* for *Boca Chica*, you ought to get into from 6 to 8 fathoms, to the west of the city, at the distance of three short miles from it, and steer afterwards S.  $\frac{1}{2}$  E. without inclining more to the westward; and so soon as you increase the depth, keep more to the larboard hand to run along *Tierra Bomba*, at the distance of half a mile: you may run thus, or even within a pistol-shot of the north shore of *Boca Chica*, shunning the south coast of it, as it is foul. To enter *Boca Chica*, and navigate inside the bays, requires a pilot, and one may generally be engaged at *Boca Chica*.

As the port of Carthagena may be made, on coming from the southward, it is now requisite to give some description of the southern coast as far as the *Rosario Islands*.

\* Note, by Capt. Livingston.—“The Castillo de St. Josef does not stand on the south point of *Boca Chica*, but is completely insulated. The water between it and the south shore is too shallow to permit any thing larger than boats, or canoes, to pass; but, to a vessel coming in, it shows as wide as the passage to the northward of Fort St. Josef. There is also another castle about one-third of a mile from the castle of San Fernando, on the Island of *Tierra Bomba*, named *Castillo del Angel*.

“Opposite the *Isote de Brujas*, there is a kind of mangrove islet, or bush, near the coast of *Tierra Bomba*, off which there is a very bad coral reef; and which, from the appearance of the madrepores, seems to be growing fast.

† A fort, or redoubt, on the north side of the entrance of *Boca Chica*, as already noticed.

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We have already shown that the south coast of Boca Chica is the north coast of the island, named *Baru*. From the point of the latter, which forms the entrance of Boca Chica, the exterior coast of it tends S. S. W.  $\frac{1}{2}$  W. thirteen and a half miles to Baru Point. This coast is sufficiently clean until you come to an islet, named the *Farallon of Perico*, from which, to the south, it is very foul, with reef: to the west of the coast, between Perico Islet and the south point, are the *Rosario Islands*, of which there are four principal ones, with some small islets: the southernmost of these, which is also the smallest, is called *Isla de Arenas*, and it is a short mile and a half distant from the Baru shore; but the shoals and reefs which extend from both, narrow the passage so as not to leave a breadth of more than three-quarters of a mile.

At W. by N. from Arenas Island, three and a half long miles, is the Island of Rosario; and to the northward of these two, is that named *Isla Larga*, or Long Island, which is the largest of the group, and which, with its shallow water, islets, &c. extend out to the west even farther than Rosario Island.

To the northward of the middle of Isla Larga, at rather more than three miles distant, lies the islet *Tesoro*, with a reef towards the west. There is a channel between, with from 18 to 28 fathoms of water, on sand and rocks, from which Boca Chica bears N. E. by E. distant ten and a half miles.

The Rosario Islands are very foul, and no one should get among them, unless well acquainted; but keep at a sufficient distance to the westward, in order to avoid the shallows stretching from them. At about seven miles S. S. W. from Rosario Island there is a shoal named the *Tortuga*.

The Rosario Islands are fertile in trees, and to the south of them, there is good shelter from the breeze. Besides the bank of Rosario Island, there are two others: one three and a half miles to the W. N. W. and another two and a half miles S. W. by S. Both are rocky, with 6 and 7 fathoms of water on them.

#### *Observations by Captain Don Torquato Piedrola.*

On the coasts of Cartagena de las Indios, of which I can speak with certainty, the breezes do not set in until the end or latter days of November, and they are not strong until the middle or end of December, from which time they are powerful both day and night; only they often, though not constantly, moderate a little between sun-rise until nine or ten in the morning, when they regain their ordinary force. When you are very near the coast, especially if it be high, you may often find them moderate at the dawn of day, and, at sun-rise, take to E. N. E. until nine or ten o'clock, when they again blow from their usual direction, which on this coast is from N. N. E. to N. E. Of these variations, those who know the coast, and sail near it, may well take advantage: and it may even be better, at night-fall, to anchor at the various points which offer, even for large vessels. In the season which is not of the breezes, that is, from April or May, to December, they experience what has been already described in the *Derrotero*; but not at the other seasons, as has been shown; adding, that any vessel which attempts to get to windward outside, or out from the land, will not effect it without great difficulty and damage; as much from the strength of the breeze, as because the sea is very short to thirty or forty leagues from the coast, when it becomes longer; and because, being forced in the night to take in reefs, and that the current draws towards the N. W. quadrant, it follows that the little gained by tacking is lost. These facts have been proved by continued experience.

#### *Additional Description of the Coast and Places between La Guayra and Cartagena: chiefly from the Journals of British Navigators, &c.*

In the preceding division, we have given, in an unbroken form, the description of, and directions for, these coasts, from the *Derrotero de las Antillas*; and we now add, in a supplementary form, some other descriptions, which may be gratifying and useful.

The coasts which have been described under the present head constitute the most important portion of the coasts of Colombia, a country of which the soil is fertile in all the richest productions of the temperate and torrid zones.

**LA GUAYRA.**—The remains of La Guayra are situate on a small bay, about four miles to the eastward of Cape Blanco, as shown on the chart. On the *Sierra de Caracas*, or high back land to the south-eastward of this port, is the remarkable high mountain called *La Silla*, or the Mountain of Caracas, which seems almost as high as Tenerife.

Cape Blanco is so low, that, at four leagues off, in a south-easterly direction, you cannot possibly distinguish it from that mountain. Being off Cape Blanco, within a league or two of the land, you may see the fort and batteries of Guayra, which appear of a whitish gray, while the soil in the vicinity seems red. Cape Blanco, from the distance of about four miles, looks like a town under the high land, and has a gray and rugged appearance. The shore is bold and clear.

Westward of Cape Blanco, the land continues high and mountainous, to the distance of thirteen or fourteen leagues, when it begins to decline in height: the coast all along is bold and clear; you may stand within a mile of the shore all the way down from La Guayra to Porto Cabello.

**PORT CATA, &c.**—At fifteen leagues to leeward of Cape Blanco, and five and a half to windward of Port Cabello, is the fine bay, or rather harbour, called Port Cata: there is not less than 10 fathoms in its entrance; and, when you have entered, you may anchor in what water you please, from 5 to 20 fathoms, land-locked from all winds but those from N. N. W. to N. N. E. which winds seldom prevail here. There is a regular sea-breeze all day, and a fine land-breeze all night, with plenty of wood and fresh water. A town is situated at four or five miles from the harbour; and many planters and other people live in the neighbourhood, who have abundance of cocoa, &c.

**PORT CABELLO.**—From Cape Blanco to Port Cabello, (the sea-port of Valencia) the course and distance are W. by S. twenty-one leagues. The land, as already noticed, is very high to the distance of about one league to leeward of Port Cata, and then it declines towards Port Cabello, which is situated in a large valley.

Port Cabello is the next place of consequence from La Guayra westward, and its distance thence is about twenty-two leagues. Of the province of Venezuela the trade centres here; but its exports of cocoa, &c. have been chiefly to Curazao and Jamaica.

This is the only harbour in the province that is perfectly sheltered from northerly winds; it being formed on the north by a very irregular and narrow isthmus, and sheltered on the south by a range of high hills. Ships of the largest size may lie alongside a handsome key. The town is said to contain only 7500 or 8000 inhabitants, and is rendered unhealthy by the confinement of the air and the vicinity of marshes. The mouth of the harbour is defended by a strong fort, called the Castle of St. Philip, on the north side, and the south side by moles and batteries. There is also a fort on Punta Brava to the N. N. E. for the protection of the road.

In the vicinity of Port Cabello are several low islets, surrounded by reefs, both to the eastward and westward; particularly the *Isla Larga*, *Isla del Medio* or *Domingo*, *Isla del Rey*, and *Isla Guaiguaza*. Each is about one-quarter of a mile in length, and the latter is the westernmost, as it lies nearly west, one mile and three-quarters from Punta Brava, the N. E. point of Port Cabello. The *Isla del Rey* (King's Island) lies E. N. E. one mile from the same point: the *Isla del Medio* (Middle Island) E.  $\frac{1}{2}$  N. one and a half mile from *Isla del Rey*: and *Isla Larga*, half a mile E. S. E. half a mile from *Isla del Medio*: so that the easternmost (*Larga*) is three and a quarter miles to the leeward or eastward of Punta Brava.

**Coast westward of Port Cabello.**—From Point Tucacas to the Punta Savanas Altas, (Upper Savannas) to the southward of Curazao, the coast is generally low; but, towards Coro, it becomes higher. On this coast, very little lee-current will be found until you have advanced without the stream off the Savanas Point. At most times there is fine weather and variable winds.



**CORO.**—There is but one trading-place, of any consequence, between Port Cabello and Cape St. Roman, the N. E. end of the peninsula of Paragoana. This is Coro, at the south end of the isthmus, which is said to contain 10,000 people, who subsist by the exchange of cattle and skins for imported goods.

**GULF OF VENEZUELA or MARACAYBO.**—The form of this gulf can be best understood by reference to the charts; whence it will be seen that the eastern side is formed by the peninsula of Paragoana, which is connected to the main by a narrow isthmus: this peninsula is inhabited by Indians and a few whites, who breed cattle for exportation to Curazao, &c.

The City of *Maracaybo* is situated on the western side of the strait, between the gulf and the lagoon of the same name.

The *Lagoon or Lake of Maracaybo* is forty-two leagues in length from north to south, by about twenty-eight in breadth, and is navigable for the largest ships. Its water is perfectly fresh, unless with a prevalence of northerly winds, when it acquires a nauseous flavour. The lake abounds with all the salt-water fish of the Caribbean Sea, but turtle do not enter it.

On the N. E. shore of the lagoon, at a part called Mena, there is an inexhaustible store of mineral pitch, from which the gas, or the exhalation, appears, at night, like a bluish vivid flame, and serves to guide the fishermen, who call it the *Lantern of Maracaybo*. The banks of the lagoon are, in general, barren and unhealthy: hence the Indians preferred constructing their dwellings on floating-stages upon the water, the great number of which, observed by the Spaniards in their first visits to this coast, caused them to give it the name of Venezuela, or Little Venice. At present but four, if four, of these floating villages remain; and their inhabitants subsist solely on fish and wild-ducks, with which the lagoon abounds. The western bank is the most fertile, and here are some plantations of cacao. The south and S. E. banks are uninhabited, or nearly so, and are entirely covered with wood:

*Gibraltar*, which is situated at thirty-four leagues to the S. S. E. of Maracaybo, has been distinguished as the centre of trade between that town and Truxillo, Marida, and Varinas; the latter being inland towns to the southward. Many rivers enter the lake near this place, and it is often overflowed in the rainy season, which renders it very unwholesome.

Between Point Gallinas, to the west of the Gulf of Venezuela, and Cape La Vela, lie the harbours called *Bahia Honda* and *El Portete*: these have no settlements, but are sometimes visited by traders, who purchase pearls from the Indians.

**RIO DE LA HACHA.**—At the entrance of this river, which is situate at 19 leagues to the south-westward from Cape la Vela, are the remains of the city of Hacha, which appear upon a little hill near the sea-coast.

In Mr. Jeffereys' description of this place, published in 1782, he stated that, in consequence of the irruptions of the buccanneers, the Spaniards deserted it in 1682; but that, within a short time, they settled here again, and fortified it. He adds,

"In the open country the Indians are free from the Spanish yoke, though they permit the priests to visit them. They subsist chiefly by grazing their cattle, every man marking his own, and thereby securing his property; but, as to the lands, they are common to all; and they have a property only in the ground around their houses, which is inclosed by a fence. The district is very fruitful; produces much gold and precious stones, and abounds in salt. Formerly a pearl-fishery was carried on near this town, which brought great riches to its inhabitants.

Since the abandonment of the pearl-fishery, the town is gone to ruin. It is, nevertheless, defended by a regular castle, dedicated to St. George. To the westward is the dangerous shoal, called the *Wrecked Ship Bank*, already described on page 364.

**SANTA MARTHA**, although a poor and decayed place, is the capital of a province of the same name.

The harbour is safe, and has very good anchoring-ground, and a place very fit

for careening vessels : there is, also, good conveniency for watering of ships and cutting of wood.

**RIO DE LA MAGDALENA.**—The great River Magdalena divides the province of Carthagena from that of Santa Martha. It has a course into the interior above 200 leagues; and is navigable to the town of Honda, at 130 leagues from the sea. It falls into the sea by six bocas or mouths, forming a delta, and with great velocity, as already noticed. Currents found in the neighbourhood have been distinguished as the effect of its streams, which may be perceived embrowning or discolouring the waters of the sea to considerable distances, as to Santa Martha, &c.

The following is from the description of Mr. Jefferys, 1762 :—The Rio Grande de la Magdalena is a very noble river, by far the best in all Terra Firma, and rises in the mountains of Popayan : it is navigable almost from its source, and receives the Rio de Cauca, which springs from the same mountains, and is little inferior to it in extent or magnitude. A branch, called *El Dique*, enters the sea about 10 leagues to the south of Carthagena, which, though filled with reeds, is navigable through a fine populous country.

By this river the produce and treasure of all the country between Popayan and Carthagena is carried on; and, for more than 300 miles from the sea, this river runs through a very fine plain, extremely well settled, with several considerable towns and villages on its banks; from some of the principal of which are many good roads to Carthagena and other parts on the western coast of this province: but the finest is that from *El Retiro* to Tolu, through a very pleasant valley, for about 20 leagues.

**BAY of ZAMBA, &c.**—This bay, to the northward of Carthagena, affords excellent shelter within the four Arenas, or Sandy Isles, the channels between which are all safe: Hence this place has been called *Arenas* or *Sandy Bay*.

*Ships bound from Jamaica* to this part of the Main, must work up to Yallah's Point, or to the east end of that island, and then steer so as to make good a S. E. course, allowing sufficiently for currents, which, it is to be observed, mostly prevail to the westward. With this precaution, you will probably fall in with the high land of Santa Martha, or the River Magdalena, and the hill called *Morro Hermoso*, on the west side of that river, in latitude  $10^{\circ} 58'$ , longitude  $75^{\circ} 41'$ . The distance from Jamaica to the latter spot, on a true S. by E. bearing, is 141 leagues. On approaching the Magdalena, the light or discoloured water may, at times, be found at 30 leagues off. The high land of St. Martha is the highest hereabout; but Point Occe, on the west of the Magdalena, is also a bluff point. Coming in with the coast in the night, approach no nearer than in 22 fathoms.

The land between *Morro Hermoso* and the Bay of Zamba is distinguished by its high hills. The arm of land which forms the north side of the bay is called the *Galera de Zamba*. The land is all low, excepting a volcano upon the east side of the bay, which appears flat and round. The hill of Zamba appears like Maiden's Paps, and there is another which appears like a barn.

The following directions for sailing into and out of the bay have been composed from those of the late Admiral Sir George Young:—

The danger of going in is a reef at the N. E. part; give it a birth of two or three miles, and steer S. S. W. and S. W. by S. in 7 or 8 fathoms of water. The next shoal is a bank of 4 fathoms, bearing W. N. W. about three miles; steer S. by W. and South, around the point, in 6 or 7 fathoms, keeping at the distance of half a mile or a mile: then steer up S. E. and E. S. E. and you may anchor in what depth you please, from 3 to 20 fathoms, good holding ground.

The bay is six or seven miles deep, and five broad. It has many lagoons, wherein smaller vessels lie, in 2 or 3 fathoms of water. Large ships generally lie in 8 or 10 fathoms. There are two small keys above water in the bay; one bearing S. E. from Zamba Point; the other about S. by E.

As the bay lies about N. E. by E. and S. W. by W. no winds, except from the N. W. can hurt you here; but they blow very hard. It sometimes happens that N. E. winds prevail during the greatest part of the year. Variation  $6^{\circ} 22'$  E. 1770.

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If sailing out of this bay for Carthagena, first steer to the W. N. W. to get two or three leagues off: then steer S. S. W. But, if bound to the eastward, or to Jamaica, you must work up as far as the River Magdalena or Point Occa, to make sure of fetching the east end of Jamaica.

There is good anchorage with Zamba Point N. W. and the volcano N. E. or N. E. by E. and Zamba Hill E. S. E. to East.

**CARTHAGENA.**—This city, once so celebrated, is situated on a sandy island, connected to the main by two broad artificial causeys. Its situation, according to the late observations, is latitude  $10^{\circ} 25' 19''$ , longitude  $75^{\circ} 37' 0''$ .

The Harbour of Carthagena is one of the best on the coast. It extends two leagues and a half from North to South, and has safe anchorage, though the shallows at the entrance and other parts make a careful steerage necessary.

### *Remarks on Carthagena, &c. by Captain Livingston.*

Vessels from the northward, in particular, should be very cautious in approaching that low dangerous point Punta de Zamba.

When the city bears about East, it makes a fine appearance from the sea. At about a mile and a half to the southward of the city, is Boca Grande (called in some Charts *Boca Cerrada* or Short Port.) When the English attacked Carthagena in 1774 this was the principal entrance to the harbour; but it has since, (I think in 1776,) been blocked up with old vessels, stones, &c. There is, however, still a passage for small craft; as, during the siege, a few years since, (when besieged by Murillo) the American schooner *Wave*, having been lightened so as to draw only about 8 feet of water, passed through it.

After passing Boca Grande you may make as bold as you please with the shore of the Island *Tierra Bomba*, all along to Boca Chica; this entrance is very narrow, and, as you approach it, the castle of *San Josef* appears situated, as it were, in the very middle of the entrance.

"In running down from opposite the city to Boca Chica, the shoal, called the *Salmedinas*, ought to be carefully avoided, which is easily done by keeping near the bold shore of *Tierra Bomba*. The *Salmedinas*' shoal lies S. W. true, from the Cathedral Church of Carthagena, and N. W. true, from the point to the westward of Boca Chica, on which there is a kind of breast-work of stone, built about 40 feet above the level of the water, and having two guns mounted on it.

"Vessels bound in, may get a pilot at Boca Chica; but, as it sometimes happens that they do not come off until you are in the narrows, it is necessary to keep the larboard shore close on board, which is bold-to, though low and sandy. A stranger, when he first comes in sight of the Castle of St. Josef, at Boca Chica, which stands on a detached shoal, is apt to suppose the passage in lies to the southward of that fort; a mistake which, if not discovered in time, might prove fatal; as the water between it and the southern shore, or that of Baru Island, is all shoal.

"Luff up close round the Fort which stands on your larboard hand, (on *Tierra Bomba*), keeping the Castle of St. Josef on your starboard side.

"You will be hailed from the Castle on *Tierra Bomba*; and, as soon as you are round it, must shoot up your vessel into a little bay, formed by the Castle's point and a point about three cables' length above it, at a kind of village named *Peubla de los Angeles*. Here you must come-to, till you are visited by the guard-boat, and receive permission to proceed up the harbour, to the city. It is advisable always to come-to with your best bower, in about 17 fathoms, as you cannot give much scope of cable; and there are often very heavy squalls or gusts of wind, particularly from 2 to 6 A. M.

"I say nothing of going up to the city, as you must take a pilot."

*Directions for proceeding from the South-westward to Carthagena, the Magdalena, Santa Martha, and Cape La Vela. By Capt. J. Mac-kellar and Mr. J. Town, R. N.*

On coming up from the south-westward, towards Carthagena, you will make the Isles of Rosario, which may always be known from those of St. Bernardo, lying more to the southward, as they have a triangular form, and are long and low. Having passed these islands, in fine weather, you may see the hill over Carthagena, called the *Popa*, with its convent, castle, and signal-staff. The land here appears in a triangular form, not unlike a gunner's quoin. In going to the anchorage, you must steer to the northward, until you open the town of Carthagena to the southward and eastward of the *Popa*, which may be seen from sea at ten or twelve leagues off. In coming in from sea, never bring the *Popa* to bear to the northward of east. Either of the above bearings or marks will lead you clear of the Salmedina shoal, which has, on its shoaler part, only 8 feet of water: it bears from the *Popa* S. W. by W. seven to eight miles.

The anchorage off Carthagena is very good, sand and mud, and from eight to six fathoms of water. Here you are about three and a half or four miles from the city, and may observe a gateway, where you may land, keeping a little to the westward, where there is a good beach of sand. In the fine season, the winds generally blow along shore, and seldom bring in much sea. The marks for anchoring are, the Citadel on with the lower south part of the *Popa*, and the Boca Chica S.  $\frac{1}{2}$  E. and the *Popa* E. by S. The current generally goes with the wind, but after you get to the eastward of the Rosario Isles, you will find a current setting to the N. W. and N. N. W. at the rate of from one to two miles in an hour.

Ships anchoring off Carthagena, with the general trade-wind, should bring the citadel of San Lazara and the *Popa* on with each other, bearing about east, or E.  $\frac{1}{2}$  N. with the Boca Chica south, Point Canoas N. by E.  $\frac{1}{2}$  E. in about 6 or 7 fathoms, fine sand.

**CARTHAGENA to the MAGDALENA.**—In leaving the anchorage off Carthagena, with the wind from the westward, you seldom carry it to the eastward of Galera de Zamba, after passing which you may expect light winds and variable, or a strong trade-wind.

Between the months of May and November, you cannot put any dependence on the winds or currents; but from November to May the trade-wind blows home.

You may find as good anchorage within three miles from the shore between the Galera de Zamba as at Carthagena; and, in my opinion, there is much superior anchorage within the Zamba than in any other part of this coast.

Being off Galera de Zamba, when bound to the eastward, with the general trade-wind, which is from N. E. to E. N. E. you may stand in towards the shore, near the Zamba, to 12 or 15 fathoms, or within four miles; to the eastward of the Zamba you may stand in to 7 fathoms. Towards the high land to the westward of the entrance of the Magdalena the shore is steep; therefore tack in 11 fathoms.

Ships may anchor any where between the east part of the Galera de Zamba and the westernmost low land of the Magdalena, in from 15 to 7 fathoms, fine sandy bottom. In turning to windward, from Galera de Zamba towards Santa Martha, close to the shore, and the lead constantly going, we had regular soundings, from 50 to 7 fathoms, until near the high land to the westward of the Magdalena, where the shore becomes steep-to, but the ground is clear and good for anchoring. During the time we remained between the Zamba and the Magdalena, we had occasion to anchor twice with the following bearings: First anchorage, the extreme point of Galera de Zamba S. W. by W. ten or twelve miles; the S. E. part of the Zamba south, 7 miles; the extreme of the land N. E. by E.  $\frac{1}{2}$  E. Pigeon Hill, S. E. by E.  $\frac{1}{2}$  E. distance from the shore four miles, in 9 $\frac{1}{2}$  fathoms, fine sandy bottom. Second anchorage, in 12 fathoms, the extremity of the Magdalena N. E. by E.  $\frac{1}{2}$  E. Pigeon Hill, S.  $\frac{1}{2}$  W. distance from the shore, 3 $\frac{1}{2}$  miles. During the time the ship lay at anchor, I sounded in different directions from the ship, and found the soundings very regular, and the ground clear.

Mr. Town adds, I should recommend, if turning to windward, with strong trade-winds, to keep the shore close-to: whereas, by going off from the land, you will not only have a heavy sea, but also a strong N. W. current. If you have light variable winds, approach no nearer to the land than four or five leagues, as you may be certain of an easterly current.

**CARTHAGENA to SANTA MARTHA.**—On leaving Carthagena, and going to Santa Martha, in the rainy season, (May to November,) you will generally have, when in-shore, the winds light and variable, accompanied with heavy rains, and violent thunder and lightning. Off the Magdalena River you will find the water very much coloured by the water from the river; and, during the rain, you may observe the colour of the water change at four or five leagues from the land. On approaching Santa Martha, a stranger will have some difficulty in making out the harbour. When coming in from the northward and westward, you may see the *Pico de Gaira*, or high land of Santa Martha, at sixty or seventy miles off. On advancing near to the land, you will observe a remarkable division in the mountains, between which is the harbour. When close to the land, you will lose sight of this division, and the harbour is then to be known by the highest mountain that stands to the southward of the harbour. In going in, you may pass on either side of the Morro Islet, which lies at the entrance; but approach no nearer to this islet than one-fourth of a cable's length. There are a few sunken rocks lying close to it, on each side. When within the islet, you may anchor any where, in from 25 to 15 fathoms, soft mud.

**SANTA MARTHA, and thence to CAPE LA VELA.**—Being off the harbour, and going in with a fair wind, you may pass to the Morro on either side, as above directed. I should recommend the Western Passage to a stranger, when coming in, because it is the largest; for, in passing it on the west, you have room either to veer or tack, if taken aback by the sudden flaws, which, at times, come off from the high land; the main being steep-to, as well as the Morro.

There are no dangers to be apprehended by going to the eastward of the Morro, if you can depend on the wind. On passing through either passage, so soon as you are within the Morro, bring the two church-towers in one, or the round tower just appearing in sight to the right of the square tower; and, so soon as you have shut in the whole of the land to the northward, or about two cables' length within the Little Morro, (*Morro Chica*,) you should bring-to, directly under the fort on the point within the Little Morro, in from 22 to 25 fathoms, and moor to the southward and westward in 17 or 20 fathoms.

In a small vessel, you may go well up the river to the northward and eastward, observing to keep the larboard shore close-to until you have shut in the Little Morro. You may then anchor in from 14 to 20 fathoms, soft mud.

When coming in, by the Western Passage, you will not obtain soundings until you have opened the small passage between the Morro and the main. You will then gain soundings in mid-channel, between the Morro and Fort Fernando, from 30 to 25 fathoms; but it frequently happens that soundings are not obtained before it be time to let go the anchor.

If turning in, you may stand towards Fort Fernando to within half a cable's length; as the shore is steep-to until you are up to the watering-place, which is about a quarter of a mile from the town. From this part, a shoal extends in a direction for the point or the fort within the Little Morro. Ships coming in should, therefore, be very careful, and not anchor far within the point, until they have brought the round church-tower open to the left of the square tower; as there are 6 fathoms close to the bank, on which there are not more than 12 or 14 feet. You may, also, anchor to the southward and westward of this bank, in from 16 to 20 fathoms; but close to the shore, and at about  $1\frac{1}{2}$  cable's length from the watering-place. The bank is called the Santo Domingo Bank.

Captain Mackellar says, that St. Martha is by far the best-calculated port of any that he has remarked on these coasts for men of war to refresh their crews in, as a fine river, on the western side, runs into the harbour, at about a quarter of a mile from the anchorage, where a fleet of twenty sail of the line could water in a day.

**Santa Martha, Eastward.**—When off Santa Martha, and bound to the east



ward, it will be most advisable to keep the land aboard, as it is seldom that you will find any other wind than the general trade, which is from East to N. E. After you have advanced to the eastward of Cape Guia, you may stand in towards the shore to 7 or 10 fathoms, and off to 50 or 60, as the land here becomes low, and the soundings towards it very regular. Wreck Reef\* lies nearly E. by N. 50 miles from Cape Guia, and from two to three miles from the land. There is no part of this shoal to be seen above water; give it therefore, the birth of a mile, and do not stand nearer to it than 15 fathoms, until you are to the eastward of Rio de la Hacha; you may then stand in, towards the shore, to 8 or 10 fathoms, and off to 60, which is near the outer edge of the bank.

At about eleven miles N. E. from *Punta de Piedras*, or Rocky Point, is the small shoal, called by the Spaniards, Bajo del Pejaro, the outer edge of which lies about three miles from the shore, and may, at times, be seen. During a strong breeze, approach no nearer to it than 10 fathoms; but, afterwards, to what depth you please. When to the eastward of this reef, you may stand towards the shore up to Cape La Vela, into 6 or 7 fathoms, and anchor in what water you choose.

Cape La Vela from the westward, on its first appearance, makes like a number of small islands, and you cannot distinguish the cape from an island until you are within seven or eight miles of it, as the land is very low within it, excepting a few hills, which stand at some distance within the land. There is a small islet or rock at about two cables' length from the cape, between which and the cape small vessels may pass in mid-channel: the depth is 5 fathoms, and close to the rock 2½.

From Cape La Vela, the land tends to the southward, forming a bay, with good anchorage for any number of ships. The best anchorage is a little within the cape, in from 7 to 12 fathoms. With the islet or rock bearing about N. by E. or N. N. E. two and a half miles, there is fine sandy bottom, and soundings very regular, in from 4 to 7 fathoms. There are here no other inhabitants than the Indians, of whom you may procure stock; but I have not seen fresh water on any part of this coast.—Var. near Cape La Vela, by amplitude, 6° 58' E. 1817.

**ARCHILLA, LOS ROQUES, &c.**—*Archilla* lies at the distance of 24 leagues N. ½ W. from Cape Cordera. It is about six miles long from East to West, and has, off its N. E. part, several low islets, separated by narrow channels, and appearing like one island. It has no fresh water, and is uninhabited. The north side is foul, but the south so bold that a ship may lie along side the rocks. The whole is more particularly described hereafter.

The Roca lies as represented on the Charts, to the westward of Archilla, distant about 7 leagues. These keys are very imperfectly known. The northern one has a high white elevation on the west end. There is a stream of fresh water on its south side, but it is impregnated with some aluminous mineral. All the keys are low and uninhabited, and are distinguished only by the production of salt.

The **AVES or BIRDS' Islands** are five in number, and described page 321. They are composed of two groups, comprising two larger and three lesser islets. The eastern lies 10 leagues W. by N. from the nearest part of the Roca, and 28 leagues N. N. W. from La Guayra.

### Buen Ayre, Curocoa, &c.

**BUEN AYRE, or BONAIR.**—This island is about six leagues in length, from N. W. to S. E. It is a dependency of Curocoa. The island yields nothing but wood and salt, there is a road on the western side, which lies within a small islet, called *Little Buen Ayre*, but it is rather difficult for strangers.

\* See page 364.

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Vessels passing the south side of the island have been directed to keep 4 or 5 miles from shore, as there are some rocks and foul ground, which may be dangerous.

The port is called St. Anna: it is situated on the south side, and is defended by Fort Amsterdam. The entrance to the road is very crooked and narrow, being only 60 fathoms wide.

Vessels from the main have been directed, when bound to Curacao, to make the Island Buen-ayre, before proceeding farther westward; and then passing Little Curacao, to make the south side of the island. In the night approach no nearer than 3 leagues; because Little Curacao, a low sandy isle, cannot be seen. The latter lies 4 miles from the S. E. end of the greater isle: it is very little above water, has nothing but prickly bushes upon it, and is steep to on every side.

The following description is chiefly from the pen of Captain Hester.

Curacao is low; the eastern side having no high land, except a mountain in the N. E. part, and another of great height, which makes like a table-land in the S. E. part; on the western side there are some high hills, but all the rest of the island is lower than Barbadoes. The table-land, on the S. E. part, bears W. N. W. from Little Curacao, distant 7 or 8 miles. After giving the eastern point a birth of half a mile, you may keep as near to the island as you please, the south side being steep all along.

The haven of St. ANNA is on the S. W. of the island: there is (or was) a white buoy on a ledge that lies on the starboard or S. E. side of the entrance; and is, of course, to be left on that side, when going in. Haul close round the buoy into the harbour, the passage being narrow, and steep to on both sides. You must not let go an anchor when going in, but should have a hawser in your boat, ready to run to the south shore, or to some of the ships; for although the entrance is not broader than the length of a 74 gun ship, yet there are 60 fathoms of water; but, if the wind be large, it is best to run up above town, and above the shipping, where you may let go your anchor; it being there broader and clear of craft.

The town lies on the south side, but there are many buildings on the north side, as well as all over the island, which is populous. This is a very good harbour to heave down in, as there is neither sea nor swell.

On the N. W. and North sides of the island, the coasts are foul to a short distance, so that it is best to keep on the south side, that being bold and clear. At 4 or 5 miles to the south-east of the harbour is a fine cove, called Sta. Barbara, or Spanish Cove: a fort stands at the entrance.

If bound to the windward, beat up along the south side of the island, and work up, under the western part of Buen-ayre, before you reach over; for there prevails, at most times, a current running to leeward, and the western side of Buen-ayre is clear and bold to.

The Island ORUBA, or *Oruva*, requires no other description than that given hereafter, as it affords nothing but wood, and is uninhabited.

### Particular Descriptions of, and Directions for, the Leeward Islands.

[From the "*Derrotero de las Antillas*," &c.]

**MARGARITA.**—The Island of *Margarita* is thirty-eight miles long, from E. to W. and forms, with the main coast, a channel of eleven miles in breadth, but having in the middle of it the isles of *Coche* and *Cubagua*. *Margarita* is mountainous, and, at some distance to the northward, appears as if it formed two islands; it having a great break of low and marshy land in the middle of it. In the eastern part of the island are various hills, which, in clear weather, may be seen from the *Cabo de Tres Puntas*, (Cape Three Points,\*) and in the western

\* More than seventy miles off, to the E. S. E.

part rises a mountain named *Macanao*. Its east point, named *Punta de la Ballena*, (Whale Point,) is almost on the same meridian as the *Morro of Chacopata*, on the main land. From *Punta de la Ballena*, the shore tends N. W. by N. thirteen miles, to *Cabo de la Isla*, (Cape of the Island,) forming the N. E. side (fronton) of the island, which may be considered as clean; it having only a shoal, or reef, stretching along it to about three cable's length.

From *Cabo de la Isla* the shore tends S. W. 7 miles, to *Punta de la Galera* (Galley Point :) this part is also clean. Three miles S. W. by S. from *Punta de la Galera* is the *Punta de Maria Libre*: between these two points, is a bay, bordered all round with a reef, which, in the middle of the bay, extends out about a mile. On the shore, near the middle of this bay, are a number of Indian huts.

From the point of *Maria Libre*, at the distance of eleven and a half miles West, is the *Punta del Tunar*; and, between these two points, is a very large bay, which is about five miles in depth: it is all very clear, having no other danger than a reef, which borders the coast, and which at the utmost, does not stretch out more than half a mile from the shore. The shore, at the bottom of this bay, is a low and wet beach.

From *Point Tunar* the coast tends W. S. W.  $\frac{1}{2}$  W. eight miles, to *Punta del Tigre* (Tiger Point:) it is all very clean, and you may sail along it, at the distance of half a mile. From *Tiger Point*, the coast inclines more to the south; and, at two and a half miles from it, is the *Morro of Robledar*, from which it turns south, for four miles, to *Punta de Arenas*, (Santa Point,) which is the most westerly point of the island. The reef, which here borders the coast, extends out about a mile and a half.

N. W. from the S. W. point of the island, at the distance of five miles, is the eastern edge of a rocky shoal, *Placer del Ostial*, upon which the least water is five fathoms. This shoal lies nearly N. E. and S. W. in which direction it is about three miles in extent. The channel between the coast and this shoal is wide and clear, and has not less than 7 fathoms, with the bottom of sand.

On the *Eastern Coast*, at three and a half miles S. W.  $\frac{1}{2}$  S. from *Punta de la Ballena*, (Whale's Point,) is the point of the *Morro Moreno*; and between the two points is a spacious bay, on the N. W. side of which is the village, or town, of *Pampatar*. Almost on a line with the two points, and midway between them, is an islet named *Isleta Blanco*, (White Islet,) which is clean all round, and you may pass between it and the shore without any danger. In all this bay you may anchor in 3 or 9 fathoms, upon sand, at about two-thirds of a mile from the shore. This anchorage affords very little shelter, with fresh breezes; and, although there is seldom much sea with the regular breezes, yet it is advisable to anchor so that, should it be necessary, you can lay out again and weather *Morro Moreno*, to the eastward of which you may pass within a cable's length, if requisite.

From *Morro Moreno* the coast tends in a curve S. W. 6 miles, to *Punta de Mosquitos*, (Mosquito Point:) between these points is a bay, on the north side of which was the village named *Pueblo de la Mar*, which is now reduced to a few cottages or huts of straw (paja.) The shore between *Morro Moreno* and *Mosquito Point* is foul, and ought not to be approached nearer than two miles; as is also the case with the coast which succeeds it to the westward.

From *Mosquito Point* to *Punta de Mangles* (Mangrove Point) is ten and a half miles, and the shore tends W. by S. and E. by N. and is foul, with a rocky reef, which extends out about a mile.

From *Punta de Mangles* the coast bends to the northward, forming a bay with *Punta de Piedras*, which is three miles distant from the former. From *Point Piedras* the coast tends more to the northward, and forms another bay with *Punta del Pozo*, (Well Point,) which is six and a half miles distant from *Punta de Piedras*: and, from *Punta del Pozo*, the coast extends about W. by N. twelve miles, to *Punta de Arenas*, which, we have already stated, is the west point of the island. All the S. W. coast, from *Punta de Mangles*, is as foul as that more to the eastward, and it is not advisable to approach nearer to it than two miles.

**FRAYLES, or Friars.**—Eight miles E. by N. from the north point of *Margrita* are some islets, named the *Frayles* (Friars.) The southernmost is the largest, and they are all very clean, except the northern one, which is surrounded by a reef, that extends out about two cables length from the islet.

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**LA SOLA**, or *Solitary Islet*.—Nearly N. E. twelve miles from the *Frayles*, is an islet named *La Sola*, which is very clean. Between *La Sola* and the *Testigos* (described hereafter) the distance is twenty-six miles; and the passages between the *Testigos* and *La Sola*, between *La Sola* and the *Frayles*, and between the *Frayles* and *Margarita*, are so clear, that you may take either of them, at any time, and with any class of vessel whatever.

**COCHE** and **CUBAGUA**.—In the channel between *Margarita* and the *main land* are the two islands, named *Del Coche* and *Cubagua*, or *Cuagua*. The eastern one, or *Isla Coche*, is low, and lies nearly W. N. W. and E. S. E.: it is surrounded by a rocky shoal, and a reef stretches out from its N. W. and S. E. points, from a mile and a half to two miles. There are thus two channels; the one to the northward, towards the Island of *Margarita*, which, at the narrowest part, is two miles wide; and the other, to the southward, towards the coast of the *main-land*, and which also is two miles wide at the narrowest part. You may pass through either of these channels freely; for they have very good bottom, on which you may anchor, and lie as secure as if you were in harbour. The Island of *Cubagua* is something less than *Coche*: it lies nearly W. by S. and E. by N.; and a reef, with a shoal, stretch from its eastern point about a mile. The north and south coasts of *Cubagua* are very clean; but, on the western side, is a rocky shoal, which extends out about one-third of a mile. This island, also, forms two channels; one to the northward, with the Island of *Margarita*; and one to the southward, with the peninsula of *Araya*: both are very free. In the narrowest part of the northern channel, which is between the shoal and reef stretching off from the east point of *Cubagua*, and the shoal stretching off from the *Punta de Mangles*, (Mangrove Point,) of *Margarita*, the breadth is three miles.

To sail through the channel to the northward of these islands, no more is necessary than to give a birth to the shoals which stretch out from the shore of *Margarita*; that which projects from the N. W. point of *Isla Coche*, and that extending from the east point of the island *Cubagua*; but, for greater certainty, you may bring the little and most northerly point of *Cubagua* to bear W.  $\frac{1}{4}$  S. and run with it so until you are well past the *Punta de Mangles*, when you may edge away a little to the northward; it being well understood, at the same time, that you may pass the north point of *Cubagua*, at the distance of a cable's length, without any risk.

To sail through the south channel, keep over to the *Isla des Caribes* and *Isla de Lobos*, which lie to the westward of the *Morro de Chacopata*, by which you will run clear of the shoal extending to the south end of *Isla Coche*. You may then steer W.  $\frac{1}{4}$  S. without any fear, for the three islets which lie off *Punta de la Tuna*, and which are called *Isletes de la Tuna*: these are very clean, and you may pass between them, if necessary. From these islets the channel opens to the westward, and of course requires less caution. In all these channels it is advisable to anchor in the night, in whatever part of them you may happen to be, and whether your object is to go to *Araya*, or to *Cumana*; for the current may very easily carry you to leeward; and besides, it is improper to run for these ports without day-light, and when you can see to give a birth to the shoal at the point of *Araya*, and also that which extends from *Cumana*, as shown hereafter.

The **TESTIGOS**, a cluster of islets and rocks, lie at the distance of forty miles to the N. by W. of Cape *Malapasqua*, on the main, and forty-six miles W. N. W. from the *Cabo de la Isla*, the north point of *Margarita*. There are seven principal islets, with some other detached rocks. The channels between the islets are clear, and may be taken without any risk: but this is not the case with the channels formed by the rocks, for they are very narrow. You may approach the islets within two cables' length, or even less, if necessary, excepting the northern one, which has a reef around it, extending out about half a mile.\*

\* The Baron Alexander de Humboldt, on approaching the *Testigos*, 14th July, 1799, says, "During a calm the current drew us on rapidly towards the west. Its velocity was three miles an hour, and increased as we approached the meridian of the *Testigos*, a heap of rocks which rise up amid the waters." This is an additional reason for approaching them with caution.

Between these islets the bottom is of sand, on which you may anchor, in case of necessity. The largest *Testigo Grande*, extends N. W. and S. E. and, in these directions, may be about two and one-third miles in extent. On its southern part there is an anchorage, sheltered from the sea-breeze, with soundings of from 9 to 17 fathoms, the bottom coarse sand. You may sail to this anchorage either by the N. W. or S. E. part of the islet: if you go by the first, it is necessary to pass outside the rocks, which lie out from that part; and, if you run in by the second, you must pass between the Great Islet and another which is to the S. W. of it: the channel between is sufficiently spacious; the narrowest part is formed by a rock, which lies to the eastward of the little islet, and another which lies about a cable's length from the S. W. side of the Great Testigo. The channel is, however, half a mile wide, with from 9 to 10 fathoms of water, and the bottom is of red gravel.

Between the Testigos and the main land there are soundings; and, about five miles to the S. by E. of them, is the *Bazo Verde*, or Green Bank, a large sand-bank, of 4½ to 6 fathoms of water: large ships ought to shun it.

**BLANQUILLA, &c.**—At nearly N. ½ W. forty miles from the most westerly part of Margarita Island, are the *Seven Brothers*; all of them are clean, and surrounded with such deep water that you cannot get soundings in the straits between them. To the westward of the Northern Brother, at the distance of seven miles, is the *Island Blanca*: it is six miles in extent from N. to S. and three miles from E. to W. This island is very low and sterile; its shores are very clean, with the exception of the S. W. side, which has several reefs and rocks, extending out about three cables' length from the shore, and some points on the west side. The *North Point*, also, has some loose rocks or stones, about two cables' length from the shore. On the N. W. side there is anchorage in from 20 fathoms, which depth is found at about a mile from the shore, to 7 or 8 fathoms, which are got at about three cables' lengths from it. All the bottom of the anchorage is of sand. At about the middle of the western coast there is a rill (*cazimba*) of fresh water, where vessels may be supplied.

**TORTUGA.**—To the west of Margarita, and at the distance of forty-seven miles, is the island *Tortuga*, stretching E. and W. in which direction it is twelve miles in extent, and its greatest breadth is five and a half miles. All the east and N. E. sides of it are very clean; the N. E. point alone (*Punta Delgada*) sending out a reef to about two cables' length. The south side is also very clean, and has some islets towards its eastern end. The west point of this island is named *Punta de Arenas*; and from it to the north point, named *Punta Norte*, the water is very shallow, which renders it necessary to run along this part by the lead. On this side there is, 1st, to the eastward, *Cayo Anguilla*, (Eel Key) which lies half a mile from the shore, and the channel between is very foul; 2d, *Cayo Herradura*, which forms, with the coast, a channel of a mile; but which ought not to be attempted with a large vessel. A rocky reef projects about two and a half cables' length from the N. E. point of this key; 3d, *Cayos del Fondeadero*, or the *Tortuguillos*, of which there are two surrounded by a shoal. The anchorage of Tortugas is between the Tortuguillos and the coast; and you may run in to it either to the southward or westward of the Key *Herradura*. In all this anchorage, and the channels into it, you will not find more than 7 or 8 fathoms, with sandy bottom in the middle; and, to direct yourself in, you need only take care not to get into less water than 7 fathoms.

**ORCHILLA.**—At N. ½ W. twenty-four leagues, from *Cape Cordera*, is the Island of Orchilla, the greatest extent of which is from E. to W. It is low; but there are some peaks which rise towards its west end, the highest of which is almost in the very westernmost part of the island. From the extreme eastern point a key extends to the north, about three and a half miles; and to the west of it there is a great reef, which extends to the westward, almost as far as the middle of the island: upon this reef are numerous keys: all the rest of the coast is clean, and, if necessary, you may run along it at the distance of a cable's length. On the S. W. side, and almost close to the west end, there is a very clean sandy beach, in front of which you may anchor, sheltered from the breezes, in 7 or 8 fathoms, sand, at the distance of a cable and a half's length from the

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beach. Off the west point of the island, at the distance of half a mile to the W. by N. there is a rock, (*farallon*) which is quite clean and bold-to. The strait between it and the island is fit for any class of vessels.

**LOS ROQUES.**—To the westward of Orchilla, and at the distance of twenty-two miles, are the *Rosa*, which are a cluster of low keys that rise upon a very dangerous reef. This group extends twelve miles from N. to S. and twenty-four miles from E. to W. You may pass within a mile of all the outer keys, which lie upon the edge of the reef, except at the eastern part, where the reef extends more than three miles outside them. You may not venture among the keys, in general; for the passes between them are shut by the reef; and only by the western part of Cayo Roque, on the north side, can you enter into a large and handsome basin formed by the keys and reef. In this basin are 16 and 20 fathoms of water; but the bottom is rocky and foul, and apt to chafe the cables. The anchorage is at the west part of the key, called *El Roque*, in 19 or 20 fathoms, on sand and mud, at about three cables' length from the beach. Cayo Roque is one of the most northerly islets, and may be easily known, because there are various hillocks (*picachos*) upon it, which may be seen at a good distance. The best way is, never to approach this group, but to pass at a distance, as it offers no advantages whatever to any vessel, and is very dangerous, especially at night.

**ISLAS DE AVES.**—To the westward of the Roques, at the distance of thirty miles, are the *Islas de Aves*, which are two groups of keys, rising upon two distinct reefs, and having between them a channel of nine miles in breadth. These keys are very low; and, as the reef extends out about four miles to the north from the eastern isle, and six miles in the same direction from the western, it results that an approach to them, especially from the north, is extremely dangerous, and therefore it is best to give them as wide a berth as you ought to give to a dangerous shoal.

**BUEN-AYRE.**—To the westward of Aves, at the distance of thirty-three miles, is the Island *Buen-ayre*. The land of this island is sufficiently high, and there are various mounts and hillocks upon it, of which the highest is very near to the west point. The south point of the island is very low, and is named *Punta Rasa del Lacre*: in the middle of it, and upon the western side, there is a village with a small fort; and at this place is the anchorage, which is steep-to that, within a cable and a half's length of the beach, there are 18 fathoms; and the depth afterwards augments so rapidly, that, at a cable's length farther out, there are 60 fathoms of water; hence it is needful to have a cable ashore, and to have it ready in your boats, that you may not drag; for, if you once begin to drive, you soon lose the anchorage, and have the trouble of gaining it afresh.

Upon the western part of the anchorage, and at the distance of a mile, there is an islet named Little Buen-ayre; and, although the strait it forms to the N. E. is fit for any class of vessels, yet it is better either to enter or sail out by the S. W. of it, as there is a greater space free.

You may pass at a cable's length from any of the coasts of Buen-ayre without any risk, except at the eastern part, whence a reef extends in some places, more than half a mile; but both the N. E. and S. E. points are very clean.

**CURACOA.**—To the westward of Buen-ayre, and at the distance of twenty-seven miles, is the Island of *Curacoa*, extending N. W. and S. E. in which direction it is thirty-five miles in extent; but its greatest breadth does not exceed six miles. This island is moderately high, and has hills on it, which are seen at a considerable distance from sea. All its coasts are very clean, and you may run along them at the distance of a cable's length, without any risk whatever.

At S. E. 4 miles from the S. E. point, named *Point Canon*, lies a very low sandy islet, called Little Curacoa; which although clean around, is dangerous in the night or in thick weather.

The Island of Curacoa has plenty of harbours; the principal of which, and through which all the commerce of the island is carried on, is that of *Santa Anna*, or *St. Anne*, situated on the west coast, fourteen miles from Port Canon; before reaching it you meet with another harbour, named *St. Barbara*. Those bound to the harbour of St. Anne ought to make Point Canon, and run down the

coast at one or two miles distance, that they may not expose themselves to the risk of getting to the leeward of the entrance of the harbour, for the current runs strongly to the westward.

The entrance of the harbour of St. Anne is uncommonly narrow, and is formed by very low tongues of land, which in the interior part, form some lagoons. On the eastern point is the fort, named *Fort Amsterdam* and the principal town, where the Protestants and Jews reside; and on the western side, is the town in which the Catholics live. On an islet immediately off the west point is a battery, which together with *Fort Amsterdam*, defends the mouth of the harbour.

The channel leading to the bay extends about N. N. E. it is about three-quarters of a mile in length, and only a cable's length in width; and, between the forts, at the entrance of the harbour, it is scarcely half a cable's length wide. The towns, wharfs and warehouses, are on the banks of the channel, where the vessels anchor, and also careen.

To enter this harbour, it is essentially necessary to run down the coast from windward, but not nearer than half a cable's length, as there are rocks and a reef, which lie out about one-third of a cable's length from the shore; and, after you are abreast of the batteries on the point at *Fort Amsterdam*, (the east point,) luff up towards the battery which is on the west point; and, keeping in mid-channel, run in. The Dutch have always a launch ready for towing vessels into the harbour.

**ORUBA.**—To the westward of the north part of *Curacoa*, at forty-three miles distant, lies the island of *Oruba*; its extent from N. W. to S. E. is seventeen miles; although this island is low, it has some hills which may be seen at a good distance, particularly that named *Pan de Azucar*, (Sugar Loaf,) on account of its shape. All its east coast is clean, though there are some small islets, lying close off it. On the western coast, there is a chain of keys, which extend along to the western point, and you may run along, outside them, at two cables' length, if you choose. This island which lies to the north of *Cape Roman*, forms with the coast, the main-land a channel of thirteen miles in width, all which is perfectly clean.

### *General Directions for Navigating on the Coasts of Colombia, from the Dragon's Mouths to Carthagena.*

[From the *Derrotero*, &c.]

On examination of what has been stated, relative to the winds on this coast, nothing appears necessary to add to the description already given, to enable the mariner to direct himself with the greatest safety; in fact, they have little else on his coast than the regular breeze (trade-wind.) There is nothing to fear on it, either from hurricanes or hard norths: as the first are absolutely unknown; and the second, if they do at any time occur, never exceed the strength of the ordinary breeze: and in the rainy season, which is from May to November, they ever have southerly winds, which are sometimes very strong; but we must consider them only as squalls of short duration, and which are not likely to do much harm, as they blow off shore.

With all this we may look upon the whole of this coast, especially to *Cape La Vela*, as a continued port; for the climate renders it equal to that; and no more is necessary, to enable us to free ourselves from the dangers upon it, than to consult the particular description: for we are sure that the loss of a vessel upon it is very rarely the effect of a storm.

It is on the coast from *Cape La Vela* that it is proper to give some notices; for the breezes especially from *Cabo de Aguja*, or rather from Point *San Juan de Guia*, (near *Santa Martha*,) are uncommonly strong: so much so, indeed, that they may be looked upon as real gales, and therefore it is proper to present some

rules for making the harbour hereabout; to prevent, if possible, those inadvertencies which, with winds so unmanageable, might be of great importance. There may also be some doubt in the making of the various places, and general navigation of the coast, arising from the variation of the wind, which, as we have said, sometimes changes to S. and S. W. from June to November. From these reasons the following reflections will not be useless; for, should they be unnecessary for those who are acquainted still they may assist those who are not so.

The principal establishments for commerce on this coast, and towards which vessels in general direct their course, are Cumana, Barcelona, La Guayra and Porto Cabello, Maracaybo, Santa Martha, and Carthagena; and Pampatar, in the Island of Margarita; and Santa Anna, in the Island of Curacao. It being a general rule on this coast, as well as in the whole sea of the Antillas, (Caribbean Sea, or Sea of Colon,) to make the land to windward of the port of destination, as a mode necessary to prevent the falling to leeward; we can say, with safety, that, having once entered into the Sea of the Antillas, they ought to make the land about Cape Mala Pasqua, or about Cape Three Points; all those who are bound to either Margarita or Cumana, preferring the channel which the island forms with the main land, as we have stated in the description: this route also seems better for those who are bound to Barcelona; though to those it can be nowise inconvenient to run to the northward of Margarita.

Those who are bound to La Guayra, from Cumana or Barcelona, will make a straight course to Cape Cordera, passing always between the Island Tortuga and the coast; but those who, from Europe, or any of the Antillas, are bound to La Guayra, will run to the northward of Tortuga, to approach the coast about the same cape, or a little to leeward; taking care to make out, if they choose, the rock called the Centinella, which lies to the northward of the cape. Those bound to Porto Cabello are not under the same necessity of making Cape Cordera, but may make any other point of the coast that answers, so that they keep far enough to windward of their port.

To make Cape Cordera, or any other point upon the coast to leeward of it, every one will be right to do it in the mode that is easiest, or that he considers best; and he may also run in by any of the straits or passes which the islands to the northward form; and, to guide them in doing this, nothing more is necessary than to attend to the description of the one they may take.

Those bound to Maracaybo from the east, will make Cape San Roman; while those from the westward will make Punta de Espada. They may pass either to the northward or southward of Curacao, in running down for Cape Roman; and, from that cape, they must run along the coast till they place themselves at two miles west from Point Macolla, which is the situation in which they can be sure of the course to the bar, as already stated in the description.

If the navigation to Cape Roman is made outside of the islands, it ought always to be kept in mind that the Roques, and the Islets of Aves, are very dangerous on their north sides; to the end that they may take care to keep themselves at a sufficient distance from them, especially in the night, and they must not forget, at night, to correct their dead-reckoning for the currents which they experienced through the day, and the effect of them as deduced from dead-reckoning and the points of demarcation (*i. e.* points of departure and land-falls.) This advice cannot fail to be of useful importance; for, in this place, the currents require particular attention.

Those bound direct for Santa Martha, or Carthagena, ought unquestionably to navigate outside of all the islands, so as to make that of Oruha and the lands about Cabo la Vela: for, having found their situation exactly by the last, they can securely shape a direct course for Cabo de Aguja, in order to take the anchorage of Santa Martha, as already directed.

We have said that they ought to pass to northward of the islands, because, thus, they take the most direct course, and make the shortest distance. Those who, without touching at Santa Martha, go to Carthagena, will shape a direct course from Cabo de Aguja to the mouths of the River Magdalena; whence, taking care to pass two leagues to the westward of Point Zamba, and one and a half to the westward of Punta Canoas, they will direct their course to the Boca

Chica, or anchor at Punta Canoas, or on the Playa Grande, if they have not time to make Boca Chica with day-light. The land-fall of Punta de Zamba ought to be made with consideration, so as to be able to take the entrance of the Boca Chica by day, or the anchorage at Punta Canoas, or on Playa Grande, in order to be able to proportion the distance to the rate the vessel sails at; or, to proportion the sailing of the vessel to the distance to be run; in order, if possible, to avoid the necessity of hauling by the wind for the night, which will be sufficiently molesting and laboursome for the vessel and her apparel in the time of the hard breezes; but, if there be no remedy, you must do this, and maintain your place by short tacks; or *always, when the wind and the sea will permit it, come to anchor for the night in that situation.*

When we advise always shaping a course from point to point, it is not merely because, by doing this, the distance is shortened, which would be much lengthened by following every turn of the coast; but also because, by so doing, the various shoals and dangers which lie between Cape La Vela and Cabo de Aguja will be avoided, as well as those between Punta de Zamba and Punta de Canoas; among which we advise no one to go with a large vessel.

If, during the season of the breezes, it is necessary to take the route already described to Carthagena, from any place situated to the eastward of it, in the time of the rains, you ought to steer true West from Cabo La Vela in the parallel of  $12^{\circ}$ , or something more, for the purpose of retaining the breeze until you gain the longitude  $75^{\circ} 45'$ , or  $76^{\circ} 15'$ , in order to steer from that situation to the South, which course may be altered to S. E. as you enter into the limits of the ruins; observing, also, that, at this season, it is better to make the Boca Chica from the southward than from the northward; as, in *this* season, the waters direct their course to the northward, though, in the season of the breezes, they run to the S. W.; also, it is indispensable not to run in upon the land by night, but by day; for, in such a time, the land is very deceiving.

To get to *Windward* on this coast, as from Carthagena to Margarita, or Trinidad, you must haul by the wind, and make as long tacks as you can. The time of tacking ought to be decided by the daily variation of the breezes, which, at about 12 at night, or something before it, come off the shore from about E. S. E. or from S. E. if it has been raining before, and the ground is wet; and, from nine to eleven, in the forenoon, the sea-breeze, or that from E. N. E. comes on. At all distances from shore these changes take place, and the mariner must ought to take advantage of them to get on from leeward to windward: thus, so soon as the breeze inclines to the S. E. in the evening, he ought to follow the off-shore tack: and, so soon again as the wind begins to change in the morning, to the northward of east, he ought to tack in-shore: and if, on account of nearing the land, he cannot continue on the same stretch until the breeze changes, he ought to keep as well to windward as he can, by working short tacks along shore, until the breeze again returns to E. S. E. when he may again stand out to sea; and, in this manner, may be able always to make two long stretches; one to the N. E. and the other to the S. E.; that is to say, he may make the two within eight points. In making short tacks along shore, to get to windward, he has not that advantage; for the breeze runs always along the coast, unless sometimes there may be a slight land-breeze in the night, and before the sun rises in the morning, in the season of the rains: but they do not last; nor can he avail himself of them as he may of the before-mentioned variations.

Very small vessels cannot follow this regular system, when the breezes are too fresh; as, from Cabo de Aguja to Isla Verde, beyond the Magdalena, where the breezes are like storms; and, in these cases, it is better for *them* to keep along shore, where the water is smoother; but in large vessels, capable of resisting these gales, and which have good tackle, or when the breezes are moderate, they ought to make long tacks, when the wind will admit of it, as we have already explained.

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## CHAP. X.

The Coast of COLOMBIA from CARTHAGENA to the Port of  
St. JUAN DE NICARAGUA.

*Description and Directions from the Derrotero, &c.*

The Rosario Isles and the south end of Baru have been described in the preceding chapter, and it has been noticed that the last is separated from the mainland by a narrow channel, which is called *Pasa Caballos* (Horses' Pass.) The north end of this channel opens into the first bay of Carthagena, and the south end of it into the *Golfete*, or Little Gulf of Baru, which is formed by the Island Baru and the coast of the main. This gulf or bay extends inward to the north-eastward, nearly twelve miles. The points which form it on the south, are, the S. W. end of Baru to the west, and *Punta Barbacoas* on the east. It has several shoal spots on it, but is generally clean, with water from 10 and 9 to 3 fathoms, on fine sand and ooze; the most general depth is from 5 to 4 fathoms. There is good shelter from the breeze in it; and, in entering, care must be taken to keep clear of the edges of the bank which extends from the Rosario Isles, and not to forget the Tortuga Bank, which lies to the S. W. with Rosario Island bearing N. E.  $\frac{1}{2}$  N. ten miles distant: this shoal has  $7\frac{1}{2}$  fathoms over it, and is of sand with rock.

*Shoals in the Golfete de Baru.*—At one mile N. W.  $\frac{1}{2}$  W. from Barbacoas Point is a shoal, the least water on which is two fathoms. There is another at two and one-third miles W. S. W.  $\frac{1}{2}$  W. from the same point, with from  $1\frac{1}{2}$  to 2 fathoms. These are named the *Barbacoas Shoals*. In addition to these are two others, named *Atillo* and *Matunillo*; the first lies three and a half miles N. N. W.  $\frac{1}{2}$  W. from Barbacoas Point, with only one foot of water, over rock; and the second lies nearly five miles N. E.  $\frac{1}{2}$  N. from the same point, and has very little water on it.

From *Barbacoas Point* the coast tends about S.  $20^{\circ}$  W. fifteen and a half miles, to the Fronton, or bluff of *Tigua*. The latter may be easily known, because the highest hill on this portion of coast rises on it. From the Fronton de Tigua, a bank, with little water on it, extends to the N. by W. four miles, and its extremity is opposite *Punta Comisario*, whence it extends two and a half miles from shore.

From the bluff of Tigua to the *Boqueron*, or the point of *San Bernardo*, the coast tends S. by W.  $\frac{1}{2}$  W. Off the coast, between, are two islets; the first and northern one, *Isleta de Jesus*, and the second, *Cabrunaz*; these lie, respectively, at four and three miles from Point San Bernardo.

The Point of San Bernardo is the S. W. point of a drowned mangrove key; between it and the coast there is a small channel, frequented by canoes and pirogues. At S. S. E.  $\frac{1}{2}$  E. two short miles from Point San Bernardo, lies the rock called the *Pajarito* (Little Bird Rock;) the least water on which is  $3\frac{1}{2}$  fathoms, and the most  $4\frac{1}{2}$  fathoms.

**ISLES OF SAN BERNARDO.**—To the west of San Bernardo Point lie the islands of that name, which are eleven in number, including those of *Jeaus* and *Cabrunaz*, already mentioned; but without including some other little islets.



These islands extend themselves to the westward nearly fifteen miles, and nearly ten from north to south. Between them are various little channels. There is also a channel on the eastern side of the group, between them and the coast. The depth on the bank, to the west and south of these isles, is very unequal; for, in an instant, you may pass from shallow into deep water. All the islands are low, and covered with trees.

The channel on the eastern side of the islands is between the eastern islet, *Salamanquilla*, on the west, and the islet *Cabrunaz* on the east; or, rather, between the banks which surround these islands. The direction of the channel is N.  $41^{\circ}$  E. and S.  $41^{\circ}$  W. Its narrow part is only three-tenths of a mile broad, but the depth is from 10 to 13 fathoms, clay bottom, with 5 fathoms at the edges of the banks. The banks have very little water on them, and therefore, unless exactly in the passage, there is much danger of grounding. The channel lies nearer to *Salamanquilla* than *Cabrunaz*; therefore it is necessary to keep nearest the former; and, if the weather be clear, you may see its bank, which will enable you to pass through with less risk: but, in thick weather, the hand-lead is the only guide.

To pass this channel, (*Salamanquilla Channel*) on coming from the north, so soon as you have passed to the westward of the *Rosario Islands*, steer towards the hill of *Tigua*; keeping in mind that the shallow bank, called the *Tortuga*, lies N. W. by W. from that hill, which bearing will enable you to give it a suitable birth; that is, you may not run towards *Tigua Hill* when in that direction, but either to the northward or southward of the given bearing; and run thus until you bring the islet *Salamanquilla* to bear S.  $\frac{1}{2}$  E. from which situation you may steer S. S. E.  $\frac{1}{2}$  E. until the hill of *Tigua* bears N. E.  $\frac{1}{2}$  E. then steer S. W. true, and, keeping the same mark always on, you must attend to what has been previously said of this channel; and keep persons on the look-out for the banks, which stretch out on both sides, and which, as we have already said, show plainly.

Having passed through *Salamanquilla Channel*, and being abreast of *San Bernardo's Point*, you will enter the great Bay of *Tolu*, which is named the *Gulf of Morrosquillo*, and which is distinguished by the islands of *San Bernardo* to the north, and that of *Fuerte* to the south. The latter lies with the southernmost key of the former bearing N. E.  $\frac{1}{2}$  N. distant twenty-six miles. All the gulf has a good depth of water; it having from 10 to 25 fathoms, on green ooze; so that you may let go an anchor in any part of it in the season of light breezes, calms, and variable winds.

**TOLU.**—At S. E.  $\frac{1}{2}$  S. thirteen miles, from the Point of *San Bernardo*, in the bottom of the Gulf, stands the town of *Santiago de Tolu*, situated on the very shore. This town lies thirteen miles N. E. by E. from the mouth of the harbour of *Cispata*, and is in lat.  $9^{\circ} 30' 56''$ . The land in the vicinity of this town is plain, with savannas, which extend to the north, east, and south, terminated to the east by a chain of mountains, over which rises one mount, forming two round hummocks, called the *Tetas de Tolu*: these lie twelve miles to the east of the town, but they are useful marks for recognizing this coast.

In order to pass to the westward of the Islands of *San Bernardo*, it is necessary to keep about six miles off from the northernmost one, named *Tintipan*, and not to advance at all to the east until *San Bernardo Point* bears E. N. E.  $\frac{1}{2}$  E. on which course you may run for it, if you choose. It is very convenient for those bound to *Santiago de Tolu*, to enter by the *Salamanquilla Channel*; and, so soon as abreast of the point of *San Bernardo*, they will see the *Tetas de Tolu*, with which mark they can direct themselves to that town; of other hills, which may be seen to the south, the easternmost is called *Santero*, and it is twenty-one miles distant, bearing south from *San Bernardo Point*. The westernmost hill, named that of *Cispata*, is twenty-five miles S. by W.  $\frac{1}{2}$  W. from the same point. Under this hill, and to the northward of it, is the harbour of *Cispata*. The valley open between the hills, bearing S. by W. will lead to the entrance of this harbour.

**PUERTO DE CISPATA.**—The mouth of *Cispata Harbour* lies at the distance of seventeen and a half miles nearly S. by W. from *San Bernardo's Point*;

and Zapote Point, which is the eastern point of the harbour, lies in lat.  $9^{\circ} 24' 19''$ , and long.  $75^{\circ} 51\frac{1}{4}'$ . The western points are called *Terrepleu* and *Balandra*, between which the distance is a long mile. Terrepleu and Balandra Points are covered with high mangroves, extending out into the water: from its mouth the harbour extends in, to the S. W. by W. 7 miles. This harbour is sheltered from harbours and winds, and the best anchorage is on the northern shore, between *Balandra* and *Navios Points*. The last point is remarkable from its extending out to the south. The hills of *Santero* and *Cispata* may serve to find this harbour exactly; the middle and the highest part of the former lies four miles S. E.  $\frac{3}{4}$  E. from Zapote Point; near this hill, and to the westward of the north part of it, is the village of *Santero*, at the distance of two miles from the little bay of Zapote. The top of *Cispata* hills lies eight long miles, nearly S. S. W. from the point or front of Zapote.

The *River Siau* falls into the interior of *Cispata* Harbour. This river forms almost a semicircle towards the south and west, passing by the southern slope of the hills of *Cispata*. At about two leagues from the bay, on the left bank of the river, is the village of *San Bernardo del Viento*; and higher up, on the right bank, are the villages of *San Nicolas* and *Santa Cruz de Loria*.

From *Mestizos Point*, which is the northernmost point of *Cispata* Harbour, the coast tends W. S. W.  $\frac{3}{4}$  W.—S. W. by W.  $\frac{3}{4}$  W. and S. W. by W. seventeen and two thirds miles, to *Point Piedras*: in the intermediate space, and on the hearings mentioned, are found the *Cienaga de Venados*, (Deer's Lagoon,) and *Punta del Viento*, (Wind Point,) between which is the place where the bank extends farthest from the coast; for there it stretches three and a half miles to the north; while its extent, east and west, is six and two-thirds miles, with a depth of 3, 4, and 5 fathoms, on sand and rock, and also on sand and ooze.

*Punta de Piedras* forms a front S. W. by S. for three miles: it is moderately high, precipitous, and foul, at the shore or water's edge: at its N. E. end it forms a small bay, at the distance of two cable's length to the north of which is a little high rock, with some shoals, half a mile to the N. W. of it: these shoals extend a short mile from N. E. to S. W.: or they have some rocks above water, and others which show only at low water; the general depth is from  $1\frac{1}{2}$  to 2 fathoms. Whoever runs along near this coast ought to keep the hand-lead constantly going.

The S. W. end or extremity of the bluff of *Point Piedras* is called *Rada Point*; at the distance of five long miles S. W. by S. from which is *Punta Broqueles*, which is low and rocky, with a reef, which extends out about two cable's length to the north. Near this reef lies the *Toro* or *Bull Shoal*. Between *Broqueles Point* and *Rada Point* is the bay named *Ensenada de la Rada*, which has a low beachy shore: it is shallow, with  $3\frac{1}{2}$  fathoms, on an oozy bottom. At eight or nine-tenths of a mile to the S. E. of this bay is a hill, stretching from N. E. to S. W.; and farther inland are three peaks, the highest and largest of which lies about five miles to the south-eastward from *Broqueles Point*.

*Isla Fuerte*.—The N. E. end of *Fuerte Island* lies twenty-one and a half miles W. by S. from *Point Mestizos*, and six and a half miles N. W. by W.  $\frac{3}{4}$  W. from the north-easternmost part of *Piedras Point*. This island is one mile and a quarter in length from north to south, and about three-quarters of a mile from east to west. It is high in the middle, and covered with trees and royal palms, or cabbage-palms, which rise above the others: it can be approached by vessels at its south point, named *Arenas Point*, only; for it is surrounded by reefs, with various scattered rocks, some of which show above water, and others do not. On the bank, outside of the reefs, and even on them, there are from 2 to 4 fathoms of water, on rock and coarse sand. In addition to these banks, which surround the island, there are two other small ones: the one a mile S. by W.  $\frac{1}{4}$  W. from the island, with 5 fathoms of water, on sand; and the other a long mile S. E. by S. from *Arenas Point*, with 3 fathoms, on sand and gravel. The channel between this island and the mainland has from 7 to 15 fathoms of water. The island may be seen twenty miles off, from the deck of a brig or schooner.

*ISLA FUERTE* to the GULF of *DARIEN*.—S. W.  $\frac{3}{4}$  W. from *Punta Broqueles*, at the distance of about six miles, lies *Punta de Carabana*, which is the northernmost point of the *Gulf of Uraba*, or of *North Darien*: the intermediate

coast forms bays, tending inward six miles, or rather less; and in this space is the bluff or hill of *Tortugon*, which is remarkable; the points of *Arboletes*, (or Little Trees,) *San Juan*, and *Savanilla*: that of *San Juan* is high and scarped, the others are low to the water's edge, with beaches from point to point. The land in the interior is a low hilly range, which terminates near the cerros or hills of *Savanilla*, which are about four miles S. S. E. from the point of that name. All this coast has a bank along it; so that, during the season of light breezes, or of variable winds and calms, you may drop an anchor on it, at more or less distance from the coast, as the size of the vessel may require. There are no other impediments on it than a high rock which lies a long mile and a half S. W. by S. from *Broqueles Point*: *Tortuguilla Island*, which lies sixteen miles S. S. W.  $\frac{1}{4}$  W. from that point, and nearly west from the *Fronton*, or bluff, and hill, of *Tortugon*, distant about four long miles; and the *Gigantones Shoal*, which, being near the coast, and along to the S. W. from *Savanilla Point*, presents no danger, unless you run near that point, or *Gigantones Point*. *Tortiguilla Island* is low, small, and covered with trees; and to the north from it extends a reef, with very little water.

The GULF of URABA, or DARIEN.—*Carabana Point*, as already noticed, is the northernmost point of the *Gulf of Uraba*: it is low, with trees, and surrounded by rocks. It is easily known, because, from it, the coast tends to the south to form the gulf, and the *Cerro de Aguila* (Eagle Hill) is near it: this hill lies in lat.  $8^{\circ} 37' 50''$ ; \* and from it *Cape Tiburon*, which is the westernmost point that forms the Gulf of Darien, bears West twenty nine miles distant.

*Aguila Hill*, although only of a moderate height, is remarkable from being insulated in the centre of low land.

The shoals about *Carabana Point* are at the S. W. end of the bank, which has already been described, as generally extending along the coast. The outer corner of this bank, with 5 fathoms of water, is four miles N. W.  $\frac{1}{4}$  N. from the point. In that direction, nearly, there are two rocks: one, at only a short distance from the point, partly shows; and the other, only a little separated from it, has very little water over it. From the edge of the bank, in 5 fathoms, the depth increases outwards to 6 and 7, on a bottom of sand, and successively to more; so that, at six long miles to the N. W. of *Carabana Point*, you may find 10 and 11 fathoms, on oozy sand: at eleven miles  $22\frac{1}{2}$  fathoms, ooze; and last, at fourteen miles, 35 fathoms, also on ooze. These soundings, and the bearings of *Aguila Hill*, may serve to guide those bound to this Gulf; observing that, so soon as *Aguila Hill* bears east, they will be entirely free from the shoals of *Carabana Point*, and may run freely for the Gulf of Darien, nearly to *Arenas Point*, which lies five miles and one-third S. S. W.  $\frac{1}{4}$  W. from *Carabana Point*; all this part having a sufficient depth of water.

The entrance of this Gulf is, as stated above, between *Carabana Point* to the east, and *Cape Tiburon* to the west. All the eastern and southern coasts of it, to the *Bay of Candelaria*, offer safe anchorage at every season of the year; but the rest of it, to *Cape Tiburon*, is very wild in the season of the breezes, and without any shelter, except for very small vessels; but, in the season of the light breezes, variable winds, and calms, (season of the *vendavales*,) you may anchor in any part of the gulf, without either wind or sea to incommode you.

The two points of *Punta Arenas* form a low front of two miles in extent, and they bear from each other S. S. E.  $\frac{1}{4}$  E. and N. N. W.  $\frac{1}{4}$  W. These two points form the western part of the *Aguila Lagoon*, which extends E. and W. five and two-thirds miles, and from N. to S. three miles, with various low islets in it. This lagoon commences at the southern extremity of *Aguila Hill*, which has been heretofore described.

From *Arenas Point*, towards the south, the coast tends to the east,  $5\frac{1}{2}$  miles, to the *Rio Salado*, and thus forms a tongue of sand, extending out to the sea, and which, although it is low, has sufficient water near it, and may be run along at less than a mile.

\* The *Derrotero* gives the longitude of this hill as  $70^{\circ} 35' 45''$  west of Cadiz; but the late Chart of Captain Fidalgo has it in  $70^{\circ} 39'$ , or  $70^{\circ} 56\frac{1}{2}'$ , from Greenwich. The last, we presume, is to be preferred.

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From the Rio Salado the coast tends nearly S. S. E. It has some hillocks at intervals, and the depth on the bank off it is so regular, and the bottom so clean, that it may be run along by the hand-lead. To the southward, from Cayman Point and Hill, which are fourteen miles from the Rio Salado, the shores on both sides of the Gulf are swampy, and continue so as far as the principal mouth of the Rio Atrato, without showing any hill on it; and, from the River Suriquilla, (which is in the southernmost part of the Gulf) to the north and west, may be considered as the delta, where the great river Atrato or Darien disembogues.

The Bay of Candelaria, which is formed by the wet land at the mouth of the river, bears about S. W. from the Point and Morro of Cayman, at the distance of twelve miles. For sailing along all this coast of the bottom of the gulf, from Point Cayman on the east, to the bay of Candelaria on the west, there are no rules nor guide but the lead; nor is there any danger, for you may anchor wherever it suits, or is necessary.

The principal or only object for entering in the Gulf of Darien can only be to avail yourself of the facility which the River Atrato affords for conducting articles into or from the interior of the country; thus, notwithstanding this river branches into the sea by many mouths, which, for so great a distance, form the watery and inundated lands of which we have spoken, yet only eight of them are navigable for boats and launches; and none of them offer the same advantages as the Little Faysan, which runs into the southern part of the Bay of Candelaria; because, when anchored in the bay, vessels will find shelter from the sea, and will be near the mouth or entrance by which the effects they bring must ascend.

The coasts of the Bay of Candelaria are so very low, that they are mostly inundated, even at low water, and bordered with mangroves, reeds, rushes, &c. so that only the N. W. point of the bay shows itself dry. The mouth or entrance of the bay, from the N. W. point to the S. E. where the Little Faysan runs in, is about two miles in width; but the bay is bordered by a bank and shoal of sand, which extends out a mile to the S. E. of the N. W. point, and reduces and straitens the bay to scarcely a mile. This shoal also stretches out from the S. E. point, but only for a cable and a half's length; and in the bay it keeps near the southern coast, but runs out considerably from the N. W. The space of good depth which remains is about a mile and a third, in all directions.

To take this bay, the utmost attention to the lead is necessary, taking care not to get into less than  $18\frac{1}{2}$  or 19 fathoms in its entrance, nor 13 fathoms within it. This caution is very necessary, for the sand-bank which surrounds it is so steep, that, from 14 fathoms, you pass to 5, and from 5 to be aground. Taking care to preserve the proper depth, you will go in mid-channel, which you will find at about four cables from the S. E. point. It will also be good to have a person on the look-out upon the yard, for the colour of the water shows both the channel and shoal. This arm of the river, namely, the Little Faysan, has three feet of water on its bar, and the tides rise two feet throughout the whole of the Gulf of Darien.

From the N. W. point of Candelaria Bay, the coast, which is low and covered with mangroves, tends N. by W.  $\frac{1}{2}$  W. five miles, to *Revesa Point*; thence seven miles W. N. W.  $\frac{1}{2}$  W. are the *Tarena Keys*: on all this coast the bank of shallow water, formed by the mouths of the river, extends outward. The chief mouth of the Atrato lies about one-third of the distance between *Revesa Point* and *Tarena Keys*; and it is necessary to keep at two miles' distance from the coast. *Revesa Point*, which has also been called *Choco Point*, forms a bight, wherein there is good anchorage, well sheltered from the norths and breezes; and, to take it, you have only to run within a cable and a half's length of the south part of that point; and, so soon as you are abreast of it, or, what is the same, to the west of it, or something farther into the bay, you may, if you choose, anchor in 14 or 15 fathoms.

On this coast, and to the south of the *Tarena Keys*, may be seen a mount or hill, named the *Peak of Tarena*, whence rise some very high mountains, which extend to the N. W. and have various peaks: of these the southernmost is named

*Candelaria*, and the northernmost, which is over Cape Tiburon, is called the *Peak of the Cape* (Pico del Cabo;) the peak next it, the south, being named *Gandi*.

From Tarena Keys the coast tends about N. W. by N. ten miles, to the *Bolanderos*: all of it is high, and there are various islets along it; of these, the first, named *Tutumale*, is a group of three islets, very clean, which lie out half a mile from the coast. To these follows that named *Tambor*, (the Drum) which also lies rather more than half a mile from the coast. Although this is clean, it must be kept in mind that, at half a mile from its N. N. E. part, there is a rocky shoal which shows: between this and the islet there is a passage, but it is better always to run outside. To the west of this islet the coast forms a bay, called *Puerto Escondido*, (Hidden Harbour) which, on account of its small capacity, admits small vessels only: to *Tambor* follow the *Bolanderos*, which are a larger islet, with smaller ones at its south part: these are all clean, and with sufficiently deep water around them, and do not lie out from the coast more than three-quarters of a mile.

At N. W. by W.  $\frac{1}{2}$  W. three miles, from the Great Bolandero, and at about half a mile from the coast, lies *Piton Islet*, which is very clean; thence W. N. W.  $\frac{1}{4}$  W. six miles, is *Gandi Point*, forming the western part of a beachy bay (*Ensenada Tripo Gandi*;) N. N. W.  $\frac{1}{4}$  W. one and two-thirds miles from *Gandi Point*, is the point of the *River Gandi*, which, with *Gandi Point*, forms the cove of *Estola* or *Gandi*, in which the rivers of these names disemboque. This place is of little importance.

Six and a half miles N. N. W. from *Gandi Point* is *Tonel Islet*, which is very clean, and has good deep water, especially on its eastern side: it is about one long mile from the coast. From this islet to Cape Tiburon the distance is six and a half miles, N. W.  $\frac{1}{4}$  W.

All this coast, from Tarena Keys to Cape Tiburon, is high and precipitous, with deep water off it; and it is very wild in the season of the breezes. It is very adviseable, therefore, at these seasons, to shun it, and keep over to the eastern side of the gulf; for, on that side, you have not only convenience and safety, in anchoring where you please, but you can also beat easier to windward, on account of having less sea or swell, and you may thus save much time.

CAPE TIBURON, the N. W. boundary of the gulf, is high and precipitous: it extends out to the N. N. E. in form of an isthmus, which forms two small harbours; the first of these is so narrow as to be of little importance; the second is larger, and called *Miel Harbour*: the latter has good holding-ground, and its greatest depth is from 12 to 13 fathoms, on sand and clay.

At thirteen miles W. N. W. from Cape Tiburon is the point and peak of *Carreto*, which is the eastern point of a small harbour of that name. Between the two points the coast forms a bay, of about two and a half miles in depth, which is called the *Bay of Anachucuna*: all the shore here is beachy to the foot of the high mountains, without any remarkable point. At about two miles to the southward of *Carreto Point* is a little harbour, fit for smugglers only, and named *Puerto Escondido*.

The Point and Peak of *Carreto* are, as before stated, at the eastern part of the harbour of that name; the western part is formed by a cluster of islets; and between, at the distance of a mile and a half, is the widest part; the narrowest part being only one mile. This harbour is of a semi-circular form, and falls in about a mile: its depth of water is not less than  $3\frac{1}{2}$  fathoms, nor does it exceed  $8\frac{1}{2}$  fathoms: notwithstanding these good qualities it is open to the N. E. breezes and the seas they raise, and has little shelter from the N. W. It is, therefore, only of use in the season of the calms and variable winds.

To the north of this harbour, at the distance of a mile, are the *Bajos de Carreto*: these are two little shoals, near each other; they lie from each other nearly N. E. and S. W. There are 6 fathoms of water on them, over rocks, and near them from 20 to 25 fathoms: the sea breaks on them with fresh breezes.

At N. W.  $\frac{3}{4}$  W. seven miles, from the point and peak of *Carreto*, is the *Punta Escosces* (Scots' Point;) cutting this line (N. W.  $\frac{3}{4}$  W.) there are clusters of islets, of different sizes, which extend out from the *Punta de los Islotes* (Point of the



Islets) a long mile, about N. N. E. To this point, which is three miles distant from Punta Escosces, the coast is high and scarped, but it becomes lower and beachy thence to that point.

Punta Escosces is the S. E. point of *Caledonia Bay*, the greater islet of *Santa Catalina* or *de Oro* (Gold) being the N. W. Between point and point the distance is four miles, and the points lie N. W. and S. E. from each other; and, in respect to this line, the bay falls in one mile and two-thirds. In the S. E. part of this bay is *Puerto Escosces*, (or *Scotish Harbour*) which extends inward two miles in that direction, and forms good shelter. There are various shoals in it, which are represented in the particular plan of the harbour, by which plan any vessel may run in, for the depths are 5, 6, 7, and 8 fathoms of water, over a bottom of sand.

The *Isla Grande de Oro* is high; and, at a mile and four-fifths to the south of it there is a smaller island, called *San Augustin*; and, on the same direction, rather more than a cable's length from *St. Augustin*, is *Piedras Islet*, which doubtless take its name from the many rocks with which it is surrounded.

Between *Piedras Islet*, to the north, the west point of *Aglatomate River* to the south, and that of *San Fulgencio* to the S. W. is formed the *Ensenada* or *Bay of Caledonia*, and the *Channel of Sasardi*.

The *Bay of Caledonia* is, strictly speaking, formed by the points already mentioned, which lie with each other N. N. W.  $\frac{1}{4}$  W. and S. S. E.  $\frac{1}{4}$  E. one mile distant. This bay is clean, and has good deep water; the greater part of its coast is a beach; and, near the middle of it, disembouges the *River Aglaseniqua*. The point of *San Fulgencio* is salient, scarped, and clean; and it also forms an indent, with little depth of water, bordered by mangroves and various keys at its western part.

Between *San Fulgencio Point*, the *Great Oro Island*, *Piedras Islet*, and the *Mangrove Keys*, which are to the west of them, the channel of *Sasardi* is formed: the S. E. entrance of the channel is off and on, with four cables' lengths in extent, from edge to edge, and with from 9 to 12 fathoms depth, on ooze; and farther in, from 8 to 10 fathoms; as also between the turn of the bank off *Piedras Islet*, and the *Bay of Caledonia*, the depth is from 7 to 15 fathoms; and the piece of sea, which intervenes between this bay and the *Porto Escosces*, is of a good depth of water; but, at a short mile S. E. by E.  $\frac{1}{4}$  E. from *Piedras Islet*, the sea breaks when the breeze blows fresh.

These harbours are equally sheltered from the winds and seas of both seasons, and have a good depth of water; but the *Channel of Sasardi* and *Bay of Caledonia* are preferable, because you can, with all winds, either enter or sail out from them with more facility and less risk, than into, or from, *Puerto Escosces*.

N. W. by W.  $\frac{1}{4}$  W. four and two-third miles from the east end of *Great Oro Island* is the western extremity of two larger islands, which with the reefs, shoals, and multitude of islets, thence to the N. W. form with the coast, the channel of *Sasardi*. The N. W. mouth of this channel is formed by the west end of the two greater islands and the point of *Sasardi*, with an opening of three-quarters of a mile. This channel has too many shoals to be of utility; nor is there any population near it.

Between the eastern point of *Great Oro* and the N. W. channel of *Sasardi* some reefs project out, with two islets at the extremity, which bear N. N. W.  $\frac{1}{4}$  W. from the eastern point of *Great Oro Island*, two miles distant, and about N. E. from the south-easternmost extremity of the large isles already mentioned. There is also a shallow bank, at a mile and a half to the west of the fronton or point of *Sasardi*.

The *Fronton of Sasardi* is salient, round, scarped, and surrounded with reefs near the shore. From the outer part of it, the S. E. part of the *Isla de Pinos* bears N. by W. two miles distant; and, in the intermediate space, the coast forms various bights; the points of which are scarped and surrounded by reefs. Off the west part of the island is the *Cienaga of Navagandi*, the mouth of which is shut by reefs; and the coast here forms with the island, a channel of two cables' length in width, where narrowest, and it has from  $1\frac{1}{2}$  to  $5\frac{1}{2}$  fathoms of water.

The *Isla de Pinos* is high, with a hill stretching along it, on which rises two remarkable points, covered with wood: its greatest extent lies N. W. by N. and S. E. by S. one mile, and its greatest breadth is three-quarters of a mile: its S. E. and N. E. sides are high, scarp'd, and bordered by reefs, very near shore. N. by W. two and a half miles, from the northern extremity of the Isle of Pines, is the *Isla de Pajaros*, (Bird's Island,) which is low, narrow, and covered with brush-wood, surrounded by reefs, which have from 7 to 8 fathoms of water at their edges, on rocky bottom. At this place commences the immense *Archipelago* of the *Mulas*, composed of islands, keys, shoals, and reefs, forming, between themselves and the main-land, many anchorages and sheltered channels, secure in all weathers, and terminating at San Blas' Point. The interior land is high, being a mountain range, with notable peaks, which may serve as leading-marks to the various anchorages, &c.

The channels formed in this space are those of Pinos, Mosquitos, Cuiti, Zambogandi, Punta Brava, Cocos, Rio Monos, Ratones, Great Playon, Puyadas, Arebalo, Mangles, Moron, Caobos, Holandes, Chichime, and San Blas. A vessel, being a league distant to the north of Pajaros Islet, and running N. W. twenty-five miles, and W. N. W. 40 miles, will pass clear of those dangers, and will be to the north of the easternmost keys of the Holandes Group, at the distance of four and a half miles: with these courses you will pass, at the beginning, at one and a half to two miles outside the reefs, and afterwards four and five and a half miles; but it remains in the option of any navigator to pass at a greater distance, if it suits him.

**GULF of SAN BLAS.**—Seventeen miles to the west of the easternmost keys of the Holandes Group lies Point San Blas, in lat.  $9^{\circ} 34' 36''$  N. and long.  $79^{\circ} 1' 30''$  W. it is low, and forms the N. E. boundary of the Gulf of San Blas, the mouth of which extends north and south to the anchorage of Mandinga, six miles, and from that line as much to the west; its coasts are low, and covered with mangroves, which run into the sea.

From San Blas' Point, to the distance of a mile and three-quarters, extend some reefs, with various keys, the easternmost one of which is named Cayo Frances: from this the other keys, to the number of twelve, extend to the S. W. and West; and to the eastward of them are many banks and islands, which make part of the Archipelago of the *Mulas*, and form various channels.

To run into and anchor in the *Gulf of St. Blas*, whether it be in *Bahia Inglesa*, (English Bay,) which lies to the S. W. of San Blas Point, or in that of Mandinga, which is on the south coast, the best and most commodious passage is by the channels of Chichime and San Blas. That of Chichime is formed to the west by the keys off San Blas Point, to the east by the reef and group of keys of Chichime, and, to the south, by another group surrounded by reefs, which some call the Lemon Keys (*Cayos de Limon*.) The latter form the channel of San Blas to the S. E. and those of San Blas bound the same channel to the N. W. The first are three miles in extent between the edges of the shoal water, and the second a mile and three-quarters.

To enter the Gulf, it is necessary to open the mouth of the channel of Chichime until you bring it on the meridian of the second islet (counting from the westward) of the Lemon Keys; from which situation steer to the south until abreast of, or rather more to the north than, Cayo Frances: then steer S. W. on purpose to run in the middle of San Blas Channel, which, as already noticed, is a mile and three-quarters in width, between the westernmost of the Lemon Keys, called *Gallo* or the Cock, and the reef which extends to the southward from Cayo Frances; directing yourself to the anchorage as advised, whether that be on the north side of the Gulf, or in Mandinga Bay. To run to the latter, the keys which lie to the north of Mandinga Point may serve for a mark: the outermost of these, named *Cabra*, lies a mile from the point; and it is to be noticed that, at a short mile N. by W.  $\frac{1}{2}$  W. from that key, there is a little sandy key, to which a birth ought to be given; and there is a bank, with 1 and  $1\frac{1}{2}$  fathoms, W. N. W.  $\frac{1}{2}$  W. from the Islet *Cabra*, one mile and a half distant, and you ought to pass between them.

The Anchorage of *Mandinga* is sheltered, and has water deep enough for any class of vessels. In the Gulf, and on running out from the bottom of it, to the distance of  $3\frac{1}{2}$  miles, there are various islets and keys, with banks; the outermost key in the Gulf is named *Maceta*, in lat.  $9^{\circ} 31' 12''$ . A birth must be given to all these, if you wish to run far into the Gulf.

The channel, named the *Canal de Holandes*, is the largest of all those formed by the *Mulatas*, and its mouth is formed towards the east by the western extremity of the reefs of the *Holandes* Group, and, to the south-west, by *Yeacos Key*; the two keys are  $2\frac{1}{2}$  miles distant from each other, N. E.  $\frac{1}{2}$  E. and S. W.  $\frac{1}{2}$  W. The least depth in this channel is 15 fathoms, on a sandy bottom; but W. N. W.  $\frac{1}{2}$  W. from *Holandes Key*, at the distance of a mile and three-quarters, there is a shoal extending half a mile, N. and S. with 6 and 7 fathoms of water, over rocks; with a little swell the sea breaks on it. You may pass this shoal either on the east or west; but it will be always best to pass it to the eastward, near the reefs of the *Holandes* Group, the breakers of which serve for marks. Run afterwards towards the east part of *Yeacos Key*, which is of firm land, covered with high wood, and named from having abundant of the *Yeacos* plum-tree growing on it. From the meridian of *Yeacos Key*, by the south of it, the *Holandes* channel extends W. S. W.  $\frac{1}{2}$  W. to the middle, even to the bottom, of the Gulf of *San Blas*. It is clean, and has from 23 to 27 fathoms of water, on ooze, with a breadth of  $2\frac{1}{2}$  and 3 miles, among groups of keys, single or detached keys, and reefs; but free and fit to turn in, in case of need, towards the anchorages already described.

**PUNTA S. BLAS to PORTO BELLO.**—At N. W. by W. half a mile from *Point San Blas* is the northern part of its front, which is low and covered with mangroves; and, in the intermediate space, is a little key, *Piedras*, and other shoals, which are connected with those off *Cayo Frances*. At a quarter of a mile N. W.  $\frac{1}{2}$  N. from the north point of *S. Blas*, is the *Cayo Perro*, a key connected to the reefs extending in a westerly direction from *Cayo Frances*, and which terminate at an island, lying in front of a *Cienaga*, at the distance of a mile and a quarter.

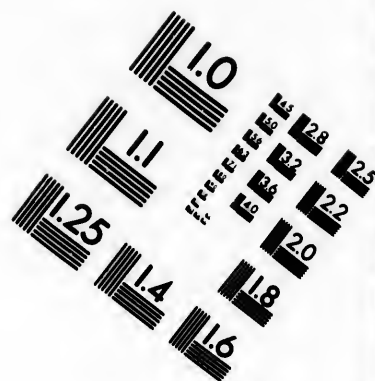
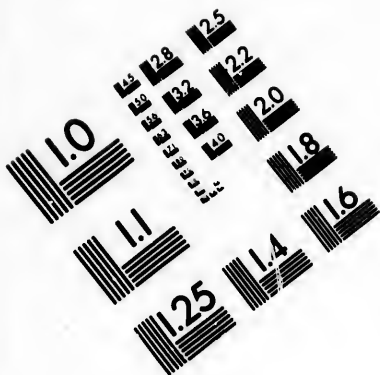
From *Perro Key* the coast continues, nearly W.  $\frac{1}{2}$  S. ten miles, to *Cocos Point*. The latter is to the eastward of *Escribanos Harbour*. The intermediate coast is almost alike low, with reefs along shore, and something of a bay. The most visible objects along it are *Mogote Point*, which is small, projects a little, and has a hillock on it; that of *Cerro Colorado*, which is round, scarped, and extends out but little, and that of *Playa Colorado*, which is round, and surrounded by reefs, running out to a cable's length.

*Cocos Point* advances out to sea, and from it the point of *Escribanos* bears W. S. W.  $\frac{1}{2}$  W. one and a third mile, and in this space the coast forms a bay, in the middle of which is *Escribanos Harbour*. The last, from its mouth, extends half a mile to the south. This harbour is very shallow, having only 1 and  $1\frac{1}{2}$  fathoms of water: outside of it, on both sides, there are reefs, with very little water on them; and, in the channel formed by them, from  $3\frac{1}{2}$  to 7 fathoms are found.

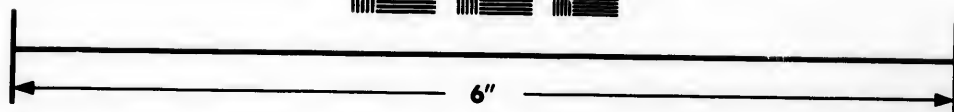
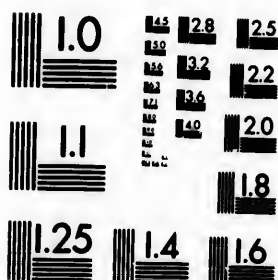
To the N. E. of the mouth of this port lie the shoals called the *Escribanos*, (Lawyers,) two in number, composed of reefs, with very little water on them, and lying near each other: the islet on the reef nearest to the coast is rather less than two miles distant from *Cocos Point*, and it extends a mile between W. S. W. and E. N. E.; the other reef lies about W. N. W. from the said islet or rock, and extends a short mile from East to West: both are steep-to, with 3 and 4 fathoms of water; and, on the bank, are from 9 to 13 fathoms, on gravel and coarse sand. In the channel between the south-easternmost shoal and *Point Cocos* there are from 10 to 13 fathoms, which diminish to 6 and 5 on each side.

*Escribanos Bank* lies nearly N. W. by W. from the shoal of the same name, distant five and a half miles: it extends from N. W. by W.  $\frac{1}{2}$  W. to S. E. by E.  $\frac{1}{2}$  E. nearly two miles, with from  $5\frac{1}{2}$  to 8 fathoms of water, on rocks. At about two cables' length to the northward of its edge, from 18 to 34 fathoms are found. In heavy seas the water breaks on this bank, and may serve as a guide; and at other times, when the sea is smooth, the look-out men must be at the mast-heads. In the channel between this bank and the *Escribanos Shoal* there are from 9 to





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18 fathoms of water, on sand, gravel, and rocks. The N. W. part of it is N. W.  $\frac{1}{4}$  N. eight and a quarter miles from Escribanos Point.

W.  $\frac{1}{4}$  N. from Cocos Point lies *Terrin Point* and *Pascador Islet*. Between *Terrin Point* and *Quingongo Point*, which are eight and a half miles distant from each other, and on the meridian of the Escribanos Bank, in *Culebra Islet*, which is about two-thirds of a mile from its point, about N. N. W. Continuing to the West, the point and islet of *Quengo* are met with. *Port Escondido*, which is something to the West of this point, is only a little *Cienaga*, or lagoon; Points *Chaguachagua* and *Macolla* being its most notable points.

The mountains, which continue along this coast, from those of *Darien* to those of *Porto Bello*, are sufficiently remarkable; that called the *Cerro de Loma*, or *Cerro Gorda*, being rather more so than the rest; this lies S. W.  $\frac{1}{4}$  S. from *Culebra Islet*, at the distance of full seven miles, and may serve as a mark for keeping clear of the Escribanos Bank and Shoals. This hill is not much higher than the *Cordillera*, in which it stands; its top is large, and of some extent.

*Pescador Islet* lies about two cables' length N. E.  $\frac{1}{4}$  N. from *Terrin Point*, and the point is surrounded by reefs, which extend a cable's length to the North, and half a mile to the West, continuing to the S. S. W. to encircle three islets, which are between the point and the N. E. of the harbour of *Nombre de Dios*.

Between *Terrin Point* and *Martin Pescador Islet*, and *Manzanillo Point*, from which the first bears W. N. W.  $\frac{1}{4}$  W. distant four long miles, and the second W. by N. distant five miles, a great bay is formed, which falls in about three miles to the S. W. and to the West and N. W. two miles, to the bottom of the bay of *San Christoval*: at the eastern extremity of this bay, and at one and a half mile S. W.  $\frac{1}{4}$  S. lies the western point of the harbour of *Nombre de Dios*; surrounded with reefs; as is also the eastern point, although at this part they stretch farthest out. The harbour is small, and the greater part of its shores are bound by reefs and shallows: its clear depth is  $3\frac{1}{2}$ , 4, and 5 fathoms, in the mouth; but the rest of the bay is useless in the season of the breezes, and the reefs from the bottom of it stretch out nearly a mile towards *Point San Christoval*.

From *Point San Christoval*, to the N. E. distant two long cables' length, lies an islet, named *Juan del Pozo*, (John of the Well,) surrounded with rocks; and, about S. E. from it, half a mile distant, is a bank named the *Vibora*: between this shoal and the islet of *Juan de Pozo*, and between the latter and *San Christoval Point*, there is a depth of 10, 11, and 14 fathoms, on gravel and coarse sand. *San Christoval Point* lies three, and two third miles distant, W.  $\frac{1}{4}$  S. from *Terrin Point*; also, from this point, the *Buey Shoal* bears W. N. W. distant nine-tenths of a mile: between this shoal and the reefs of *Terrin Point* there is from 10 to 13 fathoms of water, on rock, sand, and clay; and 10, 13, and 15 fathoms, with the same quality of ground, between the *Buey* and *Vibora Shoals*. The coast between *San Christoval* and *Manzanillo Points* is high and scarped.

*Manzanillo Point* is the northernmost of all the coast of *Porto Bello*; it is also high and scarped, projecting out, with two hummocks on it: near this point there are various islets and a shoal; the greater, named also *Manzanillo*, is high and scarped, and lies two-fifths of a mile to the East: to the North it has three farallons, of which the farthest out is distant along cable's length. There is, also, another small one, distant a cable's length and a half to the East: and, finally, to the N. by E.  $\frac{1}{4}$  E. of *Manzanillo Islet*, at the distance of two-fifths of a mile, is the islet of *Martin Pescador*, which extends about a cable's length from North to South: All these islets are high and scarped, and between those of *Manzanillo* and *Martin Pescador* there are from 11 to 15 fathoms of water.

*Manzanillo Shoal* lies two-fifths of a mile from the point of the same name to the N. W. It has very little water on it, and 5 and 6 fathoms near it; and in the strait between it and the point are 14 fathoms of water.

Among the *Mountains* of this coast those of *Saxino* and *Nombre de Dios* are most remarkable, and may serve as marks for recognizing the harbour of the last name: the first, which is high, ends in two peaks near each other, and the north-easternmost of them is about S. S. E.  $\frac{1}{4}$  E. from *Terrin Point*, distant seven short miles. That of *Nombre de Dios*, which lies to the South of the harbour, terminates in a peak, and is eight miles to the S. S. W. from *Terrin Point*.

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At W. N. W.  $\frac{1}{2}$  W. one and a half mile from Manzanillo Point, lies the highest part of *Tambor Islet*, which is high, round, and scarped: it is connected, by a reef of two cables' length, with the northernmost part of *Venados* or *Bastimentos Island*. This island stretches N. E. and S. W. a short mile, forming, with the main-land, the N. E. channel of *Bastimentos Harbour*, the greatest extent of which, between the reefs, is three-twentieths of a mile, with from  $5\frac{1}{2}$  to 6 fathoms of water, on sand. *Bastimentos Island* is foul on its S. E. South, and S. W. sides; and the latter, with *Cabra Islet*, which lies a little to the South of West, form the N. W. channel: the greatest width of this channel, between the reefs, is three-tenths of a mile with from 4 to 10 fathoms, on clay, or rather sticky mud. The harbour of *Bastimentos* is of little importance, although sheltered, and with a depth of from 4 to 7 fathoms. All its shores are bounded by reefs; and the usual anchorage is to the S. W. South, and S. E. of the South or Sandy Point of *Bastimentos Island*.

*Garrote Harbour*.—S. W. from the highest part of *Tambor Islet*, two and a third miles, lies the mouth of *Garrote Harbour*, formed by the main-land to the South, by *Garrote Island* to the East, and by *Pelado Island* (and other Islands) to the West; the latter extends a mile and a half to the West, as far as *Boquerones*. The mouth of *Garrote Harbour* is three-tenths of a mile wide, or scarcely so much, between the reefs to the West of Great *Garrote Island* and *Pelado Islet*: it first extends from North to South, and afterwards to S. E. with a depth of from 7 fathoms, in the interior of the harbour, to 13 and 19 in the mouth, on sticky mud. It is sheltered from the seas and winds of the N. E. breeze. The *Hill of Garrote* rises between this harbour and that of *Bastimentos*: it is of middling height, its top terminating in a peak, and is seven-tenths of a mile distant from the coast.

S. by E.  $\frac{1}{2}$  E. three and a half miles from the little Bay of *Garrote* is the Mountain of *Capiro* or *Capira*, high and almost always covered with clouds. *Capira* lies nearly east from the city of *San Felipe*, of *Porto Bello*.

At a little to the south of *Capira* is the Mountain of *Llorona*, stretching nearly east and west. It is the highest of all on this part of the coast; on the eastern part of its top it appears as if cut down vertically, forming a peak called *Campana*, or the Bell; from this peak the mountain spreads to the west, descending gradually to near the *Peak of Guache*; the appearance of the latter is such that it cannot be mistaken for any other; in clear weather it may be seen at the distance of forty-five miles; but in the season of the fresh breezes it is usually covered with haze; and, in the season of the rains and variable winds, it may often be seen between eight and nine in the morning, and four and five in the afternoon, though in the rest of the day it is covered with clouds.

The *Lavandera Shoal* lies north seven-tenths of a mile from the north end of *Pelado Islet*, and west from *Cabra Islet*, at the mouth of the *Bastimentos Harbour*. This shoal is of rock, with very little water on it, and steep-to, with 8 or 9 fathoms, close to a rock on which the water breaks; the channels between it and *Cabra Islet*, and *Pelado* are deep, with from 15 to 18 fathoms of water, on sticky mud.

S. W. by W. from the highest part of *Tambor Islet*, three miles and eight-tenths, lies the *Point of Boquerones*, which is salient, high and bluff; and from it, almost on the opposite bearing, viz. N. E. by E. are five islets, called the *Boquerones*, which extend out about three cables' length. The reefs and islets which follow, from *Pelado* to the westward, terminate here.

*Boquerones Point* has, to the south, at a long mile's distance, a hill, named *Casique*, which terminates in a point, and is of middling height; it may serve as a mark for keeping clear of the *Foul Farallon*, a rock which lies N. W.  $\frac{1}{2}$  N. two short miles from *Boquerones Point*. The *Foul Farallon* forms the west end of two groups of islets and shoals, which, from S. W. to N. E. extend thirteen-twentieths of a mile, forming a channel between both, with  $4\frac{1}{2}$  to  $6\frac{1}{2}$  fathoms of water; the north-easternmost islet or farallon bears W.  $\frac{1}{2}$  S. from the highest part of *Tambor Islet*, nearly four miles; and in this space there are from 18 to 33 fathoms of water, on clay and sand, and 17, 23, 24, and 27, between the said farallon, the islets of the coast, and the *Lavandera Shoal*.

Three miles S. W. by W.  $\frac{1}{2}$  W. from *Boquerones Point* is the north end of the

*Farallons or Islets of Duarte*, which are four in number, and extend nearly S. E. by S. and N. W. by N. three-fifths of a mile. From the northern one a reef extends, in the same direction, a cable's length. The southernmost of these islets is separated little more than two cables' length from the Point of Duarte, which is to the south, on the main-land, and from that of *Sabanilla*, which is to the N. E. by E. nearly half a mile; between the two straits there is a depth of from  $3\frac{1}{2}$  fathoms, close to the islet, to 16 $\frac{1}{2}$ . The intermediate coast is high and scarped, with some bays; the Point of *Josef Pobre* (which is surrounded by rocks and reefs) extends farthest out. *Sabanilla Point* has equally a reef, with some rocks.

Two long miles S. by W.  $\frac{1}{2}$  W. from the northernmost part of Duarte Islets is *Drake's Point*, which is the N. W. point of Porto Bello; the intermediate coast is high and scarped, with a little harbour called *Leon*, of little importance, and bordered by reefs, which end to the N. N. W. at a little farallon, distant four-tenths of a mile from its mouth.

**PORTO BELLO.**—The name of this port expresses, at once, the excellence of the harbour, for all classes of vessels. Its widest entrance, which is between Drake's Point on the north, and that of *Buenaventura* on the south, is rather more than a mile, and these lie nearly on the same meridian; the harbour within is not more than half a mile broad, and the land on both sides is mountainous. Its direction inward is E. by N. one mile and a half; to the mangroves at its bottom. The north shore is clean, but some reefs and rocks, with little water on them, stretch off from the south shore to between one and one and a half cable's length; and, in the bottom, or east part, of the harbour, there is a sand-bank, which advances two and a half cables' length from the mangroves, towards the west; and at N. W. by N. from the city mole, three-twentieths of a mile, there is a very little sand-bank, with one and one and a half fathoms on it. The rest of the harbour is clean and deep enough, diminishing regularly from 17 to 8 fathoms. Ships of the line ought to enter this harbour by warping or towing, because there are regularly either head-winds or calms. The best anchorage is near the middle of the harbour, to the N. W. of the battery of *Santiago*, in 10 or 11 fathoms, on clay and sand; but smaller vessels may go nearer to the city, taking care to shun the little shoal already mentioned. The reefs of the south shore continue to the W. by S. to the *Farallon de Buenaventura*, a rocky islet of which the N. W. end bears S. W.  $\frac{1}{2}$  W. three long cables' length from the point of the same name. Between this islet and the point there are two smaller ones, and all connected by reefs. At nearly S. W. by S. from Drake's Point, one-fifth of a mile distant, is the middle of Drake's Rock, which is clean all round, and has a break in the middle that seems to divide it into two parts. At a little more than half a mile W. N. W.  $\frac{1}{2}$  W. from the break of this rock, is the north end of the *Salmedina Shoal*, which has some rocks covered with water, and over these the sea breaks. On the other parts of the shoal there are 2 and  $3\frac{1}{2}$  fathoms of water on the rock; the water is deep enough around it, and between it and Drake's Rock there are from 12 to 28 fathoms on clay.

S.  $\frac{1}{2}$  E. seven-tenths of a mile from Drake's Rock, and west, seven-twentieths of a mile from Punta del Cocal, or Farnesio, is the *Farnesio Shoal*, of a triangular form; upon it are 4 and 5 fathoms of water, on rock, and there is no passage between it and the coast. In the channel between it and the *Salmedina Shoal* there are from 18 to 23 fathoms on clay.

This harbour is surrounded by hills, from which some rills or brooks descend on both shores; at these rills vessels may procure water, particularly from that which runs into the bay of, and to the west of the batteries of, *San Fernando*, on the north side.

### *Remarks on going from Chagre to Porto Bello.*

From the roads of the River Chagre to Porto Bello, the course is N. E.  $\frac{1}{2}$  N. unless you run three or four miles to the northward, for then a N. E. course will take you into the harbour. The distance is about twenty-eight or thirty

miles. I strongly recommend should light winds prevail, which is generally the case from May to the end of November, that ships, bound to the eastward, should obtain a good offing, as the current then sets at the rate of from one and a half to two and a half miles an hour, to the northward and eastward, and it sets right on the rocks to the N. E. of Porto Bello, particularly in the rainy months, which are, as before stated, from May to November. In this season, the River Chagre has a discharge which discolours the sea six, seven, and eight miles off; and the water from the river, by meeting the sea-current, causes a strong set to the eastward. If you intend to go into Porto Bello, the entrance of the harbour may be known by two remarkable trees, on the top of the hill on the starboard side; and on a hill, on the larboard or north side, is a small signal-post. In coming from the westward, keep within three miles of the shore, until you open the town of Porto Bello, on the starboard hand, or on the south side of the harbour; this will lead you into the harbour; but observe, should you have light winds, to keep well up for the Salmedina Shoal, which lies in a line with the islet called Drake's Rock, on the larboard hand, when going in, as the current may set you down upon it. Take care not to shut the town of Porto Bello in with the land on the south side, as a shoal extends from the islet *Buenaventura*, on that side. You may anchor in from 10 to 18 fathoms, soft mud. There are no other dangers in going into the harbour, beside those stated. The Salmedina is frequently visible, and generally breaks. The bearing of this rock is N. N. E. and S. S. W. it is from 50 to 60 fathoms in extent, and 50 in breadth, with 6 fathoms all round it, at 25 fathoms distance from the breakers. The Salmedina bears from Drake's Rock, on the north side of the entrance, W.  $\frac{1}{2}$  S. distant about 300 fathoms; and between is the passage generally taken by ships coming from the eastward for Porto Bello.

During the N. E. trade's blowing home, that is, from December to May, there is no danger to be apprehended from going through this passage, and you may keep within a ship's length of the islet, and within half a cable's length of the Salmedina; between these we found 7, 14, and to 22 fathoms of water. In turning into Porto Bello, great caution must be observed, when within three or four miles of the harbour's mouth that you never shut the town in with the land on the south or starboard side of the harbour; for, by keeping it open, you will avoid the sunken rocks off the Islet *Buenaventura*.

There are no particular marks for anchoring: but when ships require refreshments, and supplies of wood and water, I should recommend their anchoring about a quarter of a mile below Fort Fernando, which stands on the north shore, and is easily seen; you will then be abreast of the only watering-place in the harbour.

In going in with a leading wind, keep the town well open on the starboard side, and anchor in from 30 to 15 fathoms, or even with 12 or 10, according to the size of your ship.

During the months from May to November, light winds prevail in the harbour, from the S. W. and West; and early in the morning, light winds from the N. E. down the harbour: therefore be prepared, with boats ahead, to be under way by the dawn of day. In mooring, lay the small bower to the northward, and best to the south.

At the distance of a long half mile to the southward of Porto Bello is the *Ensenda* or Cove of *Buenaventura*, much bordered by reefs, and consequently of little use.

To enter *Porto Bello*, when approaching from the north-eastward, it is advisable to make the *Farallons* of *Duarte*, and from them to shape a course so as to run at a cable's length to the N. W. of *Drake's Rock*; but never try to pass between this rock, or islet and the main. So soon as you have passed the rock, steer to the south and east, so as to run up the middle of the harbour; or rather nearest to the north shore.

If bound out of this port to the southward, pass at about a cable and a half, or two cables, from the *Farallon* of *Buenaventura*, and thence steering towards that of *Drake*, you will bring it to the N. E. and East: as you run out, keep in mid-channel, or nearest the north shore, and take care to avoid the *Salmedina Shoal*.



**PORTO BELLO to CHAGRE.**—At about fifteen miles S. W. from Punta S. Felipe, or Drake's Point, is the west end of the Fronton of Longarremos, which with the north-easternmost of the Naranjos or Orange Isles, form a bay, into which enter the two creeks called those of Minas. The Orange Isles lie four and three-quarter miles to the N. E. by E. from Longarremos Point. The creeks of Minas are formed among mangroves; the eastern one extends inward three miles to the S. S. E. its breadth is very unequal, and its shores bordered with reefs. The western creek is narrower and shorter extending to the south rather more than a mile. The Orange Isles are low, covered with trees, and bounded by reefs; but, at the S. E. part of them, there is anchorage, 5, 6, and 7 fathoms, on sand. In the intermediate part of this coast is Punta Gorda, the most projecting point, with several coves. To Punta Gorda the coast is high, with banks or ridges; and between it and Buenaventura Cove the River Guanche disembogues. Guanche Hill is an eminence which stands three and three-quarter miles E. N. E.  $\frac{1}{2}$  E. from Punta Gorda.

From Punta Gorda to the S. W. the coast gradually declines in height; and the remainder, from Rio Grande Point and the creeks of Minas, is a low coast, with mangroves: the point of Longarremos is likewise low, with mangroves, and bordered with reefs; as are, also, the points which form the Minas Creeks. The reefs extend more than a cable's length from the coast: they are steep, and, at one-third of a mile out, are 12 fathoms of water, on clay.

From the Fronton of Longarremos, the mangroves extend to the S. W. nearly a mile and a half, to *Manzanillo Point*, which is also of mangroves, round, and bordered by reefs, to the distance of a long cable; and a little shoal lies three miles distant from it, N. W.  $\frac{1}{2}$  N.

*Manzanillo Harbour* is formed by the islet of that name to the west, and the main-land to the east, extending in two short miles from *Manzanillo Point*: this harbour is clean, with from 3 to 6  $\frac{1}{2}$  fathoms of water. The best anchorage, for all vessels, is a little to the south of its mouth, on the east coast, in 5  $\frac{1}{2}$  fathoms, on sand and clay.

S. W. by W.  $\frac{1}{2}$  W. five miles, from the Fronton of Longarremos is *Toro Point*, which is the western point of *Naos Harbour*; the eastern one being the north end of *Manzanillo Island*, and these two lie 2  $\frac{3}{4}$  miles distant from each other. *Toro Point* is salient, high, scarped, and bounded by reefs, which stretch out to about two cables' length, with an islet near them. This harbour extends inward, nearly four miles, to the south, from the middle of its mouth: its breadth is nearly equal, though it narrows a little from two-thirds of the said distance: it is clean to the parallel of *Punta Limon*, with from 3  $\frac{1}{2}$  to 7 fathoms of water, on sand and clay. As this harbour is open to winds from N. E. to N. W. round by North, it can be of use in the season of the variable winds and calms only.

From *Toro Point* the coast tends S. W. by W.  $\frac{1}{2}$  W. nearly 2  $\frac{1}{2}$  miles, to *Brujas Point*, which is moderately high, and, like the intermediate coast, bordered by reefs, which do not extend far out, but surround the islet, named *Mogote de Brujas*, which lies to the N. E. of the point of the same name, about two cable's length.

From *Brujas Point* the coast is lower than before; tending S. S. W.  $\frac{1}{2}$  W. two miles, to *Batata* or *Vigia Point*, so named, on account of having a guard-house on it: from this point that of *Chagre* is a cable's length distant, and is lower than the former, bounded by low rocks which show above water, and reefs which extend out to a short distance only.

**CHAGRE.**—The west point of the *Penon*, a great rock, on which stands the castle of *San Lorenzo*, is about 1  $\frac{1}{2}$  cable's length S. by E.  $\frac{1}{2}$  E. from *Chagre Point*. The *Penon* is scarped to the N. W. and South. The castle of *San Lorenzo* stands in lat. 9° 20' 57" N. and long. 80° 4' 0". The *Penon*, to the N. E. with *Punta Arenas* to the S. W. form the mouth of *Chagre River*, which is two cables' length across where widest and 1  $\frac{1}{2}$  at the narrowest.

To the E. S. E., at a short distance from the castle of *S. Lorenzo*, is the little town or village of *Chagre*, composed of huts, covered with thatch. The mouth of the river narrows between the *Penon* and a bank, which extends out from *Arenas Point*, to the distance of a cable's length. On the meridian, or to the

south, of the *Penon*, there are 2½ and 3 fathoms of water; the same depth continues, with little variation, half a mile up the river. At 92 English fathoms west, from the castle of San Lorenzo, is the shoal named *Laja*, which extends 70 fathoms from north to south, and is of rock, with very little water on it.

It is very dangerous either to enter into or sail out from Chagre River, and a passage can be effected only by very manageable vessels, which do not draw more than 12 feet: both operations must be performed with a fair wind; for, otherwise, the current of the river, and the various eddies it forms, from the opposition of the *Penon*, *Laja*, and west shore, will carry vessels on one or other of these dangers.

From *Arenas*, or the sandy point of the River *Chagre*, the coast tends S. W. by W. ¼ W. to the *Morrito* or Little Hill Point; and from thence S. S. W. ¾ W. scarcely two miles, to the Point of *Animas*; all the shore being low, and with a beach.

At S. S. W. ¼ W. from the last-mentioned point, and at the distance of two long miles, there is another equally low; and, as this is the last point included in the surveys of Captain *Fidalgo*, it may, with strict propriety, bear the name of this excellent surveyor.

From *Punta Fidalgo* the coast tends about S. W. by W. ¼ W. 53 miles, to *Belen River*, whence it tends N. W. by W. ¼ W. 8 leagues, to *Point Escudo*, and then West, 8 leagues, to *Valencia Point*. All this coast is generally low, though some parts rise a little. The water along it is so shallow, that, at 3 or 4 miles from it, you may have from 20 to 40 fathoms, the bottom mostly being mud and sand. Several rivers disembogue upon it, the principal being, to the westward of Chagre, that of Coclet or Coele. Chagre is 9 leagues to the westward of Porto-Bello, and Coclet 27 leagues from the same port. Between these two rivers there are four remarkable mountains, two of them inland, and the other two, on the coast; and as they may serve for recognizing the land by, we give their marks, &c.

1. *Caladeros Altos of Chagre*.—These are two mountains situated upon the Rio Chagre, and well inland. They lie E. N. E. and W. S. W. and appear separate from each other as you run towards Porto-Bello; they seem only as one when they bear S. E.: and thus apparently united they have the same bearing from the castle of San Lorenzo, at Chagre. Those bound to the river Chagre have only to bring these two mountains in one, and then steer S. E. by which they will find the port.

2. *The Picon of Miguel de la Borda*.—This hill is so named from its resemblance to a sugar-loaf; it is inland, and about 9 leagues to the S. W. by S. of Chagre. When this mountain bears S. ¼ W. it will be in one with the *Rio de Indios* (Indian River,) which is 5 leagues to the westward of Chagre.

3. *The Sierra de Miguel de la Borda*.—This is of a middling height, and rises upon the same coast: it stretches N. and S., and is 13 leagues to the westward of Porto-Bello.

4. *The Sierra of Coclet*, which is rather lower than the former, lies to the S. S. W. of the river Coclet.

*The Cordillera of Veragua and Mountain Range of Salamanca*.—Besides the four mountains above described, there are others about 7 leagues inland, which are well known, and celebrated for their great elevation, named the *Cordillera de Veragua*, which commence nearly to the south of the river of Coclet, and unite with the *Serrania of Salamanca*, nearly on the meridian of the *Bocas del Toro*, (Bull's Mouths,) and which ends a little to the westward of the River *Matina*. Both are so elevated as to be seen 36 leagues out at sea in clear weather. At the east end of the Mountains of Veragua there is a gap, resembling a riding saddle, and which is called the *Silla* (Saddle) of *Veragua*. This is to the south of the river Coclet; to find which you have only to bring the *Silla* to bear true South, and run in for the shore. To the westward of the *Silla* there is a *Mount*, on the very top of the Cordillera, which appears like a house or castle; and which is called the *Castle of Choco*. Upon the western part of the same mountain may be seen a remarkable peak, named the *Pan de Suerte*, which is so called from the village at its base. This may serve as a mark for finding *Matina*.

The hill, called the Castle of Choco, lies S. E. from the island named *Escudo de Veragua*, (Shield of Veragua,) so that, when the mountain bears in this direction, you will have the island right ahead.\*

The *Isla del Escudo* is low, but covered with cocoa and other trees, and is surrounded to the N. E. with various keys, on a hard red-coloured bar. These keys are also shaded with trees, and to the east of them a reef projects about half a league, and the sea breaks on it. All the island and keys are surrounded by a shoal of sand and gravel, which extends out about 5 miles: but there are 5 fathoms on it very near land, and it deepens progressively outward. The island is about 8 leagues from the main land; and, in case of emergency, water may be obtained in it from different rills, but the procuring it is attended with much labour; for it is not abundant, and is at some distance above the beach. On the South and S. W. of this island there is an anchorage, which is well sheltered from the breeze, or general wind, and, *Norths*. On the shoal to the east there is likewise anchorage; but it is not so commodious, not only because it is not sheltered from the breeze, but, also, because the bottom is rocky, and apt to chafe the cables.

From POINT VALENCIA, already noticed, follow the *Islands and Lagoon of Chiriqui*, to which succeed the *Admiralty Bay and Isles*. In a distance of 13 leagues, the general line of coast tends W. N. W.  $\frac{1}{2}$  W. to *Punta Gorda*, on the western side of the Boca del Drago, the western mouth of Admiralty Bay.

You may enter the Lagoon of Chiriqui by the channel formed by Point Valencia, and the eastern keys of the group, where, according to our information, although shallow, there is as much depth as what is to be found in the interior of the lagoon, and which is sufficient for vessels of all burthens.

The entrance to Admiralty Bay is by the mouth or channel which Point Gorda forms with the westernmost key; and in this mouth, and also within the bay, it appears there is depth for any class of vessels. This mouth is named the Dragon's Mouth (*Bocadel Drago*), to distinguish it from another, more to the east, which is called the Bull's Mouth, (*Boca del Toro*), and by which small vessels only can enter.

Within both bays the anchorage is well sheltered, and as secure as in the best harbours; but, as we have no particular description of them, we shall content ourselves with saying, that, to enter in or go out by the Dragon's Mouth, you should give a good birth to the west coast, or that of Punta Gorda, or account of a rocky reef which runs out from it to mid-channel.

From *Punta Gorda* the coast tends about N. N. W. true 31 leagues to *Punta de Arenas*; which forms the south side of the harbour of *S. Juan de Nicaragua*.

The bearings, &c. of intermediate points, between Punta Gorda and St. Juan, are, to *Carreta Point* N. W. by W.  $\frac{1}{2}$  W. 14 miles; this is the eastern point of a bay which falls into the S. W. West, and N. W. thirteen miles, to Blanca or White Point, which is marked by an islet, thence the coast tends N.  $\frac{1}{2}$  W. twenty-six miles, to the Arenas Point of Nicaragua.

All this coast is clean, and the water deep, and numerous rivers disemboague into it, the principal of which are that of *Matina* or *Port Cartago*, and that of San Juan or St. John. The last discharges its waters by several mouths, of which one enters the very harbour.

**SAN JUAN DE NICARAGUA.**—The harbour of San Juan is formed by a low island, which forms a bay with the coast, to which it sometimes joins at the eastern end. This island, in a semi-circular form, with its back to the north, is half a league long from east to west, by a cable and a half in breadth. Punta de Arenas is its western point, and is situated in  $11^{\circ} 0' N$ . At the east end the island is nearly united to the main land. The bay within the island is spacious, but is incommoded by a great shelf on the east and south, over which there is little water: and this shelf reduces the extent of the anchorage to five cables' length from north to south, and  $2\frac{1}{2}$  from east to west.

To take the harbour, you have only to coast Point Arenas at a half, whole, or

\* There seems to be some doubt as to the bearing, and it should be used with caution.

cable and a half's length from it, according to the water your vessel draws, and proceeding inward toward the east, in order to take the round of the point. At a cable's length from the shore where you ought to anchor, there are 5 fathoms of water. The lead is the only and best guide into the harbour. Vessels in it are securely sheltered, there being a swell with winds from the north to the west only; but these winds are common on this coast, from September to the end of January or beginning of February.

The mouth of the River of *San Juan*, is exactly on the meridian of, or true south from, *Punta Arenas*, distant rather more than a mile. Boats ascend hence into the Lake of *Nicaragua*. At a little to the east of *Punta Arenas*, upon the island, are some pits or wells, where fresh water may be obtained. It may, also, be procured in the river.

The river of *San Juan* falls by four mouths or channels into the sea. Its current is so strong, that the flat-bottomed boats and canoes which navigate it, are about nine days in ascending, and but thirty-six hours in descending, to and from the lake; boats are obliged to unload at the Falls, near which is situated the Castle of *San Juan*, built on a hill, and capable of defending with a few men, this entrance to the lake. It was taken by the English, under Nelson and Col. Despard, after a fortnight's siege, and although a Gibraltar in miniature, it has never been garrisoned. Here are three rapids besides the Falls, which render the navigation difficult; and the quick-sands, which extend nearly one half the length of the river (from the mouth of the river *San Carlos*, to the mouth of the *San Juan*), will prevent the bed of this river being used when this country shall take her rank among civilized nations. At the entrance of the Lake of *Nicaragua*, a fort stands in ruins, showing, at once, what this country has been under a regular government. This Lake, which is more than two hundred miles in circumference, and contributes greatly to the beauty of the country, approaches to within sixteen miles of the Pacific Ocean, and promises at some future time, to be the channel of communication between these two seas—*Granada* is the port of entry, and principal place on the Lake; is, situated on the N. W. side about one mile from the shore, near which this Lake is connected to that of *Marragua*, (called Lake of *Leon* in most maps,) by a small stream.

## CHAP. XI.

*The ISLANDS and SHOALS between JAMAICA and NICARAGUA.*

**PEDRO SHOALS.**—Of the shoals which are to be described in the present chapter, the first, in order from the north, are the *Pedro Shoals*, which lie to the S. W. of Jamaica, on an extensive bank, forty leagues in length from east to west. In the Spanish charts this bank appears under the name of *Placer de la Bivora*, or the *Serpent's Shoal*. The dangers which exist upon it have not yet been regularly surveyed, and the representation of them in the charts is not to be relied on. The N. E. extremity is distinguished by a rock above water, named *Portland Rock*, and to the westward of this are numerous rocks and keys. On or near the N. W. end there is also supposed to be a rock, the *Cascabel* or *Rattlesnake*, but its situation is doubtful.

The *Portland Rock* lies at the distance of ten leagues, nearly south, from Portland, in Jamaica. It is a single key, a little higher than Drunkenman's Key, off Port Royal, and has small bushes on it. From this rock the Pedro Shoals extend to the westward. It bears from Portland Point S. 2° E. distant twenty-nine or thirty miles.

Of the *Cascabel* or *Rattlesnake*, which is supposed to distinguish the N. W. end of the Pedro Bank, the *Derrotero* says, "This key has been introduced from very ancient notices, and we have even reason to suspect that it does not exist."

**BAXO NUEVO, or NEW SHOAL,** the *New Boar* of the old charts, was examined by the Spanish brigantines *Empresa* and *Alerta*, in 1804, and the position of a sandy key upon it has, consequently, been given; this is, latitude 15° 52' 20", longitude 78° 37' 58". The extent of the shoal, according to the Spanish officers, is about seven miles from north to south, and fourteen miles from east to west. All the eastern part is a reef, very steep-to; but, on the west, the depth diminishes gradually. At a mile and a half from the northern extremity, is the sandy key above mentioned. You may anchor to the W. N. W. of this key, at the distance of three or four miles; but take care not to get into less than 10 fathoms of water; for, at two miles and a half W. N. W. from the key, there is a rock, having only 7 feet over it; and at S. by E. from it, at the distance of a mile, there is another, with only 4 feet of water. Both rocks stand in 5 fathoms of water: they are very steep, and not larger than a boat.

The *Baxo del Comboy*, represented in some charts as existing about thirteen leagues to the E. S. E. from the Baxo Nuevo, has been particularly searched for, but it could not be found.

**SERRANILLA.**—This shoal, with its keys, appears on the old charts like a picture of fears and apprehensions, being magnified into ten times its real extent. It has, however, been examined by the Spanish surveyors, who place the east end in 15° 45' 20" N. and 79° 48' 20" W. The shoal and keys thence extend nearly west, fifteen miles. Further particulars are unknown, excepting that there is an extensive bank of soundings to the west, having from 7 to 18 fathoms.

A rock above water, with a surrounding bank of 9 to 12 fathoms, is represented on some charts in latitude 15° 40', and longitude 79° 20', while the Serranilla is exhibited in the same charts at nearly a degree more to the W. N. W. There can, however, be scarcely a doubt that these are one and the same.

Another Shoal is exhibited in the same charts, on the parallel of 15°, at two degrees to the east of *Cape Gracios a Dios*. In the Spanish chart it is laid down,



as therein stated, from an English chart of 1789, and we know of no other authority. The shoalest part, having 3 fathoms over it, appears in long.  $80^{\circ} 27'$ .

**SERRANA.**—The *Serrana Bank*, visited by the Spanish officers in 1804, is represented as six leagues in length from east to west, and three leagues from north to south, with two islets, one on the north, and the other on the south side. With the particulars of these we are unacquainted, and can add only that the north side is given in lat.  $14^{\circ} 28' 40''$ , the south side in  $14^{\circ} 18' 7''$ , the east end in long.  $80^{\circ} 2' 3''$ , and the west end in  $80^{\circ} 21' 54''$ .

Half a degree to the west of the Serrana is the *Quita Sueno* or *Guana Reef*, of which we have no other description than that on the charts. It appears to be very dangerous, with two fathoms close to its western edge, and to extend S. S. E. and N. N. W. fourteen leagues.

**ISLANDS of PROVIDENCE and CATALINA.**—The Island of Providence is situated in lat.  $13^{\circ} 26'$ , and in or near the longitude of  $80^{\circ} 36'$ . It is six miles long from north to south, and three miles in breadth. Catalina is an isle at the north end of Providence, two miles from north to south, and one broad, and is divided from the larger island by a very narrow channel, over which a bridge formerly existed. These isles are nearly surrounded by dangerous reefs, of which that to the N. E. extends about two leagues out, in that direction. These reefs are detached from the shore, so that there is a channel within them, all round, which may be considered as a harbour. A break in the reef, on the western side, admits vessels to an anchorage in 4, 3, and 5 fathoms.

In proportion to its size, Providence may be considered as one of the best islands in the West-Indies, both on account of its fruitfulness, and the salubrity of its air; to which may be added the facility of fortifying its shores.

The *Derrotero* states that Providence and Catalina may be considered as one island: that the last is remarkably rocky, its surface being almost covered with stones. It rises into a mountain, full of inequalities, and is too sterile to be of any value. Providence rises gradually from the sea to an amphitheatre, formed by four hills, crowned by a high mountain. On the cusp or head of the mountain is a spring, which supplies four rivulets, and these, in different directions, run down to the sea. The water is light and excellent. The rivulet which runs down to the western shore is the most abundant, and it falls into a cove called *Ensenada de Agua Dulce*, or Freshwater Bay. The island, in clear weather, may be seen at ten or twelve leagues off; but vessels, in passing, should not approach nearer than a league; and, on the N. E. not nearer than two leagues. The entrance to the port is on the N. W. and here it is requisite to have a pilot.

**RONCADOR.**—The keys and reef bearing this name were represented by the Spanish surveyors, 1804, in  $13^{\circ} 33' N.$  and  $80^{\circ} 0' W.$  The north end of the reef, according to the *Derrotero*, is in  $13^{\circ} 35' 7'' N.$  and  $80^{\circ} 3' W.$  In the Spanish chart of 1805, it was represented  $18'$  more to the eastward; but, from observations made in 1810, in the Sheerwater, sloop of war, by Mr. Nicholls, the master, it appeared that the key, on the west end of the reef, which is 6 feet above water, lay in  $13^{\circ} 33' N.$  and  $80^{\circ} 7' W.$  and the south end of the reef in  $13^{\circ} 28\frac{1}{2}' N.$  and  $80^{\circ} 4' W.$  There were two chronometers on board the Sheerwater, but it is said that neither could be depended on: this point, therefore, requires farther examination.

**St. ANDRE'S or St. ANDREW'S ISLAND.**—This island is represented by the Spanish officers as lying between the parallels of  $12^{\circ} 27'$  and  $12^{\circ} 33' N.$  in longitude  $80^{\circ} 57'$ . Its true bearing from Providence Isle, as given in the *Derrotero*, is S.  $20^{\circ} W.$  and the distance eighteen leagues. On the S. W. side of the island, it has been stated that there is good anchorage, in sandy ground. At a short distance from shore are 6 fathoms of water; and, farther off, from 12 to 15 fathoms. You may, therefore, come to an anchor in what water you please. Take care, on sailing from the island, not to be carried by the current to leeward.

The *Derrotero* states that the coasts of St. Andrew's are generally of rock, with the exception of the points on the west; and that the bank on the west side is so steep, that, at half a mile from it, the bottom is not to be found. The eastern coast is bordered by a reef, which renders it almost inaccessible, and which, in some places, projects out more than a mile. St. Andrew's is 7 miles

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in extent from north to south, and about two from east to west. The spot on which vessels anchor is on the western side, near the place where there are two mountains pre-eminent over the rest of the island, which is, generally, hilly, without precipices, all the declivities being very gradual. The mountains may be seen, in clear weather, at ten or twelve leagues off.

To make this island no pilot is required; for, by shunning the eastern coast, nearer to which you should never pass than three or four miles, you may freely direct yourself to any part of the western shore; but, if you intend to anchor, place your prow towards the south part of the island, without any fear of approaching it within half a cable's length, if required; and so soon as you see the bay, named *West Bay*, which is formed by the westernmost point of the island, steer towards it, and anchor in 10 fathoms, or less, on sand. The 10 fathoms are found at only a cable and a half's length from the land. This anchorage is well sheltered from the breezes; but, in the time of the norths, it is absolutely necessary to be ready to make sail the moment there is the least appearance of a gale.

Mr. Weatherhead, a medical officer, attached to the corps of General Macgregor, in 1819, in his account of the expedition against the Isthmus of Darien, (London, 1821) has described the Island of St. Andrew. This gentleman describes it as having, on the west side, a fine harbour called the *Cove*, where large vessels may anchor within a cable's length of the shore: the water is here so deep that the *Monarch*, a ship of 600 tons, anchored with a cable astern, within a few yards of the shore.

Besides the anchorage on the S. W. side, there is a break in the reef on the east, within which is a good roadstead in *Coco-Plum-Tree Bay*. The entrance is between two small islets or keys. The depth on the bar is  $2\frac{1}{2}$  fathoms. This is an excellent retreat for vessels of less than 200 tons. Up the harbour, towards the north end, there is good shelter, and plenty of wood and water may be obtained.

**The E. S. E. KEYS.**—Nearly E. by S. six leagues from the south end of St. Andrew's, are three keys, called the E. S. E. Keys. They are surrounded by a reef and shallow bank; and although there is anchorage on it for small vessels, it is not safe to attempt it without a pilot. The keys have a reef of loose stones to the north and N. N. E. of them, which extends seven miles out, as shown by the narrative of *Don Miguel Patino*, commander of a Spanish gun-boat, which was sent to explore the Mosquito Coast in 1804. He says, "when navigating in lat.  $12^{\circ} 35'$  N. and long.  $40^{\circ} 55'$  W. of Carthagena, at half-past eight, A. M. both the day and the water being clear, the rudder of the gun-boat, which drew six feet three inches, of Burgos measure, gave a leap of about a foot, without our having felt any shock or rub against any part of the hull. The vessel was going at the rate of six knots, and neither the man at the mast-head, nor those who were upon the deck, saw any spot, breaker, or other appearance of a shoal; nor could I make any examination of the place, as it was not possible to do it in the little canoe, which was the only thing of the boat-kind that we had on board. At 9h. we saw from the mast-head the E. S. E. Keys; and, at 10, the Island of St. Andrew's appeared, though indistinctly."

**The S. S. W. KEYS, or Keys of Albuquerque,** are three islets, which afford good anchoring-ground. There is nothing to fear here; the water about them is deep and clear, and every thing may be seen. There are a few rocks above water, close by the keys, but they will be avoided by keeping the Island of St. Andrew N. by W. until the S. S. W. Keys bear S. W. by S. whence you may proceed as convenient.

## CHAP. XII.

## MOSQUITIA, or the MOSQUITO SHORE, between CAPE HONDURAS and NICARAGUA.

*The Coast between Nicaragua and Cape Honduras, as described in the Derrotero, &c.*

From the Harbour of San Juan de Nicaragua, the coast tends to the north, a little westerly, 80 leagues, to *Cape Gracioso Dios*, and is that properly termed the Mosquito Shore. It is all low land, intersected by many rivers and lagoons: a bank of soundings extends all along it, and out to the eastward to the distance of 20 leagues: to the N. E. considerably more; as it is here supposed to include the *Seranilla* and other shoals. Upon the bank are many keys and reefs, imperfectly known, and, therefore, the more dangerous to strangers.

*Punta Gorda* lies N. W. by N. 10½ leagues, from *Punta Arenas* of Nicaragua. The coast between forms an extensive bay, called the *Gulf of Matina*. About *Punta Gorda*, and near it, are various islets. All this coast is so clean and regular, that you may safely run along it, by the use of the lead only.

From *Punta Gorda* the coast tends to the N. E. a league and a half, to *Punta Monos* (Monkey's Point.) On the S. E. of this point are a number of clean keys, between which and the coast there is anchorage in three fathoms of water. To this anchorage you should enter by the south of the islets. To the north of these islets are others, which rise upon a shoal and a reef, called the *Pigeons*, and which extend from north to south about twelve miles. To the eastward of all these, and without the shoal, is a key, which, with the *Pigeons*, forms a channel: but it is best to avoid it, by going outside, as you will thus clear the *Pigeons' Reef*, which extends from the north part of the keys about two miles.

**BLUEFIELD'S LAGOON.**—Abreast of the *Pigeons*, upon the coast, is the southern point of *Bluefield's Lagoon*, a gulf extending inland about ten miles, and receiving, in its northern part, a considerable river, of the same name, by several outlets: From the southern point of the Lagoon to the northern one, called *Bluefield's Point*, the distance is thirteen miles. Nearly on the line, between the two points, is a key tending N. N. E. eleven miles in length, and which forms two channels between the points: of these the northern is the principal one; and it has, in the season of the breezes, about two fathoms of water; but it then has a vertical fall of about three feet. In the rainy season, it has constantly more than two fathoms.

Having passed the Bar of *Bluefields*, you may find within the lagoon, 5 or 6 fathoms of water, upon clay. The anchorage is near the town, upon the eastern side. To enter the lagoon, you have only to keep along *Bluefield's Point*, at the distance of a stone's throw. The shore here is very clean, and the point may be known from its being the highest land on this coast. When within, continue on near the north shore, the southern being very foul, and requiring a wide birth. It is, also, indispensably necessary, on entering this place, to have the anchors ready to let go, at the instant you find that a strong current is setting against you.

**PEARL LAGOON.**—From *Bluefield's Point* the coast tends north, with some inclination to the west, twenty-six miles, to the entrance of the *Pearl Lagoon*.

Off this coast is a key, named the *Cayman*, which lies at the distance of seven miles from Bluefield's Point, and rather more than half a league from the nearest coast. A reef extends from the north part of the key to the distance of four miles; but as every one ought to pass to the east of it: there can be no danger if the lead be kept going.

The entrance of Pearl Lagoon has deeper water than that of Bluefield's, and some vessels anchor outside of it, under shelter of the north coast, which sweeps eleven miles to the N. E. to *Point Loro*. To the E. by S. from this entrance, and well out from the coast, lies the *Pit Key*, which is seven leagues from it: and, at twelve miles N. E. by E. from the *Pit Key*, is *Seal Key (Lobo Marino.)* The *Corn Islands* (Cayos Mangles) lie without the latter, at about twelve miles to the eastward.

The *Pit* and *Seal Keys* are rather foul, and it is not safe to approach them nearer than half a mile. They are the more dangerous, as they lie in 15 fathoms of water, and have no shoal water near them: a proximity toward them cannot, therefore, be ascertained by the lead in the night, or thick weather. The channels they form with the *Corn Islands* and the coast are free and clean.

The **CORN ISLANDS** are two islands, which bear N. N. E. and S. S. W. from each other, and are six miles asunder. The southern, which is the largest, is two long miles from north to south, and two miles from east to west, in extent. The northern is one and a half mile from N. W. to S. E. and from east to west, where broadest, is scarcely a mile. They are fourteen miles distant from Bluefield's Point. The greater isle has three small hills on it: the central one of which is the highest, and may be seen six or seven leagues off. Its coasts are foul, with a reef, which stretches out a mile from them; but the reef has some clear places, by which you may approach the coast, and which serve for anchorages. Of the latter, the two principal ones are on the west coast of the island. The first, or westernmost, lies east and west with the central hill; and the second is in the S. W. part of the island, separated from the former by a reef, which extends along to the S. W. The first anchorage, named the *Brigantine's*, is the most frequented; and, to direct yourself to it, you must not approach nearer the coast than two miles; or, what is the same, you must not get into less than 11 fathoms of water, until the middle hill bears about East, when you may steer that course towards the shore, and anchor in the depth most convenient, on sand; knowing that you will have 5 fathoms, at about two cables' length from the beach. In the southernmost part of the S. W. anchorage there are three wells, holes, or pits, of good water: this anchorage of the *Brigantine*, which we have described, is sheltered from all winds, from north to south, round by east; but, in the season of the norths, you ought to be extremely vigilant lest a gale should catch you in the anchorage. These islands afford plenty of good fresh water, which may be obtained by digging small holes in the sand.

The *Little Corn Island* is very clean on its west side, and you may sail along it, at the distance of half a mile, without any care, excepting attention to the lead; but, from its S. E. point to the N. W. one, it sends out a reef, which extends out about a mile and a half, at the end of which there are 4 fathoms of water. On the west coast, you may let go an anchor, in shelter from the breezes, in 5 fathoms of water, which you will find at half a mile from the beach.

To the south of the *Great Corn Island*, at the distance of about seven miles, there is a rock, which shows above water, and the utmost caution should be used on account of it; for we neither believe that its situation is correctly known, or that, even if it were, it would cease to be dangerous at night, or in obscure weather.

From *Point Loro*, already noticed, the coast tends about north, 22 miles, to *Rio Grande*, or *Great River*. This piece of coast is very foul, with a reef, which stretches from it about six miles. On the southern edge of the reef, and east from *Point Loro*, there are two keys, of which the eastern one is named *Maroon*: to the north, a little westerly, from this key, at the distance of nine miles, there is another, which is outside the reef. Without these two keys there are others, of which the southernmost are called the *Pearls*; to these follow three, named *The King's Keys*, which lie east and west with the mouth of *Great River*, and at

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To the N. by W. from Great River, at the distance of 11 miles, there is another river, named *Amilca*, or *Little Snook Creek*, from which, in the same direction, and at the distance of nine miles, is the *Black Rock River*, or Great Snook Creek: from this the coast continues nearly North, 11 miles, to the *River Tongula*, in front of the mouth of which, and to about five miles to the east of it, there are some rocky shoals, (*Foxes Reef*.) which are the only dangers along the whole coast comprised between this river and Great River.

From the *River Tongula*, the coast tends about N. by W. 17 miles, to the *River Wava*; whence the coast continues to the north, nine miles more, to *Bragman's River*; and from thence the coast sweeps to the N. E. eight miles, to *Bragman's Point*: this last piece of coast, which is named the *Barrancas*, or *Bragman's Bluff*, forms a bay sheltered from norths and westerly winds, and in it you may anchor in any depth you choose; understanding that, at two miles from land, you will have 4½ fathoms, upon coarse gray and shelly sand. To land on this shore requires great caution; for there is a bay, before you arrive at it, on which, with the least of the breeze, the sea breaks with great force.

From *Bragman's Bluff* the coast tends about N. N. W. six miles, to the *River Tupapi*, or *Housetana*, which is known by a town that lies about three-quarters of a league from the beach, and which can be well seen from the sea, the ground being plain and bare. From *Tupapi* the coast tends about N. by E. ¼ E. 20 miles, to the *Governor's Point*; which is known by being the one that extends farthest to the east on all this coast, and being very thickly covered with wood. From this point the coast tends to the N. N. W. 10 miles, to the mouth of *Sandy Bay*, in which there is so little water, that, in the time of the breezes, launches pass with difficulty; but, within, the bay is deep and spacious.

From *Sandy Bay* the coast tends to the north, 12 miles, to the *River Guanason*, or *Sintipoco*; and thence to the Bay of *Gracios a Dios*, is 13 miles, in the same direction.

**BAY or GRACIOS A DIOS.**—The Bay of *Gracios a Dios* is formed by a tongue of land, which stretches out to the east, more than four miles, and which affords a good roadstead during winds from S. S. W. round by north to S. S. E. The easternmost and southernmost point of the tongue of land, is that which is named *Cape Gracios a Dios*; and from it, to the south, there are various islets, of which the last is named *San Pio*, and the south point of it, called *Sandy Point*, is also the east point of the bay.

The depth in the bay is from 22 feet, which are found at the entrance, to 17, which are gained well within it; and, in all parts of it, you will find a loose slimy clay, and clean bottom. To anchor in this bay, if you come from the North and West, you have only to pass Key *San Pio*, and make afterwards for the bay, and anchor in the number of feet suitable to the vessel's draught of water; for all of which you have only to attend to the lead. The only thing which demands a little attention is, not to mistake, for the Key *San Pio*, that which comes before it, named *Troncoso*; for, having a strait of a mile in breadth between them, and the *San Pio Key* being very low, any one coming from sea may be deceived, and take the strait between the keys for the entrance: but this mistake may be avoided; if you keep in mind that Key *Troncoso* is very small; and that, on the contrary, Key *San Pio* is a mile in extent from N. E. to S. W. furthermore, in this channel, there is so little water that scarcely a canoe can pass, which is the cause of the sea generally breaking in it. To those coming from the South, in order to enter this bay, we have nothing to recommend.

Such is the description of this bay, given in the year 1768, by *Don Gonzalo*



*Vallejo* who anchored in it, in the corvette *San Pio*, commanded by him; but we ought to add what *Don Josef del Rio* says of it, for he also visited it in the year 1793: "I remark that the anchorage in the bay of *Cape Gracios a Dios* is gradually becoming lost, for the cut of communication which the English made with the *Great River Segovia*, (Vaukes or Cape River,) through the tongue of land which forms the bay, for the purpose of getting into it the trees which they brought down the river, has widened so much, that from a narrow canal it has become a branch of the river, and brings in so much earth and so many trees, as to have so much diminished the depth of the bay, that, since the year 1787, they find three feet less water in the vicinity of Key *San Pio*; and it is very possible that, in a few years, the depth will be filled up, and vessels will be obliged to remain outside without the shelter they at present have, and which is of much utility to those who navigate on this coast in the time or season of the Norths. On entering the bay a small village presents itself on the starboard side.

All the Coast from the *River Tongula* is clean; and upon the bank, or soundings, which lie along the shore, there are no other keys nor reefs than those we have described, and those which are between the parallels of Governor's Point and Cape Gracios a Dios. The latter are named the *Mosquito* and *Thomas's Keys* and *Reefs*, and have about them many others, under particular names. These keys, &c. with the coast, form a channel four leagues in breadth, where narrowest; and, although between them there are passes, with 7 fathoms or more water, yet it is best not to attempt them, but run always on the west, between them and the coast; for there can be no risk in this pass, as the lead will warn you in time, equally whether you are running before the wind or turning to windward; for, from half a league from the coast, there are 5 fathoms, and 10 in the vicinity of the keys; and thus, taking care not to get into shoaler water than 5 fathoms, on an in-shore tack, or into deeper than 9 fathoms, on the off-shore tack, or 5 fathoms on the west tack, and 9 fathoms on the east tack, you need not fear the slightest danger. From the bay of Gracios a Dios you may steer to the S. S. E. with which course you will pass in sight of the westernmost key of this group, which is a black rock, that may be descried at five or six miles' distance. On this route you will catch from 8 to 9 fathoms; and do not keep any thing to the east until you peckon yourself well past the southern keys; the surest guide for which will be your getting 12 fathoms on the same course; and thence you may shape your voyage course.

The islands and frontier shoals of this coast, which lie outside the soundings, have already been described in pages 402 to 404.

**CAPE GRACIOS A DIOS TO THE WESTWARD.**—"From Cape Gracios a Dios, the coast tends to the N. W. 10 leagues, to the *False Cape*, which may be known as being the highest land on this piece of coast. From the *False Cape* a bank, or shoal, with little water, projects out to the N. E. to the distance of 6 miles; but the soundings of the coast keep very regular, and it even seems as if they extended on this part to the *Serranilla*; but be that as it may, this is so little known that you ought not to navigate hereabout in more than 10 fathoms of water; because there are various shoals, of which the situation is very doubtful; and, therefore, to make your navigation safely, you ought not to get into deeper water than 10 fathoms, nor into less than 6 fathoms; and this rule you should observe, whether you be navigating your course or beating to windward, for you will thus be sure of navigating in a clean channel of twenty miles in width.

From *False Cape* the coast tends about W. N. W. 35 miles, to the *Lagoon of Caratasca*, which is easily known by its wide mouth. All this coast is, like the former, clean, with regular soundings along it; and, to navigate along it, the lead is a sufficient guide: so that you may not get into less than 6 fathoms on the in-shore tack, or into more than 10 fathoms, standing off shore, doing which you will evade falling on the *Cayman* or *Alligator Keys*, which, as may be seen on the Chart, are to the North of the Coast, and about 8 leagues distant from it.

**BLACK RIVER.**—From *Caratasca Lagoon* the coast tends about W. N. W. and West, eighteen and a half leagues, to *Brewer's Lagoon*; and thence, almost in the latter direction, at the distance of nine leagues, is the *Rio Tinto*, or *Black River*. This river is known by the mountains of *La Cruz*, (the Cross,) which

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are very high, and are the first which are seen after passing Nicaragua. These mountains are something to the east of the mouth of the river; and at the river itself there is a summit or peak, named the Sugar-Loaf, because it is in that shape. To anchor in front of this river, bring the mouth about south, and Cape Camaron West, without running into shoaler water than in 12 fathoms; for in less depth there are many lost anchors, which vessels have left when they have been obliged precipitately to make sail on the Norths coming to blow. This anchorage is a roadstead so open, that, even with the winds of the breeze, you must have two-thirds of the cable outside the hawse-holes; and so soon as the wind calms you must heave in, till the anchor is almost a-peak, in order to avoid fouling the anchor. When in this anchorage, in the season of the gales, which is from October to February, much attention to the weather is necessary; and, so soon as you see the wind come to S. E. and from that pass to south and S. W. you ought immediately to weigh the anchor, and get out to sea, well clear from the land; as you are sure to have a gale or storm. In the above-mentioned months, also, all thickening or bad appearance towards the N. W. is a certain indication of an approaching gale; nor is a swell from the northward (which sets in a considerable time before a gale) less so: at any of the times of the gales, the loss of any vessel remaining at anchor is certain; and many times the wind will not give time to weigh the anchor; in which case, either slip the end, leaving it buoyed, or cut the cable, that you may immediately make sail, and get clear from the land, so that you may keep under sail till the storm is past. The gales are very hard, and raise a heavy sea; and thus, if any vessel is very much distressed at sea, she has the resource at option of running to the anchorage of Gracios a Dios, and taking shelter there during the rough weather. There is nothing to prevent her doing this; for, as we have already said, the lead is a guide which there will carry you clear of all danger. As the storms are generally from N. N. W. or West, the result is, that, ordinarily, the anchorage of Gracios a Dios may be considered as one to which you can keep away, or to leeward; and, in doing this, you will also find your advantage in being to windward of the Black River, when the gale or storm ceases; because then the breeze blows from the east, and therefore, in a short time, and almost without trouble, you can return to your former anchorage. The bar of Black River is uncommonly dangerous, and boats run much risk of oversetting on it; and the people on board of them of perishing, on account of the heavy sea which is in general on it. Thus, either on entering or sailing out, it is necessary that you should do so with the calm of the morning, before the breeze comes on, and that the land-breeze should have blown from the time it became dark; and also thus, if the breeze has been too fresh, you can neither get in nor out; so that the communication with the shore is far from frequent, and is always troublesome and dangerous.

From Black River the coast tends west, with some inclination to the north, to Cape Camaron, which is formed by a small tongue of land projecting out to sea. From this cape the coast tends nearly west, eighteen leagues, to Punta Castilla, or Cape Honduras: it is all clean, and also deeper than the anterior coast, so that you should not venture in less than 8 fathoms of water on it.

### Cape Honduras to Cape Gracios a Dois.

Cape Honduras forms the northern part of the Bay of Truxillo, described in the next chapter. The coast between is irregular: there are gradual soundings in approaching, but there are some patches of rocks along shore.

The point forming the north side of Truxillo Bay is low, and a considerable reef of coral rocks, with sand, stretches from it to the westward. The land of the interior, hence to the eastward, appears high and variegated; being composed of the hills called by the Spaniards the *Sierras de la Cruz*, and by the English *Poyals* or *Poyers Hills*. This high land terminates with a remarkable sugar-loaf hill, supposed to have been a volcano, which stands several leagues inland, upon

the eastern side of Black River, and nearly south from the entrance. When bearing S. S. W. it appears nearly as represented beneath, and is an excellent mark for the coast. Eastward of Brewer's Lagoon the land is generally low, and appears as described in the preceeding extracts from the voyage of Captain Henderson.



*Sugar-loaf S. S. W.*

*Appearance of the Land over Black River, as seen at about 4 leagues from the coast.*

If the land be low, on making it from the N. E. you may conclude that it is as far to the eastward as Plantain River between Black River and Brewer's Lagoon; and gradual soundings will be found on approaching, from 40 to 9 fathoms. Should you raise the land over Black River, the Sugar-loaf hill will be seen. With this object bearing S. by E. or S.  $\frac{1}{2}$  E. you may anchor in 8 or 9 fathoms.\* The swell here from the N. E. commonly makes the bar very dangerous; boats cannot pass it unless in calms, or in the morning before the sea-breeze sets in. If a ship anchors here, and shows her colours, one of the craft belonging to the place generally comes off: these vessels are manned with Mosquito Indians, who are very dexterous in managing them. There is only 6 feet of water on the bar, and 8 feet within it. All the way between this place and Cape Camaron the surf, as already shown, runs high on the shore.

On the first appearance of a northerly wind, or bad weather, on this coast, it is proper to get under way, and either stand out to sea, or run for the harbour of the island Bonacca.† If you cannot fetch into that harbour, run for the south side of Rattan. Or, if a north wind comes on before you can get an offing, if you can weather Cape Camaron, you may proceed for Truxillo Bay, which is a very good road, well sheltered. There is nothing to fear in going in here, and giving the point a birth; when you may stand up in the bay as far as you can fetch, and bring a small island, which will be seen, to bear S. S. W. or S. W. There are here 8 or 9 fathoms, soft mud. It is, however, to be observed that this is a leeward situation to those bound to any point eastward.

There is an anchorage at *Poyer River*, about five leagues to the westward of Cape Camaron, which may be gained by keeping close in-shore, in 9 or 10 fathoms, until you have run as far to the westward as to bring the Sugar-loaf, above described, to bear S. E.  $\frac{1}{2}$  E. On the west of the bay or road is the high rocky coast called the *Great Rocks*, with foul ground: within this, you will see a fall or opening in the beach, which is the River's Mouth. To the eastward of this bay is a smaller river, called *Poyer Creek*.

Here may be seen the inland round hill, called *Picacho*, which must be kept a sail's breadth open of Great Rocks. To anchor, bring the white sandy spot on the beach, which is between the river and Great Rocks, to bear S. W.  $\frac{1}{2}$  S. and you will be in 9 or 10 fathoms, muddy ground, with *Poyer River* S. by W. Great Rocks W. S. W. and the round hill just open. As there is much foul ground hereabout, try the bottom before you bring up.

Here you must observe the weather, as at Black River; for it is more difficult

\* It is said to be the safest to anchor in 12 fathoms; as, farther in, some anchors have been lost. The north winds generally begin in October or November, and frequently continue until March. See the remarks from the *Derrotero*, page 409.

† It is, however, here proper to notice that some, who have attempted a passage from Black River to Bonacca, have not been able to get in, the entrance of the harbour lying nearest to north and south: and some who have got in have been four or five weeks before they could get to Black River again, finding a strong current setting to the westward, and the trade-wind, at the same time, from the eastward.

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From **BLACK RIVER** to the *Eastward*.—If at anchor off Black River, and the wind comes to the S. E. and, baffling about, changes to the westward, get up your anchor as quickly as possible, stretch off to the northward, and get a good offing; for you may then be sure you will have a north wind, which generally blows very hard, and makes so great a sea, that it is impossible for any vessel to ride at her anchors. If your anchor start, it is extremely dangerous, as the rocks and shoals lie at a distance from the main. If you cannot get up your anchor, slip or cut your cable immediately. If the sky looks black to the N. W. it will not be long before you have it, and then it will not be possible to get an offing. Should this be the case, before the gale comes on, if you can weather Point Patook, which lies to the eastward of Brewer's Lagoon, run away for Cape Gracios a Dios, for which you have a fair wind all the way, taking care to avoid the reefs, which lie as hereafter described. Having arrived at the Cape, do not attempt to work in, but bring up off the Sandy Point, in 2, 3, or 4 fathoms, all clear ground and very smooth riding. Here you will be ready to return to Black River so soon as the North wind is over, which may be known by its changing to the N. N. E. and N. E.

To sail from *Black River* to *Cape Gracios a Dios*, with a westerly wind, the course is nearly East, until you are past Patook River. From the point of the latter, the sharp end of a sand-bank extends for a mile and a half into the sea. Approach no nearer, by day or night, than in 9 fathoms of water.

*Brewer's Lagoon* lies about  $8\frac{1}{2}$  leagues to the eastward of Black River. In the middle of the haven, about a league up, is an island, that appears like two hills, whereon some English people formerly resided. You may proceed from Black River by the lead, and turn up as far as Brewer's Lagoon, and as near as you please to the main. There is anchorage off the entrance of the lagoon, in from 12 to 8 fathoms.

**CARATASCA LAGOON.**—The *Entrance* of *Caratasca Lagoon* lies about 14 leagues from Patook River. The course, with a westerly wind, is E. by S. This place is easily known; for, as the mouth of the river is very wide, the opening may always be seen.

The **FALSE CAPE** of Gracios a Dios is 12 leagues from the entrance of Caratasca Lagoon. On sailing for it, with a westerly wind, take care to avoid the *False Cape Bank*, extending to the N. E. To pass clear, keep at least three leagues off from the shore, and approach no nearer than in 5 or 6 fathoms.

From the False Cape to Cape Gracios a Dios, you may proceed by the lead, and will find 6, 5,  $4\frac{1}{2}$ , 4,  $3\frac{1}{2}$ ,  $3\frac{1}{2}$ ,  $3\frac{1}{2}$ , and  $2\frac{1}{2}$  fathoms.\*

### Cape Gracios a Dios to the Southward.

In proceeding to the anchorage under Cape Gracios a Dios, so soon as you are clear of the Cape Bank, you will be in 3,  $3\frac{1}{2}$ , 4,  $3\frac{1}{2}$ ,  $4\frac{1}{2}$ , and 5 fathoms; then keep in 5, or a quarter-less 5, very close along the low sandy point: This point is to the windward or eastward of the river: give it a good birth; and, so soon as you have well opened the bay of Cape Gracios, then steer directly in to the west. To come to an anchor here it is best to let go in  $4\frac{1}{2}$  or 4 fathoms, good muddy ground. The depths in the bay are from 6 to  $2\frac{1}{2}$  fathoms, and this is a safe and convenient place of shelter during the North winds.†

\* The nature of the Shoals to the northward, eastward, southward, of Cape Gracios a Dios can be best understood by reference to the Charts. But it is to be noticed that, in the late *Spanish Charts*, and some others, many dangers have been entirely omitted, of the existence of which no doubt can be entertained. All this coast is, indeed, very inaccurately represented in the *Spanish Charts*.

† See, however, the descriptions of this place, in page 407.

**SANDY BAY** is nearly 10 leagues from Cape Gracios a Dios, on a course S.  $\frac{1}{2}$  E. Keep along the shore, with the lead going, 6, 7, and 8 fathoms of water. You may come to an anchor in Sandy Bay in as deep or as little water as you choose. In 6 or 7 fathoms there is good muddy ground, and fit for ships. In from 5 fathoms, or less, is sandy ground, fit for smaller vessels.

**Rocky Key**, or *Stony Islet*, is a rock that appears above water to the height of a ship's hull, and quite black. It lies E. S. E. from Sandy Bay, at the distance of about 4 or 5 leagues. Vessels bound out from Sandy Bay, to the S. E. should shape a S. E. course, so as to make and pass to the southward of Rocky Key, which may be seen 5 or 6 miles off. You may approach to the distance of a mile from Rocky Key, and have 6 fathoms, bottom of white sand.

To the south of Rocky Key, at the distance of about 4 leagues, is a little sandy key, with a few trees upon it, by the Indians called *Waniessa*, and by the English *Devil's Key*. This key may not be seen; but, if bound towards Carthage, you may continue on a course S. E. by S. until you arrive to the N. E. of the Corn Islands, and thence proceed according to circumstances.

If you pass close by Rocky Key, and thence steer E. S. E. so as to pass to the eastward of Waniessa, you may see the latter, if the weather be clear: and, when you are close in with the land of Waniessa, you may, in clear weather, see Rocky Key. In approaching Waniessa be cautious, and keep the lead going. In steering from Rocky Key, on an E. S. E. course, you will have 7 fathoms of water all along. Close to Waniessa there are less than 7 or 6 fathoms, and immediately after dry. It is proper always to strive to keep in from 7 to 15 fathoms, until you arrive in sight of St. Andrew's, or of Providence Island.

The course from Waniessa to Providence Island is about E. S. E. distance nearly 40 leagues.

**WAVE** or *Bragman's Bluff*, to the W. S. W. of Waniessa, is composed of the highest sandy hills on the coast to the southward of Cape Gracios a Dios. These are three or four whitish hills which cannot be missed. The course hence to the Seal Keys, within the Ship or Man of War Keys, is S.  $\frac{1}{2}$  E. On this course two sand-banks will be avoided, which lie off the shore, the southernmost at the distance of nearly 3 leagues.

The navigation hence to the southward is too intricate to be comprehended from verbal description only.

### *Directions for proceeding from Jamaica to the Mosquito Shore.*

If bound from the Island of Jamaica to Cape Gracios a Dios, take your departure from Pedro Bluff, or the west end of Jamaica. From the latter, a true course S. W. by W. 75 leagues, will lead to the Bank of Soundings, whence Cape Gracios a Dios will bear about S. W. by S. true, at the distance of 30 leagues. The variation to be allowed on the compass course is  $7^{\circ}$  East.

In approaching the main, the greatest caution must be taken, in order to avoid the Caratasca and other reefs, and particularly attending to the current, which, at times, sets to the eastward as well as to the westward. The east end of the Caratasca Reefs lies at the distance of 15 leagues from *False Cape*, on the main, and is steep-to. The safest way is, therefore, to proceed more to the west than the first course above given, so as to pass to the westward of these dangers, rather than attempt to find a channel through. The west end lies nearly north from the entrance of Caratasca Lagoon, the appearance of which has already been described. The bank is of shoal and broken ground quite up to the Hobby Keys, and it is very difficult for a stranger to pick his way through.

If you come in to the westward of Caratasca Shoals, when bound to Cape Gracios a Dios, endeavour to make the main; and, if you can lay through, keep your lead going, especially in the night, and come no nearer to the shoals than 20 fathoms: you will then be about 4 or 5 miles off them, and out of sight of the main, which cannot be seen till you are in 12 or 15 fathoms: you may run down, keeping the main on board, in 6 and 7 fathoms, till you come to the False Cape.

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When you are come near the False Cape, you will shoalen your water, but you may run along the spit in 5 fathoms in safety. It stretches from the main about N. E. two leagues off, as before described. The False Cape makes, when you are to windward of it, like the Main Cape, with high mangroves. From the False Cape to the Main Cape, the course is S. E.

When off the pitch of the Main Cape, you will see the land tending nearly North and South. The cape ends in a low sandy point, tending to the southward, with keys, as shown in page 407. Old trees are frequently drifting out of the river. The water shoalens a good way off, till you double the pitch of it, and then you may borrow as close as you please, into 2, 3, 4, and 5 fathoms, soft ground. Do not proceed higher up in the bay than in 3 or 4 fathoms; although it is all clear good ground.

If BOUND to BLACK RIVER, from Jamaica, the best way is to make the *Santanilla* or *Swans' Islands*,\* and thence proceed on a S. by W. or even a South course; as the latter will lead to the eastward of the river.

The CURRENTS generally are very uncertain; therefore, when you make the land, in proceeding for Black River, if you see any high land to the eastward of you, you are to leeward and westward, and the current has deceived you: for, as already shown, in the description of the coast, there is no high land to the eastward of Brewer's Lagoon.

The appearance of the Sugar-Loaf Hill, to the southward of the entrance of Black River, has been already given on page 410.

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\* These islands are described in the next chapter.

## CHAP. XIII.

*The BAY OF HONDURAS, &c. from CAPE HONDURAS and CAPE CAMARON to CAPE CATOCHE and the BANK of CAMPECHE'.*

*Description of the Coast, from the Derrotero, &c.*

In this, as in the last chapter, we shall describe the coasts, as given in the *Derrotero*.

**TRUXILLO BAY.**—The position of *Cape Honduras* or *Delgado*, the *Punta Castilla* of the Spaniards, has been already given on page 469. This point is low, and a small sand-bank, with very little water, extends from it, one-quarter of a mile to the west. From the point, which is the north point of the *Bay of Truxillo*, the mouth of that bay is seven miles in breadth. This bay is easily entered, it having no other shoal than that about the point, as noticed above. On the south coast of the bay is a high mountain, named *Guaimoreto*, which may be seen twenty-four leagues out at sea. This is a good mark for running in by; for, by bringing it to bear between S. S. E. and S. E. by S. you will run clear of *Cape Honduras*, and may anchor almost in front of *Crystal River*, upon the S. E. shore. This anchorage seems preferable, not only because, being near the river, you can readily obtain water, but because, from this spot, you can easily clear the north point, in case of being obliged to get under way, by a storm from W. S. W. or W. N. W. whence it blows oftenest from October or November until February. With such winds, it may be plainly seen, by a glance at the plan, there must be much sea in the bay; and this the ship *Maria* experienced in December and January, 1800, when, having rode out one or two of these gales at anchor, she was under the necessity of quitting, and running to *Port Royal*, in the *Island Rattan*. Thus the commandant of this vessel found, contrary to what is generally supposed, that the anchorage of *Truxillo* is much exposed in the season of the norths, which was the season he was in it.

To enter in, or sail out from, *Truxillo*, there is little difficulty; for you may work in or out without any other precaution than to keep at least half a mile from *St. Luke's Key*, which is off the south coast, and about two miles outside the bay; as a shoal surrounds this islet, the best guide towards which is the lead. Take care not to get into less than 6 fathoms of water, when near it, and you will go free of all danger. The islet is rather more than a mile from the coast; and you may run through the channel between without any other guide than the lead.

It was heretofore believed that the bay of *Truxillo* was well sheltered, and a good place of refuge during storms in the winter; but it is not so: every vessel on this coast, at that season, ought to prefer *Port Royal*, in *Rattan*, to this bay.

From *Crystal River*, (*Rio de Crystalis*) in the Bay of *Truxillo*, the coast tends nearly W. S. W.  $\frac{1}{4}$  W. thirty leagues, to *Cape Triunfo*.\* Here the navigation is rendered unsafe by several reefs and shoals existing to the southward and eastward of the *Island Utila*. Between *Cape Honduras* and *Utila* are, also, the *Cochinos* or *Hog Islands*, consisting of two large islands and numerous keys, foul with reef to the south, but clean on the north side. On the N. W. is anchorage.

\* Or *Triunfo de la Cruz*, Triumph of the Cross.

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**UTILA.**—The island *Utila* lies about W.  $\frac{1}{4}$  N. seven leagues, from the *Cochinos*. The north, south, and west coasts of this island are very foul: on the eastern coast, however, there is good anchorage, but not to be attempted by a stranger. To the S. W. of the island is the extensive shoal called the *Salmedina*, which is not less than five miles over.

Those bound to the westward, who are not obliged to run along shore, will most safely pass to the northward of the *Cochinos* and *Utila*: but observe not to approach nearer to the latter than two leagues, until you are abreast of its western points, whence you may steer towards *Punta Sal*, to the S. W. or according to circumstances; noting only that the current here commonly sets towards the N. W.

**TRIUNFO de la CRUZ.**—From the point which we call *Cape Triunfo*, the coast sweeps to the south, and forms a bay, whence it tends about four leagues to the N. W. There is anchorage in the bay for vessels of every class, sheltered from the breezes. To the north of *Cape Triunfo*, at the distance of half a mile, are some islets, called the *Bishop* and *Clerks*: two of these are rather large, and may be seen at the distance of two leagues: they are clean; and, by passing at half a mile clear of all that is visible, you may proceed to anchor in the eastern part of the bay, at a little to the southward of the point, in 6 or 8 fathoms, on sand.

*Punta Sal* (Salt Point) has off it, distant above half a mile, some high rocks, which form a channel navigable for boats. This point appears with some hillocks of broken ground, and has on the S. W. a little harbour, *Puerto Sal*, of which we can say only that, in front of its entrance, and at the round of *Punta Sal*, you may anchor in shelter from the breezes, but may not come-to in more than 13 fathoms; for in 15, 16, 17, and 18 fathoms, the bottom is of rock; while, on the contrary, in less than 13, it is of clean clay.

From *Punta Sal* the coast tends about W. S. W. three leagues, to the *River Lua* or *Ulua*, which is large. In front of this river you may anchor, on excellent holding-ground of clay, but without the least shelter from the norths. At about eight miles W. by S. from the *River Lua* is that named *Chamalucon*, at which you may likewise anchor on good holding-ground, but equally unsheltered from the norths.

**CABALLOS, OR CAVALLLOS.**—At about W. by S. from *Chamalucon River*, and at the distance of 4 or 5 leagues, is the *Harbour of Caballos*. This harbour is formed by a low sandy point to seaward, on the S. W. of which there is anchorage in 7, 6, or 5 fathoms, on sand. *Caballos Harbour* may be known by a round and high hillock, which lies close to the sea on the coast, about two leagues to the eastward of the harbour. To enter this port you have only to keep clear of what is visible.

**OMOA.**—From *Port Caballos* to *Omoa* is seven miles S. W. by W. on the way there is a little shallow shoal, which lies to the north of some red gullies or broken ground, which are seen on the coast, and it lies out from it a league and a half: to keep clear of it, take care not to get into less than 8 fathoms, until you are past the red gullies, when you may direct your course to *Omoa*.

The *Harbour of Omoa* is formed by low land covered with mangroves, which extends out to sea: upon this point there is a watch-tower or lookout, which is well seen from the sea, and serves as a mark to recognize the harbour by; for this the high-land, which rises and extends to the west from *Omoa*, may also serve: for, to the eastward of *Omoa*, the land is all low.

To enter into *Omoa*, we have only to say that you may pass at a cable's length from the mangrove point, which forms the harbour; and, so soon as you are to the west of it, you ought to luff to south and east all that you can, approaching the south part of the mangrove point, with the object of seeing whether you can enter under sail into the basin, which is in the N. E. corner. For this you must steer to the north; and the best way will be to gain as much to the east as you can, until you are abreast the mouth of the basin, when you may anchor, and afterwards warp in.

From the anchorage of *Omoa*, you may, in clear weather, see *Cabo Tres Puntas* (*Cape Three Points*) which bears about W.  $\frac{1}{4}$  N. All this land to the west of

Omoa is very high, and upon it rise three or four summits, like sugar-loaves; but the coast is very low, and continues the same to the Gulf of Honduras. From Omoa to Cape Three Points, the distance is about eleven leagues, and the intermediate coast sweeps something to the south, so that it forms a bight, in which there must surely be much dashing of the sea; and therefore it is advisable not to come too near it, but rather to steer W. N. <sup>W</sup> or N. W. by W. to get well clear of Cape Three Points. After standing some time on these courses, you may see to the N. W. the Southernmost Keys, which lie out from the coast of *Bacalar*, and which are about five leagues distant from Cape Three Points.

The N. W. extremity of Cape Three Points is *Punta Manabique*, which has to the west of it, at a league and a half, a shoal named the *Buey* or *Ox*, to which a birth must be given. Point Manabique and the Southern Keys of the coast of *Bacalar* form the entrance of the *Gulf of Honduras*, within which, and to the South or S. by E. of Point Manabique, is the Bay of *St. Thomas de Castilla* (St. Thomas of Castile); and S. W. by S. or S. W. from the same point, lies the mouth of *Rio Dulce*. All this gulf is shoal, but with sufficient depth for any class of vessels; and, to navigate in it, you should run with the lead always in hand, and the anchors ready to let go, if needful; or if you wish to anchor. The mouth of the *Rio Dulce* may be known by a little insulated hill, which is something to the west of it: the anchorage is to the N. N. E. of the river's mouth, in the number of fathoms that best answers, and you must have your cable N. E. and S. W.

### *The Coasts and Bay of Honduras and Yucatan, as described by Navigators, &c.*

**TRUXILLO BAY.**—Of Truxillo Bay, within Cape Honduras, a description has been given on page 414. The course and distance to this bay, from the S. W. end of the Island Bonacca, is S. by W.  $8\frac{1}{2}$  leagues; but as the current, unless when the wind blows strongly from the north, sets with some strength to the westward, you should steer S.  $\frac{1}{2}$  E. The point forming the north side of the bay, as already shown, is low, and requires a large birth in passing, so as to avoid the coral reef, with sand, which stretches from it to the westward. This is a good place for the obtainment of wood and water. The latter may be had on the south shore, to the eastward of St. Luke's Key, where the old town and fort of Truxillo formerly stood; or at the Crystal River.

**COAST from CAPE CAMARON,** on the East, to *Truxillo Bay*.—Black River, to the eastward of Cape Camaron, is situated as described in the preceding chapter, page 409. The following is a detailed description of the coast thence westward to Truxillo Bay.

*Praunow Creek* lies two miles to the westward of Cape Camaron River: the opening of the latter may be plainly seen, as the eastern side is distinguished by a high sand-hill, and on the western side a spit stretches a mile into the sea.

Two miles W. by S. from *Praunow Creek*, is *Sierra Leon*, or *Lion's Creek*. The high land, right over it, has the form of a sugar-loaf, not unlike that over Black River, but distinguished by a saddle-mountain a little to the westward. The *Little Rocks* are one league distant W. by S. from *Lion's Creek*; the land over them is double, not very high, and the southernmost appearing above the other.

Four miles W. S. W. from these are the *Great Rocks*, which show themselves like a round bluff, close to the sea-side, at about a mile from shore: the ground here is very foul, mixed with sand and stones, which you may avoid. The bluff point of the *Great Rocks* to the eastward, and old Roman Point make *Limehouse Bight*. Between the *Little* and *Great Rocks* are the two rivers, called *Poyer River* and *Poyer Creek*.\*

*Limehouse River* is three miles distant, S. W. by W. from the *Great Rocks*:

\* The anchorage between these rivers has been already described in the preceding section, page 411.

it is known by a saddle-mountain, with a sugar-loaf on one side; and by another sugar-loaf on the other side, whose top appears to be broken off.

*Little or East Roman River* lies five miles farther W. N. W. Near to its mouth, which is very wide, and always open, are two or three black sand-hills. *Great Roman River*, whose opening is also very wide, is four miles W. N. W. from this. Between the two rivers you meet with a bank of stones and sand, two miles from the shore, and about three miles long: it lies nearly east and west: to get clear of this bank, you steer from *Little Roman River* out of the Bight W. N. W. and pass to the northward until you come to *Cabbage Tree or Three Leagues Point*, and then you steer right for *Cape Honduras*. The point is easily known by a round sand-hill, covered with many palmeto-trees of an inferior size. The coast without it is rocky.

*Cape Honduras* lies nearly seven leagues W.  $\frac{1}{2}$  N. from *Great Roman River*. In sailing from *Cape Cameron* to this cape, the general course is about W.  $\frac{1}{2}$  N. and the distance eighteen leagues.

**TRUXILLO BAY**, Westward.—Sir George Young, in his directions for sailing on this, coast has said, "On coming from the eastward to *Truxillo Bay*, be sure to make the land to the eastward of the cape: it is low by the water-side, but up in the country it rises high: when you have run down your distance, and got the cape to bear S. W. and *Bonacca* North or N. by W. the soundings along shore, at a mile distance, will be 20 fathoms, muddy ground. Run in S. W. and S. S. W. till you bring the *Point Castilla* N. N. E. or N. by E. from you, giving the point a good birth; then haul up E. and E. S. E. You may come to an anchor in what depth you please, with muddy ground: but the best part is with *Point Castilla* N. N. W. to N. W. about a mile from shore. The tide is not perceptible here. The easterly winds prevail during the greater part of the year." Variation about  $8^{\circ}$  E.

**COCHINOS**, or *Hog Islands*.—These islands lie about nine leagues to the westward of *Cape Honduras*: the group is composed of two high islands, with eighteen little sandy keys, which extend on the south, from the S. E. of the easternmost island to the western part of the westernmost one. To the north-west of the westernmost isle there are three or four of these sandy keys, which afford no passage, but you may pass between the others. A rocky reef stretches along to the southward of these islands, two miles distant from the shores, and from E. S. E. to N. W. You must not come nearer on any side of the westernmost island than one league; but you may approach the easternmost as near as a mile; and, at its west end, small vessels may come to an anchor with a sea-breeze, but it is very hazardous with a north. On the north side of this island is the best channel to anchor in, at the west end: you may sail in boldly; and, keeping a good look-out for a few rocks, under water, which are close to the shore, you come into an anchorage in 6 or 7 fathoms of water, good sandy ground. There is a channel on the south side; but, to gain it, you pass between the reef and keys, and must be well acquainted with the place.

*Quemada Point* and the *Horse Race* lie nearly seven leagues S. W.  $\frac{1}{2}$  W. from *Cape Honduras*. The latter is a rocky reef, stretching from the point four miles to the N. W. and has been named from the rough appearance of the sea, as it runs over it.

*Cutchabutan Point* at the distance of six and a half leagues to the westward of the *Horse Race*, forms with the latter, a bay, called the *Bay of Cutchabutan*. Here ships may anchor in 5, 4, and 3 fathoms of water, but entirely exposed to the north winds. The *Hog Islands* lie to the northward of it. The point on the western side is low.

The coast hence to the westward, in a distance of about 16 leagues, is very imperfectly known. It, however, affords no harbour, although anchorage may be found in several places along shore. The coast is, in general, bluff, and the land in the interior very high. Over the *River Congriero*, or *Congrehoy*, which is about five leagues from *Cutchabutan Point*, it is remarkably so, and serves as a mark to ships when to the westward of *Rattan*, at the distance of fifteen or sixteen leagues from the main.





*Appearance of the high land of Congriero, bearing S. by W. 12 or 13 leagues.*

The Keys called the *Bishop* and *Clerks* lie at the distance of about fifteen leagues to the westward of Cutchabutan Point. These are three or four rocks, above water, noticed in the preceding description. The River Leon, about a league and a half to the eastward of the Bishop and Clerks, was formerly a noted place of trade with the Spaniards.

*Punta Sal*, described in page 415, is about five and a half leagues W. N. W.  $\frac{1}{4}$  W. from the Bishop and Clerks. This point may be known by three or four rocks, pretty high above water, and larger than the Bishop and his Clerks: they lie about half a mile off the shore, and form a little channel practicable for small craft: the point off the main shore appears with little hills, as broken land, high and low.

The anchorage is under this point to the westward, and right before the opening of Puerto Sal, a little harbour for small vessels. In 13, 17, 16, and 15, fathoms of water, there is rocky ground; but from 13 to 12, and less, you may come with safety to an anchor, in fine muddy ground.

The Low Point of Puerto Caballos lies about 11 leagues W. by S. from Point Sal; there is no high land between the two points: and you meet with two large rivers, viz. Rio de Ulua, commonly called Rio Lua, and Chamaluçon, at both of which you may anchor, in very good muddy ground, with a sea-breeze. To the westward of the Low Point, the anchorage lies in 7, 6, 5, fathoms of water, sand; but without the point you have muddy ground.

From Puerto Caballos to Puerto Omoa, which is about eight or nine miles farther to the S. W. by W. it is all very high land: five or six broken hills, appearing red, lie close to the sea between the two places; and, off these Red Hills, a stone bank stretches to the northward into the sea, about one mile and a half. You should go no nearer in shore than in 8 fathoms of water.

From Omoa to Golfo Dulce, the sea-port is generally very low; but the interior exhibits very high land. This has been already noticed.

Captain Hester says, "The windward, or larboard, side of Omoa is a low sandy point, running off towards the sea, full of high mangrove-trees; and having a look-out house, which is very discernible. This makes the Bay of Omoa very safe in a north, and equally secure in all winds. You may come as nigh the Windward Point as you please: quite close to it there are 6 fathoms; and, about a cable's length from it, 17, 16, 15, 14, 12, 9, 8, 7, 6, 5, 4 $\frac{1}{2}$ , and 3, fathoms of water: this depth runs from the point as far as the river: you will have from 17 to 12 fathoms, when you come to sail in, and you luff as near as you can to the point. If you cannot lie in the bay, it is best to come to an anchor in 12 fathoms, and warp up in the bay, and moor the ship. You must not come too near on the side of the river, nor where the houses of the town stand, but you may go as nigh as you please to windward. You will have 12 fathoms of water near the wharf at the fort. The river lies to the westward of the town, and has the following depths: from 12 to 9, 8, 7, 6, 5, 4 $\frac{1}{2}$ , 3, and 2 $\frac{1}{2}$ , fathoms of water; about a cable's length from off its mouth, you will have 7 fathoms, and so on to 2 $\frac{1}{2}$ . When you are at anchor at Omoa, if the weather be clear, you may see Cape Tres Puntas about W. by N. or W. N. W. The land to the westward of Omoa is very high, and remarkable by three or four peaks or sugar-loaves considerably higher than the rest."

*Port Omoa to Golfo Dulce*, at the S. W. end of the Bay of Honduras, from Captain Speer.—"The course is westerly to Point Buenavista, which is very low. Then it is W. N. W. to Cape Tres Puntas: between the two points, about 4

miles from the main shore, you may come to anchor in 20 or 15 fathoms, and less water, muddy ground. Having passed Cape Tres Puntas, you open Golfo Dulce, and steer for it S. S. W.

The S. W. bottom of the Gulf of Honduras, into which you enter, after having doubled Cape Tres Puntas, is generally known by the name of the Gulf of Amatique; and the mouth of the *Rio Dulce* lies about 8 leagues S. by W. from Cape Tres Puntas; you must go by your lead, and will have from 9 to 3 $\frac{1}{2}$ , or 3, fathoms. The mouth of the river shows itself very plainly; you bring it to bear S. S. W. and anchor in what water you please, mooring the ship S. E. and N. W.

Five or six leagues N. E. by E. of Rio Dulce, and within the land, is the Golfo, or Little Gulf, called formerly Pirates' Lagoon, and Lake St. Thomas: it is three or four leagues broad, and as many deep; the land round it being very low near the sea, with large manchineal bushes, but very high within the country. This gulf is known by a remarkable table-mountain to the southward of it.

### Swan Islands, Bonacca, Rattan, Southern Four Keys and Reef, Turneff, and Glover's Reef.

SWAN ISLANDS, the Santanilla of the Spaniards, are two small low islands, with bushes, and of importance only as a point of departure. The position of the middle of them, as deduced from the observations of Captains J. Burnett and W. J. Capes, is, latitude  $17^{\circ} 25'$ , in longitude  $83^{\circ} 35'$ . The bearing and distance, from the S. W. end of Jamaica, are W. S. W.  $\frac{1}{2}$  W. ninety-six leagues. They are surrounded by a reef, excepting on the S. W. side, where there is anchorage. The isles are uninhabited; but they are occasionally visited by people from the Grand Cayman to the N. E. for the purpose of catching turtle: and there is some fustic here. Upon the reef, on the south side of the isles, there are several small keys. As the current here commonly sets to the W. N. W. the course from the west end of Jamaica should be W. S. W. about eighty-eight leagues, or until you get into the parallel of the islands, whence you pursue a more westerly course.

BONACCA, the Guanaja of the Spaniards, lies at the distance of forty-four leagues S. W. by W.  $\frac{1}{2}$  W. from the Swan Islands, and will be made by steering S. W.  $\frac{1}{2}$  W. thirty-nine leagues, the land being high. The east end of this island is ten and a half leagues N. by E.  $\frac{3}{4}$  E. from Cape Honduras, and is situated in lat.  $16^{\circ} 30'$ , long.  $85^{\circ} 47'$ . A reef incloses the north and west coasts of the island.

The interior of this island is highly picturesque, and profusely covered with trees. The harbour is on the south side. On coming in, run to the southward of the island, and be sure not to approach within less than a mile of the east end. You will then see a range of ten small keys; run close to them. They nearly join to each other, in form of a half circle, on the edge of the reef. The westernmost of the range, called Half-moon Key, is the largest, and has coco-nut trees on it: run close to the west end of this key, and, bring the key to bear S. E. let go your anchor in 6 fathoms of water. About half a mile to the S. W. of this place there is a dangerous shoal, on which the *Swift*, a sloop of war, struck, in 1784, and was thereby obliged to throw her guns overboard. This shoal stretches S. W. towards a large key, called South-west Key.

There are several keys within. To go to the watering-place, you must steer west from the Half-moon Key, for the Middle or Trolan Key. Keep close to the west point of the latter, in passing, in order to avoid a bed of rocks that stretches N. E. up the harbour. From Trolan's Key steer W. by N. for the key which is nearest to the island, and called Frenchman's Key. Run round the north-east side, between it and the island, observing to keep close to the reef, to keep a good look-out, to fetch as near as you can to the key, and, when it bears east from you, to let go your anchor. There are several patches of rocks lying

to the southward and westward; but as the water is very clear, those dangers may be avoided.

Of Bonacca the *Derrotero* says, It lies nearly N. E. and S. W. in which direction it is about three leagues in extent, nearly surrounded by keys and reefs, extending a league outward. The anchorage at the east end is very good during norths. It may happen that, on any one's taking this anchorage, with a storm from N. or N. W. or W. he may not be able to enter on one stretch; but, in this case, he may tack or work between the keys, on the supposition that it will be sufficient to give them a birth of a cable's length.

**RATTAN.**—This island, lying to the westward of Bonacca, was visited by Captain Henderson, in 1304, is considerably larger than many of the West-India Islands which are cultivated. Its soil, and the natural advantages connected with it, might, perhaps, be found in no degree inferior to any of them. It abounds with deer, wild hogs, Indian rabbits, and birds of many species: parrots are innumerable; and their incessant noisy chattering may be heard at a considerable distance from the shore. The Spaniards have a kind of military station or look-out post on this island: this, however, may rather be considered as intended to establish their right to it by occupancy than as a mean of defence, as the force does not consist of more than five or six men. The small isles to the east of Rattan, named Helena, Moratte, and Barburat, are situated on a flat, extending from the former, and separated from each other by narrow channels. They are frequented by turtles. Captain Henderson, on his return from Mosquita, was driven by stress of weather to take shelter under Barburat, on the beach of which he constructed a hut, but could not gain the interior without great difficulty; the surface, though high, being nearly covered with impenetrable underwood. In the vicinity, pieces of wreck, masts, spars, &c. &c. presented themselves in every direction: and, from an elevation, subsequently gained, the high dark mountains, of the continent, in the neighbourhood of Truxillo, were distinctly seen. The distance between Barburat and Moratte is about one league. Off the eastern part of Barburat are several low keys; and care must be taken, especially in the night, not to haul in too soon.

The *Harbour of Rattan*, named *Port Royal Harbour*, is on the S. E. side of the island. It is formed, on the south, by several islets and shoals, which form two entrances. The largest of these is called *George's Isle*; and the best channel is at the west end of it. On proceeding from the eastward, give the isles of Barburat, &c. a good birth. Endeavour then to make *George's Isle*, which lies abreast of the first high land, and may be known by the water's appearing between it and Rattan. Keep close to the reef which lies on the south side of this isle; and, when you are at the west end, steer, between the reefs, N. W. by N. or N. N. W. It is best to keep close to the island reef, because that is the weather-side. The depths are from 7 to 12 fathoms.

As the water is clear, the reefs and sands may easily be seen, provided that you keep a good look-out. When you have advanced within the reefs, bring the west end of *George's Isle* to bear south, and anchor in 9 or 10 fathoms. You must anchor near the isle, because, on the north shore, and thence towards the middle of the harbour, there are rocks and broken ground, on which, however, there is not less than 3 fathoms of water.

At the N. E. end of the harbour there is a small key, called *Careening Key*, where vessels may be cleaned and repaired. This is the best anchorage for vessels that come in to stay for any considerable time.

The currents, herabout, are very uncertain. With a north wind the current runs strongly to the E. S. E. from the bottom of the bay, and up along the coast of the main. The commanders of vessels, on the first appearance of bad weather, ought, therefore, to get into this harbour as soon as possible.

In *Port Royal Harbour*, ships formerly obtained wood; and they procured water from a rivulet in the N. W. part of the harbour. The harbour is capacious enough to contain twenty or twenty-five sail of the line. The heights of Rattan command such an extensive prospect, that no vessel can pass to the Bay of Honduras without being seen from them.

*Rattan* is about 9½ leagues in length, nearly in a true east and west direction.

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On its south coast there are several small harbours to the westward of Port-Royal; particularly one, formerly called *Dixon's Cove*, about  $2\frac{1}{2}$  leagues from the west end, and just to leeward of the second point that comes in sight in running down from Port Royal. This is a convenient place, during north winds, for ships to shelter in, when bound to the bay, or to British Yucatan.

To enter Dixon's Cove from the eastward, run to leeward of the above-mentioned point, and you will see a key just to leeward of it: keep round the bank that lies off this key, in 8 or 9 fathoms, and you will open the harbour, which lies N. by W. and S. by E. In running in you will see another key to leeward of you, with a reef running to the eastward, which always shows itself. Keep mid-channel, which is all deep water, from 20 to 15 fathoms. Run in till you bring the west end over the key on which the little hut stands, and anchor in the middle of the harbour in about 15 or 16 fathoms, clay ground, and moor with a kedge to the eastward; you will then be abreast of a creek on the east side of the harbour. The banks, on both sides of the harbour, are very steep, from 12 to 3 fathoms, not half a ship's length from the deep water to the shoalest. This is a fine outlet, as you may be at sea in ten minutes; and, in case of accidents, a vessel may be saved here without anchors or cables, by running up to the N. E. part of the harbour, which is all soft mud. The latitude of this harbour is  $16^{\circ} 20' N$ . If your vessel work well, you have room to turn in.

In going down to the bay, if you meet with northerly or N. W. winds, come in for this harbour. In coming in from the westward, you will see the above-mentioned point about  $3\frac{1}{2}$  leagues from the west end. Run in well with the west key until you come on the bank into 7 fathoms: keep along in that depth, hauling round the key until you open the small key; then edge off into deep water, as the reef is very steep, and luff in till you are abreast of the creek on your starboard hand, or the west end over the small key; anchor in about 16 fathoms and moor, as before directed, but, if you anchor in the middle of the harbour, you have room to swing any way, and come to sail from your kedge, when you go out.

When bound from the bay, with a good sea-breeze, you need not go out of this harbour before two o'clock, P. M. as you will be down to the west end time enough to take your departure in the evening.

Right off this harbour, to the southward, at four miles off, is a dangerous shoal, which has not above 10 feet on it.

Running along this bank, about two miles to the westward of the harbour, and about the same distance from the shore, a shoal spot has been passed over, of a foot less than 3 fathoms, when, in a east or two, it deepened to  $3\frac{1}{2}$  and 4 fathoms, then to 6 and 7 fathoms. Loaded vessels of a great draught of water, when running up or down, should not come nearer the land than four or five miles, to keep clear of these banks. There is a good channel between them and the island, but it is very narrow. When you bring the west key of Dixon's Cove N. N. E. you are then to the eastward of the foul ground, and may haul in for the harbour. When you come within four miles of the west end, going to the westward, you are to the westward of the bank.

This harbour, Dixon's Cove, has been the more particularly described from its great utility for ships that may want a place of safety in bad weather.

The *Derrotero* describes Rattan as extending nearly E. N. E. and W. N. W. about 10 leagues, with the reef to the eastward of its east point twelve miles more. It adds, that the north side should not be approached nearer than a league, and those unacquainted should even give it a wider birth. "The south coast has many good anchorages, but they are difficult to take, on account of their entrances being foul, with reefs. Port-Royal is a very proper place to pass the season of the norths in. The entrance to it is by a narrow channel, which the reefs leave open, and which is scarcely half a cable's length broad. The eastern side of this little channel is a reef, extending to the West from George's Island, which cannot be mistaken for either of the other keys, as they are very small. To take this harbour, not having a pilot, it is necessary to buoy the entrance, which ought always to be taken with the wind from the N. E. to East, or from West to South, in order to enter quickly.

"On making Rattan from the South or S. W. care must be taken so as to

avoid the rocky shoal which lies off the S. W. coast, at the distance of four miles; the channel between which and the shore is obstructed by several shallow spots."

Directions for Sailing hence to the Bay, or to British Yucatan, are given hereafter. We shall here only add that, in proceeding from Rattan, on a course to the southward of west, the island *Utila* must be carefully avoided, and should not be approached within the distance of two leagues, as the north side is surrounded by dangerous reefs.

The **SOUTHERN FOUR KEYS and REEF**.—The islets, &c. thus denominated, are the easternmost of those lying off the Coast of British Yucatan.

The *Eastern Reef*, on which these keys are situated, is about 9 leagues in length, from North to South. On the north-east part of it is a key, called the *Northern Key*, which is covered with mangroves. The Four Southern Keys, above mentioned, are those on the southern end of the reef; and of these the westernmost is round and small, and has the appearance of a man's hat; it is called *Hat Key*, and may be known by its having no tree upon it. To the north of *Hat Key* is *Long Key*, which is covered with trees. About two leagues to the eastward of *Long Key* is *Saddle Key*; and to the S. E. of this is *Half-moon Key*, now distinguished by a *light-house*.

From the west end of Rattan, *Half-moon* or the Easternmost Key bears N. W.  $\frac{1}{4}$  N. 21 leagues distant; being situated in  $17^{\circ} 12' N.$  and  $87^{\circ} 26' W.$  From *Half-moon Key*, westward, the edge of the reef or bank, which may be seen, forms an indented curve; and as, to the southward of *Hat Key*, it extends in a S. S. E. direction, it altogether forms a bay, in the shape of a half-moon. Here you must be cautious not to get embayed; as, with the wind blowing at East or E. S. E. the swell is great, and the sea breaks very high. *Hat Key* bears nearly S. W. by W.  $\frac{1}{4}$  W. eight miles from *Half-moon Key*. The extremity of the reef bears from the latter S. W. 3 leagues.

**TURNEFF**, the *Torranof* of the Spaniards, lying to the westward of the Eastern or Four Keys Reef, is a considerable extent of low land, now broken into various forms, and so far overflown by the sea as to appear like an assemblage of small islands. It is surrounded by a reef, or very nearly so, and its extent north and south, is about thirteen leagues. *Key Bokel*, the southernmost part of this land, may be known by its being round, low, and small, with bushes on it. The course and distance from the end of the Southern Keys Reef to this key are W. by S. seven leagues.

Vessels coming in, may keep close round *Key Bokel*, and anchor on the bank within it, in 4 or 5 fathoms, looking out for a clear spot to let go the anchor in, as there is much foul ground, with heads of coral rocks. Bring the key to bear E. S. E. or S. E. by E. or for anchorage you may run to the northward, along *Turneff*, until you open the third boca or lagoon, and there anchor in 4 fathoms; and you will have smoother riding, in case of a north wind.

**GLOVER'S REEF**.—This, as well as the other parts of the bay, already described, has been very erroneously represented. The bank is, in general, very dangerous. With the common trade-wind the current sets strongly over it to the westward. The following description has been communicated by Captain J. Burnett.

"Glover's Reef, which has two sand spots on the north end, lies nearly south from *Hat Key*, distance fifteen miles, tending thence S. S. W.  $\frac{1}{4}$  W. to the south end of the reef, on which there are five islands or keys. These may easily be known from the Southern Four Keys, as they are quite bold on the south side; the keys are very little detached; and nearly all of the same height, with numerous coco-nut trees on them. If, from want of observation, and strong current, you may have gotten to the southward of Glover's Reef, and the wind be so far to northward that you cannot sail north for *Key Bokel*, night coming on, you should anchor to leeward of the key, where there is good ground, in from 7 to 17 fathoms, within half a mile of the keys, and there either wait for a wind, or till you send into English Key for a pilot."

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*The Main-Land and Keys of British Yucatan, commonly called British Honduras.*

Of the variegated keys, reefs, and flats, which lie between Turneff and the main land of Yucatan, no adequate idea can be gained, but by reference to the chart; and, with such reference, an enlarged description becomes unnecessary. In all directions the approach to the coast is attended with anxiety and danger; and the difficulty of the navigation is demonstrated by the numerous remains of vessels that have been wrecked on the keys and reefs. During the continuance of the north winds, the danger becomes increased: the weather in that season being usually hazy and thick; and the currents, which, in this part of the world, are peculiarly governed by the influence of the winds, run with such extraordinary and unequal rapidity as frequently disappoints all calculation, and renders every precaution ineffectual. Another particular, worthy of remark, is that, so deceitful in appearance are the different keys, from the general resemblance that they bear to each other, that the most experienced seaman, when placed among them, frequently becomes distressingly perplexed from the impossibility of accurately ascertaining his situation. To strangers, on making this coast, it is seldom safe to proceed without a pilot. On taking a departure for the eastward, the hazard appears to be still greater.

The Town of *Balize*, which is situated at the mouth of the river of the same name, is the only regular establishment which the English settlers have formed in this country. It is immediately open to the sea. The regularity of the winds which prevail here, and which impart salubrity to the settlement, will be hereafter noticed.

The *River Balize*, from which the establishment takes its name, and from having the oldest and most valuable mahogany-woods connected with it, claims the first consideration. Some of the wood-cutters have placed themselves as high up this river as 200 miles from its entrance: from the sea to this distance it is perfectly navigable for all the purposes required; the continuance of it beyond this, though conjectured to be great, is not accurately known.

The *Sibun*, or *Sheboon*, as it is usually called, is the next river of importance in the colony. The navigation of this is much bolder than that of the *Balize*, and vast quantities of mahogany are floated down its main stream and the numerous branches which fall into it. Its entrance from the sea is little more than three leagues, to the southward, from the town of *Balize*.

Many of the keys contiguous to the coast are of considerable extent; and in some of them particular spots are cultivated, chiefly by the people engaged in turtling and fishing.

*St. George's Key*, (the *Cayo Casina* of the Spaniards) about four leagues distant, in a N. E. direction, from *Balize*, is a most agreeable and healthful spot, and contains a number of good houses.

The long isle, called *Ambergris Key*, to the northward of *Balize*, is said to abound with extensive fresh-water lakes; to produce logwood, and the more valuable kind of dye-wood, named *Brasiletto*. In most seasons it is plentifully stocked with many kinds of game.

At the beginning of October, the *Norths*, or north winds, commence, and generally continue, with little variation, till the return of February or March.

Captain Henderson says that, "whilst these winds last, the mornings and evenings are cold, frequently unpleasantly so; and what in this country is understood by a *wet north*, might, perhaps, furnish no very imperfect idea of a November day in England; a *dry north*, on the contrary, is healthful, agreeable, and invigorating. The state of the weather, during the norths, is extremely variable; for a depression of more than 15° in the thermometer has been remarked in the space of a few hours. Thunder-storms are frequent during the greater part of the year; and in the hottest months are often tremendously violent."

*Directions for sailing to, in, and from, the Bay of Honduras, by Capt Wm. Johnson Capes.*

*Directions for sailing from Jamaica to Balize.*

Take your departure from the west end of Jamaica, and steer W. S. W. by compass, until you get into latitude  $16^{\circ} 35'$ , then run on that parallel till you make the island of Bonacca, the latitude of which is  $16^{\circ} 33'$ , longitude  $85^{\circ} 47'$  W. (The northern and easternmost part of the island is here meant.) Bonacca is a bold high island, and may be made by night, if required, as I do not know of any danger that extends more than one or two miles off on the north side. Some navigators endeavour to make Swan Islands, but that cannot be of any advantage to them, and is the contrary; for if you expect to be near them in the night, you get very anxious, as they are very low, and you may run on them before you perceive your danger. I always give them a good birth, that is, keep to the southward, for the current about these islands is very deceiving and uncertain, but, for the most part, sets to the northward and westward. In one of my voyages to the bay, I was set thirty-four miles to the northward, and sixty-four miles to the westward of account.

Bonacca ought to be made early in the day, so that you may run down to the middle or west end of Rattan by the close of the day, to be ready to take your departure for the Southern Four Keys, at six, seven, or eight o'clock, according to the breeze you have.

If you take your departure from the middle of Rattan, steer W. N. W.  $\frac{1}{4}$  W. and on no account whatever run more than forty-five miles from Rattan before day-light: if you run more than that distance, you are in danger of running your vessel on the reef, where there is no possibility of saving her; for in a short time she will be a perfect wreck. At daylight make all sail possible, and if you do not see the keys, you will soon lift them. The principal key is called Half-Moon Key, owing to its having a sandy bay in the shape of a half-moon; on this key there is a *light-house*, elevated about fifty feet from the surface of the sea: its latitude is  $17^{\circ} 12'$  N. and longitude  $87^{\circ} 26'$  W. On this key the pilots live; a set of useful, active, steady, sober men. These keys ought to be made as early in the day as possible, in order to insure you an anchorage before night.

It frequently happens that vessels, after leaving Rattan, are becalmed during the night, and, in consequence, they will not make Half-Moon Key before the afternoon. In this case, I would advise the master to brace sharp up on a wind, and beat to windward all night, tacking every two hours; for it is to be particularly noticed that the current sets strongly down on the Southern Four Keys Reef. Several vessels have been lost on this reef, owing to their lying-to.

If it should happen that the pilots are all in Balize, (which is very seldom the case) you must make all sail possible. Keep a man at the mast-head, and you will soon discern the key called Hat Key; it is about the size of a long-boat, without any trees upon it. You may round the reef, within two or three cables' length, as there is no danger but what you may see; for soundings extend but a short distance from the blue water. After you have rounded the elbow of the reef, steer west a little southerly, and you will very soon lift the Island of Turneff: at the south end of this island is the little key, called by the pilots, Key Bokel. (At one time the pilots used to reside on this key, and now frequently rendezvous here.) You may round this key by your lead; and, if it be later than 3 P. M. you must anchor here for the night. The anchorage is about one mile from the key; that is, bring the key to bear about S. E. but your lead and your eye is the best pilot for this anchorage. You anchor on a fine white sand-bank; the first sounding you will get is about 10 fathoms: run into 3 or 4 fathoms, clewing your sails up as fast as possible, and giving the vessel at least 40 fathoms of cable; for the sand is so very hard, that, with a short scope, you will certainly drift off the bank; then you have no bottom. If this should be the case, you must heave up immediately, and make sail again, to get on the

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bank. I anchored here one fine night about 11, P. M. let go my anchor in 5 fathoms, gave the ship 30 fathoms of cable; she never looked at it, but drove off the bank. If it had not been a fine night, I should have been compelled to cut from my anchor. I would not recommend any commander to anchor on this ground with a chain-cable; at any other part of the bay a chain is preferable. This bank abounds with fish. In the morning (if you have not by this time got a pilot) get under way at daylight, and steer N. W. for English Key, distance about twenty miles.

*English Key* is situated on the south side of the channel, and is a small, low, sandy key, with two or three thatched houses on it. A pilot lives on it. On the opposite side of the channel, that is, on the north side, is another key, about the same size, called *Goff's Key*; about half a mile to the eastward of which is a little sand-patch, nearly even with the water, called, by the pilots, the *Sand Bore*. This is the place you must anchor at, for it is impossible for a stranger to proceed any farther without a pilot; for the channel becomes so very intricate, and the various keys have such a similitude in their appearance, that a description of them would be a loss of time, and of no use to the commander of a vessel.\*

#### *Directions for anchoring at the Sand-bore.*

When you have made out *English Key* and *Goff's Key*, run for them; but mind and keep nearer to *Goff's Key* than to *English Key*, as there is a dangerous reef off *English Key*. Bring *Goff's Key* to bear about N. N. W.; keep your lead going, and you will come on a fine sand-bank; then anchor in five or six fathoms, good holding ground. The pilots' mark for anchoring here is, to bring three little keys, situated to the northward of *Goff's Key*, called *Curlew*, *Serjeant's*, and *Punchgut Keys*, a little open to the eastward of *Goff's Key*. I have rode very frequently with them all in one. From this anchorage your ship can be seen from the *Government-House*, and in a few hours you will have a pilot.

#### *Directions in case of being misled by current.*

In case the current, or any other casualty, should set you to the northward of *Half-moon Key*, and you fall in with the middle of the *Southern Four Keys Reef*, I would still recommend you to haul the ship to the northward, and go round the north end. On the north end of this reef is a key, called, by the pilots, *North Key*: after you round this key, make all sail for *Mauger Key*, the northernmost key on *Turneff*: after you round *Mauger Key*, steer S. S. W. and you will soon lift *English* and *Goff's Key*; then anchor as before directed.

#### *Directions for returning from the Bay.*

On your leaving *Balize*, I would recommend your taking the pilot as far as *Mauger Key*, as I have known many vessels run upon *Turneff Reefs*, owing to their having discharged the pilots at *English Key*. Endeavour to leave *Mauger Key* at the close of the day, so as to be the length of the *Triangles* by day-light. There is a very dangerous shoal on the west side of the *Triangles*, that has picked up many ships.

The current, in general, sets rapidly to the westward, by the south end of the *Triangle*; a ship should, therefore, never attempt to pass to windward of this reef. On approaching the western edge of the *Triangle*, keep your lead going.

From the channel within *Mauger Key*, if the wind is free, steer north; if not, steer north by east. After you are to the northward of the *Triangles*, shape your course for *Cape Antonio*. From the *Triangles* the current runs from ten to

\* COPY OF A NOTICE, dated Lloyd's, 10th May, 1823.—Many vessels, at different times, having been lost on the *Main Reef*, when going into *Honduras*, from being unable to distinguish *English* and *Goff's Keys*, (between which is the only ship-channel into *Balize*), from the many other keys on the *Main Reef*, Major General Codd, his Majesty's Superintendent, has caused a flag-staff, sixty feet high, with an octagon figure on the top, to be erected on *English Key*.

(Signed)

JOHN YOUNG, Agent for Honduras.

thirty miles per day to the northward : this I have ascertained from the mean of twelve voyages.

N. B. It will sometimes occur that persons offer themselves for pilots, who are entirely ignorant of the channels into Balize : guard against this, as much as possible.

It was observed, in former Directions, that, " should a vessel be constrained to come out by the southern passage, or to the southward of Turneff, the wind which prevents her progress northward, may also prevent her from lying up east from Key Bokel. In this case, bear up and run to the southward, between Tobacco Key and Glover's Reef, especially if you have not day-light to get to the northward and eastward of the north end of the reef. Run to the southward till you see the small keys on the south end of the reef, and there you may bring up till morning, bringing the keys about N. E. There is mostly a strong leeward current about Glover's Reef, which has deceived many, who have lost their ships in the night, expecting to have weathered the north end of Glover's Reef, which is steep-to in most places."

### *Remarks on the Northern Triangle, Cosumel, and the Coast of Yucatan.*

The shoal called the **NORTHERN TRIANGLE** lies at the distance of 13 leagues to the northward of Mauger Key. Captain Burnett says, when the trade-wind prevails, a current, often very strong, sets down between Mauger Key and the Triangle ; there dividing itself, it sets to the southward, between Turneff and the Main Reef, and, to the northward, between the Triangles Reef and Ambergris Key. With a wind from East to E. S. E. as you sail to leeward of the Triangle, you will have a strong current in your favour.

The south end of the Triangle Reef is from four to five miles broad ; it makes in two points, between which there is a sandy spot. From the S. W. point, the reef tends N. by W.  $\frac{1}{2}$  W. to the great key on the centre of the reef ; from thence N. by E. to the two keys on the north end. The course along shore to Cosumel is N. by E.  $\frac{1}{2}$  E. and the shore pretty bold.

**COSUMEL.**—This island, which has been variously represented, is celebrated as the spot whereon mass was first said by a monk in the suit of Cortez. It is covered with timber, cocoa-nut, and banana-trees, and is said to be inhabited by a few Indians, of whose ancestors it was a sacred place of pilgrimage. Captain Burnett says, "The south point of Cosumel is in latitude  $20^{\circ} 4' N.$  the north point in latitude  $20^{\circ} 36'$ , longitude  $86^{\circ} 50'$ . There is a good channel between it and the main, being quite bold on both sides ; but a reef extends to the northward of Cosumel, from the N. W. point, which may always be seen in daylight, with northerly winds. The current runs nearly two and a half miles an hour in this channel, and along shore, till lost in the Mexican Sea. If, after leaving the Northern Triangle, you can lay N. E. by N. you may fetch to windward of *Cape Antonio*, and may thence pursue your course through the Strait of Florida, &c."

**COAST of YUCATAN.**—The last edition of the Spanish Directory describes the N. E. coast and Isles of Yucatan as follow :

The land or corner of Yucatan, called *Cape Catoche*, sends out various islets at a short distance from it, named *Cancun*, *Mugeris*, *Blanquilla*, and *Contoy* : the last, which is the northernmost, and separated from the coast, is thirteen miles from Cape Catoche : its north end lying true east and west with the cape : it stretches from N. by W.  $\frac{1}{2}$  W. to S. by E.  $\frac{1}{2}$  E. five miles. A bank stretches out two miles from its north end, in the same direction, with from 3 to 4 and 5 fathoms depth of water, on rock. From its south part a spit also projects towards the north end of Mugeris Island, leaving a passage, with three fathoms of water, to the anchorage of the last-named island. Contoy has an anchorage for frigates, nearly on the parallel of its northern point, at the distance of a mile and a half, in 4, 4 $\frac{1}{2}$ , and 5 fathoms, on sand ; the depths decrease towards the south to a mile and a half, where 2 $\frac{1}{2}$  fathoms are found, near the edge of the bank ; the latter continues from the north point of the Contoy, and afterwards turns to the west, towards Cape Catoche. Those bound to this anchorage should keep in mind

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that the waters ordinarily run to the N. W. and that at W.  $\frac{1}{4}$  S. five miles from the north end of Contoy, there is a shoal, with two fathoms of water. The tides here are irregular, and fall 18 inches in the season of the breezes, or trade-winds. This anchorage is safe; but at other times you ought to be aware of on-shore winds. At the south end water in holes may be found.

Blanquilla Island does not properly deserve the name, as it is united to the coast by a small tongue of sand, and therefore it is properly a *peninsula*.

Cancun is nearly united to the shore, forming two mouths; the southern named *Nisuro*, and the northern, which has an islet in the middle, *Cancun*: we know nothing of any anchorages here, though some charts represent anchorages at the southern part of Cancun.

*Mugeres*, or *Woman's Island*, stretches six and a quarter miles S. S. E.  $\frac{1}{4}$  E. and N. N. W.  $\frac{1}{4}$  W. with two islets, one at each end of it. It is three miles from the coast. On the west side of this island, and at its middle, there is a cove, formed by two islands, where, according to report, there is a good anchorage, an English frigate having been in it careening in 1801.

*Cape Catoche* has two islets along its shore, which extend out scarcely a mile from it, and form, with *Jolvas Island*, two mouths, called *Jonjon* and *Nueva*, fit for canoes only. From the cape to the west the coast bends something to the south, eighteen miles, to the western extremity of *Jolvas Island*, which forms the *Bocas of Conil*. This coast is foul, for a rocky bank, with little water, extends out two miles. The *Island Jolvas* and the coast form a lake, obstructed by various islets and grassy spots, and fit for small canoes only.

From the *Bocas or Mouths of Conil*, the coast tends W.  $\frac{1}{4}$  S. eighteen and a half miles, to *Monte Cuyo Point*, whence it follows W.  $\frac{1}{4}$  N. thirteen and a half miles, to the *Colorados Point*; and from thence, W.  $\frac{1}{4}$  S. nine miles, and S. W. by W.  $\frac{1}{4}$  W. eight miles, to the west point of the *Lagoon of Mursinic*, or *Lagartos*, in which small canoes only navigate.

From *Colorados*, or *Red Point*, a bank stretches out to the N. W. with 2, 3, and 4 fathoms of water, on a rocky bottom, and on which, in 1780, the frigate *Santa Marta* was lost, at the distance of 1827 varas (nearly 340 English fathoms) from the coast.

A point extends W. S. W.  $\frac{1}{4}$  W. seven and a half miles, from the west point of *Lagartos*, or *Lizard's River*, and thence the Look-out (*Vigia*) of *Igil* bears W. S. W. distant sixty-four miles; and in the intermediate space are the *Bocas of Silan*, and the *Vigias* (Lookouts) of *Silan*, *Santa Clara*, and *Telchaac*: at the first and last, water may be procured.

From the *Vigia of Igil* the coast follows S. W. by W.  $\frac{1}{4}$  W. thirty-one miles, to the east point of the *Castle of Sisal*, and forty miles to the western front of *Mount Note-Perderas*, at the foot of which is *Piedras Point*. On the intermediate coast are the *Vigias of Chujulu*, *Chuburna*, and finally, that of the *Castle of Sisal*.

All the coast from *Cape Catoche* is very low, with shoal water, and without any remarkable objects, excepting the cairn, called *Monte Cuyo*, at the *River Lagartos*, which is only a heap of stones, raised by the Indians for a mark, and is known by its resemblance to the figure of a hat; and the little wooded hills of *Angostura*, *Yalcopo*, and *Puerto de Mar*, which are between the *vigia* of the *River Lagartos* and the cairn or *Monte Cuyo*, which is fourteen miles to the west from the west end of *Jolvas Island*.

Near the west end of *Jolvas Island* is the *Corsario Shoal*, which has been described.

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Remarks on navigating off the Coast between Carthagena and Cape Catoche, and on the General Navigation of the Caribbean Sea, from leeward to windward.

[From the "*Derrotero de las Antillas*," &c.]

It has been shown that, between *Carthagena* and *Nicaragua*, there is a change of wind, which comes to the westward in the months from July to January, and



which does not extend out to sea higher than  $12\frac{1}{2}^{\circ}$  or  $13^{\circ}$  of latitude. We have also said that, in general, the currents on this coast follow the course of the winds; and we have also inculcated the necessity there is of making some point to windward of your port of destination, in places where the winds blow constantly from a certain point of the horizon; and, keeping all this present, or in remembrance, it will naturally occur to consideration, that, in order to navigate from Carthagena to any point of the coast, situated to the west, in the season of the breezes, it is only necessary to shape a direct course, and without more care than is requisite to prevent any injury from errors of situation, by keeping sufficiently to windward: thus, also, to gain way from Carthagena, to the west, in the rainy season, you ought to ascend to the parallel of  $12\frac{1}{2}^{\circ}$  or  $13^{\circ}$ , in order to get into the breezes, so that with them you may gain the necessary longitude; having made which, you can run down to make your destined port, but taking care to make your land-fall to windward of it; that is, at some point to the westward of it. This advice comprehends all we can state on this head without descending to minutiae, which is not necessary: and we shall only add that, by general practice it is known that it is sufficient to gain the longitude of the *Escudo de Veragua*, in order to make the west point of *Porto Bello*, and to enter or to make the port with certainty.

In the same way this advice may be useful to those who, from the westward, seek to make *Carthagena*; for thus, in the rainy season, they ought to make direct courses: thus, also, in the time of the breezes, it is necessary to increase your latitude; for, although in higher parallels you may not have the wind decidedly free, yet so that you can avail yourselves of the winds from N. to W. which, in that season, are common on the Mosquito coast; and farther out, from the proximities of that coast, the breezes are neither so strong, nor the currents so lively. We remark here that, on the meridian of *Escudo de Veragua*, the norths from the Mosquito coast are felt, and so sharply sometimes, as to render it necessary to lie-to; from hence arises the knowledge (or rather evidence) that if, with the breezes, you take the starboard-tack, whether sailing from *Darien* or *Porto Bello*, it will lead the vessel to places where the winds from N. to W. are more frequent, and with them the larboard-tack may be taken, in order to gain *Carthagena* with convenience, and in a moderate space of time. It does not appear correct to dictate rules on subjects which have not been sufficiently tried; but we are completely convinced that such is the practice which ought to be followed, and even so far, as we think, that the starboard-tack should be prolonged even to the length of getting upon the soundings off the Mosquito coast; for ascertaining well your situation on it, and making for the Island of St. Andre, or that of Providence, you may, from either of them, catch *Carthagena* on one stretch; or even, if it could not be done on one stretch, it may be done in very few days. We know that this was done by Captain Manuel de Castillo, who, having the brigantine *Alerto* under his command, dismasted, on an expedition he made in January, 1805, for the purpose of ascertaining the situations of the frontier shoals of the Mosquito shore, got up to the Island of Santa Catalina, whence, having raised a jury-mast in place of his main-mast, he made sail in the beginning of February, and made the *Rosario Islands* on the 8th of the same month: so that he made his whole navigation in less than eight days: and this, being in the month of February, shows well that the winds are sufficiently free to shape a course. We have nothing farther to add to what we have already said in the description of this coast, and shall only mention that, to make *St. Juan de Nicaragua*, it is necessary to be very sure of your latitude; and that, at all seasons, it is better to make the land to the north than to the south of it.

For what relates to the *Mosquito Coast* and its frontier sea, we shall say, that prudence recommends it to the mariner not to risk himself in the tract comprehended between the southern parallel of Providence, and the northern one of the Baxo Nuevo (New Shoal); nor between the meridian of that shoal on the east, and the western meridian of the Mosquito Keys; for in this tract are many shoals, of which the situations are doubtful, and you may run much risk of falling (or rather stumbling) upon some of them.

Thus all that we have to advance on the matter is, that either the said paral-

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els should be crossed well to windward of the eastern shoals, or by the channel which the coast forms with the Mosquito Keys. Vessels from Carthagena may always pass to windward of the easternmost banks; but those from points further to the west, who seek to navigate to the north; for instance, those that sail from *Darien* and *Porto Bello*, must go by the channel of the coast to double *Cape Gracias a Dios*, and get to the west of the Caratasca Shoals, whence they can shape the courses that suit to make *Cuba*. The navigation of this channel is very safe, as before noticed; for the lead is an infallible guide in it, at all times, and under all circumstances. (See pages 408 and 412.)

From what we have said, it follows that every one, bound to any port of the Mosquito coast, should shun getting among the frontier shoals of it; and, to go to it, it is necessary to go either to the south or north, as may best suit, from the place the vessel is in. To go to the coast by the south, you ought to get upon the soundings of it, on the parallel of the Corn Islands, a little more or less; and, once aware of your situation on the soundings, you have only to direct yourself on them to your point of destination, keeping in mind what we have said in the description.

To go to this coast by the north, it is necessary to approach the shore of *Black River*, by the meridian of *Brewer's Lagoon*, in order to be clear of the Caymans and Caratasca Reefs, which, being steep-to, are very dangerous. To make the land-fall with certainty, it is advisable to sight the *Swan Islands*; and from thence, with a south course, you will fetch the coast on the proper meridian.

To make this coast, with or without seeing the *Swan Islands*, and being satisfied as to your longitude, and that you are to the west of the Caratasca shoals, you have nothing more to attend to than the lead; for, as we have shown in the description of this coast, it has such regular soundings, and the depth diminishes so gradually, that it is impossible for any one who sounds, to be lost; and you have only to place yourself in suitable depth to run to the eastward to double *Cape Gracias a Dios*, in the mode and form we have stated in the description, to which we have nothing to add.

If bound to the *Black River*, it is also advisable to make the *Swan Islands*, and to steer thence S. by W. The currents on this coast are very uncertain, although with the breeze they usually run to the N. W. and thus you sometimes cannot make the desired point; but the difference cannot be great, and therefore the error may be easily amended. Those who, for the first time, go on this coast, may be in doubt as to the point of it on which they find themselves; from not knowing the land, though there is no reason for doubt, because the land, from *Brewer's Lagoon* to the east, is all low land; and, on the contrary, to the west, it is very high.

In the navigation which is made to the westward, for the purpose of taking *Puerto Cavallo*, *Omoa*, or the *Gulf of Honduras*, it is necessary to pass to the south of *Rattan*, and north of *Utila*; and, having ascertained your position by the latter, steer to make *Point Sal*, as we have shown in the description, in order to run along the coast from it to the port of destination: but much attention ought to be paid to the weather in the season of the storms, so as to proportion it so as to have the steady breeze to sail in from *Rattan* to *Port Cavallo* or *Omoa*; for, if you are caught by a storm to the west of *Rattan*, it will not fail to be an uncomfortable time to any one obliged to spend it in this sea, which, in all directions, will be dangerous at night; as it would also be to run to take the shelter of *Rattan*, or any of its ports, the only choice that remains to the navigator; for this requires day-light to do it in with safety. With still better reason every one ought to proceed from *Omoa* to the *Gulf of Honduras* with the established breeze; and every one sailing in this sea, in the vicinity of *Omoa* or *Cavallo*, who perceives any appearances of a coming storm, ought to go into one of these harbours, in order to pass the storm while at anchor, and sail from it on a good opportunity offering, for the purpose of doubling *Cape Three Points* and *Point Monabique* in good weather.

If these precautions be necessary in entering the *Gulf*, they are the same in going out of it; and this navigation ought to be made by taking advantage of the land-breeze, and beating to windward with the breeze until you are abreast of

Omoa or Cavallo. From Omoa, if it be in the season of the breezes, or from March to the end of August, you ought to beat to windward in the proximity of the coast, as far as the meridian of Barburat, prolonging the off-shore tack to eight or nine leagues, in order to tack in-shore at mid-day, which is the hour the breeze enters, and keep on till the beginning of the night; when, on the land-wind's coming off, you should again return to the off-shore tack: in this way you may contrive to make your tacks in eight points, or even less, with evident utility. On this navigation you ought to proceed with the greatest caution; which we need hardly remark, as the inspection of the Chart will show the necessity of it. In the season of the norths, when you think the weather settled, you ought to proportion the time of sailing from Omoa, so as to make Rattan with good weather. In this season the land-winds blow during the whole of the night, and the greater part of the day, and allow of courses being made to the east: but you ought, in the first place, to steer to the N. E. for the purpose of getting to sea, and rendering the in-shore tack with the breeze longer: but if, in this situation, the breeze does not enter, and the land-wind continues, you ought then to steer E. by N. that you may pass to the north of Utila, and, if the weather seems settled, to go also to the north of Rattan. Being so far advanced, in any of the seasons, as to the meridian of Barburat, you must haul by the wind for Cape Corrientes, in the Island of Cuba, in case you should have to go to the north; keeping in mind that, as the waters generally draw towards the N. W. it is not advisable to follow the tack to the west with winds from N. E. to N.; but you must change the tack to E. S. E. or E. that you may not approximate too much to the *Northern Triangle*, or the Island of Cosumel, which might be unsafe.

To conclude this subject, we shall now say something of the route which it is advisable to make to go from the western meridians of Cuba, to any point of the coasts of the Caribbean Sea. That which generally has hitherto been done, was, to run out by the Strait of Florida, and steering by high latitudes to gain sufficient longitude afterwards to descend to the south, and make land either in the Greater or Lesser Antillas, or the coast of Cumana and Caraccas, after the same mode as vessels bound from Europe. This navigation is undoubtedly very good, and well considered; but it has been taken, in general, without meditating on the advantages of the navigation within the Caribbean Sea, not only for shortness, but for safety.

To proceed with certainty on the subject, it is necessary to remember that, in the season of the Norths, there is much facility in navigating to the eastward by the south of Cuba, Hayti or St. Domingo, and Porto Rico; and, in addition, there is not that danger which might occur in going to the north, to run out through the Strait of Florida; for, although in the Strait, if a vessel be managed with skill, there is no great risk, yet, before entering the Strait, there is some; and, with a north, you may very suddenly get upon the coast of Cuba, which is then much exposed, and unsafe. With such winds, also, the navigation by the strait is much obstructed; while, on the contrary, it is facilitated and shortened within the Caribbean Sea: and, added to this is, the greater length of the voyage by the strait, than by the sea. It is, therefore, very possible that shorter voyages may be made by the latter. It is true that the norths are neither so strong, nor so frequent, to the eastward of the eastern meridian of Cuba, as they are to the westward, and, therefore, much cannot be reckoned upon them; and you have to gain upon a bow-line all the longitude that remains between them and the meridian of your place of destination; but, if the vessel be moderately *weatherly*, by taking advantage of the daily variations of the breeze, you may make very advantageous boards or tacks, and choosing the parallels between  $15^{\circ}$  and  $16^{\circ}$ , in which the currents have little or no influence, it will be very easy to gain the required longitude in a short time.

From March to June is the time when it is advisable to run out by the Strait of Florida; for, in these months, the breezes are very strong, especially on the Southern Coast, from St. Juan de Guaya, or longitude  $74^{\circ}$  W. to leeward: and, however well-found a vessel may be, some damage is to be expected.

In the other months, during which the breezes are moderate, the land-winds more fresh and certain, and the currents very weak, the navigation within seems

preferable: for, by keeping near to the main land, in the south, the navigator will keep clear of the hurricanes; a circumstance which, of itself alone, is enough to induce one to take this determination; but, in this case, it is necessary to stretch across, so soon as you can pass to windward of the frontier shoals of the Mosquito shore, so as to reach the coast of the main, and make your navigation along it.

From what has been stated, it results that, in the time of the moderate breezes and of the *norths*, that is to say, from *July* to *March*, it is advisable to prefer the route *within*: and, in that of the strong breezes, or from *March* to *June*, *without*, by running through the Strait of Florida.

As practical illustrations of this subject, we will cite the route *within* made by the Naval Lieutenant, *Don Josef Primo de Ribera*, commanding a merchant-vessel, which he conducted from Vera-Cruz to La Guayra, in January, 1803; and the route *without*, made in March, 1795, by the squadron under the command of Lieutenant-General *Don Gabriel de Aristizabal*, which, when compared, will afford a good idea of both, and he examples for those who may practise either.

1. *Don Josef Primo de Ribera* sailed from Vera-Cruz on the 30th of December, 1803, and, upon the 7th of January following, at dark, he found himself 10 miles to the west of Cape Corrientes, in Cuba; from this point he continued working to windward, on both tacks, availing himself of the variations of the breeze until the 10th, when a *north* came on, with which he made a course to the south of the *Bivora Bank*, or *Pedro Shoals*, having previously made the *Great Cayman*. On the 11th, in the evening, the *north* terminated, leaving him in lat.  $16^{\circ} 5'$  and long.  $78^{\circ} 17'$ : until the 19th, he continued to beat to windward on both tacks, in between  $16^{\circ}$  and  $17^{\circ}$  of latitude, on which day, having good observations for longitude, which placed him in  $74^{\circ} 40'$ , he determined to cross over to the Spanish Main, which he did; and on the 22d, before dark, he then recognised the *Snowy Mountains* of *Sta. Marta*, which he marked at S.  $19^{\circ}$  W. *true*; and, on the following day, he made *Cape la Vela*: thence he persevered in beating to windward; and, not being able to get through the strait between the Island of *Oruba* and the coast of *Paraguana*, he went outside, prolonging the stretch well, in order to shun the currents which are in the vicinity of that strait: he afterwards followed the other tack, in order to pass between *Oruba* and *Curagoa*, and then continued beating up, between these islands and the coast, to *La Guayra*, which was his port of destination, and in which he anchored on the 4th of February, at 8 h. in the morning: thus his voyage from Cape Corrientes was made in twenty-seven days.

2. The squadron of General *Aristizabal* sailed from Havana on the 27th of February, 1795.—On the 5th of March, they found themselves clear of the Strait of Florida, and continued between the latitude of  $28^{\circ}$  and  $29^{\circ}$ , until the 14th of the same month; when, finding they were in longitude  $60^{\circ} 17'$ , they began to reduce their latitude, by steering about S. S. E. with which, being on the 21st in lat.  $19^{\circ}$ , and near the longitude of  $54^{\circ}$ , they mended their course to S. S. W. with which, on the 27th, they were in lat.  $11^{\circ}$  and longitude  $57^{\circ}$ , whence they proceeded to the west, and anchored in Trinidad, on the 29th of March, in thirty days passage.

It is to be understood that these reflections have not been given so much with the view of persuading mariners to adopt the route proposed, *within* the Caribbean Sea, as with the view of promoting *future consideration* and *experiments* on the subject.

## CHAP. XIV.



*The COASTS and HARBOURS of the MEXICAN SEA or GULF of MEXICO.*



[This chapter includes all the navigation of the Mexican Sea or Gulf of Mexico, from Cape Catoche to the Mississippi.]

*Cape Catoche to Point Xicalango.*

The N. E. land or knee of Yucatan has several islands at a short distance from it, as represented on the new chart; these are *Cancun*, *Mugeres*, *Blanquilla*, and *Contoy*; the last, which is the northernmost one, lies about seven miles from the main coast; its shore is clear, and you may pass at two miles from it, in 6 fathoms: between it and the coast there appears to be anchorage; but this part is imperfectly known. The north point of Contoy lies nearly east, true, twelve miles from Cape Catoche.

From the Bocas de Conil, the coast continues to the W. by N. about fifty miles, to the *Rio Lagartos*, (Lizard River) whence it inclines W. S. W.  $\frac{1}{2}$  W. the distance of thirty-five leagues to *Punta Piedras*, or Rocky Point. All the coast from Cape Catoche is very low and flat, without any remarkable objects upon it, excepting a *Cairn*, or little mount of stones, intentionally raised by the passing Indians on the very beach of Lagartos, which may be known by its resemblance to a hat: to this follows the *Vigia*, or Look-out, of the River Lagartos; next to it is that of *Silan*, where water may be procured with facility. To the Look-out of Silan follows that of *Santa Clara*, to which succeeds that of *Telehaac*, where, also, water may be procured; next comes that of *Ygil*, then that of Chuburna, and to this, finally, the Castle of Sisal. None of these Look-outs (*Vigias*) nor the cairn of Lagartos, nor Castle of Sisal, can be seen farther off the shore than from 6 fathoms of water. From the Cuyo or Cairn at Lagartos, to Chuburna, you may anchor without fear in from 4 fathoms outward; but not nearer land, as there are many stones, shoals, and banks of rocks, which cannot be easily ascertained by the lead, because they are covered with a coat of sand, and thus they cut the cables, whereby anchors are lost; in addition to which the depth often suddenly diminishes upon them, and therefore vessels are in much danger of getting aground, and of being lost.

Upon Point Piedras there is a little mount, named *Note-perderas*, (Do not lose yourself) which serves for a good mark to know it by, and which is seen from Sisal Shoal, or at fourteen miles off. From this point the coast rounds about to the S. W. for thirty miles, to Point Descendida, which forms the N. W. front of the Peninsula of Yucatan: this coast, as well as the former, may be seen well from 6 fathoms of water, and is commonly named the *Palmares*; for, among the wood with which it is covered, many *Palmitos* (Cabbage Palms) are seen, though there are none on the other parts of this coast. On the coast of Palmares no one ought to anchor; for the bottom is of stones, covered with a thin coat of sand, which deceives the lead.

From Point Descendida, the coast tends to the south, but rather inclining to the east, true, twenty-two miles, to *Las Bocas*, (The Mouths) which are two lit-

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the inlets formed by the coast; in front and very near to them are two very little islets. From the Bocas, the coast continues to the south, with some inclination to the west, true, to the distance of fifteen miles, or to *Jayna*, which is another inlet of the coast, at the mouth of a river; in front of this there is another islet; there is also an islet, named *Piedras* (or *Rocky*) *Islet*, half-way between the Bocas and Jayna.

From *Jayna* the coast continues with some inclination towards the west, true, to the distance of twenty-one miles, towards the river of *St. Francisco*, which is four and a half miles to the N. E. of *Campeche*, the only point of commerce on all this coast.

The coast between Point Descondida and the River of *St. Francis* cannot be seen farther off than from 3 or 4 fathoms depth, and then it appears to the view with various breaks, which look like very low keys; all of it is remarkably shallow and clean, so that, with the lead in hand, there is not the least danger on the whole of it, excepting that which arises from the hull of a sunken vessel, which lies to the west of the *Isla Piedras*, and in 3½ fathoms of water, to which vessels navigating in this depth ought to give a birth.

From the River of *St. Francisco*, the coast continues to the S. W. for twelve miles, to *Point Morros*, on which the Castle of *St. Josef* is the first thing described; afterwards the city of *Campeche*; to it follows the castle of *St. Miguel*, next comes the town of *Lerma*; after it succeeds a point of the coast extending out to the sea, and which is named *Point Martin*; the next to it is *Point Morros*: all this front of coast, which forms the anchorage of *Campeche*, may be seen plainly from 5 fathoms; but the water is so shallow that you will find 4 fathoms at fifteen miles from the land, and 2½ fathoms at four miles from it. This anchorage, therefore, needs no pilot, nor any particular advice for taking it; for, once arrived at the depth convenient for the vessel's draught of water, you may let go your anchor, remaining as if in the middle of the ocean: hence results an immense labour in discharging and loading cargoes; for even those vessels which can approach nearest to the land, remain four and a half miles distant from it. In order to diminish this labour, and to manage so that boats, lighters, or launches may go to and return from the shore under sail, they anchor to the west of the tower. In this anchorage, although open entirely to the north and N. W. winds, which in the season blow with great force, there is not any thing to fear, for they do not raise any sea of consequence, and vessels remain at anchor with sufficient safety.

To the west of *Point Morros*, and rather more to the south, it is not so shallow; and, according to information, 4 fathoms may be found there, at a league from the shore. Any one who approaches this coast, with the object of wooding and watering, ought to endeavour to take this last anchorage, in the vicinity of which, and something to the south, is the town of *Champton*, where they may provide themselves with the articles required.

From *Point Morros*, forty-four miles S. by W. is the River *Escatalto*; the coast hence begins to round itself to about S. W. by W. to *Point Xicalango*, which is the western extreme of the Lagoon or Lake of *Terminos*. This lagoon is a great bay, about forty miles wide, and having about thirty miles of bight: between its two outer and extreme points are two islands, which shelter it; the western, named *Carmen*, is the largest. At the western extremity of *Carmen* is a garrison, named that of *San Felipe* (*St. Philip*.) Between this and *Point Xicalango* is the principal entrance to the lagoon, with rather more than two fathoms of depth, and of it we are informed only that it is very difficult to enter, and that it is absolutely necessary to have a pilot.

**SHOALS OFF THE NORTHERN EDGE OF CAMPECHE BAY.**—The first, which we have distinguished by the name of the *Argus*, was seen by a lieutenant of the Spanish navy, Don Sebastian Rodriguez de Arias, commandant of the brigantine *Argus*, in sailing from Vera Cruz to Havana, at 2 P. M. 11th of July, 1818, being then in latitude 24° 2', and longitude 89° 44', (from Greenwich) discovered a break, which, on examination, disclosed a small bank, of about a cable and a half's length, in all directions, with a breaker of from 12 to 15 toises in the centre, on which the water broke heavily, although the sea was other-

wise very smooth, and the wind very calm. At mid-day the commandant had observed in latitude  $24^{\circ} 4'$ ; and at 5 P. M. he found the longitude, by lunar distances,  $89^{\circ} 56'$ , both observations to be depended on, and corrected to 2 P. M. and, referred to the situation of the shoal, he made it in lat.  $24^{\circ} 8' 30''$ , and long.  $89^{\circ} 42'$ . This shoal appears to be the same which was seen on the 10th of November, 1800, by Don Narcisso Riera, captain of the Spanish merchant schooner Catalina, bound from Campeche to New-Orleans; but, as his longitude was deduced from dead reckoning, we have more confidence in the position assigned to it by Arias: nevertheless, navigators sailing on this parallel, ought to be on their guard, lest the two dangers should really exist.

Don Manuel Bozo, pilot of the Spanish bombard Nuestra Senora del Carmen, in sailing from Vera Cruz and Terminos Lagoon, towards Havanna, on the 8th of December, 1817, at day-break, saw a breaker or rock off the starboard gangway: the sea being smooth, and the wind moderate from the eastward, there was no doubt of its being a shoal, the extent of which he estimated at from two to three cables' lengths, extending N. E. and S. W. and on its ends he saw two rocks or pinnacles, about three feet high, and his distance from it was from three to three and a half cables' lengths, where he sounded, and found no bottom with 70 fathoms: and although he thought to examine it with his boat, he could not effect it, on account of the heavy break in the vicinity of the shoal; but he saw the spit of rocks, of which it was composed, running the whole length of the danger. Having corrected his reckoning, for 6h. A. M. the hour at which he saw the shoal, he found it lay in latitude  $24^{\circ} 8'$ , and longitude  $91^{\circ} 7'$ . At noon, he observed in latitude  $24^{\circ} 22'$ , with certainty, and this was only one minute north of his D. R. and referring this to the shoal, by his run for six hours, he found its latitude by this to be  $24^{\circ} 7'$ , and longitude  $84^{\circ} 49'$  west of Cadiz; nor could there be any considerable error in his reckoning, in three days sailing from the *Vigia of Chuxulu*, off which he had been at anchor.

This shoal appears to be different from the former, although its latitude is so nearly the same: the short time which intervened between his departure from the *Vigia of Chuxulu* and his making of the Tortugas Bank, when he found only 13 minutes of error in his longitude by dead reckoning, shows that its situation, as to longitude, cannot be materially wrong. The shape and circumstances of the shoal, as described by Bozo, also shows it to be different. Many old charts indicate a danger, with the word *doubtful*, almost in the same position, which, also, tends to confirm the belief of its existence.

### *The Soundings or Bank of Campeche.*

The Campeche Bank is a great shoal, which extends from the north coast of Yucatan almost as far as lat.  $24^{\circ}$ , and from the coast of Campeche, to the west, as far as the meridian of  $92^{\circ} 30'$ ; the depth as well as the quality of the soundings on it are so uncertain, that it is not possible to ascertain your situation on it by the lead: it will be sufficient to take a glance at the chart to convince yourself of this fact; nevertheless, the soundings from 20 fathoms towards the shore are so regular, that you may navigate along it with all safety; for having once caught that depth, which you will find at ten or twelve leagues from the coast, the depths will be found to run uniformly with the coast until you are to the N. W. of Point Piedras, when it suddenly diminishes two fathoms. The same regularity is remarked all along these soundings, from 20 fathoms to 4 fathoms; and you will always find the diminution to the N. W. of Point Piedras, which is undoubtedly caused by some spit of rocks that extends out from the point; for upon it the soundings are always on stones. From 4 fathoms to the shore, in all the tract of coast between the Cayo or Cairn of Lagartos and the Lookout tower of Chuburna, we have already said that there are various stones and shoals, most perilous to navigation.

The quality of soundings, from 20 fathoms towards the shore, does not preserve regularity; for some times it is gray sand with gravel, at others gravel alone,

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and at others sand with shells and coral; thus it alternates until to the N. W. of Point Piedras, where, as we have already said, the soundings are on stone or rock, which make a very good mark to know a vessel's situation by, and to enable her to shape a course with security, so as to pass between the Triangles and New Shoal, (Triangulo y Baxo Nuevo,) which is the channel that ought to be preferred for running off the bank on its western side: but it is still better to ascertain the vessel's place by the course which is necessary to preserve the depth of 20 fathoms; for, if you retake that, steering W. S. W.  $\frac{1}{4}$  W. it is a proof that you are between the meridians comprehended between the Cairn of Lagartos and Point Piedras; but, if you augment the depth on this course, it is necessary to change it to S. W. by W.  $\frac{1}{4}$  W. and S. W.  $\frac{1}{4}$  S. it is a proof that you have passed the meridian of Point Piedras, and that you are abreast of the N. W. front of the coast, or between Point Piedras and Point Descondida; and, finally, if, in order to retain the same depth, you are obliged to steer south, you need not doubt that you have passed, or are at least abreast of, or on the parallel of, Point Descondida. What we have said of 20 fathoms depth applies also to any lesser depth on this coast; but on the rest of the soundings, or bank, that is, from 20 to 22 fathoms, into deeper water, there is no regularity whatever, either in the depth of water or quality of soundings, especially on the north part of it; and this necessarily follows, for it is sown with shoals most dangerous to navigation, of which we shall speak in order.

Baxo del Corsario (the Privateer Bank) has been explored by Don Ciriaco de Cevallos and Don Juan Lopez de Aguila. It extends N. N. W. from the west point of the island Jolvas, and has near it 10 fathoms of water; there are breakers on it only when there is a heavy sea.

The last Edition of the "*Derrotero de las Antillas*," says, the shallowest part of the Corsario Bank, is situated according to the survey of Don Ciriaco Cevallos, in lat.  $21^{\circ} 37' 30''$ , and long.  $87^{\circ} 16'$ , from Greenwich, giving it an extent of three miles from east to west, and about half a mile from north to south; its west end being on the meridian of the west end of Jolvas Island, four and a half miles distant. The shoal has been examined by the pilot Josef Gonzales Ruiz, who gives the following description:

"The Corsario Shoal is a rocky spit, which begins to the eastward of Mosquitos Point, with a turn of about three leagues to the north and to the westward of that point; it extends about N. W. by N. to that or rather a less distance, and ends in 7 or 8 fathoms of water. All this bank is of rocky spots, which shoalen towards the land, until, at about three and a half miles from Mosquitos Point, there is a shoal extending about two miles east and west, and less than half a mile in breadth. This shoal, at low water, has 11, 12, and 13, palms of water; and, at high water, 13, 14, and 15, palms. Some of the rocks rise higher than others. The shoal is of Mucara Rock, with black spots, and some red ones, which seem to be sponges. Those spots farthest to the east bear from the west part of the island, two leagues from Mosquitos Point, N. N. E." It may be observed that the situations given by this pilot do not accord with those of Cevallos, and the latter are supposed to be entitled to the greater confidence.

Bajo Sisal (Sisal Shoal) is a large tract of rock, on which there is a spot of about two cables in extent, in all directions, which has not more than 13 feet of water on it: this point is the danger to navigation; and to keep clear from it, take care not to get into less than 12 fathoms if you go to the north of the shoal, or into more than 7 fathoms if you go to the south of it, or between it and the land; for its edges on this side are in 8 fathoms, and on the outside in 11 fathoms. Soundings on rock are also a secure indication of the proximity of this shoal; but the best mark for it by day is the bearing of the Mount Note-perderas, which lies true south (S.  $7^{\circ}$  E.) from the shoal, and from the shoal itself this mount can be seen in clear weather: the situation of this shoal is well ascertained.

The "*Derrotero de las Antillas*," says "This shoal was sought for and found by Don Ciriaco Cevallos, on running from the anchorage at Sisal. He says, the least water on it is 2 fathoms, according to the traditional information of the people of the country; but he could find only 18 feet, surrounded, very near, on all sides, by 6, 8, and 10 fathoms. Between it and the contiguous lands

of the continent is a channel of 12 miles, fit for the largest vessels. It is true, when he found 18 feet, we were ignorant of the state of the tide, which, at that time, rose from 3 to 4 feet at high water. From the shoal Mount Note-perderas (*i. e. Don't lose yourself*) bears true S. 7° E. 14 miles; and this mount is the best mark of keeping clear of it, whether passing to the northward or southward."

The Alacran is a shoal of great extent; it is thirteen miles from north to south, and ten miles from east to west: in its south part there is a little safe and well-sheltered harbour, in which vessels drawing 11 feet may anchor. This harbour is frequented only by the Campeche coasters, who make oil from the immense quantity of fish which they find here. All others ought to shun the proximities of the shoal; no one should ever sail here about, from the east to the west, in 28 fathoms depth or upwards; but should always pass in from 20 to 22 fathoms. The situation of this shoal has been well ascertained by the survey of Don Ciriaco de Cevallos, who says, the shoal extends fourteen miles from north to south, and eleven from east to west. The islets upon its southern part are named Perez, Chica, and Pajaros, and it has various banks and reefs, rising more or less above the surface of the water. The harbour is formed by the reefs, which extend around Perez and Pajaros. At its entrance the depth is from 2½ to 7 fathoms and, farther in, from 2½ to 7½ fathoms. The best anchorage is to the eastward of the middle of Perez Isle, in 6½ fathoms, on sand and shells, having to the south the rocky bank, which extends from the S. W. end of that isle towards the E. and E. S. E. about six cables' length."

The Arcas are three islets, which may be seen at the distance of five miles; they are the southernmost upon the western edge of these soundings, and lie almost nearly W. by N. twenty-seven leagues from Campeche. They form of themselves a good harbour, which may be entered at any side as is most convenient, and without any other care than to avoid the spits stretching from them. The N. W. entrance may be taken by hauling round the south part of the N. E. island, (which is also the largest) and passing the east part of the S. E. island; this will carry you clear of a spit which runs out to the N. W. of the greater island, and which is the object that shelters the anchorage from the northerly swell. To enter by the S. W. you ought to give a birth to a reef which stretches out about one and a half cable's length to the south of the westernmost island. The west shore of the larger island also sends out a reef about a cable's length from it; and as this lies within the shelter of the anchorage, the sea does not break upon it, and therefore you may very easily run upon it; but you will avoid this by not approaching the west coast of that island nearer than two cables' length. This anchorage is very superior in northerly gales to that of Campeche; and as there is depth in it for all classes of vessels, he who under such circumstances, can catch it, will find himself well sheltered and secure. These islands are correctly placed in the new chart.

These isles have been surveyed, and a plan of them published at Madrid. The new directions state that, in entering by the N. W. Passage, you should bring the south end of the northernmost isle, which is also the largest, on with the middle of the S. E. isle: this mark will lead clear of the spit, which extends to the north and west from the larger islet, and which is that affording shelter to the anchorage from the northerly swell. The S. E. Area is surrounded by reefs, separated from it by a space of about a cable's length in breadth. This islet, with the reefs at the S. E. part of the large one, form a channel of two short cables' length, with from 5 to 16 fathoms, on sand, stone, and gravel; by which, in case of necessity, and according to the situation a vessel is in, an entrance to the anchorage may be attempted.

The Cabezo, a head of rock, which lies thirteen and a half miles to the S. W. by S. of the Arcas, having only one fathom over it, must be cautiously avoided.

About N. by W. from the Arcas, at the distance of seven leagues, there is a shoal of small extent, named the Baxo del Obispo, (the Bishop's Shoal), on which it appears there is some rock that may be seen, but which cannot be discovered at more than two miles off, by day, in clear weather, and with great vigilance; therefore it ought, at all times, to have a wide birth. Its situation

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has been well ascertained, and to be a flat rock or stone, with 5 fathoms of water on it, and so steep that, up and down at its edge, there are 27 fathoms; and this causes the sea to break heavily on it; wherefore at all events, it should be avoided. The Placer or Baxo Nuevo, lies 5 leagues N. E. by E.  $\frac{1}{4}$  E. from the Obispo: and to this, also, a birth ought to be given.

To the north of the Obispo, at the distance of 31 miles, is the Triangle. (El Triangulo.) which consists of three islets, lying about N. E. and S. W. in which direction they extend about seven miles. They are visible at seven miles distance, and send out spits and shallows, which render it improper to pass between them, or to approach them nearer than two miles to the W. N. W. of the northernmost. At six miles from the latter there is another islet of sand, of about half a mile in extent, which is very clear on the south part, and which sends out a spit to the north; it is very low, and is covered with birds and some drift wood. The situation of these islands has, also, been accurately ascertained, and the *Derrotero de las Antillas*, says, the Triangle lies to the north of the Obispo, at the distance of twenty-four miles. It is composed of three islets, of which the two eastern are two miles distant from each other, but they are connected by reefs. The westernmost bears from the easternmost which is the largest, W.  $\frac{1}{4}$  N. eight long miles; and between the western and middle one is a channel, six miles broad, having from 18 to 30 fathoms, on sand, gravel, and rock. From the easternmost islet a reef extends, with a large rock above water, first to the N. N. E. and then to the N. W. forming a bow or crescent, two miles in length. From the north and east of the western island, shoals also extend to a short distance.

"The soundings in the vicinity of the Triangle are 20 fathoms, on fine sand, at two miles E. by S. from the larger islet; 25 fathoms, sand, gravel, and rock, at seven-tenths of a mile; 28 fathoms, sand and clay, at nearly a mile to the S. E. 20 fathoms, sand and gravel, at two cables' length to the south; 21 fathoms, from three to six-tenths of a mile to the south of the reefs which connect the eastern island to the middle one. To the W. S. W. of the middle isle are 21 fathoms, on sand and gravel."

The *Bajo Nueva* (*New Shoal*) is a head of sand, which shows at low water, with various rocks, which also show a little; the sea breaks upon it in ordinary breezes, and it is so steep that, from 30 fathoms, in running two miles, you pass to 10 fathoms, and from that, in two cable's length more, you may be aground. This shoal is hardly of the extent of a cable and a half from north to south, and four cables from east to west. Its given situation is, as yet, rather doubtful; for the observations of latitude made in the two ships of the Spanish line, San Leandro and Dragon, when the latter was lost on it, differ six minutes; being, according to the one, in  $21^{\circ} 50'$ , and, according to the other, in  $21^{\circ} 44'$ . Its longitude, although not deduced from particular observations made on the spot, cannot vary much from the truth. Since the preceding was written, the shoal has been placed, by Don Ciriaco de Cevallos, in lat.  $21^{\circ} 50'$ , and long.  $81^{\circ} 50'$ , which is, we presume, correct.

*Isla Arenas* (*Sandy Island*) is placed according to the situation assigned to it, by Don Ciriaco de Cevallos; it had been previously seen by Captain Miguel de Alderete and Lieut. Andres Valderrama, on their voyage in search of the *Negrillo*, in 1775. The eastern side is bordered by a reef, which continues to extend, in two long spits, to the West and N. W. 10 miles. Between these spits, on the west of the isle, there appears to be anchorage, between the reefs, in from 7 to 4 fathoms; but of this ground we have no correct description. Cevallos has determined the situation of the island, which is  $22^{\circ} 8' N.$  and  $81^{\circ} 18' W.$  this isle is low, and forms nearly a parallelogram, in the direction of N.  $48^{\circ} E.$  to S.  $48^{\circ} W.$  true, 3 miles; its greatest breadth being two. It is foul all round, and a great stony spit extends from its north end, with some rocks above water, to N.  $35^{\circ} W.$  true, 9 miles. From the S. W. part, another, of a like kind, extends N.  $62^{\circ} W.$  and S.  $89^{\circ} W.$  (true) 6 and 9 miles. Between the reefs there is a good harbour, to the W. N. W. of the island, sheltered from winds from the North round by East to S. W. with a depth of from 5½ fathoms, at 2 miles from the island, to 7 fathoms between the points of the reef.



The island *Bermeja* is placed, as given by Alderete and Valderrama, to the northward of Arenas; but these officers did not see it, though they sought for it, and thus we are not sure either of its situation, nor any particular relative to it. Cevallos also sought for it in vain. It seems possible that this and Arenas may be one and the same.

The *Negrillo* is a shoal of which many have spoken, without knowing its true situation. In the ship of the Spanish line, *San Julian*, commanded by Don Juan Joaquin Moreno, the declaration of the gunner, Manuel Sandoval, was taken, who said that, sailing in the ship of the line, *Buen Consejo*, commanded by Don Joaquin Olivares, on his voyage from Vera Cruz to the Havana, and nine days after sailing from the former port, they saw, about 2 P. M. the sea breaking; and having examined it with the long-boat, in which the declarant went, they found a rock of about half a boat's length in extent, to which they hung by the boat-hook, until they sounded at the boat's stern; with 120 fathoms they found no bottom; and though they repeated this, with equal diligence, round the whole circumference of the rock, they found the same results. Upon the rock there was not more than 3 or 3½ fathoms of water: he added, that he had heard the officers and pilots say that this was the *Negrillo*.

The prime object of the expedition of Alderete and Valderrama, in 1775, was to search for this shoal; but they never could find it, though they cruised for it over the whole space of sea, in which it ought to have been found, according to the old charts: subsequent information, however, which was given to Don Thomas Ugarte, proved its existence; and latterly, Captain Cevallos has communicated information which he gained from the declarations of Don Domingo Casalo, captain of the schooner *Villavonesa*, who saw it on the 14th of November, 1806, at 3 P. M. and it turns out to be in  $23^{\circ} 25' N.$  lat. deduced from an observation taken at mid-day, with all care, and long.  $83^{\circ} 55' W.$  of Cadiz, or  $90^{\circ} 12' 27'' W.$  of Greenwich, as deduced from the points of departure from the Campeche soundings and the making of Vera Cruz, which leaves the longitude questionable only to an error of 4 minutes. According to the description of the captain, this shoal is no more than a rock of one-quarter of a cable in extent, N. E. and S. W. over which the water washes, except at the two extremities, which show a little; but these could not be seen above a cable and a half off, and at less than a cable from it, no bottom could be found with 75 fathoms.

In addition to the shoals already described, it seems that there is, somewhere about the northern part of the great bank, a shoal of some extent, and, in part, very shallow. It is described to have been found, in 1768, by the sloop *Podre de Dios*, (*Power of God*,) but the account is so confused as to afford no satisfactory result as to its longitudinal position. It must, however, lie to the eastward of the *Negrillo*. In lat.  $23^{\circ} 15'$ , 50 fathoms were found; afterwards, on an undefined course to the N. E. 14 fathoms, on a rocky bottom. Here, at one A. M. they anchored until day-light, after which they weighed and continued to the N. E. sounding frequently, and in a short time found six fathoms, and saw in the bottom great heads of black rocks, with some patches of sand, which were avoided by steering to the East. On this course, in two hours, they had 50 fathoms, bottom of sand; resuming a N. E. course, the water increased to 70 fathoms; but, at mid-day, they found 40 fathoms on rock, when their latitude, well observed, was  $23^{\circ} 28'$ . From noon until day-light of the next morning, the vessel sailed always upon an unequal bottom of 38 to 47 fathoms, over rocks, and afterwards on sand, thence increasing the depths, so that at noon, by observation in  $23^{\circ} 46' N.$  they had 74 fathoms, with the prow to the N. N. E. They preserved the same depth until midnight, when they got 58 fathoms on rock, and continued on this shoal until day-light, when they had soundings on sand; the water again increased; and, at mid-day, observed in latitude  $24^{\circ} 3'$ , and found 116 fathoms, sand bottom, whence they shaped a course for the *Tortugas* soundings, on which they entered without any new differences in their reckoning.

From the ambiguous relation, of which the preceding is an abstract, we can only make out, that the soundings which this vessel ran over were from the meridian of the *Alacranes* to the Eastward; that the edge of them reached lat.  $24^{\circ}$ ; and that on the soundings were found various unknown shoals, which seem likely to be dangerous to navigation.

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In December, 1801, Don Dionisio Galiano passed over an extensive sand-bank, exhibited on the new Charts, which lies about 24 leagues to the eastward of the Negrillo, and having, on its S. W. part, 16½ fathoms. As it does not appear to be dangerous, it requires no farther description. The situation seems well ascertained.

*These are the Shoals*, which, down to the present time, have been known as existing on the Campeche Bank of Soundings. He who navigates on it, in 20 fathoms, will go clear of the *Corsario*, *Alacranes*, and *Sisal Reefs*; and in a secure track for passing through the channels formed by the shoals on the western edge. Of all these channels, the best is that between 21° and 22°, formed by the Triangle and New Shoal, (*Bajo Nueva*.) because it is the clearest; and we recommend it always to be taken by those bound to the west. The soundings which conduct the mariner through the middle of it, and clear of the shoals on each side, are tolerably regular; for, after he is to the north-west of Point Piedras, if he continues the course W. S. W. and W. by S. true, he will increase the depth, in a short time, to 23 and 24 fathoms, on fine white sand, or coarse white sand with gray spots; and thus he will run progressively to 30 and 35 fathoms, in which depth he will find some clay; and, so soon as he gets 40 and 45 fathoms, the bottom will be of loose clay, a certain sign of being to the west of the shoals. In this channel, and almost in the middle of it, there is a shoal of 29 fathoms, hard gravel, with a spot of rock of 10 fathoms, which can alarm those only who sound on it, by the idea that they may be near some danger. But they need not be alarmed; for, sounding a short time afterwards, they will find the bottom sand and clay; and those who find this change will, of course, have a new mark for their situation, as this shoal is in mid-channel, and almost in a line with the shoals.

### *Directions for Navigating on the Campeche Soundings.*

It is undoubted that the eastern edge of this bank is an excellent corrector for the longitude of a ship: on running nearly north or south, every one who gets soundings on this edge may consider himself as in 86° 20' W. of Greenwich, and thus those who sail from the eastward, to enter on the soundings, or bank, ought to sound frequently, in order to catch bottom at the edge, or in its proximity, in order to have this correction of longitude.

But this excellent mean of rectifying the longitude ceases to be so when there is great uncertainty in the latitude; for as the water between Cape Antonio and Cape Catoche at times runs to the northward, at the rate of 3 miles in an hour, it is necessary to allow for this, so as to enter on the soundings in a convenient parallel from which you may make a course to the S. W.

It is clear that, by steering S. W. or thereby, you may not only get soundings on the eastern edge, but also on the northern edge, in which case, having no certainty of the longitude, it would be very dangerous to direct the subsequent navigation by making courses to the S. W. in order to obtain the depth of 20 fathoms, and to pass at a proper distance to the east of the Alacranes. Such an attempt was the cause of the loss of a merchant-vessel named the *St. Rafael*, which got a-ground on the eastern extremity of the Alacran Reefs; from which the other vessels of the same convoy, escorted by a ship of the line, *Santiago la Espana*, passed about 2 miles clear. This loss, which happened in 1795, authorises us in recording it, and in pointing out the necessary means of preventing similar mistakes in future.

Once on the Bank of Soundings, and having ascertained your latitude, or situation on its eastern edge, you may make the rest of the navigation by it with much security; for, placed on it, you have a mean of keeping a very exact reckoning, and free from the errors produced by currents. In place of a log-chip, in heaving the log, make use of a lead; for the lead, by resting firm on the bottom, will show the whole distance or rate that the vessel runs, whether that rate

be caused by the wind or by the current; and marking the bearings of the line, the opposite direction will be the correct course which the ship makes good, and which requires no farther correction than for magnetic variation. It is true, that, if there be much depth, this practice will be very difficult; but as, in general, on this bank, you ought not to sail in more than 20 fathoms, and in the rest from Point Descondida to the shoals, there is no part so deep as 30 fathoms; there can be no reason why this useful method of ascertaining the vessel's place should not be adopted. Nor is the frequent use of the hand-lead of less importance; it ought to be constantly going.

Many neglect sounding, because they are not aware of its importance. If, in fact, a vessel, which has to sound in 30 fathoms, *has to take in sail*, in order to heave the topsails aback, she cannot sound frequently; for, in doing so, half the day would be consumed in sounding; but it is well known that there is no necessity for so much work, in order to sound, even in more than 30 fathoms, as those well know, by practice, who manœuvre their vessels with propriety. In depths between 15 and 20 fathoms, they ought to make use of more than the lead hove or flown by hand; and for this it is indispensable to have seamen acquainted with this work; without which every vessel might be lost, that has to navigate over shoal places, on which, usually, the dangers are only discoverable by the lead.

### *Directions for those who Navigate from East to West.*

1st. You ought to shape courses, so as to compensate as much as possible for the effects of the currents which prevail between Cuba and Yucatan, and so that you may enter upon the Bank in  $22^{\circ} 15'$ , a little more or less. To be able to correct your course with judgment, and in good time, you should omit no means of observing the latitude; not contenting yourself solely with what the meridian altitude of the sun gives, but taking also those of any stars of the first magnitude, or of planets, when an opportunity offers.

2d. Attending to your reckoning, sound in time, that you may, at any rate, not pass far from the edge of the bank, without having obtained soundings on it; and, so soon as you have got them, correct your longitude by them, establishing thus a new point of departure.

3d. So soon as you are in 30 fathoms, heave your log, with a lead in place of the log-chip, that you may thus keep a more accurate reckoning, and free from the effects of currents.

4th. In the season of the Norths, you should be directed by the depths of 20 or 22 fathoms, which you will find in the parallel of  $22^{\circ}$ . Sail on this depth until you are on the meridian of Point Descondida, when you will steer W. S. W. true, until you are on the parallel of  $21^{\circ} 25'$ , when you must run to the west, to pass between the Triangle and New Shoal.

5th. It is very advisable to know the latitude by observation, for passing between these shoals, or in default of being very sure of the situation by your course, and the quality of the soundings off Point Pedras to the N. W. which offer a good mean of knowing the vessel's place: and, if both these *data* fail you, and you are in consequence doubtful of the situation of the vessel, you ought not to attempt passing between the shoals during the night, but to keep your situation during it upon the 20 fathoms, in order to take the passage by day, in which you will run no risk, especially if you incline your course to the direction of the Triangle; for that, as we already explained, may be seen at the distance of five miles.

6th. If a North comes on, while you are on this bank, the only alarm you can be under is, when the vessel is to the eastward of the meridian of Point Pedras, when it will be necessary to carry sail sufficient to proceed to the westward, without falling much from the depth of 20 fathoms, in order that you may pass the said point clearly and without danger from the Sisal Bank or Shoal: but this offers no great difficulty; for there is little sea on this bank (Campeche Bank or

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Soundings;) and, as the winds from the north are generally free, with very little difficulty you may clear the point.

7th. If the navigation is made in the season of the rains, or from May till September, you may sail nearer the coast, in 12 fathoms; and you may, also, from the time you are in 20 fathoms, abreast of the River Lagartos, steer S. W. (true) with which course you will run to make the lookout tower of Chuburna, from which, with your course parallel to the land, you will pass between it and the Sisal Shoal, without any other care than to keep in 5, 5½, or 6, fathoms, according to the vessel's draught; for, with ships of the line, and not having to anchor at Sisal, it will be best to pass outside of the shoal. At this time it is preferable to leave the bank by the south side of the Arcas; and, to effect this with more certainty, you will keep in the depth of 10 or 15 fathoms, until you cross the parallel of Campeche, when you will steer so as to leave the soundings in 19° 30' or 19° 40'. The reason of approximating the coast more in the summer, is because, having in that season many calms, with squalls and continual rains, which at times deprive you of observations for two or three days, it follows, that the navigation among shoals is very unsafe. On the contrary, near the coast they enjoy more land-breezes, and the changes of the breezes are more certain.

8th. Until now we have supposed you to have entered on the bank with a good knowledge of your latitude, and for so much also, to have ascertained your position on the edge of it; but, if you enter on the bank with great uncertainty as to your latitude, which must always be the case when you are without observations for one or two days; in such a case, so soon as you have caught soundings, steer S. E. true, or as near to that as the wind will permit: with this course it is clear you will either catch the 20 fathoms soundings, or you will lose bottom very soon. If the first happens, you will have attained your object by getting into the proper depth to navigate with safety; having happily freed yourself from the dangers of the Alacranes, upon which you would indubitably have gone with any south-westerly course; for you will have caught the soundings on the northern edge of the bank, and in about 88° 47' W. of Greenwich: in this case, from the time you catch 20 fathoms, you will run to the west, in order to retain them; and you cannot be certain of your longitude until you are abreast of Point Piedras, in consequence of having failed of observing your true situation by the soundings on the east edge of the bank. If the second of these cases happens, namely, running soon out of soundings, not the least doubt can remain that you are on the eastern edge of the bank, and you must steer to the S. W. to get the 20 fathoms depth, as we have already advised.

9th. You may also steer to the west, taking soundings in 23° 30' of latitude, and running along that parallel in 50 and 60 fathoms of water on a sandy bottom, keeping afterwards so as to pass to the north of the Bermeja; but we are very far from advising this route to be followed, from two reasons; first, because we have seen that there are well-founded fears of shoals on the north edge of this bank, which as yet is imperfectly explored; and second, because, in the summer, you could not enjoy the advantage of the land-breezes, and the changes of the breezes, which you might have in the proximity of the land, and your voyage would thus be rendered longer.

As we have said all that is necessary to be kept in mind for navigating on this bank from east to west, we shall now give some notices for sailing in a contrary direction.

### *Directions for Navigating from West to East.*

1st. It is evident that, to enter on the Campeche Bank by its western edge, nothing more is necessary than the latitude; for, running on a free parallel, you proceed without risk of shoals on the bank; and, whatever may be the error of longitude, you can correct it so soon as you strike soundings: but it must be remembered that the tract between the New Shoal (Bajo Nueva) and Bermeja Island, cannot be considered as clear; for we neither know the situation of the latter, nor are we even certain of its existence.

2d. Having entered on the bank, it will itself indicate when you are to the eastward of the shoals, which will be when you have less than 27 fathoms, and then the quality of the bottom will be of sand, if you have entered to the north of the Arcas; but if you have entered to the south of them, you will keep on clay to 12 and 10 fathoms.

3d. But, if you have to enter on the bank, while uncertain of the latitude, and in obscure weather, as there often is when the Norths blow, it is advisable to shun, as much as you can, entering on it by night, and endeavouring to make it by day, between the Triangles and Arcas; or it is even better to keep to the south of the Arcas, as a little more or less than the latitude by account will answer for this; but you must remember that the north winds always produce currents to the south: and from this you will always find your vessel more or less to the south of the reckoning: under this circumstance you may expect the effects of the current to be about eighteen miles in 24 hours.

4th. If in this case, when running to the east, you have soundings on the edge of the bank, you may continue to the east, although it be by night, so long as you find clay; but the greatest attention must be paid to sounding frequently, so long as you do not consider yourself to the eastward of the shoals; which, as we have said, will be so soon as you have less than 27 fathoms. This remark is most essential, and of itself will save any vessel from being lost; for if, sounding in more than 27 fathoms, you find gravel and sand or rock, it is an infallible sign that you are near some shoal; which known, you should immediately steer S. W. in order to get again upon the clay soundings, when you may steer again to the east; and so soon as you are past the shoals, and to the east of them, you need take no other care than to steer in to the east, because the bottom is the only object you have to guide you, whether it be to go to anchor at Campeche; to lie-to till a North blows over; or, beating to windward on the bank, until you can leave it by its eastern channel.

5th. Beating to windward on this coast is very easy, and the navigation expeditious, especially in April, May, June, July, and August, because in these months the winds during the day are changeable from N. W. to N. E. and the land-breezes are from E. S. E. to S. E. during the night; with which you may navigate towards the east with very advantageous tracks, which tracks ought to be so managed as to stand off shore into 20 or 22 fathoms with the land-breeze, and turn towards shore with the sea-breeze as far as 6 fathoms.

6th. On this bank the sea is very moderate, even with heavy norths; and thus even a vessel which finds herself between the coast of Vera Cruz and this bank, ought not to forget that, when a North comes on, she may find security on it, either to lie-to, in from 20 to 8, or 6 fathoms; or to anchor in 8, 6, or 4 fathoms, according to the draught of the vessel; and if she find herself in about the parallel of  $20^{\circ}$ , and is afraid of falling to leeward and getting ashore on the coast of Tabasco, she ought immediately to prefer steering east, in order to get upon the bank, and take advantage of it.

7th. We shall conclude these directions with one about the mode of leaving this bank, when you navigate from Campeche to the north, bound to any of the harbours on the northern coast of the Gulf. In the manuscript directions, (those formerly called Pilot for the Mexican Gulf,) and which are the only ones compiled until now, it is advised that, sailing to the north until you pass the parallels of Sisal, you should then steer N. N. E. on purpose to run out between the Negrillo and Alacran, following the said course to the  $24^{\circ}$  of latitude: here it is proper to remark, how arbitrary these directions are; for they are written as if the writers were certain of the situation of the Negrillo, which they were not; and even if they had known it, they ought (it seems to us) to have been a little more cautious in giving their directions, than to have advised passing by a strait formed by two shoals; of which, if the one is dangerous on account of its great extent, the other is no less so on account of its smallness; for it cannot be seen till you are almost on it. By following this route, the brigantine, in which went the mariner, by whose account we have placed the Negrillo, got within it; and it is very wonderful that this shoal has not laid navigation under a severe tribute, by causing the loss of many vessels.



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It appears to us proper to advise, that those who wish to leave this bank, by its northern edge, should steer to the north, and so as to pass to the east of Arenas Island; and leaving the bank at such an hour as to be able to cross the parallel of  $23^{\circ} 30'$ ; with day-light they ought to keep the same course, until they pass that of  $24^{\circ}$ , when they may shape their course as convenient; due caution being taken to avoid the Negrillo, &c.

### *Directions for Sailing to Campeche, by Captain John Mackellar, of the British Navy, (1817.)*

In sailing from Jamaica for Campeche, be sure to make Cape Antonio, and steer to the West, so as to gain the latitude of  $22^{\circ} 0'$ : then steer W.  $\frac{1}{4}$  S. 100 miles, sounding frequently, and having good soundings on the bank. You may then, with great confidence, keep in the soundings laid down in the new Chart, either in going within the shoal of Sisal or without it; but, in fine weather, I should always prefer making the land to the eastward, and then run down along the coast, in 5 or 6 fathoms. On approaching Sisal, keep the land freely on board, by your soundings; and, in doing so, you avoid the risk of running on it, either by day or night; for you will see the castle of Sisal five or six miles off, and you may run down in 5 or 6 fathoms. The great advantage of this will be, the certainty of land-winds off shore, from about four o'clock in the afternoon until seven or eight the next morning; the sea-breeze setting in generally from the northward and eastward. If you are in a vessel drawing more than twelve feet water, avoid a shoal laid down in the Spanish chart, on which  $2\frac{1}{2}$  fathoms only have been found: this shoal lies off the village of Jayna, about sixteen miles, which village, or any part of the coast, cannot be seen off deck; therefore great caution is necessary in running for, or leaving Campeche.

The town of Campeche is situated in lat.  $19^{\circ} 51' 15''$  N. and long.  $90^{\circ} 28' 15''$  W. of Greenwich. Proceeding for the anchorage from the northward, and having advanced towards Point Descondida, on the N. W. part of Yucatan, distant from it eight or nine miles, your depth of water will be from 5 to 6 fathoms; from this proceed to the southward, about S. by W. observing that you must not go nearer to the shore than six fathoms, until you are as far as the lat. of  $20^{\circ} 0'$  N: then, being in that latitude, and your depth of water six fathoms, if clear weather, you will see the land, which is very low and difficult to make out; from this, if the wind will allow you, steer E. S. E. or S. E. by E. until you make the land out plainly. The most remarkable spot on it is Fort St. Michael, which is a large white fort, on the very top of the hill. This is the first part of the land you can make out, and it may be seen in lat.  $19^{\circ} 56'$ , in  $5\frac{1}{2}$  fathoms. So soon as this is made out plainly, bring it to bear E. by S. and steer for it: you will then be in the deepest channel for Campeche, and may choose your depth of water to anchor in. When you have  $4\frac{1}{2}$  fathoms, the steeples of Campeche are just in sight, from a frigate's deck; and when in  $4\frac{1}{2}$  fathoms, the church at Lerma can be seen from the deck; the Point Morros, which is the S. W. extreme of the land, will bear S. S. E. and Campeche East; and, when in 24 feet, which is the depth I should propose for a frigate to anchor in, the tops of the houses at Campeche are just well in sight from the deck, bearing S.  $83^{\circ}$  E. Fort St. Michael S.  $73^{\circ}$  E. Lerma Church, at the bottom of the hill, S.  $66^{\circ}$  E. and Point Morros, the S. W. extreme of the land, S.  $19^{\circ}$  E; your distance from the town will then be nine and a half miles, and lat.  $19^{\circ} 53' 47''$ , and long.  $90^{\circ} 37' 30''$  W. Should your ship be of less draught of water than a frigate, proceed on for fort St. Michael, keeping it bearing as above, and anchor in what depth you please, but within  $3\frac{1}{2}$  fathoms; in this direction the bottom is bad, being covered with large shells, and, of course, dangerous to anchor in.

In the event of running for Campeche, in hazy weather, which often is the case on this coast, in the fore part of the day, I should recommend proceeding as follows:—After you reach the lat. of  $20^{\circ} 0'$  N. haul up to the E. S. E. keeping

your lead going; and should you not see the land, endeavour to get into the lat. of  $19^{\circ} 54'$  before you are in less than 4½ or 5 fathoms of water. So soon as you consider yourself in this latitude, proceed to the eastward, until you shoalen your water to what may appear best to anchor in; taking care, if you have to beat up, not to pass to the southward of  $19^{\circ} 52'$ , nor to the northward of  $19^{\circ} 56'$ , for between these two latitudes is the deepest water, and anchor as near the latitude of  $19^{\circ} 54'$  as possible.

In lat.  $20^{\circ} 12'$  and long.  $90^{\circ} 41'$ , there is a small spot of ground with only fifteen feet of water on it; but, running along shore, and keeping in 6 fathoms, you will pass to the westward of it: the soundings near this part are very irregular, altering sometimes a fathom and a half between two casts; there is no other part on the bank where this is the case.

The town of *Campeche* is a walled town with four gates, N. E. and S. W. the North gate leads into the town from the sea by a pier of about 50 yards long; but the water is so shallow that small boats only can land, and then only at high water; the rise is about three feet.

### *Remarks on Sailing towards Campeche, by Captain J. W. Monteath.*

On rounding the bank of Sisal, in 12 fathoms, I hauled up South, until we had attained the latitude of Point Descondida, and the depth of water 5 fathoms: steering in this depth, the first object I observed, was a large white building on the second lump of high land visible, and which is a fort (St. Michael's,) two miles S. W. from the city. Steering on, the next objects that appeared were the steeples of the churches in the city. Steer directly for the fort, until in 3½ fathoms, when you will observe the village of Lamos, which lies five miles S. W. of Campeche. Steer in, keeping the church of Lamos on your starboard bow, until you bring it to bear South, and Campeche E. by N. when you may anchor in from eighteen to sixteen feet of water, at the distance of four and a half miles from Campeche; in this position the depth of water, for above a mile, does not vary more than 12 or 15 inches.

During my stay, (from June 10th to July 10th, 1817,) I observed the tides were very irregular, and greatly influenced by the wind; so that ships (with the wind off shore) must pay attention, if drawing much water, to get under weigh, and run out farther into deeper water. On the 2d of July, the *Fame*, then drawing 17 feet, and lying in 3½ fathoms, grounded with an off-shore wind, and in a few hours had only 14 feet alongside, and for three days never more than 16½ feet, until the wind shifted to the northward; and, had she not been a remarkably strong vessel, would have strained very much.

Vessels with hempen cables ought to be careful in picking out a clear birth, as a number of vessels, were formerly in the habit of heaving out stone-ballast where they lay: this is now prevented, by a fine of 500 dollars being laid on any vessel that does so. Sand ballast is allowed to be thrown overboard, by shifting the vessel often, so that there is no danger of banks being formed by it.

### *The Southern Coast of the Gulf, from Point Xicalango to Vera-Cruz, including some general Remarks, &c.*

*The Province of Tabasco*, adjoining that of Yucatan, is bounded on the west by Vera Cruz.

The principal harbours to be described within this division are those of *Alvarado* and *Vera Cruz*; the last being the emporium of the Mexican Provinces. Ample directions for sailing over the Bank of Campeche, to the westward, have been already given; but we shall here introduce some general remarks, which may be acceptable to those who are strangers to this sea.

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**COAST between the Lagoon of Terminos and Vera Cruz.**—From Xicalango Point, the distance to the River of S. Pedro is 32 miles. The high lands between are the Altos, or Heights, of St. Gabriel. From S. Pedro River, the coast tends S.  $75^{\circ}$  W. true, 55 miles, to Cupileo River: it forms, from this bearing, a slender bay, only 5 miles in depth. From Cupileo River to the bar of Santa Anna, the coast tends more to the south, forming a bay, S.  $52^{\circ}$  W. true, 31 miles.

From Point Jicalango the coast tends nearly west, (true,) 10 leagues, to the River of St. Peter and Paul; and all this portion of it is named the *Lodazar* (*Muddy Place*;) for the bottom is of such loose soft clay, that there have been instances of the hulls of vessels being saved which had been driven ashore on it by the Norths.

From the River of St. Peter and St. Paul, the coast tends about W. S. W. 28 leagues, to the River Santa Anna, and on this coast are the rivers *Tabasco*, *Chiltepeque*, *Dos Bocas*, and *Cupilco*. The bars of St. Peter and Paul, and Chiltepeque, have 7 to 8 feet of water, and those of Dos Bocas and Rio Cupilco about 4 feet; that of Tabasco, which is deeper, forms two months, separated by the Buey Islet; in the eastern one there are 8 feet, and in the western 10 feet; we can say nothing of the channels of these bars, which are changeable, excepting that of St. Peter and St. Paul, which remains fixed in the middle, between the two points of the river.

All the coast from Jicalango to Santa Anna is clean, so that, from the Lodazar to Chiltepeque there are 4 and 5 fathoms, at a mile from the shore, and 10 from Chiltepeque to Santa Anna; the quality of the bottom between the Lodazar and Chiltepeque is mud; from Chiltepeque to Dos Bocas, mud and rotten shells; from Dos Bocas to Rio Cupilco, coarse sand, of an olive colour; and from Rio Cupilco to Santa Anna, coarse sand, with some shells, and partly gravel. In the mouths of these rivers there is mud, until clear of the heads or points of the bars. All this coast is rather low than otherwise, and is covered with palms and mangroves, from two leagues to windward of St. Pedro to Chiltepeque; and thence to Santa Anna, with mangroves and thatch-palms.

From the River Santa Anna, the coast tends west, true, for thirty-eight miles, to that which is named Barrilla; and in the intermediate coast the rivers Tonala and Gozacualcos discharge their waters: the last has, or lately had, 15 feet of water on its bar.

The River *Gozacualcos* is twenty-five miles to the west from the bar of Santa Anna. This river may be easily known; for its eastern point forms a scarped mount, while the western is very low. At S.  $34^{\circ}$  W. true, nearly four and a half miles, you may see, on an eminence, a *vigia*, or look-out tower, with a house at the foot of it, which serves for a powder-magazine, and rather more to the east is a guard-house and battery, the flag-staff of which, at its east end, serves for a mark for the bar of the river. The depth on the bar is about  $2\frac{1}{2}$  fathoms, and once over, it increases to 3, 14, and 16 fathoms.

*Barilla*, or the little bar, is thirteen miles to the west of Gozacualcos: the two rivers form an island. At N. N. W.  $\frac{1}{4}$  W. ten miles from Barilla, is the Point of San Juan, with an islet; and seventeen miles from it, N. W. is *Zapotilan Point*, from which the coast tends, in a bight, eleven miles, to the Point of Morillos, following afterwards to W. N. W. seven miles, to *Roca Partida* (i. e. the split or parted rock.) One league to the westward of Zapotilan Point, is the mouth of the Lagoon of *Sontecomapa*; and to the S. S. E. of Morillos Point there is a *vigia* or look-out. The coast between Barrilla and Roca Partida forms the base of the Mountains of St. Martin, the highest peak of which, the volcano of Tuxtla, is twenty-five leagues from Vera Cruz. At W.  $\frac{1}{4}$  S. thirty-seven miles from Roca Partida, is the Bar of Alvarado, admitting vessels of 10 feet draught. On the intermediate coast are the *vigias* of Tuxtla and Barrancas.

From Barrilla the coast tends about N. W. thirty-seven miles, to Point Morillos, from which it follows to the west, forty-four more, to the Bar of Alvarado, forming thus a kind of promontory, upon which rise the *Sierras* (mountains) of *St. Martin*; on the highest summit of these mountains is the volcano of Tuxtla, which broke out in March, 1793, and its eruptions continue: the Sierra is plainly seen from Vera Cruz, which is twenty-seven leagues distant, when it is in a state

of smoke by day; so that it is an excellent land-mark. From the Bar of Alvarado the coast tends irregularly to the N. W. for sixteen miles, to Point Salao-chico, which is the southern part of the anchorage of Juan Lisardo.

ALVARADO, which is one of the best harbours in the Gulf of Mexico, is situated thirty-six miles S. E. from Vera Cruz, in lat.  $18^{\circ}45'$ , long.  $95^{\circ}42'$ . Its bar admits vessels of 12 feet water, which, within the bar, are sheltered from every wind. The entrance of the river is very narrow, and cannot be seen until bearing from S. by E. to S. by W. and at a short distance; it is, however, very easily found by a remarkable sand-bluff about one mile to the east of the bar. The high land of St. Martin, called on the Spanish charts *El Volcan de Santia*, which is twenty-five miles east of the meridian of Alvarado, affords a very remarkable land-fall, and a sure indication for this port. With the high lands of St. Martin E. S. E. by compass, twenty-five or thirty miles, and the sand-hill of Alvarado S. E. by E. one and a half mile, the bar of Alvarado will be south, distance one mile. Vessels bound here, on making the usual signals for a pilot, firing a gun and hoisting colours, will be furnished without delay. The pilot proceeds from the town in a long pirogue, or canoe, manned by eight or ten rowers.

All the coast, from the bar of Santa Anna to Anton Lisardo, (westward of Point Salao-chico) is as clear as that to the eastward; but in every part, from the Lagoon of Terminos, to the point last mentioned, it is highly dangerous to anchor from October to April, on account of the strong north's blowing right on shore; and you ought even to avoid approaching it with any vessel that cannot enter over the bars which have been described; for it may very easily happen, in spite of all exertions, that you may be driven upon the coast; for the norths are very strong, and it may be easily seen that, with them, there is no clear way of getting off.

The ANCHORAGE of ANTON LISARDO, which is about four leagues S. E.  $\frac{1}{2}$  S. from Vera Cruz, is formed by various shoals and reefs, which form among them several channels: the latter are not only clear, but are of easy access; especially when a fresh wind causes the sea to break on the shoals, &c. These shoals, although they do not afford any shelter from the wind, break the sea so much, that, even during the hardest norths, vessels may lie very safely at their anchors. The anchorage is spacious, and fit for all classes of vessels; the knowledge of it is of the utmost importance, to those who happen to be to leeward of Vera Cruz during a north, and to those who cannot enter Vera Cruz with these winds. This anchorage has been surveyed by the captain of a frigate, Don Francisco Murias, who made a plan of it in 1818, which has been published at Madrid. The following are the directions for it, given by Captain Murias: "To run to this anchorage, although it has the advantage of having four entrances, with a sufficient depth, the two which the shoals form with the coast ought to be preferred; and of these the western is the best. To enter the latter, steer midway between the coast of Blanquilla Island, on a true east course, continuing so until some way within, when the course may be altered to north, for the purpose of anchoring where it suits. The best anchorage is to the N. W. and W. N. W. of Anton Lisardo Point, (upon which there are some houses,) in 11 fathoms, on gray sand, and sand with shells." The castle of San Juan de Ulua is about four leagues N. W.  $\frac{1}{2}$  N. from the point of Anton Lisardo.

VERA CRUZ.—The harbour of Vera Cruz is not a commodious or a convenient port, but a mere roadstead, covered with several islands, on one of which, (the fortress of Juan de Ulua) on the north-west corner, a light-house is erected, showing a *revolving light*, elevated 79 feet above the level of the sea. The light is from 21 lamps, having reflectors, 7 on each side of a triangle, which make the revolution as follows: From the first appearance of light, it appears bright for about six seconds; then a faint glimmering for forty seconds, and so on alternately, which may be seen twelve miles off alternately. The access to the port is difficult and dangerous, but subjoin such as we are in possession of.

The north-western range of reefs, &c. are the Reef and Isle of Blanquilla, the Reef of Galleguilla, and the Reef of Gallega. On the S. W. side of the latter stands the *Castle of St. Juan de Ulua*, (before mentioned) which forms the east-

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M. Chappe D'Auteroche, in his "Voyage to California," to observe the transit of Venus, &c. 1769, described the port of Vera Cruz. The entrance of the harbour, he says, is very dangerous; especially with the gusts of wind so frequent in the Mexican Sea: as the channel between the rocks is so narrow, that there is room for only one ship at a time. The wind from the north, bearing full upon the rocks, makes it exceedingly dangerous, at such times, to anchor in the passage. On the arrival of M. Chappe, 6th of March, 1769, the north wind prevailed, and blew so vehemently, as to render landing difficult; and he had no sooner entered the town than it blew a most furious hurricane. All intercourse with the ship was then cut off, and she had barely time to run for shelter behind the castle of St. Juan d'Ulva, the only place where a ship can be screened from the north wind. M. Humboldt says, that the north wind here is announced by a great change in the barometer: during this wind, the mercury rises six or seven lines.

The principal land-marks to vessels advancing towards Vera Cruz are the high mountains called the *Cofre* or *Coffer of Perote*, and the *Peak of Orizaba*, both of which are far inland, to the westward of Vera Cruz. Still farther from the city to the E. S. E. but much nearer shore, is the volcano of Tuxtla, on the eastern part of the Sierras or mountains of St. Martin. The first of these, the *Cofre de Perote*, is elevated 2,548 Spanish toises, or 2,332 English fathoms, above the level of the sea. It stands in lat. 19° 29', and about thirteen leagues from the nearest part of the coast. It is the highest of the mountain ranges. The *Peak of Orizaba* may be readily known; it stands in about 19° 3' N. sixty-one miles W. 9° S. true, from Vera Cruz, and is always covered with snow. This mountain, of a conic form, became volcanic in 1545, and continued in action for twenty years, since which time there has been no appearance of inflammation. Though the summit be covered with snow, the sides below are adorned with beautiful forests of cedars, pines, and other trees. Its height has been given by the surveyors as 3,258 Spanish toises, or 2,981 English fathoms, above the level of the sea. It may be readily known, as it shows, at a great distance, in the form of an isosceles triangle, and may be seen to the distance of twenty-five leagues from the coast. The eastern part of the Sierras of St. Martin lies about twenty-seven leagues S. E. by E. true, from the port of Vera Cruz. The light or fire of the volcano, if not always, may be occasionally seen.

### *Directions for Vera Cruz, by Captain John Mackellar, R. N. 1817.*

1. The harbour of Vera Cruz is formed by the walls of the town on the south side, and by the walls of the castle of St. Juan de Ulva, where the light-house stands, on the north. The castle is built on a small island opposite the town, and has a large reef of rocks running off from it to the N. by E. for nearly two miles: this reef is called the Gallega, and always shows a part above water. The harbour is bounded on the S. E. and E. sides by three or four small islands and reefs, with good passages through between them. On the N. W. side is the principal entrance, on account of the ships getting easier in and out, and that is the only side which is clear and open to seaward.

2. In running for this port, I should recommend to you to get into the latitude of 19° 20', before you pass the 95th degree of longitude, and from that proceed to the westward, keeping in that latitude: by so doing you will pass 10 miles to the



northward of Anegada de fuera,\* 5 leagues to the E. by S. from Vera-Cruz, and approach Vera-Cruz six miles to the northward of all the shoals that lie off from it. If, in the night-time, a good look-out must be kept for the light, on the larboard bow; and, on making it, stand on to the westward, until it bears S. S. W. from you; then, if in the lat. of  $19^{\circ} 20'$ , you will be 8 miles from the N. N. E. side of the shoals off the harbour: here bring-to, with the ship's head to the northward, observing, during the night, not to approach nearer to the light than 5 or 6 miles, and to keep it bearing from you between S. S. W. and South; the S. S. W. bearing will keep you clear of any shoals that may lie to the eastward of the light; that is, more than two miles from it: and the South bearing will keep you clear of the N. W. shore. At day-light, in getting sight of the town, steer for it, observing the following directions.

3. Before you approach nearer than 3 or 4 miles of the town, bring the largest domed-top steeple, in the centre of the town, to bear S.  $\frac{1}{2}$  E. it will then appear with two sharp spire-top'd steeples close to it, on the west side, and on the small hill behind the town. There is a division between part of the hill that is covered with grass, and part that is covered with sand; this division will be on with the steeples bearing as above; the grass part to the S. E. and the part covered with sand to the N. W. With this mark proceed on to the southward, along the west side of the Gallega Reef; your soundings here will be regular, from 10 to 5 fathoms; and, when you are so far as to bring the S. W. side of the square building that the look-out house stands on in the fort to touch the N. E. side of the light-house bearing about E. S. E. steer for it, taking care not to open the light-house to the N. E. of the Look-out house, until you are close to the Castle: this mark will carry you up to the light-house; then steer round it to the southward, and anchor close to the south side of the castle, in from  $5\frac{1}{2}$  to  $4\frac{1}{2}$  fathoms.

During the months of November, December, January, February, and March, the strong northerly winds prevail, and at times blow very strong, which occasion a considerable sea in the harbour; and, as the ground is not good for holding, I should recommend mooring in these months with the small bower to the N. W. and best to the N. E. in order that you may ride by both anchors, with the wind at North, and lay your stream-anchor astern, which will be sufficient to hold you with the land-wind, which seldom blows with any force. During other months of the year, moor with your small bower to the N. W. and best to the S. E. in order to have on open hawse to the eastward.

4. There is no regular tide here, but in moderate weather; there is one ebb and one flood in twenty-four hours, or rather one rise and one fall in that time; for it is the case sometimes, that the tide runs to the N. W. for three or four days, and the same to the S. E. but it appears to be governed chiefly by the winds blowing in the same direction; as the wind blows, its rise and fall is from two to three feet; but in strong breezes, sometimes, there is neither rise nor fall for three or four days.

5. The anchorage at Vera Cruz is extremely bad, and, if once you part, there is no chance of saving your ship, having nothing but broken ground to leeward of you.

The men of war of the country always moor with the small bower to the N. W. in 5 fathoms, and the best bower cable to the rings in the castle of S. Juan de Ulua, with a cable over the stern to the S. S. W. in 6 fathoms, by which mode they lie so close under the castle, that they are, in a great measure, sheltered from the violence of the North and N. W. winds. I anchored, in June, 1817,

\* In these directions, Captain Mackellar seems to have assumed that circumstances are favourable. In order to guard against the effects of an unexpected North, or a northerly wind, Captain Hester, in some former directions, written in 1764, says explicitly, that none should fall to the southward of  $19^{\circ} 50'$ , or between that and  $19^{\circ} 40'$ , until the summit of Orizaba is seen, and that care should be taken not to bring that mountain to the westward of W. S. W. The Captain of the port, Don Bernardo de Orta, says, as shown hereafter, that the course should be made to windward on the parallels of  $19^{\circ} 30'$ , or  $19^{\circ} 40'$ , and especially so in the months of May, June, and July, when the sun is in the proximity of the zenith. It is, at least, clear, that the safest course is to the northward, particularly to such as cannot rely on their observations.

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by bringing the S. W. angle of fort S. Juan to bear N. E. by E. ¼ E. about 600 yards off; from which bearing only four guns from the castle or out-works could be brought to bear on the ship. This position may be taken by running in to the southward of the castle, between the shoals of Galleguilla and Blanquilla, which always show themselves, and round the *Gallega Reef*, in 5 fathoms, until you bring the bastion of St. Crispin (on the south corner of the castle) to bear N. E. by E. ¼ E. Drop your anchor on a quarter-spring, to act according as the wind and circumstances may require.

The town of Vera-Cruz furnishes no certain supply of any kind for ships, excepting water, and that bad; and, during the winter months, difficult to get off; as the sea breaks with so much violence on the pier as to prevent boats from landing for three or four days at a time. As the sea and land breezes, throughout the year, are regular, there is seldom any difficulty in going in or out of the harbour. During the months of August, September, and October, the rains set in, with close sultry weather, and the vapours arising from the marshy ground makes the season extremely subject to the yellow fever, of which many hundreds die yearly, equal to a tenth part of the whole population, particularly strangers.

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### *Brief Directions for Vera-Cruz, communicated to Captain Livingston, by Don Cayetano Olivella, 1819.\**

Run in for Punta Gorda (lat. 19° 14') until the castle of S. Juan de Ulua bears S. E. by S. and then keep away to the south-eastward until you bring that castle to bear S. E. You will then steer so as to keep the foremost shroud of the vessel always on with the castle; that is, the foremost shroud of the larboard side; the bearings to be from the wheel or tiller of the vessel: keeping it so will lead you clear round the reef into the anchorage.

In case of parting one anchor, never attempt to let go another, but make sail immediately, and run the vessel right for the Mole: the current, which runs with great velocity, will not allow you to fetch the Mole; but, steering for it, you will fetch the beach at the S. E. end of the city; by which, at least, the lives of those on board will be saved: whereas, were you to take time to let go another anchor, it would not bring you up, but you would infallibly go on either the Lavandera Shoal, the Isle of Sacrificios, or the reef of rocks off the Punta de Hornos, in either of which cases not a soul could be saved.

You anchor under the castle of S. Juan, and near to it; the centre of the castle-walls bearing N. N. E. ¼ E. or thereabout.

Vessels should always keep their fore-topmast staysails, and such others as may be required to run them on the beach, ready bent.

The reefs generally show, either by breaking, or by the water's being discoloured; you moor with the bower-anchors to the N. W. and North, and a stream-anchor out astern to the S. W.

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### *Description of, and Directions for, the Port of Vera-Cruz, from those of Don Bernardo de Orta, 1798.†*

The *Sierras of San Martin*, the eastern part of which lies about 27 leagues to the S. E. by E. true, from the harbour, near the coast, the *Peak of Orizaba*, and the *Cofre de Perote*, both of which stand a distance to the west, and which, from

\* These directions for entering appear to be particularly adapted to small vessels.

† Don Bernardo de Orta was Captain of the port, or harbour-master, an intelligent man, and one of the few who got forward by merit in Spain, without, what is called, noble blood. He was lately superintendent of the posts at Vera-Cruz.

their great elevation, are seen a long way out at sea, in clear weather, are objects which facilitate the making of Vera-Cruz. Should neither of the two latter be seen, the light or fire of the volcano of Tuxtla may happen to come in sight. After seeing either of these objects, the course will be regulated according to its bearing and circumstances, by reference to the Chart.

2. It is assumed that, on quitting Campeche Bank, you will in the season of the Norths; direct your course to Point Delgada, (latitude  $19^{\circ} 51'$ ;) but, even in the summer, you should, on no account, run in on the parallel of Vera-Cruz, as some directions recommend, lest you meet with its tempestuous Norths:\*. With these gales, and even before they come on, there are currents towards the south, which may, in some cases, lead vessels on the outer or inner shoals of Vera-Cruz, and particularly on the *Anegada de fuera*, or the *Anegada de Adentro*; the course should therefore be made to windward on the parallel of  $19^{\circ} 30'$ , or  $19^{\circ} 40'$ , of latitude, and especially so in the months of May, June, and July, when the sun is in the proximity of the zenith.

3. Having once seen the coast near Point Delgada, you will pass to the east of that point, Bernal, Bernal-chico, Juan Angel, &c. at the distance of from 4 or 5 leagues, and steering from S. S. E. to S. E. by S. until you gain sight of Vera-Cruz, or of the castle of San Juan de Ulua, without embaying yourself in the Bay of Antigua.

4. If, from circumstances, you come in from a lower latitude than  $19^{\circ} 30'$ , the ship's place will be first known from some of the outer shoals, the breakers on which will be seen, if not obscured by thick weather, which is often the case during the norths, and even after the rains commence. Here, on approaching, the colour of the water, and the lead, if attended to, will give warning what ought to be done.

5. To the most remarkable objects and points, on the coast above described, may be added the point which projects from that part of the coast named the *Sierra of Maria Andrea*, three leagues to the southward of Point Delgada; and, whenever this or one of the other points of the coast is recognized, you will proceed, according to judgment, for gaining the first leading mark for entering the harbour by the castle of St. Juan de Ulua.

6. If, on approaching the harbour, you should see any of the edifices of Vera-Cruz, or masts of shipping, or the inner shoals, to the westward, you must of course be to the east of the given marks for entering, and also of the harbour; and, consequently it becomes necessary, according to where you may be, to shape your course to the S. W. or N. W.

7. If the wind should, at that time, be free from the eastward, it will answer for running in at a prudent distance, around the Galleguilla, and Gallega Shoals, for the purpose of gaining the marks; but if it does not pass from E. by N. towards the North, it will be hardly sufficient to clear the Soldado Point, or western part of the Gallega Shoal, on advancing into the harbour. If, therefore, you find a scant wind on the starboard tack, or a North, you must luff, to pass the Anegada de adentro; and, effecting this, you will with ease also clear the Galleguilla. The northernmost points of these two shoals lie nearly east and west from each other, distant three and a quarter miles. Blanquilla Island lies between them, but something to the south of that line of bearing.

8. Should you happen to be thus situated when the north wind will not permit your clearing the Inner Anegada by tacking to the west, nor the Outer Anegada by tacking to the east, there will be no other resource than to keep away to the S. or S. W. to take the possible shelter of Isla Verde, (Green Island,) or of the Isla de Sacrificios, (i. e. Sacrifice Island) and riding in from 6 to 14 or 16 fathoms on good holding ground, with two or three anchors down, until the wind returns to the regular breeze; but if, in consequence of your having anchored wide, the

\* From the middle of September until the month of March, caution is necessary in making Vera-Cruz, for the norths are then very heavy. The narrowness of this harbour, the obstruction formed by the shoals at its entrance, and the slender shelter it affords from the norths, render an attempt to make it, during one of them, extremely dangerous, for it will be impossible to take the anchorage.—(See winds after described.)

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shelter should be insufficient, while you have a pilot on board, and the wind so fixed a head that you cannot gain the harbour, or more shelter here, you will do well to avail yourself of a fit moment to run for the shelter which the Isla Blanca, (White Island,) lying to the west of the Point of Anton Lisardo, affords from the sea.

9. Some have, from their temerity, incurred misfortunes which they might have avoided ; for, having recognised the Outer Anegada, (*Anegada de fuera*,) they have followed the tack to the west with a scant wind, persuaded that they could free themselves : this does not always succeed, and never if the water runs with such velocity, as it does, with head winds, towards the channels of the shoals. The safest way is, considering the situation and the hour, if the wind does not permit a certainty of passing the Inner Anegada, (which lies about 5 leagues W.  $\frac{1}{2}$  N. from the Outer Anegada,) and of catching the harbour with day-light, to tack out to the eastward. You will thus leave the shoals astern, having been favoured by the current.

10. If, being more to the west, you cannot on that tack weather the Galleguilla, near the Anegada de dentro, on the east tack, you ought, without a moment's hesitation, to keep away S. W. or S. S. W. so as to run in mid channel between Anegada and Blanquilla ; leaving the latter on the starboard, and Anegada with the Isla Verde on the larboard, side, keeping clear of all the breakers ; and, steering successively to S. W. by W.—W. S. W. and W. you will run along the south-east side of Gallega Shoal, leaving it to starboard, and the Lavandera Shoal on the larboard ; the shoal part and edges of which the breakers will plainly show ; hauling up more or less to anchor, *seaman-like*, where you see others moored with two anchors, and you must let go the starboard anchor first.

In the same case, being more to the west, you may take the resolution to keep away to the south, to pass away between the Galleguilla and the Blanquilla Island, and successively in sight of the Gallega, by which you will run in, rounding it to the very anchorage. In good weather, with a middling-sized vessel, and a knowledge of the place, you can run in by these channels more commodiously than by the N. W. channel, and will not have the trouble of warping, if the breeze comes to the S. E.

11. Those who are acquainted with the inner Shoals will not often incur misfortunes ; because, at the *Isla Verde* and *Pajaro Reef*, there is as good anchorage as at the *Isla de Sacrificios* ; as there likewise is in the shelter afforded by the Blanca Island, off the point of Anton Lisardo, and that formed by the same point and some of the Outer Shoals ; the channels of which, during a fair wind, and with a knowledge of them, are clear : thus you may run in by them, as among the Inner Shoals, to direct yourself to the harbour by the S. E. channel, *if your vessel does not draw more than twenty feet* ; for the breeze raises some sea ; and between the Gallega and Lavandera Shoals, in the narrowest part of the southern entrance, there is not more than twenty-three feet of water.

12. If, in consequence of any irregular navigation or mistake, you should have passed through any of the channels formed by the Outer Shoals, among them, or between them and the Point of Anton Lisardo, with a vessel of larger draught of water than twenty feet, and are obliged to enter by the N. W. channel, you must proceed as directed in the 6th paragraph, by shaping your course to the S. W. or N. W.

13. Having thus described the entrance into the harbour by the S. E. entrance, and the incidents which may oblige you to enter it, we shall proceed to explain all that relates to the N. W. or principal channel.

14. *N. W. Channel*.—All the just fear caused by this harbour may be avoided, by not coming-to with a fresh or strong north ; or by securing your vessel well, or mooring her well, before you wait to hand your sails.\* The Inner Shoals do

\* Promptitude in doing every thing in coming into this port, with any vessel, is of the greatest importance ; as this harbour may be considered as one of the most dangerous known. If, in entering, you have time, after getting ready cables, anchors, &c. to get out your boats, do so ; keeping the capstans clear, and every thing ready for the necessary manœuvres in coming to.

not much affect vessels that do not draw more than sixteen feet of water: for the only dangers which are in the channel, to those of greater draught, are the *Outer and Inner Laxas*, (i. e. flat stones, like flags or pavement stones.) The extensive shoals of the Gallega and Galleguilla on the eastern side of the entrance, and the reef of Gorda Point on the west, (which lie a league asunder,) form the mouth called that of the Outer Channel, while Point Soldado upon the Gallega, on the east, and the Reef of Caleta on the west, form the mouth of the Inner Channel: the two latter are visible, particularly when there is any wind to raise the breakers. You may safely pass at a cable's length from them; and, if there is no sea or swell on, when the water is high, and hides the rocks which terminate or bound the outer edge of the Gallega and Galleguilla shoals, with a kind of visible cordon or border, a moderate degree of vigilance will enable you to know them with facility, by the colour of the water, as they can never have over them more than three feet in the morning in the summer, and in the afternoon during winter, which is the order most generally remarked in the irregular rise that the sea takes at this place. At night, they are most dangerous, if high water, darkness, and little wind, so that the sea does not break, all concur.

15. If, in consequence of an error in reckoning, you should have proceeded too far to the west, as to Antigua Bay, the coast itself, or low land, will indicate that you should run along it to the S. E. or E. S. E. toward the harbour, which will show itself ahead; but you must not go into less than 9 fathoms abreast of the Points Brava and Gorda, the reefs of which show themselves by breaking with all winds; and if, on this passage, it happens at day-light, or in the morning, that the land-breeze is from S. to S. E. you must continue on the starboard tack all you possibly can, so that, when the breeze enters, you may be to the north of the harbour; and observe, also, to lose no time, by following something to the east, to the end that you may take the harbour when the wind comes more to the N. E. when making for it you may fetch the anchorage on one tack, thus freeing yourself from the necessity of having to anchor outside, and of having to warp in.

16. Again, if day breaks when you are to the N. or N. N. E. of the city, and in sight of it, with the wind from the land, you must not pass to the west of the meridian of the port, nor of the first mark for entering; for if the breeze takes to the S. E. and no land-breeze comes on, or if the breeze is very light, it may cost days to gain it; for with such winds from the eastward, the waters draw with force to the N. W. It will be well if, by day, you keep some object in view, by the bearings of which you may know how the current operates; and at night you may ascertain your place either by the *deep-sea or hand lead*.

17. *Being to the eastward of the port*, and seeing the city and castle, as well as the Anegada de adentro, Blanquilla Isle, &c. with the wind from the east, which, as we have said, (paragraph 7th,) may be scant from the Soldado Point of the Gallega to within; you must *direct your course* according as the wind may be more or less free, so as to pass the high tower of the castle to the south, on which course you will leave the N. W. part of the Gallega; and seeing it as well as distinguishing the two towers of St. Francisco and the cathedral in the city,\* you will follow or keep away until you bring them in a line at S.  $\frac{1}{4}$  E. or very nearly so; but you must be cautious on approaching the Gallega and Galleguilla shoals. This direction of the towers of the two churches is the first mark given in the plan of the port; but if you are to the west of this line hauled by the wind, on the larboard tack, it will be sufficient to get on it, and afterwards follow it; thus entering, as already directed.

18. Being to the west of these shoals, in 25 or 30 fathoms of water, with the two towers in one, and also seeing the tower of the cathedral to the S. E. of that of St. Francisco, if the wind should be from E. N. E. or E. by N. (as said in para-

\* These towers have been already noticed, see page 448. Don Bernardo says, They are the farthest west; that of San Francisco is a complete tower; the other is not, for it has neither the third story nor spire, and it terminates in a square. The little tower and cupola of the Hermitage of Pastora, which is farther to the west than these two towers, cannot cause any mistake, as it is so small.

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graph 7,) you will run for the entrance by the first mark, diminishing the depth to about 6 and 5 fathoms, on good holding ground, until the salient angle of the battery of St. Crispin, or the S. E. angle of the castle, opens beyond the equally salient one of St. Pedro, which is on the N. W. (second leading mark of the plan,) or, what comes to the same, opening the whole of Sacrificios Island to the S. E. of the castle; you will then direct the ship's head to Point Hornos, and successively as you run in to Point Mocambo,\* or to Sacrificios Island; on which direction, having passed between the Caleta Reef and the Soldado Point, and luffing up or keeping away, as may be necessary to keep in the channel, you will go into the harbour clear of the Outer Laxa, which is the most dangerous,† and also of the Inner one,‡ running close to their buoys or marks, if placed, until the angle of St. Pedro's Bastion bears nearly E. N. E. when you will luff up to let go the larboard anchor, which ought to lie out to the N. W. and you ought to occupy the first place; or, if you pass on to another, you must run in and let go your anchor where the pilot directs, and where you must bring-to, or act according to circumstances. You ought to have every thing ready for anchoring; because, when once off the breast-work of the castle, you should drop the anchor instantaneously; for, if you do not, the least risque is that you will have to weigh the anchor, and carry it out again, which you cannot always do, as you may wish.

19. *Preventions.*—When the anchor is gone in its place, and the wind is from E. N. E. or thereabout, you must carry out to the S. E. a warp of at least two stream-cables, to get the vessel immediately into the place she ought to occupy; and, passing the warp aft,§ with no little trouble, as both wind and current will be against you, haul on it to make the turn, (by hauling the vessel stern round,) when you must carry out the stern-fast, and receive on the starboard side the bend of a cable, which is kept ready; and, if you do not get this assistance, you must send a stream-cable (or hawser) to be made fast to the ring, to haul close in, and which, serving for a guy, the launch can carry ends or fasts ashore after the vessel is hauled close in.

20. If, on account of the scantness of the wind, the anchor is not let go in its proper place, the warp ought to be longer; or you should prepare another, by hauling on which when the cable weighs the anchor, you will return to anchor where you ought, and pursue the rest of the necessary duty of the ship.

21. If the winds be from N. E. to N. or north-westerly, it is advisable, if possible, to have on board the hawser, which is made fast to the ring, or to the end or bight of the cable prepared in it, to haul in by, before you do any thing with the cable; in this case, as it requires that the current should be running in, it will cost little or no trouble to make the turn, and you may even carry out the sternfast without a warp.

22. It is necessary to be especially careful with the N. W. anchor, when anchoring with the wind from E. N. E. to E. S. E. because, as you must let it go on bearings opposite to the vessel, when in her place, the least error that may happen will be that of letting it go with the arms towards the ship, when it would not turn itself until the vessel came to hang by it in some north: this, however, is a thing which ought instantly to be attended to; and, if it is let go wrong, it will cost but little trouble to weigh it, and let it go again clear and right. This same anchor will be

\* They are the two which are seen to the S. E. of the city.

† It has 18 feet on it at low water: it is at the inner part of Soldado Point. Its first mark is the flag-staff of the castle on with the second merlon, or wall between the embrasures or gun-ports, near the angle of the visible shoulder of the bastion of St. Pedro; and the thwart mark is the first two poles, which are seen on the larboard hand, upon the Gallega shoal, in one.

‡ This has 24 feet of water upon it: it is almost in the channel, near the salient angle of San Pedro's Bastion. Its mark is, the said angle of the shoulder on with a small turret, which is upon the parapet, and fifth merlon of the contiguous curtain that looks to the N. W. and the second or thwart mark is, the two second poles, which stand also on the same shoal, in one.

§ This is to be understood of having to haul into a place, with a cable to the ring, or an anchor on the shoal, and moored with 3 fathoms; but, if you have to anchor upon the turn, you may lay it out to the east as far as suits you, after having let go the N. W. one in its place, or the contrary way.

better let go with the bill downwards than the stock,\* for you cannot do any thing without the cable to the north-eastward, which may be replaced from the castle, or the vessel; but the N. W. cannot be replaced from either, and, if it fails, a tragical catastrophe may ensue.

23. After what has been said in regard to the winds, it is obvious, if you are bound to this harbour, that you ought to have four anchors ready, with your best cables bent to them, and ought never to think, when in it, that you are not in the season of the norths; for, as has been said, they sometimes come on so quick, and blow with such fury, out of their proper season, that they do not give vessels, at sea, time to furl their sails; and, in harbour, they render it in a moment impossible to get on board, and much more to get any assistance, unless it is given from the walls of the castle, between the two bastions, which you cannot always reckon on being done with the requisite promptitude; or it may be impossible, on account of the vessel's distance from the wall, or of other ships intervening; and, if the N. W. cable should fail, there is no remedy.

24. From these seasons, every mariner, who is acquainted with the want of shelter in this place, and how confined or narrow it is, can infer how very dangerous it must be for any line-of-battle ship, or other large vessel, which, in the season of the norths, anchors at night-fall within sight of the city,† or afterwards in sight of the light in the light-house, and also in the mouth of the interior channel, that is, as far advanced as Point Soldado; as it happens that, when the breezes take to the S. E. that they cannot run in to secure themselves (as expressed in the paragraphs from 19 to 21,) and thus, whenever they have to anchor here, they ought directly to prepare the warp, and the moment the breeze will permit, to commence warping, without waiting or hoping for any thing; for, whether there have been appearances of a north or not, it may come on; as, when you least expect it, it comes suddenly, and never more fiercely than in the serenest night and clearest sky.

25. If you anchor on a sight of Vera Cruz, or of the light-house, or outside of these situations, on account of a calm, on the coast of Chicalacas, Juan Angel, &c. in from 50 to 20 fathoms, on good holding ground, you ought to reef, and merely stop the topsails; and ought to be most attentive to heave up at the least breath of wind, or cloud coming from the north, which ought to warn you; or to cut, if it comes suddenly, that you may manœuvre or work ship as you ought, in consequence of its force, according to the place in which you are, the size of the vessel, and other circumstances, be it either to haul to the east, with all possible sail, which is the most adviseable, in order to repass the Anegada de fuera, or Outer Anegadilla, from which arises the greatest risque; or, to keep upon boards until day-light, and then to run for the harbour; or, to run for the harbour under sail proportioned to the distance and hour: but these last two determinations ought only to be taken, in case you should be so entangled that you cannot repass the Anegado de ardentio; and the second, in case of being in want of provisions, or having sustained damage, &c. &c. You ought always to keep in mind the risque there is, particularly with a large vessel, in coming into the harbour with much wind; for if it blows harder in it, than outside; and it is to be considered that casualties may disconcert the best taken measures for anchoring in such critical circumstances, as much wind, sea, current, narrowness of anchorage, the quantity of anchors scattered over it, the vessels in it, and the want of assistance. On these occasions, too, you may be prevented from working freely, by finding vessels whose anchors and cables do not hold them, or getting athwart others, so as to drive upon the reefs at Hornos Point, or on the Lavendera Shoal, and lose some of the lives.

26. Those who do not apparently expose themselves to be thus entangled, yet sometimes are so; as happens to those who, sighting Vera Cruz at the dawn of day, follow towards the harbour, persuaded that the breeze will blow, which is not always the case; for though it blows something regularly, it rounds to the

\* The commodore's, or of whoever occupies the first rings or place, ought certainly to be so, for the stock might catch the edge of the inner Laxa.

† To be on clear bottom, you must take care that it bears nothing to the west of south; for, more to the eastward, there are spots of good and bad ground.

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land from west to south, when it announces good weather; and, if bad, from north to west: it may also become calm; and, therefore, as, both in the first and last of these cases, it is impossible to enter the port, they consequently remain outside and exposed.

27. Knowing this, and that, even if the land-breeze comes, there is no certainty of its continuing, so as to enable you to repass the Gallega and Galleguilla, and to clear the mouth of the harbour; it is necessary that, at the setting of the sun, when the manœuvres made can be seen from the lookout, or before that time according to the season, appearance of the weather, distance from Vera Cruz, or from its shoals, and the number of vessels which may be in it, the successive navigation should be resolved on; and, in case there is the least doubt of catching the port before dark, if in the time of the norths, it will be best to haul out on the starboard tack, until you consider yourself seven or eight leagues to the N. N. W. or N. E. of it: here you will be in a proper situation for receiving a north, if it comes on by night; and, if not, to work early in the morning, so as to see the castle, city, &c. but if you have not a large vessel, and if it be not in the season of the Norths, this precaution admits of some modification.

28. From the preceding remarks, it may be inferred how far from proper it is to enter this harbour by night, especially with ships of the line, or others approaching to their draught of water. Some have entered, and others may enter, successfully; but if any one, on any circumstance apparently favourable, attempts this entry, he may find the occurrence but momentary, and disagreeable consequences may ensue.

29. Notwithstanding what has been said relative to the winds, if, in the good season, there can be any confidence in them, it may be expected in the months of May, June, July, and even in August; in which, if you wish to make for the harbour, at most, with a large vessel, when towards the vicinity of the inner channel, the following instructions must be observed: If the wind is favourable, and if not, according to the greater or less distance you may be from the harbour when a contrary wind or calm ensues, you will anchor or not, reckoning that every possible assistance will be given you; and that you will have a pilot off so soon as in his power, upon your firing two guns precipitately, as an indication both for your intention to enter, and of your being in want of a pilot: the castle will answer you with two guns fired deliberately, both to indicate to you that you are understood, and that you shall have the desired help. At the second shot you may fix the bearings, if you had not got them before.

30. Night then coming on, when you are in sight of Vera Cruz, and of its lights, and to the eastward of the harbour, and at one, two, or three, miles to the northward of Anegada de adentro, or of Blanquilla Island, or of the Galleguilla, you must steer so as to run for, and to open, the mouth of the harbour about W. N. W. until the light bears S. by W.  $\frac{1}{4}$  W. from thence steer west until it bears S.  $\frac{1}{4}$  E. and afterwards S. W. until it bears S. by E.  $\frac{1}{4}$  E. when you will steer S.  $\frac{1}{4}$  E. being now included, or nearly so, in the first leading-mark of the plan, and in the Outer Channel, diminishing the depths to nearly 5 fathoms; and, when the light remains at S. E. by E. you will be in the place where it is usual to take a pilot. If you have to conduct a vessel of war, or one of great draught of water, and determine not to enter, you will anchor to wait for day-light. If your vessel is of middling size, and you have no pilot to direct your entering, but wish to go in, you must steer S. E.  $\frac{1}{4}$  S. for the purpose of passing the Outer Laxa, until the light bears E.  $\frac{1}{4}$  S. when you will run in E. S. E.  $\frac{1}{4}$  E. going clear of the N. W. buoys, to work afterwards, as is directed in from paragraphs 18 to 21, or seaman-like, according to circumstances.

31. If night comes on when you are to the N. N. W. of the light, you must steer so as to get it S. by E.  $\frac{1}{4}$  R. and from thence you must steer S.  $\frac{1}{4}$  E. being included in the first leading-mark of the plan, and successively, as has just been stated in the preceding paragraph.

Finally. *If caught by night to the N. W. by N. of the light*, which will be near to the shore, you must steer to the East, to keep clear of Points Brava and Gorda; and, having passed the last, place the ship's head to the S. E. or towards the light itself, until you find from 6 to 5 fathoms, when you must steer S. S. E.  $\frac{1}{4}$  E.

until the light bears E.  $\frac{1}{2}$  S. when you may steer E. S. E.  $\frac{1}{2}$  E. for the interior of the harbour; but, if you have to conduct a vessel drawing less than 18 feet of water, having once passed Point Gorda, you may continue the course of S. E.  $\frac{1}{2}$  S. without danger from Point Soldado, or from the Outer Laxa, over which, in such a case, you may pass.

*Directions for the S. E. Channel*, by Don Fabian Ali Ponzoni, who surveyed the harbour in 1807. The S. E. Channel is that between the Gallega, on which the castle is erected, upon the north, and the shoal called the Lavandera, on the south. The latter is more dangerous than the other shoals, which are generally steep-to; and particular caution is required in regard to it, as it is covered by the water, and not distinguishable to the eye, unless there is so much sea, that the water breaks on it, which is particularly the case with north winds. On entering by the S. E. Channel, it is necessary to pass near this shoal; and, therefore, observe that, you may keep clear of it, by keeping Punta Gorda always a little open past the most salient angle to the N. E. of the low fortification of the Castle of San Juan de Ulua, until you bring an insulated stone edifice, which serves as a slaughter-house, on with a salient angle of the city, upon the wall and only point of which is built an edifice, of considerable extent, for barracks for the troops. When arrived at this position, you will be sufficiently past the Lavandera to incline your course towards the vessels in the anchorage, but without getting too near the shallow water at the south end of the bank, which, at this place, terminates the Gallega Reef.

The only channel which, although deep, is to be shunned, on account of its narrow breadth, unless by those who have a practical knowledge of it, is that formed between the Pajaros and Sacrafscios Reefs. The leading mark through it is that already given for the S. E. Channel; that is, Punta Gorda kept open past the north-easternmost part of the Castle of St. Juan de Ulua. The shoaler part of the channel admits the passage of vessels no larger than with two masts, and directed by a pilot.

Considering that the Port of Vera Cruz is far to leeward, we shall here add the mode of navigating *from it*, and coming out, both by the Channel of Yucatan towards the Caribbean Sea, and by the Strait of Florida towards the ocean.

In order to this, remember first, that the winds in the Mexican Sea are, generally, from the eastward; that, from October, the easterly winds are interrupted by the hard Norths, which often blow; that, after the Norths cease, which is from March, you may count upon the regular changes of land and sea-breezes, along the whole of the coasts, and especially on those of Yucatan and Campeche; and, finally, that, on the north coast of the Gulf, in the months of August and September, there are frequently furious hurricanes, which descend as far as latitude  $26^{\circ}$ , or even sometimes to  $25^{\circ}$ .

On departing from Vera Cruz, in the season of the Norths, you should first steer north or N. N. E. but taking care never to keep very close-hauled: this is enjoined, that you may, so soon as possible, gain the parallel of  $25^{\circ}$ , on which you may keep as close to the wind as you can, for the purpose of gaining longitude; for, in such a case, you not only avoid all danger of getting entangled with the Tabasco coast, in the south, in case of a north coming on, but you may also run to the east, without danger from the Negrillo, or other shoals, on the Bank of Campeche. This plan is the most judicious, because the first thing is to get well clear of the Bight of Vera Cruz, wherein, if caught by a north, you must carry sail to it, in order to avoid being driven on the coast to the south, in which you might, very probably, get shipwrecked by a continuance of the wind; and, besides, it is of importance to be in such a situation, when a north sets in, as allows you to take advantage of it, for running to the east, and thus to shorten your passage.

In the months when the norths are weaker, you may calculate that one of them will facilitate your passage to the Tortugas soundings, and will have only to gain all you can to the east, after you have gained the parallel of  $25^{\circ}$ , by beating up in that latitude; for, in this season, (part of March, until the end of April) it will be little advisable to run up into the vicinity of the north coast, upon which the E. S. E. and south winds blow with much force, before a north comes

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on. With the north you must haul up for the Tortugas Bank, which you should not leave, in order to make the shore of Cuba, either with light winds or norths; in the first case, because the current may carry the vessel up the Strait of Florida, or even through it; and, in the second, because the Cuba shore is generally much obscured by such winds, which are, in general, not very manageable, and you may, therefore, get so entangled on the coast, as ultimately may cause you to be wrecked. If not bound to Havana, but directly through the Strait of Florida, with a light wind, you may leave the soundings, and proceed according to circumstances, or rather as hereafter directed.\*

The course for running across to the coast of Cuba must be such as to compensate the effect of the current: in general, to make Havanna, it is sufficient to steer S. by E.  $\frac{1}{2}$  E. if the vessel does not run more than three miles an hour, and S. S. E. if she run six miles an hour: this is counting upon two miles, hourly, of current, which is what we may generally expect in this place. If the vessel runs more than three miles, but less than six, you can shape a course between the two above stated; or, if she goes more than six miles, you may luff to S. E. by S.

If you sail from Vera Cruz between the end of March, and the middle or end of June, you need not then keep close-hauled to the breeze, nor exert yourself to gain to the eastward, when you have reached the parallel of  $25^{\circ}$ : for, with this route, you would be crossing the middle of the Gulf, where you would then find fixed winds from the eastward only, and many calms, which lengthen the navigation much; what at this season ought to be done, is, to steer always to the north or N. N. E. keeping the breeze well free, until you get into the vicinity of the northern coast, when you may advance to the eastward, about the parallel of  $28^{\circ}$  or  $29^{\circ}$ , with the assistance of the variations of the sea and land-breezes, until you get on the Tortugas soundings, when you may run to the south, in order to run off the bank to the west of the Tortugas. At this season, also, you may run for the Campeche Bank, in order to get to windward of it by the aid of the changes of the sea-breeze and land-breeze, until you gain the eastern edge of it, when you may steer for the coast of Cuba, taking care to quit the edge of the bank as far to the south as you can, with the vessel's head to the S. E. in preference to the N. E. unless the latter should be very advantageous; for you will thus shun the current, which, on the N. E. portion of this bank, sets with considerable force towards the N. W. then advancing to the east, and next taking the other tack, follow the latter to get into the general current, which runs to the eastward, between Cuba and Florida.

Finally, between the middle or end of June and the month of October, you ought to shun the middle of the Gulf, because you would there be exposed to calms and contrary winds; and, at the same time, avoid the northern coast, on account of the hurricanes; and you ought then, therefore, to take the route by the Campeche Bank.

To go from Vera Cruz to Campeche, if it be in the time of the Norths, you must endeavour to gain the parallel of  $21^{\circ}$ , and beat to windward by it, to get on the bank, either to the northward or southward of the Arcas, as we have already shown in page 372; and if a North comes on while you are in this part, by steering the same it will enable you to make your passage in less time; but, in the summer-season, having once cleared the *Outer Shoals of Vera Cruz*, you may keep along the coast of Tabasco, availing yourself of the changes of the sea-breeze and land-breeze to get to windward.

We shall conclude by saying that, when bound to Vera Cruz, in the time of the Norths, in case that wind should take you on the Campeche Bank, you

\* Six miles to the westward of the Dry Tortugas lies the centre of the Tortugas Bank, already noticed in page 141. Although, from the clearness of the water on this bank, it appears dangerous, it is not so in reality. The extent of the bank is nine miles from north to south, and six from east to west. If, when bound to the eastward, from any port in the Mexican Sea, and you meet with a fierce storm about this part, which is very common in the summer season, you may safely anchor in 5 or 6 fathoms, to the north of the Southwest Key, at the distance of one-quarter of a mile from the west side of the long sandy key called Turtle Key.



should so arrange, that, calculating on the time the North may probably last, which you may do by its greater or less violence, you may make the coast when the north has ceased; availing yourself of the favourable conjuncture for taking the harbour when the breeze is established.

### *Vera Cruz, to the Bay of St. Barnardo.*

From the harbour of Vera Cruz the coast tends nearly N. W. by W. eleven miles, to the River Antigua; thence forming something of a bend, it extends to the N. N. W. to the point and river of Chacalacas, and forms also a bay named that of Antigua; from Chacalacas, it follows the same direction of N. N. W. six miles, to Zempoala Point, forming also a bight to the west between the two points. From Zempoala the coast sweeps to the N. W. forming a regular bay, with Point Bernal, which lies N. N. W. ten miles from Zempoala Point.

To the S. E. of Bernal Point, and at the distance of about a mile, there is an islet, named Bernal-chico, which as well as the shore of the bay, is very clean; and you may pass between it and the point, without fear, in 5 or 6 fathoms of water. On the south of it there is shelter from northerly and westerly winds; but none from winds to the eastward of north. To anchor in this bay there is no need for any other guide but the lead, and, at half a mile from the beach, there is 5 fathoms of water.

Off the coast between Zempoala and Bernal, there is a shoal, which breaks: this shoal bears nearly north from Point Zempoala, at the distance of four miles, and at the same distance athwart from the coast: it is necessary to beware of it, especially at night. With a large vessel you should always pass outside of it; for between it and the coast there is a spit, which runs off from the shore, with only 4 fathoms depth upon it.

From Bernal Point the coast tends north (true) four miles, to Mariandrea Point; from thence N. N. W. by compass, ten miles to Point Delgada, from which it follows N. 58° W. twenty-five leagues, to the River Tuspan; from the River Tuspan, it continues nearly N. N. W. eighteen miles to the Bar of Tangujo; from thence northerly, bending to Cape Roxo, nine leagues; and from that to the River Tampico, nearly N. W. seventeen leagues. The coast comprehended between Tangujo and Tampico, and which is that which forms Cape Roxo, is no more than a narrow tongue of land, which separates the Lagoon or Lake of Tamiagua from the sea.

Between Cape Roxo and the River Tuspan there are various shoals and islets, which lie out at a distance from the coast, and form excellent roadsteads, in which vessels may be sheltered during the norths. The first to the southward is the shoal of Tuspan, which is about ten miles to the E. N. E. of the river of the same name; upon this shoal is a group of islets, and on the S. W. part of it is good anchorage in 8 or 10 fathoms of water, on coarse sand, which is found at two cables' length from its edge. About N. W. (true) from this shoal, and at the distance of five miles, lies the shoal named Bajo del Medio, or Middle Shoal, which is seven miles distant from the coast. This shoal is much smaller than the former; but it also affords anchorage on the S. W. part in 6, 8, or 10, fathoms on sand. To the N. W. of this shoal, and at the distance of two and a quarter miles, is that named Tangujo Shoal, at the S. W. part of which there is also a better anchorage than at the other two. The channels formed by these shoals are clear and deep, and between them and the coast there is no object of danger which is not visible.

Off Cape Roxo are the islets and reefs of Blanquilla and Lobos; the first, which is a reef, with a cluster of islets on it, lies to the east of the Cape, and about five miles from it; to the S. E. of it, and at the distance of six miles, is the islet Lobos, from the north part of which a great rocky shoal stretches out, which leaves only a strait of three miles between it and Blanquilla; there is also a shoal in the middle of this strait, so that much caution is required in passing

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through it. To the S. W. of these islets there is excellent anchorage, sheltered from the norths; and, to take it, there is no necessity for particular instructions.

All the coast, generally, from Vera Cruz to Tampico, is clear and deep, and without any other dangers than the spits, (restingas,) which stretch out from Juan Angel, in the Bay of Bernal, and at Point Gorda; and, along the whole of it, the soundings extend from shore from eight to ten leagues, and the water so shoalens, that, at two miles from the shore, you will find from 5 to 7 fathoms. The land is not very high, and almost all terminates in a sandy beach; it is covered with brambles and small trees, which are very thick upon it, and look green at a considerable distance. There are no particular marks to distinguish the land by; and observations for the latitude are, therefore, especially required here.

The River Tampico is considerable, and has commonly a depth for any vessel which draws less than 2 fathoms. Its bar stretches nearly N. W. and S. E. and the depth over it is more or less, according to the floods of the river. Two miles from the bar, (up the river,) there is a little channel in the south side of it, which leads to a lagoon or lake, named Zapote; at a league from the entrance of it, there is a village called Old Tampico; and, at two leagues from it lies that of Tampico, to the N. W. of the channel of Zapote: there is another channel, at the distance of a league, by which you can go to the village of Altamira, and ten leagues up the river Tampico lies the village of Panuco. At all these towns, abundance of provisions may be found.

### *Sailing Directions for Tampico River.*

As it is sometimes difficult for strangers bound for Tampico to hit exactly upon the entrance of the river, the land in its neighbourhood being low and uniform in its appearance, it would be well always to approach as nearly in the latitude of the river as possible.—The soundings gradually shoalen as you near the land, no danger is therefore to be apprehended from running even in the night.

Navigators in approaching Tampico River will observe as a mark a few houses situated on the point forming the southern entrance of the river. From this hamlet, pilots can at all times be procured when the weather will permit.

A dangerous bar obstructs the entrance of this river, forming a narrow channel upon the left, or southern shore. In this channel the depth of water varies from 7 to 11 feet.

The anchorage outside the bar is entirely exposed, and on the commencement of a Norther, vessels should invariably put to sea: they ought, therefore, always to ride at single anchor, with their sails reefed, and slip-buoys on their cable.

The best and safest anchorage in winter (during which season the Northers prevail) is to bring the houses on the south point to bear S. W. and anchor in 8 or 9 fathoms water. In summer you may anchor E. N. E. from the south point, in 7 fathoms. The first mentioned birth is about three miles from the point, the latter two miles. The object of anchoring well to the northward is to allow sufficient room to slip and make sail.

From the Bar of Tampico the coast tends to the N. N. W. towards Ciego Bar, which is six leagues from it. The coast is clear, and with good depth for twelve miles, when you begin to find pointed rocks in the bottom, but which do not run out above two miles from the shore. From Tampico Bar to the north you will find no more high land on the shores than the rising grounds, (*medanos*) which extend to Point *Ilicacos*, and a double hill inland, which is named *Mutanzas*; from which, in the interior, the mountain range extends to the N. W.

Ciego (i. e. Blind) Bar has only 3 feet of water on it; and within it there is a shallow lagoon, which communicates with that of Altamira. True west from Ciego Bar is the hill of *Metute*, which is inhabited by wild Indians. From Ciego Bar to that of Trinidad, the coast tends nearly N. N. E. for two leagues: in its proximities the bottom is rocky, like the preceding: the bar of Trinidad

has only two feet on it at low water. From Trinidad Bar to *Barra del Tordo*, or Tordo Bar, is twelve miles N. by W. and all good depth, with the exception of some pointed rocks, which also do not lie farther out than two miles. On Tordo Bar there is only 4 feet of water at low sea, and within it are various shallow lagoons: all this coast is bordered with low hills, or hillocks; and two leagues inland from these there are some which rise a little, and are named the Commandant's. To the northward, near the parallel of  $23^{\circ}$ , are three double hills, seen when near the coast, which are named *Cerros los Marlinez*, which serve as land-marks to those bound to Tordo; for the southern part is nearly west from the bar: farther inland than these hills are seen the *Sierras*, or *Mountains of Tamaolimpia*, which tend to the N. W. and which serve as a haunt for the wild Indians.

From the bar of Tordo, northward, the lagoons become more numerous; they are all of salt water, and fresh water is to be found only in hollows between the hummocks, where it has remained after rain.

From the bar of Tordo to the River Marina, or Bar of Santander, the coast tends nearly N. by W. eighteen leagues, and is all of a good depth until within three leagues of the bar, when various pointed rocks are met with, which lie out about two miles from the beach: six leagues to the north of the bar of Tordo, is a place named *Ostional*, by which the Lagoon of Morales communicates with the sea whenever it is a little risen: in this lagoon there is abundance of fish, and there is a watering-place in front of Ostional. The Lagoon of Morales communicates with the River Marina.

The bar of the River Marina has 7 feet of water, and the *Hills of Palma* and *Carrizo*, between which lies the neck of the river, serve as marks for it; before this the river forms a great lake, of which the shores are low. Six leagues up the river is the town of *Soto la Marina*, which is ten leagues distant from the colony of New Santander, at which all necessary provisions may be found. The lake, which is within the bar, and below the neck of the river, is full of shallows, and has solely a channel of 12 or 14 feet of water; but in the river there are 3 and 4 fathoms. All the coast here consists of very low sandy beaches, and on no part of it is there fresh water to be found; but it may be obtained in the interior country.

From the bar of Santander, the coast, which is very low and of sand, tends twenty-five leagues N. by E. to the *Bocas Cerradas*, which are four, within the distance of a league: by these the sea enters when there are storms; and they may be distinguished at three or four leagues off at sea: they communicate with the *Madre Lagoon*, which thence extends to the river *San Fernando* or *Tigre*. At eight leagues to the north of the River Marina, the interior high land ends, and thence the land continues low. The lagoons, in many parts, form a horizon. From the Bocas Cerradas to the river of San Fernando or Tigre, the coast bends to the N. N. E. and continues of the same description as that last described.

The bar of San Fernando has 3 feet on it at low water: the water of this river is salt, owing to the communication it has with the lakes or lagoons, and fresh water is to be found only at the time of the rains: but on the south coast of its bay there is a pool of standing water, at which any urgent necessity may be supplied. From this bar the coast follows to the N. N. E. for fourteen miles, and afterwards north for sixteen miles; and then about two leagues before arriving at the River *Bravo del Norte*, it directs itself to the N. N. W.

The bar of the River Bravo is good and very straight; it extends east and west, and has 7 feet on it at low water: this river is of fresh water, and has a regular current the whole year, which is more or less strong according to the waters it receives: within the bar there are 3 and 4 fathoms. As all the land hereabout is equal and low, it offers no distinguishing marks, excepting a small lagoon, which extends from the Tigre to this river, and the bar of which stretches a league out to sea. At a greater distance, it may also be noticed, that the fresh water changes the colour of the sea; a thing unknown at any other bar off this coast.

From the Rio Bravo, the coast tends N. N. W. for five miles, where there is a shallow bar; thence N. by W. to the distance of six miles farther, and to another

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bar of 15 or 16 feet; but with very little shelter, having a very wide mouth, and the coast being very low; while the lagoon with which it communicates leaves merely a short space of about 4 fathoms in depth, where you may anchor in case of necessity; but all the rest of the lagoon forms a horizon, having only 2 and 3 feet of water to the main land, which is at a good distance. It is necessary to be much on your guard in this place, on account of the Indians, who come down to the sea-shore in periaguas or pirogues. On no part of this coast is there fresh water. To find this bar, which is called *Barra de Santiago*, you have no other guide than the latitude, and observing that, to the northward of it, the lagoon begins to get wider. The entrance of the bar is very near to the north point, and lies E. N. E. and W. S. W. to the anchorage of 4, or perhaps 5 fathoms, which is about a league in length. From this bar the coast follows to the true north, all very low and of sand, the main land being distant five or six leagues from the beach, forming a lagoon of 3 or 4 feet of water, with much clay. This lagoon begins to be still broader in latitude  $27^{\circ} 30' N.$  where it is nearly seven leagues in width. The embouchure of, or channel to, this lagoon, in the south, is by the bar of Santiago; and towards the north, by the *Pasa del Caballo*; and when its waters are very high, they open various mouths or passages in the beach, which is of sand and very low. From lat.  $27^{\circ} 30'$ , the coast continues nearly true north to lat.  $28^{\circ} 10'$ , or the shoal bar of the *Pasa Caballo*: to the N. W. of the latter is the Lake of St. Joseph, (*S. Jose*) distant about sixteen miles. From the latitude of  $27^{\circ} 30'$ , the lagoon narrows towards the Bay of San Bernardo. From *Pasa del Caballo*, the coast tends to the eastward of north, to the Bay of San Bernardo, and all of it is low, with sandy beaches; so that, with hard gales, the sea covers the little tongues, which serve as barriers to the lagoons, and unites entirely with them.

All the coast which we have described, from Tampico to the Bay of San Bernardo, is very clean, and 3 or 4 fathoms are found at a league from the shore. The quality of the bottom is, in general, either of coarse or fine sand, and in some places mud: on the bars of the rivers very fine sand is always found; but also, sometimes, sand and ooze. The greater part of the lagoons on this coast have not more than 3 or 4 feet of water, where deepest, and parts of them are dry, except in the season of the rains. In the season, from August to April, the navigation is very dangerous on these coasts, on account of the heavy sea which is on them, and which renders it impossible for a vessel to ride at her anchors; for, in that season, the E. S. E. winds blow with much force, before the wind comes to the north, for three days; but in the other months, from April to August, the navigation is very good and secure, and currents are always found to the north and N. E. which facilitate an increase in the latitude; and although the easterly winds, which prevail from April to June, raise much sea, yet you may, in a case of necessity, ride at anchor in 7 or 8 fathoms, but, if you can keep under sail, do so, in 7 or 8 fathoms, when you will be in sight of the coast. The land-breezes are frequent in the summer, from midnight till 9 or 10 in the morning, when the breeze comes on: but this is only the case to the latitude of  $28^{\circ}$ , which is where the mountain range ends; for all the rest of the land is very level, low, and swampy, or watery; and there are few showers on it, which are the causes of the land-wind.

### *The Bay of San Bernardo, and Coast thence to the River Mississippi.*

The Bay of San Bernardo is in the N. W. corner of the Gulf or Sea of Mexico; its entrance is formed, on the west, by the low land which tends up from the S. W. and on the east, by the west point of the *Isle of San Luis*: there is not more than 7 feet of water on the bar, which extends W. N. W. and E. S. E. Within the exterior points, there is a depth of 3 fathoms; but it so soon diminishes, that the bay may be generally considered as a lake of 3 or 4 feet in depth: from the bar there is a strong current to the S. W. when the tide ebbs; so that

it is necessary to anchor and wait until the flood favours the entrance. The tide rises 5 feet. Before passing inward, it is necessary to mark or buoy the bar; for, as there is always a swell upon it, striking would be dangerous.

All the land of this bay is low, and without trees. The island of San Luis, or St. Louis, of which the west point is the east point of the bay of San Bernado, follows E. N. E. 42 miles; all very low and marshy, without wood; and the south coast is a very fine white sandy beach. This island is very narrow, and the inner part of it, with the main land, forms a lagoon of about two leagues in width: it is studded with keys, and it is so shallow that there is no passage through, except for canoes. The eastern extremity of San Luis' Island sends a spit out for two leagues to the E. N. E. between which and a shelf, stretching out from the main land, is the entrance of Galveston Bay, the exterior point of which, to the south, is *Culebras Point*, or the eastern point of the island of San Luis; and that to the north, on the main land, is *Point Arcokisas*. In order to enter this bay, it is requisite to round the reef at *Culebras Point*, and to go in by the channel which the north edge of that reef forms with the south edge of the shelf, stretching from the main land to about four miles to the south of it. This channel is a mile in width; and, at its entrance, has a bar of about fifteen feet of water; and this, which is the greatest depth, will be found nearer the edge of the spit than that of the shelf. Within the bay, 5 and 6 fathoms are found. So soon as you are abreast of *Culebras Point*, within the channel, you must luff up to N. W. and N. by W. until the point of *Arcokisas* bears east, when you may anchor in 4 or 5 fathoms, on clayey sand. More to the north you will find 3 fathoms. This bay is good for the shelter it affords; but, although very large, its coasts have shallows to a long distance out, on which boats only can pass: in the northernmost part of the bay, and almost N. by W. from *Arcokisas Point*, and about seventeen miles from it, is the mouth of the river *Arcokisas*, or *Trinidad*, the land at which is good and wooded: this is the only place in which fresh water can be procured in this bay, or even on the exterior coast, a long way to the eastward.

This coast, which is that of the province of Tejas or Texas, has been described as generally low and marshy, with small isles, inclosing bays of more or less extent: the country, however, imperceptibly rises to the northward, and becomes dry, broken, and healthy.

The discordancy, in different representations of the coast, between Galveston Bay and the Sabine Lake, are rather extraordinary, owing to the want of a regular survey. In the late Spanish chart of the gulf, the difference of longitude between Galveston Bay and the mouth of the Sabine is only  $1^{\circ} 14'$ , the latter being laid down in  $94^{\circ} 45'$ , while in the new survey of Louisiana, by Mr. Darby, it is given in  $93^{\circ} 57'$ , and in the marine survey of Mr. Gauld, as in  $93^{\circ} 30'$  only.

From the consideration that the interior land has been actually measured across the state of Louisiana, it can hardly be questionable that Mr. Darby's longitude is, at least, a near approximation; but of the true figure of the coast, thence to Galveston Bay, we know nothing; even after an examination of many charts, &c. several of which agree only in one common error, that which originated in the Spanish chart of 1799, and since copied into others of later date.

We may now question whether an inlet or lake appearing at its entrance like the Sabine, has not been mistaken for the latter. Mr. Gauld has represented the Sabine, under the Indian name *Chicowansh*, and, as above noticed, in  $93^{\circ} 30'$ . Fifty miles more to the W. S. W. or in  $94^{\circ} 18'$ , ( $94^{\circ} 48'$  corrected,) he gives the entrance of a lake, studded with many isles, which might possibly be mistaken for Galveston Bay, would the difference of longitude admit: but the difference between the Sabine and Galveston Bay is more than two degrees. The supposition cannot, therefore, be allowed.

The *Derrotero de las Antillas* says that, "between Galveston Bay and the Sabine, no fresh water is to be found, even in pits or holes:" but the distance is given as only 22 leagues. Within this space several rivers appear, on the old charts, which are not here admitted to exist. These are, the river of St. Susanna, the Rio de Flores, Rio Dulce, the Magdalena, and Mexicano: but the question, whether they do or do not exist, remains to be determined.

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described in the *Derrotero*. "This mouth or entrance may be known by the width of it, which is *not less than four miles*. To enter it, you must open out the bar, which extends to the south about two miles, and lies in an E. N. E. and W. S. W. direction, and has not more than six or seven feet of depth, until clear into the first lake, where there is more depth. Having passed the first lake, you enter into another, much greater, of four leagues in extent, into the extremity or north corner of which falls the river Sabine, and ten miles to the S. W. of it that named *Nieves*.\* In these rivers there is a good fresh water; the lands are low, and liable to be flooded, and are covered with trees clear of underwood. The general depths of this great lake are only four and five feet."

**RIVER SABINE to the MISSISSIPPI.**—The greater part of the country between the rivers Sabine and Mississippi was formerly that of the Indian tribes *Ope-lowsas* and *Attacapas*. Hence it appears on the Spanish charts as the *Tierras de los Opelusas y Attacapas*, and a great part now forms two western districts of the State of Louisiana.

The coasts generally are very low, marshy, broken, and in some parts entirely inundated during the rainy season. The country is intersected by many lakes, rivers, and lesser streams. In Attacapas, on the western bank of the River Teche, are two small towns.—New Iberia, in lat. 30° S', and St. Martin's, in 30° 9'; but neither are entitled to particular notice. The Teche falls into the Atchafalaya, and thus communicates with the Mexican Sea. The great body of the present inhabitants of Attacapas are settled along the Teche, this being a superior part of the country; but there are also many beautiful settlements on the Vermilion River, more to the west.

The mouth of the *River Calcasieu* is about twenty-five miles to the eastward of that of the Sabine. The coast, in the interval, is generally without wood, and in some parts very marshy. The bar of the Calcasieu, which extends a mile out, has only four feet over it at low water, and the great lake within has only three feet. The banks of the latter are not more than four feet above the level of low water; and at high spring tides are frequently overflowed. To enter the river, keep nearest to the west point, until you open the neck, which has a lake on the western side, communicating with it at high water. The water here is fresh and good.

The mouth of the *Mermentau* is about 27 miles to the eastward of the Calcasieu. The coast between continues low and marshy. The bar, like the former, has only 4 feet on it at low water; but the depth within is much greater. The interior lake, Mermentau, like the Lake Calcasieu, has a general depth of only 3 feet at low water. A few low marshy islands choquer its surface, while the general monotony of its shores are relieved only by clumps of live-oak.

Between the Mermentau and the Atchafalaya, an extent of about 80 miles, the land is variegated in its shape, and forms *Vermilion Bay*, *Cote Blanche Bay*, and that of *Atchafalaya*, the figures of which have been variously represented, and can be best understood by reference to our New Chart of the Gulf of Mexico. The River Atchafalaya is a considerable branch of the Mississippi, or rather an outlet from that river, and its waters fall into the bay with great rapidity.

The "*Derrotero*" says that the *Bayou*, or *Creek*, of *Constante* lies 21 miles to the eastward of the bar of the Mermentau, and has about 7 feet at its entrance, with a greater depth within. The coast thence is evidently described inaccurately; but the point, called *Tigre Point*, westward of Belle Isle, "may be known by a great row of oak-trees." The southern coast of Belle Isle tends nearly E. by S. 25 miles. Within the isle, on the east, is a range of keys, which divides Cote Blanche from Atchafalaya Bay. The great lagoon, within Belle Isle, which forms Vermilion and Cote Blanche Bays, has a general depth of only 5 to 10 feet, and its western strait, which is the clearest, has a bar of about 5 feet.

The *River Atchafalaya*, or *Chafalaya*, has been already noticed. This river may be considered as a boundary of the great *Delta* of the Mississippi. Beyond the distance of four leagues inland, within the Atchafalaya, the land is elevated

\* Mr. Darby represents the Natches, or western branch of the Sabine, as falling into the lake at only five miles from the main or eastern branch.

and fertile; but thence to the sea it is liable to be flooded, and has no wood, except upon two mounts, which are to the eastward of it. Almost S. by E. 4 leagues from the mouth of the Atchafalaya, is *Point Fierro*; and the intermediate space forms a large bay, much impeded by oyster-banks. Opposite to this bay, on the west, extensive oyster-banks also extend from the southern shore of Belle Isle. From Fierro Point the coast tends to the E. S. E. 30 miles, to *Raccoon Point*, the west point of an isle, called *Buey Island*. The coast all along is bordered with oyster-banks, some of which have scarcely 5 feet of water upon them; and, indeed, there is a chain of them all the way from Bayou Constante; and they are, in some parts, uncovered at low water. It is, therefore, here necessary to navigate with much caution, taking care not to go into less than 7 fathoms, in order to keep clear outside of all the banks. Between the shoals there are channels of 8 feet, which lead to the Atchafalaya, but they can be taken only by vessels of a light draught, and with a good pilot.

The island *Timballier*, which is about 7 leagues to the S. W. of Barataria Bay, is ten miles in length, and tends nearly east and west. At its east end is the bar of the river *Lafourche*, on which there is not more than 8 feet of water; and the interior does not afford shelter from a storm. The coast hence to Barataria Bay is formed by a chain of isles, of which the N. E. and largest is *Grand Isle*.

BARATARIA BAY is a great lake, communicating with the Mississippi by two creeks, which, at the time of the floods, have much water in them. At the entrance is a bar of 9 feet water, and within the depth increases. This harbour is well sheltered, but there is a strong current in it when the river is in flood, and a vessel here requires to be moored with good cables. The entrance may be known by three distinct clumps of trees, on the east side. There is, also, here a look-out, with a flag-staff, and a cannon for making signals to vessels, by which the situation of the bar is indicated. A vessel may gain a pilot, by firing guns, as a signal for the same, until answered from the look-out.

In advancing up the bight, to the bar of Barataria, whether from the East or West, be cautious not to go into less than 4 fathoms, especially after passing the S. W. pass of the Mississippi; for the N. E. part of the outer bay is very deceiving, it having many oyster-banks. The coast is low, and mostly covered with bullrushes. Without the bar there is anchorage in 4, 5, or 6 fathoms, in sight of land; but it can be taken only in good weather: in bad weather it is better to keep under sail, keeping in mind that, on this shore, the water runs much to the west, which is caused by the discharge from the branches of the Mississippi. The tide here regularly rises 4 feet.

GENERAL REMARKS, from the *Derrotero de las Antillas*, &c.—All the coast, which has been described, from *San Bernardo* to the Bayou of *Constante*, is clean and of good depth; and you may run along it, by the lead, understanding that, at 5 miles from it, you will have 3 and 4 fathoms of water; and, although it is low, you may see it, in clear days, from 8 fathoms of water; but, from the Bayou of *Constante* to the isles *Buey* and *Vino*, it is most commonly foul and full of oyster-banks, most dangerous to navigation; to avoid which, on passing, approach no nearer than 10 fathoms, in which depth you proceed safely. The Current, from *St. Bernardo* to the Bayou of *Constante*, is weak; but, from the latter to the S. W. pass of the Mississippi, it runs with strength to the West and S. W. especially during the floods of the river.

In the morning you have the land-breeze; but, when day-light is well come, the wind comes to the East and E. S. E. and in the evening it rounds to S. W. This, however, is varied in the time of the *Norths*; for, when they blow, which generally is with much force, there is neither land-breeze nor change. The fore-runner of a North is the wind from South, which blows, with force, for twenty-four or thirty hours before the other comes on. The weather, in the months of August, September, October, and November, is most to be feared on these coasts; for, in addition to having winds dead on shore, there are violent hurricanes; and thus, in such seasons, you should never go into less than 20 fathoms, either in beating to windward or in sailing along it.

[For "Directions for vessels bound from the Mississippi through the Gulf," See page 156.]

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## CHAP. XV.



### *The COAST and RIVERS of GUYANA, from the EQUATOR and the AMAZON, westward to the GULF of PARIA, or TRINIDAD.*



#### *The Coast of Guyana in general.*

The country comprehended under the name of Guyana, extends southward from the river Oronoco to the river of Amazons. The coasts of it are generally low; as the numerous rivers bring down vast quantities of alluvial matter, which, accumulating on the shores, has formed a border of low ground. This ground, between the high and low water marks, is commonly covered with mangroves; at low water, it appears like an inaccessible bank; but, with the rising tide, it is inundated.



#### Portuguese Guyana.

The Amazon, is considered as the first or largest river in the world. Mr. Pinkerton has said, "among the grand rivers which water the globe, and diffuse fertility and commerce along their shores, the Amazon will ever maintain the preference." The truth of this averment seems to be unquestionable; the sources of this river being within two degrees of the Pacific Ocean, about the parrallel of 11° S. and several great rivers fall into it, these again having innumerable branches. The course of its grand stream is nearly east, across the continent, until it falls into the Atlantic, under the equinoctial line. The river is said to be navigable through nearly its whole length, though impeded by many banks of sand, some of which extend 30 or 40 leagues. Below its confluence with the river Xingu, at 40 leagues from the sea, its opposite banks are invisible from each other. At *Ovidos*, more than 140 leagues from the sea, its breadth is about 1000 fathoms. The tide is perceptible to the distance of 150 leagues.

The declivity of the bed of the river, from *Ovidos*, has been computed at only four feet; yet the immense body of interior water gives it an astonishing impetus; so that it rushes into the sea with amazing velocity; and is said to freshen the ocean, at times, to the distance of nearly 90 leagues from the shore. This rapidity, on the return of tide, occasions a bore, called by the Indians *pororoca*, which is chiefly observable towards Cape North, and which surpasses those of other great rivers. This phenomenon always occurs two days before and after the full and change of the moon; when, at the commencement of the flood, the sea rushes into the river, forming three or four successive waves, that break mountains high on the bar, and raise the tide within, to its greatest elevation in one or two minutes. It has been said that the elevation of these ridges of water has amounted to not less 200 feet; but the ordinary rise, over the bar, is from 12 to 15 feet. The noise of the irruption may be heard at the distance of two leagues.

## French Guyana.

The coasts of French Guyana are much like those of the Portuguese or Brazilian territory, already described, and present nothing remarkable to the navigator; the whole being lined by drowned mangrove isles and mud banks, which bar the mouths of the numerous rivers. The rains on this coast prevail from January to June, and form stagnant ponds, and marshes, which render the climate very unhealthy. The currents along the coast are strong and irregular.

The only town is that of *Cayenne*, situated on an isle or rather delta, called Cayano; hence the whole territory is commonly styled *Cayenne*. The situation of this place was ascertained by M. la Condamine, in 1774, from four eclipses of the first satellite of Jupiter, &c. who has given it as in  $4^{\circ} 56' 15''$  N. and  $52^{\circ} 16' 30''$  W. a position since generally adopted.

The coast is in many places dangerous; having extensive banks of sand and mud, with numerous rocks. Some of the shoals reach to the distance of two leagues from shore. The isle Cayano lies between the rivers *Ouya* and *Cayenne*; the latter has near its entrance, only 12 and 13 feet of water with soft mud interspersed with rocks. The town is situated on the N. W. side of the island; it is generally described as a wretched place, the streets steep and narrow, and paved with sharp stones. The harbour, which is a tolerable one, is supposed to have determined the choice of settlers, in fixing on this situation.

There are several islets off *Cayenne*, as exhibited on the charts; of these the outer ones, called the Constables or Gunners, are the most conspicuous; they being barren rocks, whitened with birds' dung. The Malingre, and other Isles to the eastward of *Cayenne*, are very steep. On one of these is an hospital for lepers, a malady very common on the Cayano Island. These isles, &c. are more particularly described hereafter.

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Dutch and British Guyana.

*Dutch Guyana*, or *Surinam*, extends as already noticed, from the Marrowwyne to the Corantine, an extent of 170 miles; and *British Guyana*, from the Corantine to the Essequibo, an extent of about 120 miles.

## General Directions for the Coasts of Dutch and British Guyana.

Ships bound from the windward or Caribbee Islands to these coasts, should steer as far to the eastward as S. E. if the wind will permit, on account of the strong indraught or current, setting at all times of the year to the westward, into and through the gulf of Paria. The moment you come on to the outward edge of the ground, you will perceive the colour of the water change to a light green, and will have from 35 to 45 fathoms. If in that depth you should be so far to the southward as  $7^{\circ} 25'$  or  $7^{\circ} 30'$  north latitude, you may steer in S. W. and make the land; but if more to the northward, keep your wind till you attain that latitude. You will have very gradual soundings quite to the shore, but very shallow; you will be in 9 fathoms when you first get sight of the land about Demerara; but you may run in without fear in 4 fathoms, being attentive to your lead. As it is the general opinion that there are many unexplored sand banks on this coast, a great attention to the lead and quality of the ground will be necessary, as by that only you will be apprised of the danger; for, on most parts of this coast to the eastward of the river Oronoco, the bottom is of very soft mud; if, on a sudden, you find hard sandy ground, be assured some danger is near, and immediately haul off, till you again find soft ground, as before.

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alike, that the most experienced pilots are frequently deceived. Your chief dependence therefore is in a true altitude; if that, by reason of thick weather, cannot be obtained, it will be advisable to anchor in about six fathoms, which you may do with great safety, having good ground, and, in general, moderate gales and smooth water.

The making of the land about Demarara is the most remarkable of any part of the coast; the woods in many places being burnt down, and cleared for cultivation, makes the land appear in large gaps, where the houses, &c. are plainly to be seen; and if there are any ships lying at the lower part of the river, their mast-heads may be plainly seen above the trees, from some distance at sea.

If bound into the Demerara, you must run to the westward till you bring the entrance of the river S. S. W. or S. by W. and either lie to, or anchor for the tide, in 4 fathoms of water; but be very cautious not to be hauled farther to the westward than these bearings, for the flood runs very strongly into the river Essequibo: at the mouth of which, and at a great distance from the land, lie many very dangerous sand-banks, on some of which there is not more than 2 or 10 feet of water, and the flood tide sets directly on them.

On many parts of this coast, particularly off Point Spirit, a league to the eastward of the Demerara, the flood tide sets directly on the shore, and the ebb sets off to the N. E. It will be advisable, when calm and near the land, to anchor there.

In the month of December, there is, at times, particularly in shoal water, on the coming in of the flood, a great sea, called the *Rollers*, and, by the Indians, *Pororoca*; it is often fatal to vessels at anchor. The early navigators have been puzzled to assign a cause for this phenomenon, which is occasioned by the northern winds blowing on the shoal water.

It is to be observed, generally, that on a great extent of the coast of Guyana, the sides of the rivers and creeks are almost every where covered with thick forests; the immense plains of natural salt swamps, which lie between these forests and the sea coast, (commonly called Savannas) were also formerly covered with forests which have been destroyed by means of fire; much brush wood, however, has since grown up, the branches and roots of which are so interlaced with each other, as to prevent penetrating through them even in boats. The greatest part of these savannas contain so much water, which flows into them during the rainy season, that the greatest heat of the dry season is insufficient to drain them; the land therefore cannot be cultivated.

At the distance of between 12 and 40 leagues from the coast, the wind generally prevails from the E. S. E. but within twelve leagues the wind is variable; in the morning S. E. and E. S. E.; towards noon, drawing round to the East; and, between two, and eight, it is generally to the N. E. and N. N. E. or North. In the night it varies from E. by N. to E. by S.

To get to the windward on this coast, care must be taken not to suffer the southerly winds to take you more than 10 leagues from the land; at which distance you should be about noon; for, by two hours after, the wind may prevail so far to the north as to lay you along shore. By eight in the evening the North wind has generally subsided, and the wind then blows along shore from the eastward; therefore, with a whole ebb before you, it may be best to anchor, and stop for a tide. By day light the wind will be found to have changed to west, southerly; hence the advantage of being near shore. Thus proceeding, and taking advantage of the tides, a ship may beat from Demerara to Surinam in the space of three or four days.

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### *Particular Description of and Directions for Surinam, or Dutch Guyana.*

The RIVER MAROWYNE, forms the eastern boundary of the province. This river, which is but little frequented, empties itself into the sea by channels



formed between several alluvial banks. The mouth of the river, above these, is three miles in breadth, and the stream is navigable to a great distance.

Of **SURINAM RIVER**, the entrance is three miles broad, and there is a depth over the bar of from twelve to eighteen feet at low water, and from twenty one to thirty at high water. The depth within is greater; but this is interrupted by two bars, within the river which are exhibited on the Charts.

**PARAMARIBO**, the chief town, is on the western side of the river, between 4 or 5 leagues from sea.

The approach to the town is defended by several works on each side of the river. Of these, *Fort Amsterdam*, at seven miles up, on the eastern side, is the most considerable. *Fort Zeelandia*, below the town, is separated from it by an esplanade, and protects the shipping, in the reach of the river before it, which will contain one hundred sail.

The river is navigable for large ships to the distance of twelve miles within land, and sixty miles higher for small vessels. The banks, quite down to the waters edge, are covered with evergreen mangroves, which render its navigation extremely pleasant.

### *Directions for the River Surinam.*

It is advisable for ships bound for Surinam, when coming from the eastward, or long voyages, to get into latitude  $5^{\circ} 55' N.$  in the longitude of 50 degrees (unless they have a time-keeper, or lunar observation, which may be depended upon;) as by that mean they will have an opportunity, from observation to observation, of ascertaining the current, which almost constantly, off the Marowyne, runs to the N. W. and, you are also to observe that, during the rainy season, you cannot always depend on a meridional observation.

When you have gained ground in the above latitude, (and be sure to sound in time) 60 to 40 fathoms, fine sand, you will be 40 to 20 leagues to eastward of Marowyne Shoals; and you may not, in the night, approach nearer to them than 10 fathoms, when the soundings will be gradually coarser. In hauling to the northward, you will have deeper water and finer sand; and, in 10 fathoms water, heaving-to with your head to the northward, you will drive clear enough of the shoals to the N. W. You will always know whether you are to the eastward, and consequently to the windward, by those soundings; for the ground, six leagues to leeward, of the Marowyne, all the way to *Brams Point*\* is soft mud. Your best land-fall will be between *Post Orange* and the Marowyne; indeed it is absolutely necessary that you should make the land thereabout. The Marowyne is known by the only high land near the coast, and appears, when you make it, at a great distance in-land; and bringing it to bear south of you, you will be clear of its shoals; and had better then stand in until you are in 8 fathoms of water.

In making *Post Orange*, which has often been mistaken for *Brams Point*, and which error has occasioned the loss of many ships,† observe that there are many large white houses, which are barracks; and, in the middle of them, appears a large tree, which, when bearing south of you, makes like a ship with top-gallant-studding-sails set; and the flag-staff also appears among the trees; and those trees show to be nearer the houses; whereas *Brams Point* has two large houses,

\* *Brams Point* is the eastern point of the entrance of Surinam River. A beacon, seventy feet high, has been erected about a mile to windward of the point, on which is a broad tin vane, painted white. When this vane is first distinguishable from any vessel coming from the eastward, she may be reckoned on the edge of the mud-bank. The body or frame of the beacon is boarded around and painted white. There are also two flag-staffs, the eastern one for signals, and on the western the colours are hoisted, and at a distance appear to be almost in the water.

† As the name of *Post Orange* does not appear on some Charts, it may be proper to notice that it lies 13 leagues to the eastward of *Brams Point*.

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a beacon erected in 1817, and the trees are on the other side of the river, as shown on the Chart of Surinam.

**SURINAM**—You will then keep on the edge of the Mud Bank, (well described on the Chart,) in from 3 to 2½ fathoms, or as near as your draught of water will permit; and you need be under no apprehension in steering along the coast, if you touch, as the mud is very soft; and, on the Mud Bank, the moment you haul to the northward, you deepen your water; for, on the whole of this bank, it deepens gradually, from 2 to 3½ fathoms, and then you are on the outward edge of it.

The next mark you have (for you must be very attentive in keeping a good look-out) is a break in the land, which has been cleared for a plantation with two houses; the trees on each side having been burnt, appear very brown, and, in making it in 3 fathoms of water, 4 leagues off, you will be from 3 to 4 leagues to the eastward of Brams Point, which forms the eastern entrance of Surinam River. If it be evening, or ebb-tide, you had better haul to the northward, and must anchor when you have 4 fathoms of water, as the current would, during the night, drift you (should you lie-to) as far to the westward as the Saramacca; and many ships have been three or four weeks beating back to Brams Point, although the distance is only seven or eight leagues. Nay, heavy sailers, after beating many weeks, have borne up for Berbice, finding it unavailing to contend against wind and current.

**BRAMS POINT** may be readily known by the beacon with a vane, at a mile to the eastward of it, and two flag-staffs, which have already been noticed. You will, on the flood, when it bears S. S. E. haul in, keeping the point open to the larboard bow. Steering thus, you will clear the shoal that runs out to the northward of it; and you are in the fair channel way, and may go within hail, when there is good anchorage in 4 fathoms of water; observing the best anchorage is within the point half a mile. The course up the river from its entrance to Fort Amsterdam is S. E. On getting within this point, keep the eastern shore on board, as then, all the way up, until you reach Paramaribo, is the deepest water. About three miles within the point you have only 2 fathoms at low water; and from thence to within two miles of the entrance of the Comowinie, may not be improperly termed the lower bar; it extends about three miles.

In approaching close to Brams Point from the sea, you may naturally, if a stranger, apprehend danger from several wrecks that lie on the point; but these are old vessels that have been brought from Paramaribo, and placed there as break-waters; as, at some seasons, the sea breaks upon the point.

Having reached nearly to the entrance of the Camawina, which branches from the Surinam, you must be very particular in guarding against the flood, which sets strongly into the Camawina, and which, without great precaution, would set you on a spit of sand, which extends from Fort Amsterdam, almost across the Camawina. On the other hand, you must guard against some sunken rocks, which lie a little below Fort Amsterdam, on the western shore, so as to keep between the two. Having passed the flag-staff, you will have eighteen feet at low water; and from thence to the edge of the bar, the deepest water in the river. It is here that those ships complete their lading, which draw too much water to pass over the bar.

At Tiger's Hole there are 6 fathoms of water, which is just above Governor Frederic's Plantation, called Voorburg; here you will then have a leading wind up; and, by keeping three-quarters over to the eastern shore, you will have the deepest water, eleven feet at low, and eighteen feet at high water. You may anchor abreast of Paramaribo, in 4 fathoms, observing that the deepest water is close to the town.

*We shall conclude by these general descriptions:—*That you will be near, and to windward of the Marowynne, with coarse ground; that, hauling to the northward, the ground will gradually become finer and the water deeper; and, to leeward of the shoals, a sandy coast and ooze. That it is necessary to keep on the edge of the bank, in from 2½ to 3 fathoms; and, in the rainy season, rather anchor too soon; or, if you are in the least doubtful, or should you sail a few leagues to leeward, even in a fast-sailing vessel, you would have much difficulty and length

of time in turning back, and that, in observing these precautions, you cannot fail to make the land properly.

Is is high water, at full and change, at Brams Point, at six o'clock; the flood sets to the westward, ebb to the eastward.

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### *Particular Description of and Directions for British Guyana.*

The River Berbice, as a harbour, is of minor importance, there being a depth of only seven feet on the bar at low ebbs. This bar is two leagues from the entrance of the river. The low isle within, called Crab Isle, is so named from the number of land-crabs which are found upon it.

New-Amsterdam, the chief town, is situated at two miles above Crab Island, on the eastern bank. It is intersected by canals, which have the advantage of the tide. The government and public houses are of brick, and handsomely built. The entrance is protected by three batteries.

The River Demarara is half a league wide at the entrance, but is obstructed by a bar, on which there are only from 9 to 11 feet at low tide, and 18 or 19 at high water. The chief town is Georgetown, formerly Stabrook, on the east bank of the river, at a mile and a half from the fort defending the entrance.

The great River Essequibo, to the westward of the Demarara, is much obstructed by shoals and islands, and little frequented. The best idea of it may be gained from an inspection of the charts. There is no town of consequence upon this river.

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### *Directions for the River Demarara.*

A flat mud bank stretches off from each point of the river, at least three leagues into the sea, on many parts of which there are not more than from 8 to 12 feet of water, at high water. Between these banks lie the entrance and bar of the river, on which, at the highest spring-tides, there is not more than 20 feet of water, but all very soft ground. If the wind should cast out, be very cautious, and not stand too near the west bank, as the flood-tide sets on it, in an oblique direction, and the ground in some parts is hard sand; but you may borrow on the east bank at pleasure, being all soft mud, and receive no hurt by touching the ground.

About six miles up, on the west side of the river, stands a remarkable lofty tree by itself, the branches of which appear to be withered; and three or four miles above that, there is a tuft of trees or bush, which is very remarkable.

In running into this river, the leading-mark is to keep the withered tree on the westernmost part of the tuft or bush, which will carry you in the best water, and about mid-channel, steering at the same time S. by W. The breadth of the channel going in is about two miles, shoaling gradually on each side. The best anchoring ground is within the east point, in 4 fathoms at low water, soft mud; keep the eastern shore on board, the western side being flat and shoal: it is necessary to weigh the anchors once every ten days, or they will bury so much as to be supposed to be lost.

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### *Remarks and Directions for Demarara and Berbice, from the Chart of Captain Thomas Walker, 1798.*

Vessels coming from Europe or North America should run within a degree and a half, or two degrees, of the longitude of Barbadoes, in consequence of which they will have a steady wind, and avoid the currents which prevail from Cape

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Orange to the mouths of the Amazon. Many have run in three or four degrees of latitude, and frequently suffered severely by meeting strong currents and light winds, by which their voyages have been prolonged to 80 or 90 days, which might have been avoided by this track.

*Vessels directly from Europe to Demarara* should not be too anxious to make the land, but endeavour to fall in with it to the westward of Berbice River, as the coast to windward of it is dangerous in several places, and with great reason to suppose that banks exist which occasionally shift. It is easily to be known when a vessel is to leeward of Berbice, by seeing houses and plantations. To windward all is bush, for cultivation is not yet begun, and you are sure to meet colony craft passing and repassing. The figure of the land, from time to time, alters much, by washing away in many places, and in others growing farther out into the sea. There are some white houses between the Berbice and the Courantien; and this part of the coast is dangerous, owing to a sand-bank that lies to the N. E. of Devil's Creek, on which the sea sometimes breaks.

*Vessels coming from the Islands* should keep well to the eastward, and by no means give up their easting until they get well to the southward; for the strong current that runs through the Gulf of Paria is apt to set them to leeward; more particularly when they are to the southward of Tobago; and more so during the rainy season, when the freshets set so strong out of these large rivers. This precaution is also necessary during the hurricane months, when the winds are commonly light. In lat.  $7^{\circ} 40'$ , or thereabout, the water begins to colour. The vessel may then steer in south, to lat.  $7^{\circ}$ , and have 5 fathoms by the lead, when she may be certain to be abreast of Leguan Island, in the Essequibo; haul in, upon this, for the eastern coast, sounding frequently, if not constantly, in order to avoid the Essequibo Banks. After getting well in, keep the coast aboard, with  $3\frac{1}{2}$  or  $3\frac{3}{4}$  fathoms of water. A look-out must be made for a remarkable bush at the mouth of Mahaica Creek, which when brought south, the vessel must haul off gradually, to avoid a bank which advances or runs out from Point Spirit and Corobana Point. Fort William Frederick, on Corobana Point, will then soon be perceived bearing S.  $\frac{1}{2}$  W. Mahaica Bush is now the only one remaining on this coast, that of Corobana having been cut down; and Point Spirit, which was formerly a leading object, having been so encroached upon, as hardly to be noticed from a ship. When you bring the shipping open of the flag-staff of the fort, bear up, and stand in that direction. There is good and safe anchorage off the fort, which all vessels are obliged to take, and report to the commandant. It is not advisable for ships of a large draught attempting to pass the bar until the water is tolerably high; because, when the vessel drags through the mud, she will, in a measure, be ungovernable, and apt to fall on the leeward bank, which is vexatious and dangerous: large ships running down the coast, should sail in 3 fathoms of water, not less, which is about three leagues distant. Vessels drawing less water may keep in  $2\frac{1}{2}$  fathoms. Off Corobana Point, in  $2\frac{1}{2}$  fathoms, you cannot discern any land to the westward, until such time as you get Demarara River open.

About eighty leagues in the latitude of Demarara, you will have 35 fathoms of water. Ships obliged to anchor on the outside of the bar will have good anchorage in 4 fathoms, the fort bearing S. S. W.

The dangerous banks, which lie off the mouth of the great River Essequibo, make it advisable for all vessels bound for it, to anchor off Demarara, and, if possible, get a pilot. If she cannot procure one, the lead must constantly be kept going; and whenever hard ground is found, be sure that danger is at hand, for the channel is in soft mud. The course is S. S. W. between the outer bank, which properly is the continuation of the Sugar Bank and the Leguan Bank; keeping as your mark, right ahead, a bush or clump of trees, called Millburn's Bush: after running a certain distance, edge off, and proceed up the river.

Should vessels bound to Demarara have the misfortune to fall to leeward of it, they may coast it up, even from the Oronoco, by observing never to tack off from the land more than in 5 fathoms of water; for, if they stand farther off, they may be sure to be swept away by a strong gulf-current. By making short tacks, in the depth recommended, there is a chance of land-winds and smooth

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water; and the coast is of a soft muddy bottom all the way. Within this depth, towards Demarara, it becomes dangerous, by the projection of the Essequibo Banks. It therefore is not prudent to come nearer than in 4 fathoms of water; observing to anchor on the flood, or it may set you in among the banks. If you can lay S. E. with the ebb tide, it will carry the vessel clear of every thing; observing when she deepens her water, to keep away in 4 or 5 fathoms, until she gets to the eastward of Demarara, when she must follow the directions already given for the river.

"The land about Berbice may be known by its appearing like a number of islands. Vessels standing for this river may run in as far as  $3\frac{1}{2}$  fathoms, when they will see houses on the coast: on this they must haul their wind until they open the eastern channel of the river, then steer in S.  $\frac{1}{2}$  W. From the east point there runs out a large shell-bank, upon which the sea breaks very high. Do not be alarmed, for the water is very bold close to it. On the west side there is another large bank, but of mud, upon the edge of which there is not more than 2 fathoms at high water; indeed during the springs it is quite dry for nearly six miles from the shore. The bar is about two leagues distant from the mouth of the river: it has, at low water,  $7\frac{1}{2}$  feet upon it, and is remarkable for the soundings varying from sand to mud. Sufficient water to pass it is absolutely necessary to be attended to, and the lead not neglected. Crab Island makes two channels in the mouth of the river; the lee one has generally been thought sufficient only for small craft, or vessels drawing little water; but lately a vessel of thirteen feet draught has passed: however, it is advisable for all ships to use the eastern one: it is deeper, and anchorage can be easier chosen. On sailing in, keep Crab Island just open with the point of Canje: by this she will avoid the middle ground, or bank, which runs out from Crab Island.

"Captain Thompson remarks that, at the entrance of Demerara River an E. N. E. and W. S. W. moon makes full sea, and that the highest spring-tide does not rise more than 8 or 9 feet. With respect to tides, we found that, in 1796, the neaps were, generally, from 8 to 9 feet. The springs rose 11, and, in the month of September, just before the equinox, they rose from 14 to 15 feet. In September, 1797, again, and nearly on the same days, the tide rose almost 16 feet; a circumstance never known before, but accounted for from the freshes and a strong northerly wind which prevailed at both times. In March, 1798, they were very high. The flood sets strongly to the westward, and the ebb to the eastward.

It is generally high water upon Demarara Bar at half-past four o'clock, and at Corroban Point, at five o'clock.

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*Remarks on making Demarara, &c. by Capt. Robert Fildes, of Liverpool.*

"Vessels frequently fall to leeward of Demarara, and it has generally taken some time as well as caused much anxiety to regain their lost ground; as the mouth of the Essequibo is, to strangers, rather dangerous. A commander may always know when he is to windward or leeward of Demarara; for, if he makes the land to the westward, when he is to the northward of  $7^{\circ} 12'$ , he may be sure he is to leeward, and should then haul on a bowline directly to the southward and eastward. If land be not seen to the westward, when in the parallel of  $7^{\circ} 12'$  you may be certain of being to windward of Demarara.

"Those who unfortunately, fall to leeward, should find which way the current is running; for, if it be flood, the Essequibo tide will carry them still farther to leeward; they should, therefore, immediately come to an anchor, and wait for the Essequibo ebb, which runs strongly and long to the northward, particularly after very heavy rains. By weighing at the first of the ebb, and taking, by turning to windward in its stream, the advantage of the whole tide, a vessel may always gain offing, sufficient to fetch Demerara Bar, on the larboard tack; parti-

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cularly if she come to an anchor again when the ebb is done, and then make a long stretch to the eastward, with the first of the following ebb. This method the droggers all pursue, and find little or no more difficulty in going from the Poumaron to the Demerara, than in going from the Demarara to the Poumaron.

"I had an opportunity of acquiring this useful fact by an excursion I made in a drogger from Demerara to the leeward of the Essequibo, and wondered that the common practice of all the droggers had not been before noticed. By consulting the Chart, you will see the reasonableness of the practice; for the Essequibo ebb runs far to seaward; and, in a great measure, preserves the direction of the river, particularly near its mouth."

### Spanish or Colombian Guyana.

The most remarkable feature of Spanish Guyana is the course of the River Oronoco. A great part of the upper portion of this river was explored, in the year 1800, by the celebrated Humboldt, who proved its communication with the Rio Negro, and, consequently, with the Amazon. The mouths of the Oronoco are of dangerous navigation, and require an expert pilot. Seven of them are navigable; but the chief is the Great Mouth, (Boca Grande, or Boca de Navios,) which is about six miles in width. This is most to the southward, and in the direct course of the river. The isles of the Oronoco, or rather its Delta, which is of prodigious extent, are possessed by the Guaraunas and the Mariusas, two independent tribes of Indians. The northern part, opposite to Trinidad, is overflowed from the middle of January to the middle of June; and, during this season, the Guaraunas dwell upon the palm-trees with which it is covered.

The seven navigable channels into the river, already mentioned, have been described as follow, commencing northward:

The first of the navigable mouths is the Grand Manamo, in the Gulf of Paria: the second is the Cano, or Canal, of Pedernales, three leagues south of the Soldier's Island, at the entrance of the Gulf: it is fit for long-boats only: the third mouth, named Capura, is seven leagues to the eastward of Pedernales, and, likewise, is fit only for boats: the fourth, named Macareo, is six leagues eastward from Capura, and is navigable by small craft: Mariusas, the fifth, is 12 leagues to the south-eastward of the fourth; but between are many mouths navigable when the river is high: the sixth mouth is eighteen leagues to the southward of Mariusas, and is navigable for small vessels; the seventh, Boca Grande, or Great Mouth, is eight leagues S. E. from the sixth; its breadth is six miles between the islands Congrejo, (Crab Isles,) on the N. W. and Point Barma, on the S. E. but the navigable channel is not above three miles, and is crossed by a bar, with 17 feet at low water: the approach to this entrance is dangerous, from the shoals running off seven miles eastward from Congrejo Island, and two miles northward from Point Barma.

The *Flux* and *Reflux* of the Tide, are felt in the month of April, when the river is lowest, beyond Angostura, at a distance of more than 85 leagues in-land. At the confluence of the Carony, 60 leagues from the coast, the water rises one foot three inches. These oscillations of the surface of the river, this *suspension* of its course, must not be confounded with a tide that flows up. At the Great Mouth, near Cape Barma, the tide rises to a height of two or three feet; but farther to the N. W. towards and in the Gulf of Paria, the tides rise 7, 8, and even 10 feet. Such is the effect of the configuration of the coast, and of the obstacles presented by the *Bocas del Drago*, &c.

The *Currents* on the whole of this coast run from Cape Orange towards the northwest; and the variations which the fresh waters of the Oronoco produce in the force of the general current, and in the transparency and the reflected colour of the sea, rarely extend farther than three or four leagues E. N. E. of Congrejo, or Crab Island. The waters in the Gulf of Paria are salt, though in a less de-

gree than in the rest of the Caribbean Sea, attributed to the small mouths (*Bocas Chicas*) of the Oronoco, and the mass of water furnished by the River Guarapiche. From these reasons there are no salt-pits on this coast.

The navigation of the river, whether vessels enter by the Great Mouth, or by the labyrinth of the Bocas Chicas, requires various precautions, according as the bed may be full or the waters very low. The regularity of these periodical risings of the Oronoco has long been an object of admiration to travellers, as the overflowings of the Nile furnished the philosophers of antiquity with a problem difficult to solve. The cause is similar, and acts equally on all the rivers that take their rise in the torrid zone. After the vernal equinox, the cessation of the breezes announces the season of rains. The increase of the rivers is in proportion to the quantity of water that falls in the different regions. This quantity, in the centre of the forests of the upper Oronoco, and the Rio Negro, appeared to me to extend 90 or 100 inches annually. The following is the usual progress of the oscillations of the Oronoco. Immediately after the vernal equinox, (the people say on the 25th of March,) the commencement of the rising is perceived. It is, at first, only an inch in twenty-four hours; sometimes the river again sinks in April: it attains its *maximum*, or greatest height, in July; remains full, (at the same level,) from the end of July till the 25th of August, and then decreases progressively, but more slowly, than it increased. It is at its *minimum*, or least depth, in January and February.

The River Amazon, according to the information which I obtained on its banks, is much less regular in the periods of its oscillations than the Oronoco; it generally begins, however, to increase in December, and attains its greatest height in March. It sinks from the month of May, and is at the lowest height in the months of July and August, at the time when the Lower Oronoco inundates all the surrounding land. As no river of America can cross the equator from south to north, on account of the general configuration of the ground, the risings of the Oronoco have an influence on the Amazon; but those of the Amazon do not alter the progress of the oscillations of the Oronoco. It results from these data, that, in the two basins of the Amazon, and the Oronoco, the *concave* and *convex summits* of the curve of progressive increase and decrease correspond very regularly with each other, since they exhibit the difference of six months which results from the situation of the rivers in opposite hemispheres. The commencement of the risings only is less tardy in the Oronoco. This river increases sensibly so soon as the sun has crossed the equator; in the Amazon, on the contrary, the risings do not commence till two months after the equinox.

Foreign pilots admit ninety-feet for the ordinary rise in the Lower Oronoco. M. de Pons, who has, in general, collected very accurate notions during his stay at Caraccas, fixes it at 13 fathoms. The heights naturally vary, according to the breadth of the bed, and the number of tributary streams which the principal trunk receives. It appears that the mean rise at Angostura does not exceed twenty-four or twenty-five feet.

When vessels, that draw much water, sail up towards Angostura, in the months of January and February, by reason of the sea-breeze and the tide, they run the risk of taking the ground. The navigable channel often changes its breadth and direction; and no buoy has yet been laid down to indicate any deposit of earth formed in the bed of the river, where the waters have lost their original velocity.

### General Description of, and Directions for, the Coast of Guyana.

[From the "Derrotero de las Antillas," &c.]

The Coast which extends from Cape North, to the Great Mouth of the Oronoco, which is in latitude  $8^{\circ} 41'$  N. is very low, and soundings off it reach out a great way to sea. This circumstance is the only mean of ascertaining with certainty the proximity. Any other mode of recognising the coast is very difficult; for, in the

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clearest day, it is not possible to discern the land at five leagues off: and the nature of the coast itself impedes a nearer approach than two leagues, on account of the shoalness of the water, and the banks of sand and mud, of great extent, with which it is obstructed.

The harbours on this coast are the mouths of rivers only, all of which have bars, more or less navigable; and, to enter, a practical knowledge is necessary.

From North Cape to Cape Cassapana, the land is very low and wet, and covered with a thick wood, without any other mark to recognise it by, than the hill or Mount of *Mayes*; a kind of platform, insulated and hilly, which may be seen, in clear weather, at the distance of five or six leagues. Its latitude is  $3^{\circ} 5' N$ . The soundings hereabout extend far out to sea. You may sail along the coast at three leagues from it, and at that distance have from 8 to 10 fathoms. At 10 leagues from land, the depth increases to 15 and 20 fathoms; and, at 15 and 20 leagues distance, there are from 25 to 30 fathoms, with bottom of soft clay, or of fine sand of various colours. The current runs N. N. W. but, close to the shore, varies according to the tide, of which the flood runs W. N. W. and the ebb N. E. at the rate of about three miles an hour. It flows at six o'clock, on full and change days, and rises from twelve to fifteen feet.

The general velocity of the current, outside the influence of the tides, may be estimated at two miles an hour. On this account, in making this coast, it is always necessary to make it in less latitude (i. e. more to the southward) than that of your port of destination. It is the custom of those bound to Cayenne, to endeavour to strike soundings about N. E. from Cape North, and 20 or 30 leagues from it, at which distance they find from 40 to 50 fathoms of water.

*Cape Cassepour* lies in latitude  $3^{\circ} 50'$ : near it there is a great bank of clay, which extends 5 or 6 leagues out to sea: its extent from N. to S. is about 4 leagues; with 4 and 5 fathoms of water upon it. On account of this, vessels from the southward, making this cape, ought not to run along the shore nearer than 5 or 6 leagues. After having passed this bank, *Cape Orange* bears W. by N. distant from 6 to 7 leagues; and although, from this place, it cannot be discovered, yet its proximity may be ascertained without any doubt: for, steering North, you will deepen the water from 5 to 10 fathoms in running less than a mile; when you find this latter depth, you ought to steer W. N. W. (or even West, if necessary.) to preserve the same depth. It is to be remarked that, when a vessel is near Cape Cassepour, and in 5 fathoms of water, she ought not to be steered so as to maintain that depth; but that it is necessary to steer North, or even N. by E. until you get 7 fathoms of water, when you will no longer be able to see the land from the deck, as it is very low. After steering the same course for a short time, in 7 fathoms, you may steer N. N. W. and N. W. with the same depth: with these courses you will near Cape Orange insensibly, and make it at the distance of 2 or 3 leagues, when in 8 or 9 fathoms of water. Between this cape and Cape Cassepour the river of that name disembogues itself.

*Cape Orange* may be known by a Cut Point, (*Punta Cortado*.) or rather, more properly, a point which seems to have been cut or shortened, which is on the side next the sea, and is the highest land to the S. E. of the same cape; and also by the *Silver Mountains*, which form various peaks, appearing insulated and detached the one from the other, and which are the more remarkable, as they are the first high land discovered in coming from Cape North. Approaching Cape Orange, you may discover various remarkable hills over the point which forms the entrance of the River Oyapoc.

Beyond Cape Orange the coast forms a bay, of 4 leagues in breadth, in which the great river Oyapoc disembogues itself, and into which also two other rivers of small consideration discharge their waters; the one to the eastward is named *Coripe*, and that to the westward is called *Wanary*. The Silver Mountains serve not only as a mark for Cape Orange, but also for this bay; because, beginning to rise on the west coast, in a swampy country, they come down almost to the edge of the sea.

The River Oyapoc is two leagues wide at its entrance; and you may anchor in it in 4 fathoms, clayey bottom, keeping *Wanary* west, at the distance of three-quarters of a league. Mount *Lutas* is a small, but tolerably high hill, on the

point which divides the rivers Ouanari and Oyapoc. One league up the river (Oyapoc) there is a low island, named *Isla de Venados*, which is covered by very high tides. You may pass to the westward of it, where you will have 4 fathoms of water close to the shore. After the *Isla de Venados*, there are some other small islands, which do not embarrass the navigation of the river. After sailing up the river, 5 or 6 leagues, there is a fine bay, which serves as a harbour, and in which you may anchor in 4, 5, or 6 fathoms of water, and as near the shore as you please. At this place there is a small fort and a country-house.

About 12 leagues to the N. W. from the River Oyapoc is the River Apronak, which, also, is of some importance. Its entrance is two leagues wide, and it has from 3 to 4 fathoms of water. The lands which form it are very low, marshy, and covered with mangroves. Two leagues up the river, and in the middle of it, there is a low and very narrow island, of about half a mile in length, covered with wood, and named *Fisherman's Island*. To the north of it a bank of sand stretches out more than two miles, to which it is necessary to give a birth when you enter into the river. There is a channel on each side of the island. The one to the eastward has 3 fathoms of water, but that to the westward not more than 2 fathoms.

Five leagues North of the mouth of this river there is a tolerably high bare island, in shape resembling a half-orange: it is called the *Great Constable*, to distinguish it from a smaller island, which lies half a league from it nearer the coast, almost level with the water, and which is called the *Little Constable*.\* The *Great Constable* (or *Gunner*) may be discovered 8 or 10 leagues out at sea. Vessels bound to Cayenne direct their course to these islands from Cape Orange, from off which they bear N. N. W. distant 18 leagues. In this passage it is necessary to keep in 8 or 9 fathoms. The *Great Constable* has 3 fathoms of water all round it, and is very clean. The *Little* one lies E. N. E. and W. S. W. with the *Great* one. You may pass between them in 8 or 9 fathoms of water, observing to keep within two musket-shots of the *Great* one, and to leave the *little* one on the larboard hand.

N. N. W. from the *Great Constable* there is a rocky shoal, which some place at two, others at three, and others even at four miles distance from it. To avoid this shoal is the principal reason for passing between the *Constables*. The French ship of war *La Gironde*, bound to Cayenne, in 1733, after having passed between the *Constables*, leaving the *Great* one on the starboard hand, steered N. W. by W. for the *Mother and Daughters*, and soon after discovered the water breaking upon what appeared to be rocks, which bore N. by W. about a league distant. At the same time the *Great Constable* bore E. by S. and the *Little* one S. by E. From this it appears that the shoal lies N. 30° W. true, from the *Great Constable*, at the distance of four miles. Its extent may be about five cable's length, and it lies N. W. and S. E.

The course from the *Great Constable*, to pass outside the *Mother and Daughters*, which lie about 6 leagues distant from it, is N. W. by W.; with this course you will shoalen the water, and will not have more than 6 fathoms near the *Malingre*, (one of the *Mother and Daughter*;) near the N. N. E. part of which you may anchor in 3 fathoms, at low water.

Four leagues† N. W. from the *Apronak* is *Kan River*, and from it to the River *Orapu* is reckoned 5 leagues more. The River *Orapu* separates Cayenne on the east from the main land. It is a fine river, its entrance being about a league wide, and has 3 fathoms, at low water. The banks are pretty high, and covered with large trees.

CAYENNE.—The Island of Cayenne is about six leagues in extent, from north to south, and its greatest breadth may be three or four leagues. On the north it is bounded by the sea; on the west by the River Cayenne; on the east by the River *Orapu*; and on the south, by a branch formed by the rivers *Orapu* and Cayenne, which here unite.

The City and Fortress of Cayenne are situated on the N. W. point of the is-

\* These are the *Gunners* of the English charts.

† The original says six leagues, which distance appears to be too great.

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land, the north part of which has various hills and eminences, but the south part is low and wet, in the season of the rains. The harbour is to the westward of the city, in the mouth of the River Cayenne. The hills, or high lands, of which we have spoken, are named Du Pont, Remontabo, Mount Joly, and Mahuri; and all these are close to the north coast. A little inland are those of Baduel, Tigres, Papaguay, and Mathory; and upon the banks of the Onya, that of the Franciscans.

At about a league, or league and a half, or something more, from the Island of Cayenne, are the Islets of Remire: they are five in number, viz. the Child, the Father, the Mother, and the Two Daughters. The last are two little rocks, very close together, and about a mile distant from the Mother, to the E. S. E. The Father is the largest of all these islets, and bears E. N. E. true, from Mount Joly, on the eastern coast of Cayenne Island 4 miles distant. It may be about half a mile long, E. S. E. and W. N. W.

The Child is very small, and lies about a league E. N. E. from Mount Remontabo, and four miles from the Father. You may pass without them at three miles, or a little less distance, without any risk, and with a certainty of not having less than 5 or 6 fathoms of water. Betwixt these islets and the coast there is about fifteen feet of water, at low ebb, but the passage is dangerous, on account of a rocky shoal which lies in mid-channel, almost even with the surface of the water. There is also a shallow, which extends between the Father and Child: this shoal lies N. N. W. from Mount Joly, and nearly East from Mount Remontabo. Round the Malingre the bottom is very shallow, and it is said that a reef stretches out about two cables' length N. N. W. from its western extremity.

Besides these isles there is another, at about three leagues to the W. N. W. of the Child, called the Forlorn Hope, or the Lost Child, which lies nearly on the meridian of the town of Cayenne, at the distance of seven miles.

In order to enter Cayenne, it is first absolutely necessary to anchor between Malingre and the Forlorn Hope, both for the purpose of receiving a pilot, and to wait for the tide, so as to pass the shallows at the entrance of the harbour. Between the Child and the Father, the anchorage is very incommodious; for the N. E. winds raise much sea in it, which, catching vessels on the beam, makes them roll as if in a storm. An anchor is very apt to drag, and it is necessary to have another all ready to let go; and often three or four days elapse, in which no communication can be had with the shore. In this anchorage there are from twenty to twenty-five feet, at low water, the bottom being of clay.

In general, vessels anchor to the E. N. E.—N. E. or North, of the Child, at the distance of two miles; but there are some who anchor to the E. N. E. or N. E. of the Forlorn Hope, at about two miles distance from it. From the east to the south of the latter, the depth of water diminishes to 15, 12, or even 10 feet; and you must take good care not to place yourself between it and the coast, because there is even less depth. In this place the tides rise seven or eight feet; and it is high-water, on full and change days, at five o'clock.

N. W. by N. from the Forlorn Hope, at the distance of eight or nine leagues, are three small islets, which are so placed as to form a triangle. They are called the Devil's Islets. They form a fine and well-sheltered harbour. The best anchorage at them is E. S. E. of the most southerly islet, in 5 or 6 fathoms of water, with a hard clay bottom, at about a musket-shot's distance from the islet. In this islet there is a reservoir of fresh water; but it is necessary to get the water with small kegs, which can be carried, as the roughness and steepness of the ground render it impossible to get it with large casks.

Between these islets and the *Forlorn Hope* there are 5, 6, and 7 fathoms of water, at three or four leagues from the land: near the Devil's Islets are 9, and leaving them to the S. or S. E. you will have 20, 30, and 40 fathoms, increasing your depth as you increase your distance from the islets.

Six leagues N. W. from Cayenne is the *River Macouria*. The coast between is low, level, and has many handsome houses. At fifteen leagues N. W. from Macouria is the *River Sinamari*: this river affords excellent anchorage, at two or three leagues from its mouth, in which vessels are not incommoded by the sea, because the bottom is of very soft clay.



Nineteen leagues N. W. by W. from Sinamari is the *River Maroni*, which is very considerable; its entrance is about two leagues wide, but is of difficult access, on account of the shoals of sand and clay which are in it. In this space of coast the rivers *Cinamari*, *Aracoubo*, and *Amanibo*, disembogue themselves, and shoals and banks of clay stretch out, about three leagues to sea, along the whole of it; so that it is indispensably necessary to keep at least four leagues from the land, in 5 or 6 fathoms of water. It is also to be remarked that, between Cayenne and the Maroni, there are many single or detached rocks, some of which are even two leagues from the shore.

From the River Maroni to Surinam River, the distance is about thirty-four leagues; the coast tends W. by N. it is all so much alike, and so low, that it is totally impossible to distinguish one part from another, so as to rectify the position of any vessel: hence it is absolutely necessary to make the Maroni, in order to be sure of falling in correctly with Surinam. This coast, also, has various banks of clay stretching from it, which render it necessary to keep at four leagues off it. The entrance of the River Surinam, when coming from the eastward, may be known by its Crow's-hill point, which may be seen at four or five leagues off, and is the only land which, under these circumstances, can be discerned. It has a beacon on it, as before mentioned, page 468. The east shore is that which is first seen; the opposite cannot be discerned until you are in the entrance of the river, it being remarkably low land, which, as it were, hides itself to the west.

To anchor in the entrance, it is necessary to bring the east point, of which we have spoken, to bear S. E. or S. E. by S. at the distance of three leagues, anchoring then in 3½ fathoms, at low water. The tides flow at six o'clock, on full and change days; and at the anchorage, at the entrance of the river, the flood-tide sets from S. to S. S. E. and the ebb from N. to N. N. W. The least water is two fathoms and a half. When the wind is favourable for entering the river, steer S. E. or S. E. by E. until the east point bears east; then steer E. S. E. to anchor in 5 fathoms, on a clay bottom, at a quarter of a league from the east point, which is named *Brams Point*, with that point bearing N. 90° W.

At one league up the River Surinam the River Commowinie discharges its waters into it. The entrance is defended by Fort Amsterdam, on the southern side, and by a battery, which is on the north part, so situated as to defend the River Surinam also: on the west bank of the latter there are various batteries, which cross their fires with those of Fort Amsterdam. A little farther up is the bar, upon which there is not more than two fathoms at low water. After passing this, you find, on the west shore, Fort Zeeland, and the town of *Paramaribo*, which is the capital of this colony.

Four leagues west of the River Surinam, the Rivers *Saramaca* and *Copename* enter the sea by the same mouth. Their banks are uninhabited, and in their mouth are two fathoms at low water.

Ten leagues west from these rivers, the River *Corentine* disembogues itself. Its entrance is about a league in width, but of difficult access, on account of the sand-banks off it, which extend three leagues out to sea. Within the river are three islands, which are very clean, running north and south; between you may anchor in 5 fathoms of water. The entrance and anchorage are on the west side. The small river *Nikesa* also discharges its waters by the same mouth as the *Corentine*.

Five leagues west from the *Corentine* is the river of *Berbiere*: its mouth is about a league in width; its banks are very low, and covered with trees. In the very mouth lies *Crab Island*, which divides the entrance into two channels. This island is low and bushy, and is surrounded by a bank of sand and clay, which prevents a nearer approach to it than at least a long musket-shot. It is in length about a mile, and half a mile in breadth. The bank which surrounds it stretches about a league to the northward of it. A rocky shoal extends from its east point, to which it is necessary to give much attention, as you must enter by the east channel, on the bar of which there is not more than two fathoms, at low water.

[Directions for the *Demarara* have already been fully given in pages 470 to 472.]

The River *Essequibo* is very large; its mouth is three miles wide, but it is full of islands and shoals, which obstruct the passage, and render it difficult to

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Maroni, which is of difficult access. In this space the river discharges itself into the sea, along the coast four leagues marked that, beached rocks, some

about thirty-four fathoms low, that it is to rectify the position of the Maroni, in order also, has various rapids at four leagues from the eastward, four or five leagues from the eastward. The east shore is that you are in the entrance, hides itself

point, of which we three leagues, at six o'clock, on full tide, the flood. The least water entering the river, steer E. S. E. to the mouth from the east 9° W.

the discharge is on the southern side, defend the River by batteries, which further up is the bar, river. After passing the mouth of Paramaribo,

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embogues itself. On account of the main the river are between you may are on the west the same mouth as

its mouth is with trees. In the channels. This clay, which presents in length about stretches about its east point, to the east channel low water.

pages 470 to 472.] wide, but it is rather difficult to

enter; and although the islands and shoals form channels deep enough for all classes of vessels, yet it requires much care and practical knowledge to enter them. The islands are numerous, low, and bushy; the greater part of them are a league or two in length, but very narrow, and lie north and south. There are two principal channels for entering the river, viz. the east and west channels: the eastern is the best; there are in it from 15 to 35 fathoms. After having passed the islands at the entrance, you will see another cluster of them, which it is proper to pass on the east side, where they form so deep a channel that there are from 40 to 70 fathoms in it.

At ten leagues from the entrance, the fort is situated, upon an island in the middle of the river. The town, or rather village, is situated on the west side, in front of the fort.

At fifteen or sixteen leagues from the River Essequibo is the mouth of the River Pauroma, which is about half a league in width; its shores are low, and covered with trees. The east point of the entrance is named Cape Nassau. Six leagues up the river, on the eastern side, is the fort named New Zealand; the town or village, named Middleburg, stands at the foot of the fort.

From the River Pauroma the coast tends, without varying its appearance, to Coco Point, which forms a bay to the south, and to the westward has some very high coco-nut trees, which are the only ones on all this coast, on which, in general, there is nothing else than mangroves.

From Coco Point, you ought to steer N. W. and N. N. W. with the precaution of keeping in 5 or 6 fathoms of water, in order to shun a bank of mud, which lies about two and a half leagues N. N. W. from it. Having run twelve leagues on these courses, you will see the mouth of the Guayama, situate in 8° 25' N. latitude. The making of this mouth is very necessary for those who seek the great entrance of the Oronoco, as there is no other point which can be used with certainty as a mark, and it cannot be mistaken; not only because it is the sole entrance or opening which can be seen, but also on account of three little hills or hillocks, which may be seen, if the day be clear, bearing about S. W. at some distance inland.

N. E. from this mouth, about three leagues distant, there is a shoal of fine sand, with two and a half fathoms of water on it; and to avoid it, you must take good care not to shoalen the water more than to 5 fathoms, muddy bottom.

From the mouth of the Guayama the coast is woody, level, and low, and tends for eight leagues about N. W. to the point of Mocomoco; after which comes the coast named Sabaneta, which tends west about four leagues: it, also, is covered with wood, level, and lower, and the water on it shallower, than the former. All this coast is bounded by a shallow bank of soft clay and shells, and sand, with clay and shells.

**RIVER ORONOCO.**—The Isle Congrejo (Crab Island) of which the N. E. point is in lat. 8° 51' N. has a shoal of hard sand, of the colour of ground coffee, which extends six leagues from its eastern part, and about two leagues from the northern part of the island; and this renders the entrance of the river dangerous: for between it and the coast of Sabaneta is formed the Bar of the Grand Entrance of the River Oronoco, the depth of which at low water is 15 feet, and at high water only 16 feet; the bottom soft clay. The bar is about three leagues in extent from N. to S. and a little less from E. to W.

The coast, which is rather higher than the former, though still woody, tends S. W. from Point Sabaneta, about three leagues, and ends at Cape Barma, which forms the boundary of this line of coast; as after this it forms a great bay, into which the river empties itself.

The coast which follows, from Isla de Congrejo to leeward, is very distinct from the former; low, and all broken, forming different mouths, by which the small branches of the Oronoco discharge their waters. They are fit for small vessels only, which have pilots, because they are full of dangerous sand-banks.

*Directions for finding the Grand Mouth of the River Oronoco, and Sailing into it.*

After what has been stated, we need only say that, having recognized the Boca de Guayama, you may run along the coast at the distance of five or six leagues, in 4 or 5 fathoms, in soft clayey bottom, until Cape Barma bears S. by W. when you may shape your course for the har; still, however, keeping the lead going, in order to preserve the soft clayey bottom, although even in shallow water; as it is better to get ashore on the clayey mud, than to run the risk of falling on the shoal of hard sand off Isla Congrejo. If you catch that quality of soundings, (hard sand, like ground coffee,) you must immediately steer south, to recover the soft bottom. Following these directions, you will near Cape Barma; and, when about two leagues from it, you will see a large island covered with trees, which is that called Isla de Congrejo; and, having passed the har, you will begin to augment the depth of water until you find 5 fathoms. When it is proper to steer from S. W. by S. to S. W. by W. to keep mid-channel, understanding that, if you are in less than 5 fathoms, soft bottom, you are too much on the mainland-side of the channel, and must steer more to the westward to recover the mid-channel; but, if you find less than 5 fathoms of water, with a sand bottom, you are getting upon the shoal off the Isla de Congrejo; and, in this case, must steer more to the southward to recover the mid-channel. With these directions, and attention to the soundings, you may run in, until the S. E. point of Isla de Congrejo covers some woody islets, which lie off the N. E. point of it; you may then run close to the island, and anchor in 5 or 6 fathoms of water, the bottom soft clayey mud. Moor with a cable ashore, and, in this situation, every vessel will be secure and well-sheltered; and it is necessary, at this place, to wait for a pilot, to conduct any vessel up the river; for, without one, they may be certain of experiencing some misfortune or other. A pilot may be engaged from any of the small vessels of the country.

On all this coast the tides are rapid and irregular. They are said to be felt as high up the river as Imataca, a village of the Guaraunas Indians. As to the times of high water, all that the pilots remark is, that, at one-third ebb at the rising of the moon, the water of the Oronoco increases from April to September, and decreases during the other months of the year. It is navigable for large vessels up to the capital only, between the months of May and December; during the rest of the year, they must stop sixteen leagues farther down, not being able to ascend higher, in consequence of a bar or pass, named del Mamo, which, at that time, has not more than 4 or 5 feet of water on it; and large merchant-vessels, therefore, must employ lighters to load and unload them, which, although there are plenty of them, occasions much expense.

The magnetic variation, at the Mouth of the River, is  $40^{\circ}$  East.

From this mouth the Delta of the River Oronoco extends itself to the interior of the Gulf of Paria, rendering this portion of the coast useless, either for trade or navigation, being no more than a labyrinth of low muddy isles, which are drowned in the season of the floods, in the river. The number of them is unknown; and it is not easy to make a plan of them, for they are all formed by the various channels into which the Oronoco divides, and which may be considered as useless for any thing, except boats and canoes. The termination of this coast may thus be fixed at the Grand Mouth of the Oronoco, which we have described; and we now proceed to make some General Remarks, as follow:

*General Remarks on the Coast of Guyana.*

Although the whole of this coast may have no great errors in the situation on the charts, yet it must be supposed that every point of it is accurately placed: for instance, Point Barima had an error of 22 minutes of latitude in its position.

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The mariner may confide in the situation of these points; and it is necessary to remark, also, that, on a coast, of which there is scarcely a possibility of recognising the different places, except by the latitude, it is very easy to make a mistake, and get to leeward of your port of destination. From this reason, it is proper to run down the coast from windward to leeward, taking good care to make the various places out distinctly. It is also proper to examine the mouths, or embouchures, of the rivers; and what renders this more and more necessary is, that, in the season of the rains, there are often days on which the latitude cannot be observed.

2d. If such is the uncertainty as to the positions of the points, it is no less in respect of the soundings at the mouths or entrances of the rivers. It ought always to be remembered that all these rivers form bars, and that the bars generally have very little water on them. The best way for those who have not a practical knowledge of these entrances, is either to obtain such by means of their boats, or not to enter a river without a pilot.

3d. The wind, which from E. N. E. to N. E. or E. S. E. and S. E. always prevails upon this coast, and the current, which always runs W. N. W. make the lesser latitude to windward; and hence, on all this coast, it is very easy to increase your north latitude but almost impossible to decrease it.

4th. The general current, of which we have spoken, must be confounded with that which is produced by the tides, the influence of which is principally felt near the coast; and twelve leagues out at sea, or 9 fathoms of water, may be considered as their limits; as, at that distance out at sea, no other current but the general one is felt; but, between that and the land, no other currents than those caused by the tides are felt. The flood sets towards the coast, and the ebb away from it: the tide flows on full and change days, at Cape North, at 7 o'clock; on the coast of Mayez, at 6 o'clock; at Cayenne, at 5 o'clock; and, at Surinam, at 6 o'clock.

5th. In addition to what has already been said, it is advisable for vessels bound from Europe to Guyana, to make the land about the coast of Mayez; shunning the vicinity of the River Amazon, because it produces vast swellings, which are felt a great distance out at sea; and which, near the mouth of the river, might prove most fatal to a vessel. This phenomenon, which is known in the Ganges, and other great rivers, by the name of a Bore, is here called the Pororoca, as already noticed in page 465.

6th. Having made and recognised the coast, it is necessary to run along it, keeping the lead constantly going, so as to keep in 7, 8, or 9 fathoms, taking care not to get into less water, from fear of striking on some of the shoals which stretch out from the coast; and although with that depth, in some places, the land cannot be seen from the vessel, even in clear weather, this can occasion little or no inconvenience; as, when near the latitude of your place of destination, it is easy to put the vessel on the larboard tack, and run in to sight the land. Nor is there any difficulty in examining it, when necessary, as you have only to keep more away on the larboard tack; but, in such cases, it is very necessary to be extremely careful with the lead. When night comes on, and you are near the port of your destination, it is proper to anchor; as also when it is calm, within the limits of the tides, (described before,) as the current, or set of the flood-tide, carries a vessel towards the coast.

7th. Getting aground on this coast is not generally attended with much danger, as the bottom is always of clay, more or less soft. Notwithstanding this, no one ought to navigate this part without due care, as getting ashore not only causes a loss of time, but occasions much work in carrying out anchors, &c. to get a vessel off. We notice here, that, even when a vessel is in the regular track, although in 9 fathoms of water, she will raise the mud, as if ploughing it with her keel. This may cause uneasiness to those who witness such a thing for the first time, though it is the consequence of a very natural cause.

8th. The islands of Remire, the Constables, and the Health Islands, are the only points of this coast which are likely to cause the loss of a vessel, if it gets

ashore on them. In order to avoid this, it is needful to pay attention to the currents, that they do not drive you upon them; and not to attempt to pass between the Constables, unless with a free wind; with the contrary, it is better to anchor at three leagues from them, or to pass outside of them, taking care to give the shoal, of which we have already spoken, a sufficient birth.

9th. On the whole of this coast there are no other harbours than those formed by the mouths of rivers, the greater part of which require practical knowledge to enter them, on account of the bars and shallows which run out from all of them; but as, on all this coast storms are unknown, and there is not the smallest risk in anchoring where one deems it to be necessary, there can be no necessity to run rashly for one of these anchorages, but rather wait at anchor outside for a pilot, or till such time as you can obtain a sufficient practical knowledge of the place by means of your boats; so as to be able to take the vessel in safety yourself.

10th. When any one wants to beat to windward on this coast, or, what is the same, wishes to go from the Oronoco or Surinam to Cayenne, he must work along the coast, with the ebb-tide, in from  $3\frac{1}{2}$  or 4 fathoms water, out to 8 or 9 fathoms: for though you may be shouldered away by the current to the N. E. you will gain very well on the tack to the S. E. or E. S. E. but with the flood, it is necessary to anchor; for then, both wind and current being against you, you will irremediably be driven upon the coast.

11th. Those who from the Antillas are bound to any port in Guyana, ought to keep their larboard tacks on board, until in a convenient latitude to make the land to the southward of their port of destination, which ought to be more or less to the southward, according to the practice and knowledge of the navigator who directs the vessel: but, upon all this coast, especially from Cayenne to the Oronoco, even the most experienced are unable to ascertain the places where they find themselves; and without the assistance of observations for latitude, and of prudent conjectures on the different appearances to windward and leeward, they would often commit very serious mistakes.

The environs of Demarara are the parts of the coast easiest known, on account of the trees being burnt and cut down to clear the land for cultivation; and where these trees have been cleared away, there are clear spots or gaps in which (as already stated) houses, &c. may be plainly seen. When at a loss, it is best to anchor till you can clear up your doubts; as, although you lose the time in which you are to anchor, yet you keep still to windward, which is what interests you most; and which, if lost, it would cost you much time and labour to recover.

12th. DEAD-RECKONING in *Shoal Water*, as on the *Coast of Guyana*, &c. —As the greatest uncertainty in the attention of a vessel arises from the errors in the dead-reckoning, caused by currents, to diminish such errors, and render the computation more correct, it is advisable to take off the log-chip from the log-line, and to substitute a leaden weight, weighing 4, 6, or 8 pounds, as may be judged necessary: this, taking the bottom, (when the log is hove with it, in place of a log-chip) will not so easily follow the vessel, or be influenced by currents. By this mode it is clear that the log will show the whole distance which the vessel runs, whether caused by winds or by currents. Then, having made fast the log-line, before you haul it in, mark the bearing of it, and the opposite point or direction will be the course which the vessel makes good. It is clear that, by this mode, the course and distance ought to be as exactly found as if no current existed. If you heave the log with a chip, in the usual manner, as well as a log with a lead attached to it, and compare the distance by it, and the course which the vessel appears to make by compass, with the distance and course found by the proposed method, you will be able to ascertain the direction and velocity of the current.



## CHAP. XVI.

## COAST OF BRAZIL—By BARON ROUSSIN.

The appearance of the coast of Brazil is very different. From the island of Santa Catharina up to Olinda Point, (sixty leagues north of Cape Frio) the land is very high and woody, and can be discovered in fine weather from fifty to sixty miles distance, and consequently, with little care a vessel can make land without danger. North of this, in many places, the land is very low, and not to be perceived from that distance, as for example, between Espirito Santo and Mount Pascal; between the bay of Porto Seguro and the Bay of All Saints; between the Torre de Gracia de Arila and Cape St. Augustine; and finally, every where between Olinda and the Island of Maranham: In all these places the land is more or less low, few mountains can be perceived, being so far in the interior.

Sounding in general is of very little service to indicate the distance from the land, particularly from Point Santa Catharina Island up to Olinda, on account of the great depth, even at a short distance from the shore, except in the neighbourhood of the Abrolhos. It may be generally stated that the depth under the following parallels is nearly this; 70 fathoms at eighteen leagues distant from the land of Santa Catharina; 40 fathoms at 12 leagues from the Paranagua; 50 fathoms at 12 leagues east from the island of San Sebastian; 35 fathoms at 5 leagues south-east of Joatinger Point; 77 fathoms at 18 leagues south-east of Rio Janerio entrance: Finally, more than 60 fathoms at 7 leagues only from Cape Frio. The depth of the sea is very great N. E. of Cape Frio, for at 30 leagues distant, in a direction E. 4 S. of Cape St. Thomas, we did not find the bottom even with 100 fathoms. Soundings increase again E. and S. E. of Abrolhos; generally speaking, it is in few instances not to be depended on, that a less depth than 100 fathoms is to be met at thirty leagues from the coast.

No bottom is to be met even with 200 fathoms, eight leagues only S. E. of St. Salvadore, nor at twelve miles South of this, although at a distance of four miles, there are but 20 fathoms; and finally, E. from Cape Morro San Palo, we did not find the bottom with 120 fathoms, although at nine leagues distant. From Bahia to Olinda the coast is not less bold, for at nine leagues East of Torre de Gracia de Avilla the sounding is over 130 fathoms; at the same distance 9 leagues East of the bar of Itapierucu it is over 200 fathoms; the soundings are over 190 fathoms 20 leagues from Rio Real, and 15 fathoms are found ten leagues East of Rio San Francisco. Finally, every where up to Pernambuco, there is not less than 30 to 40 fathoms at 9 or 10 leagues distant from the shore, and between Olinda and Pernambuco, from 18 to 20 leagues distant from the shore, the bottom is not met over 120 fathoms. Though the sounding be less north of Olinda, yet it is too great at a small distance to be of service.

North of Cape San Roque, the land being more low, and extending into the sea, the sounding decreases gradually towards the shore.

From Monte Melancia up to the village of Amufadas there are but 15 fathoms at 16 leagues distant, and farther north the soundings increase, but it may be taken as a general rule, that 10 fathoms are to be met with at the distance of ten

to twelve miles, between Amufadas and Jericacoara. Opposite the village of Caraca, there is a spot where twenty-four to twenty-five feet only of water are to be met, over an extent of three leagues, but it is the only place up to Maranham.

The coast of Brazil offers this particular, viz. that there are two banks or shoals at no great distance from the shore, the first of which is not far distant from the land, and in many places rises over the level of the sea, and in some other places form the breakers or shallow waters. The other bank, farther distant from the shore, is not equally distant any where: It cannot be stated as forming shallow water, but it is a fact that between this bank and the former, there is a deep channel separated from the main sea by this bank and the small islands of Figuera, Castillo, Guemado, los Alcatroses, los Abrahos. Manuel Luis Shoal may be considered as the prominent point of this second bank.

The temperature of Brazil varies. In the southern latitudes the winter is pretty severe. Frost and snow are not uncommon at Rio Grande. The seasons may be divided into two, viz. the rainy season and dry season, the last of which is from September to February. The rainy season continues from March to September, but the only months in fact which may be considered as rainy are May, June and July.

On the Brazil coast the south monsoon is from March to September. The northern one from September to March. The prevalent winds, according to the saying of the natives, during the south monsoon, are from E. S. E. and S. S. E. and during the northern monsoon are from E. N. E. and N. N. E. this may be the case at sea. I will not oppose this fact, having no reason for it; but, I can assure from my own observation, that at a short distance from the shore I did not find the monsoon so regular as it is supposed, in fact the most prevalent wind at all times is from the Eastern part of the compass. The Rabajos are very strong winds, blowing from the S. W. during the rainy season; they last three or four days with great force, not so great when it rains, but very heavy in dry weather. This begins at the change of the moon. The *grains* are squalls and are met more frequently in the neighbourhood of Abrolhos Islands, and called, for this reason, Abrolhos squalls. They are more frequent in the months of May, June, July and August, and in very rainy seasons they blow from E. S. E. They say they arise from a white cloud of a round shape, and of a little appearance at first, and by and by increase to such a force as to be dreadful.

Land breezes are very regular on the whole extent of Brazil Coast, but not equally regular and strong; but more so as you approach the equator. At Rio Janeiro they are not very regular, and very often not at all felt. The land breezes are more powerful in the northern monsoon, and in the southern monsoon, very often the land breeze has quite the same direction as the sea breeze, this part coming from the South West.

It is a general rule, that the land breeze will be more powerful in proportion as the sea breeze is so. It may be stated, that a vessel can depart from Brazil any day it pleases.

Generally the more you proceed south along the coast, the more you must expect to find the wind coming from the south and west in the rainy season. In this time of the year, from Abagoados Patos up to Cape Frio, they blow with great violence from S. E. to S. W. and even N. W. In this case they turn into hurricanes, and are called Pampeiros. In the river Plata they are very dangerous. If at sunset, foggy clouds, and the land appears more distinct at a small distance, it is an omen the wind will blow from the S. or S. W. and they will be powerful in general. They last in proportion as they are more heavy, and last longer if not so dreadful. When they turn into a hurricane, they will never last over twenty-four hours. When the wind hauls towards the East, you may expect fine clear weather. It is to the contrary when it nears towards the west, Easterly winds bring clear weather, Westerly winds bring fogs.

Nothing positive can be said respecting the regularity of the currents; they generally follow the direction of the wind, for there is no river of a sufficient magnitude on the whole extent of the Brazil's coast capable of causing a current, according to numerous observations. The average running of the currents is at the rate of six tenths of a mile an hour; in the monsoon time never over that rate,

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when you go along the coast at no great distance, for if distant at sea, no current  
exists. From what has been said respecting winds and currents, we may infer  
that no impediment exists in navigating the Brazil's sea, from Santa Catharina  
to Olinda Point, and it is entirely useless to endeavour to make land more south  
than the place bound to, as formerly prescribed. If going to Olinda, or any  
other place more north, up to Maranham, it is better to keep East of the place  
bound to, in order to counteract the effects of the currents, which run generally  
W. N. W. as will be more particularly stated when describing the several  
harbours, and the manner to reach them.

### *Description of the Coast comprised between the Island of St. Catharina and the Bay of Rio Janeiro.*

The Island of Santa Catharina, is of such height as to be discovered in fine  
weather from forty-five miles distant, at which distance there are 70 fathoms wa-  
ter, diminishing gradually towards the shore. Nearing it from the East, it ap-  
pears with high mountains, and deep valleys; taking the whole together, the  
southern part appears higher than the northern side. The Morro Camborello  
is a Mountain which appears above every other; vessels may go round this Island  
with safety; the channel between the main land affords good anchorage, but the  
best place to cast anchor is on the northern part.

Santa Catharina affords the best place to refit a vessel; there is an inexhausti-  
ble quantity of good water, to be got without any expense; fuel and provisions  
of every kind at a cheap rate—such as beef, pork, poultry, corn, sugar, dried  
beef, arack, &c. &c. It is then the most convenient place for a ship to stop, in  
case of want and for repairs. When taking on board wood for fuel, it is neces-  
sary to take young branches only, and even to let them float in the sea water, in  
order to destroy the numerous worms, as their eggs are very dangerous on board  
of a ship.

The coast north of Santa Catharina is every where very high. Woody moun-  
tains and deep valleys are to be discovered all round. From Santa Catharina, to  
the bay of San Francisco, you meet several small islands and rocks, and the last  
are the small Garcia Islands, two miles distant from Joao Diaz Point, (which  
point forms the eastern extremity of the River S. Francisco.) San Francisco River  
is not very deep. Its mouth is turned N. N. E. and empties in a large bay, in  
which you may anchor any where. The shore of this bay is flat, the surround-  
ing land not very high, but from place to place, small hillocks are to be seen,  
which renders that place remarkable; particularly by the chain of a very high  
mountain to be seen at nearly nine miles in the interior. The Island of San Se-  
bastian is to be seen forty-five miles distant; the shores are very bold; the  
whole Island taken together seems of a triangular shape; the channel affords good  
anchorage, but is not to be followed in a straight line from end to end. Banks  
connected with the main land, existing nearly two thirds of the whole extent, in  
the direction of N. to S. and consequently, when coming from the north, and  
starting from a point situated one half mile from the Armacao, which is con-  
structed at the head of the island, it is necessary to steer first five miles S. 16°  
W. and from thence S. 45° W. until you are out. This route is nearly eleven  
miles, and the depth of water from 10 to 20 fathoms. The greatest distance be-  
tween the opposite lands, is nearly three miles, but two-thirds of that space is  
not safe for navigating. It is necessary to near the shore of San Sebastian Island,  
at no less distance than from ten to twelve hundred yards. The southern en-  
trance is more narrow, the natives say that very large ships may pass through.  
San Sebastian harbour is one of the safest in the world, and offers the same faci-  
lities as Santa Catharina for provisions of any kind.

\* A light-house, which exhibits a revolving light, has been erected at the entrance of Per-  
nambuco, by which that part of the coast may be recognized.

*Description of the Mountains and other objects which show your approach to Rio Janeiro.*

At the eastern end of the beach of Maranbaya stands the large point of Guaratiba, where begin the high mountains which surround the Bay of Rio Janeiro. From this point, in clear weather, the Island Redonda (Round Island) can be seen, although eight leagues distant. That island stands at the entrance of the Bay of Rio Janeiro, and is easily distinguished by its round shape, and by the green and white colour of its shores. From the same point the mountain called the Gabia or Main-top, which, by its peculiar shape, cannot be confounded with any other, and is, by this reason, the surest mark of Rio de Janeiro. When arrived near Round Island, there is not the least difficulty in reaching Rio Janeiro. It is unnecessary to undertake the course toward that place, unless you are sure to reach it before night time, and for that to wait for the sea-breeze, which generally begins at 12 or 1 o'clock.

Some say that it is better to make land near Cape Frio, when bound for Rio Janeiro; though it will do well for vessels coming from the north or east, yet in every other instance, it will be wasting time.

The Grand Island, the Morro Marambaya, and particularly the Main-top mountain, are the surest guides for nearing Rio Janeiro, as they may be seen at a great distance, and no fear in nearing the land.

There is something peculiar which distinguishes the appearance of the Bay of Rio Janeiro from every other place. When coming from the E. S. E. up to the S. W. the tops of the mountains bear a perfect resemblance to a man lying on his back, in a direction W. S. W. and E. N. E. the Mount Main-top seeming to form the head, and Mount Sugar-loaf the extremities of the feet.

The Main-top Mount is flat on its top, and seems not so large at its base as at its top, from whence it derives its name. Eight miles distant from this mountain, lies the Paoofasucar (Sugar-loaf) Mount, a large rock which, although generally indicated as the best mark to ascertain the Bay of Rio Janeiro, is not so, according to my observations, being not so high, so distinct, or so near the shore, as the Main-top Mount: it offers this particular, that its shape is very conical, and it appears above all the other mountains of a like shape around it, and it seems to incline a little towards the N. W.

It is very prudent to keep at some distance from the shore, when navigating between Rio Janeiro and Cape Frio, because the sea-breeze blows generally towards the shore, and in like manner the waves generate a current, having the same tendency, particularly when it blows from S. W. and then in case of a sudden storm, there will be some danger in the anchorage, not being there very safe.

We must repeat that it is very prudent never to approach too near the islands which stand at the entrance of the bay of Rio Janeiro, except in case you are certain to reach the harbour during day time; for if engaged amongst them you may be dangerously situated, in case of a squall of wind, which is often the case, then if not enabled to reach the harbour in daylight, it is better to put to sea again.

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*Directions for going in and out of the Harbour of Rio Janeiro.*

To enter the harbour of Rio Janeiro it is preferred generally to pass between the Island Rasa (Bare Island) and the Island of Para, (Father and Mother) the first one nearly seven miles from the Sugar-loaf, the two last five and a half miles N. 41° E. of Bare Island: they have bold shores, and may be approached very near; and even, if necessary, a vessel can pass between them and the shore. The depth of water between these islands is from 13 to 23 fathoms. Standing one mile west of Bare Island, you must perceive the western end of the most

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western island (Paya) N.  $47^{\circ}$  E. from this point; direct your course during seven and a half miles N.  $50^{\circ}$  E. until you arrive at 800 yards west of the fortress of Santa Cruz, situated at the eastern extremity of the entrance: during that course you will have passed on your larboard hand several small rocks and small islands, which lie between the Round Island and the land on the Main-top Mount side, and you will pass at one-half mile's distance from the small island Toucinho, (Ham Island) which is not distant from the Sugar-loaf Mount; there is not the least danger; you have only to keep at a proper distance from the rocks which are to be seen. The least depth of water is 7 fathoms at the bar; but when in the harbour it increases very fast, and at a few yards from the Santa Cruz battery, there is over 12 and 16 fathoms.

The way we prescribe to go into the harbour possesses many advantages: first, it enables you to approach the Santa Cruz fortress sufficiently near to answer the questions put to you by the guard; second, to keep the ship at a reasonable distance from the flat island, lying in the middle of the entrance, on which is built the fort Lage; and thirdly, to correct the effect of the current, which sets towards the N. W. with the tide.

The passage between fort Santa Cruz and fort Lage is the only one used in passing, and the one formed by San Joao Point is never used; not on account of deficiency of water, but because it is narrower, more crooked, and the bottom being rocky, is not safe, in case of necessity, to anchor. They say the passage through it is prohibited.

When at 600 yards distance, west, from fort Santa Cruz, the course to reach the best anchorage is N.  $35^{\circ}$  W. until you arrive at E. N. E. of fort Villegagnon, which you may pass at only 600 yards distance; from that place you will steer toward the Island dos Ratos, (Rat Island) and now, being in sight of the city, you may choose your anchorage in from 10 to 20 fathoms.

If you draw a line from the flag of fort Villegagnon to the Cobras (Snake) Island, that line will separate the anchorage for vessels of war from that of the merchant-vessels. The best for vessels of war is towards the E. N. E. of the palace, and south of a line drawn from Rat Island to the main church in the city; and the best for merchant-vessels is near the city; the largest reach that place by passing north of Snake Island, and they are separated from the vessels of war by a bank, or shallow water, where boats only can pass, and over which the sea is constantly breaking at low water.

The sea and land-breezes are regular, and each last one half of the day. The land-breeze begins in the evening, continues during the night, and stops at nine or ten in the morning; a calm of one hour generally succeeds it, and at about eleven the sea-breeze commences.

Vessels going to sea will follow the course opposite to that pursued when going in. It is best to take your departure in the morning, in order to take advantage of the land-breeze, which, lasting three or four hours during daylight, enables you to clear all the small islands, and reach the open sea. Vessels used, sometimes, to go at some distance from the city the day previous to their departure, in order to have a better chance of getting to sea the day after, with the land-breeze. In case the breeze should subside, it would be better to cast anchor.

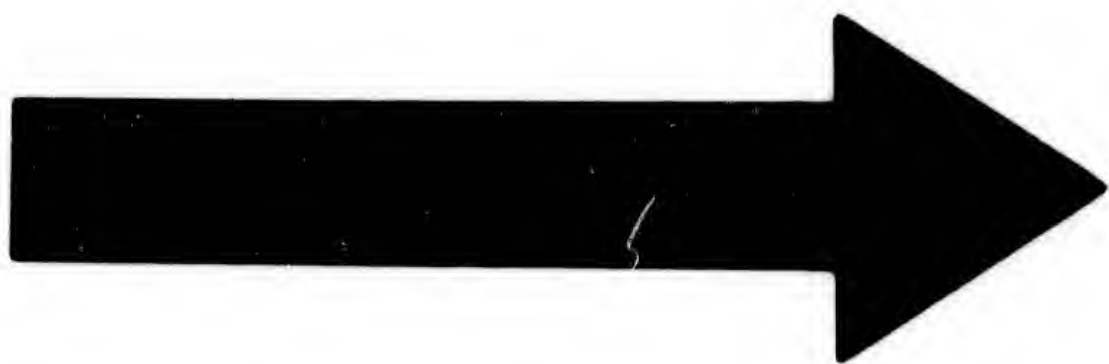
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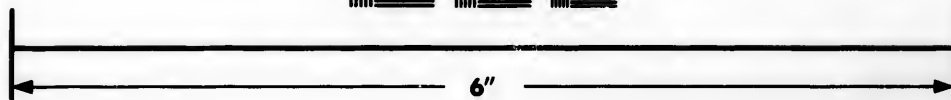
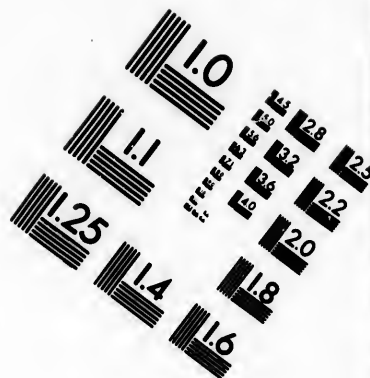
*Description of the Coast between Rio Janeiro and the Bay of All Saints, showing the Anchorage in the Harbour of Espirito Santo, Porto Seguro, &c. &c. and near Capes Frio, Thomas, St. Paul, and St. Antonio, with a description of the Banks and small Islands of Abrolhos.*

Leaving the Bay of Rio Janeiro to proceed eastward, fourteen miles distant, E.  $15^{\circ}$  S. of the Sugar Loaf, you will find the two islands of Marice, situated nearly one league from the sea-shore; they are not very high, their southern shore is quite perpendicular, and there is no danger in going near them.

At fourteen miles farther N.  $77^{\circ}$  E. of these islands, you meet Cape Negro,







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which is formed by a hill not very high, adjoining to the highest mountains to be met with between Rio Janeiro and Cape Frio, which, with its dark green tinge (from which it derives its name) are quite sufficient to distinguish it. There is not the least danger in nearing it, for even at the distance of three miles, the soundings are from 30 to 40 fathoms, muddy bottom.

The sea-shore from Rio Janeiro to Cape Frio is low and sandy: the mountains which surround that bay run first E. N. E. until you reach the meridian of Cape Negro, and afterward N. E. leaving an empty flat between, over ten leagues in extent, which is to be seen from the sea in fine weather only.

Between Cape Negro and Cape Frio the land is low, and few small hills are to be perceived at some distance from the sea-shore, which is there sandy and bushy. On the top of one of these small hills, nine miles E. N. E. from Cape Negro, stands a church dedicated to Nostra dama de Nazareth. At no great distance from the shore a ridge of rocks and sand are to be seen at low water, and considered dangerous by the coasting traders, but without good reason, as there are 30 and 40 fathoms water at six miles distant, muddy bottom, the depth increasing very fast toward the sea, and at ten leagues distance, from 70 to 90 fathoms, bottom sandy, rocky, and muddy.

Though of little importance, it is proper to state that inside the beach, a flat of water can be seen. The depth of the sea near Rio Janeiro is very great, varying from 78 to 90 fathoms, at the distance of ten or fifteen leagues, diminishing gradually toward the land. The bottom is a mixture of coarse sand, gravel, broken shells, rocks and mud. In some charts, S. S. E. from Cape Frio, distant ten or twelve leagues, from 20 to 25 fathoms have been marked, but we believe it incorrect.

Cape Frio is the southern end of an island lying on the eastern end of the beach of Maranhaya. This island is rocky; there are trees only in some places, and no where is green grass to be seen. In fine weather it may be discovered from fifteen leagues distant. Viewed from east and north, two different hills are to be perceived on Cape Frio, the northern one of which is the largest and highest, and on the southern one a kind of rock seems to project and hang over. Viewed from the N. N. E. and S. S. E. these two hills appear to be but one with tops, and at a small distance from the cape, in an E. S. E. direction, lies a small island of a conical shape. All this shore is so bold that 30 and even 40 fathoms are to be met in every direction, even at one mile distance, bottom almost every where mud.

Between the Island of Frio and the main land there is a good channel for small vessels, and a good anchorage for others of any size. The channel runs N. E. and S. W. It is not frequently used, on account of its narrowness at the southern part, but the depth of water is every where more than sufficient. The northern passage is very spacious and safe against any wind except N. E. but by anchoring more north toward the Island dos Porcos, you may consider yourself perfectly safe, the anchorage being firm, and often resorted to by coasting traders who wait there for favourable winds, and for a chance to put to sea through the southern or northern passage. In time of war this place may be useful to get information. Var.  $2^{\circ} 5'$  E. 1819.

The northern part of the coast of Cape Frio, together with the islands, runs N.  $35^{\circ}$  E. up to Anchora Islands, and forms with this last a deep bay, in the inside of which stand the numerous islands of Papagaros; several of them afford very safe anchorage in case of contrary wind.

The Island of Ancoras stands at four miles E. & S. from Cape Busios; the eastern one has the appearance of a quaker's hat. I do not doubt, as reported by native mariners, the practicability for a large ship to pass between them and the main land.

North of Cape Busios lies the small island of Branca, from whence another beach extends to the Morro San Joao or San Joam, and at no great distance the Island of Feno. The land now runs easterly up to Cape St. Thomas. This gulf, formed by the coast between the Capes Busios and Cape St. Thomas, is very near thirty leagues in extent, and in the middle of it, at three leagues distant from the shore, lies the Island of Santa Anna.

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The Morro San Joam is easy to be distinguished, being entirely separated from the chain of mountains lying in its rear, and its top having a warlike appearance.

At twenty miles N.  $\frac{1}{2}$  W. of Morro San Joam, another hill is to be perceived, which offers this particular, that its northern side is quite perpendicularly cut, and its top ends in a sharp point. It is known by the name of Father de Macayo or Macahe.

The Islands of St. Ann are three in number. Viewed from S. S. W. and N. N. E. they appear as one only. The southern one is the highest. The anchorage in the channel is one of the safest and most convenient to any kind of repairs, and refit vessels of any description. Good water and timber is to be found, and at the distance of four to five miles from the shore there is, in every direction, from 19 to 30 fathoms of water, and a good mud bottom.

From the parallel of the island of St. Ann up to Benevente, which stands in lat.  $20^{\circ} 53' 50''$  S. a flat land projects considerably into the sea. That low land is known by the name of Granes. Some navigators bound to Rio Janeiro state that they have been deceived by the similar appearance between the coast north of Cape Frio, and the coast forming the Bay of Rio Janeiro. Such an error appears very extraordinary, for the entrance of Rio Janeiro is on the angular point of two chains of mountains, the eastern side running E.  $\frac{1}{2}$  N. and the western side running W. S. W. whereas the land north of Cape Frio runs N. and S. which is quite an opposite direction. On the whole, a single observation will relieve the doubts in that respect.

From the Island of St. Ann to Benevente End, the land extends more and more to the sea, and at Cape Thomas the mountains appear to be thirteen leagues from the sea-shore. This part of the Brazilian coast is very low; a few trees and small sand-hills seem as buried in the sea-water. This beach extends far in the sea, and forms what is called the Banks of Cape Thomas. The chart shows how far the shallow water extends; at the distance of five miles we found from 10 to 21 fathoms, increasing regularly towards the sea. By keeping fifteen miles from the shore there is not the least danger.

Though some coasting traders state that places on the banks are to be met with, having 2 or 3 fathoms of water only, yet the pilot we had on board thinks differently, and nothing has been perceived by us to indicate such a shallowness.

The nature of the bottom near Cape Thomas is not of a muddy nature, but white sand and broken shells. It should here be observed, that this white sand, which extends so far north, appears to begin only there, and is never met with farther south.

At a short distance from Benevente you meet, in succession, the Barra Guarapaya, (Bald Island) La Rosa, and the small Islands of Guarapari.

The river Guarapari empties into the sea between two hills covered with trees; on the top of the southern hill, there is a church with a steeple, many houses and cocoa-trees. The other hill is called Perro de Cao. To proceed up the river, it is necessary to keep Guarapari hill N. W.

The surrounding coast is tolerably high, and every where covered with small trees, and in several places a yellow steep beach not perceived to the southward of Benevente. The mountains in the interior deserve particular notice, being of a conical shape, and appearing to incline on one side, which is not to be observed to the south or north.

The Island Calvada lies four miles distant from the shore; there is no danger passing in the channel, being from 12 to 20 fathoms water. Outside this Island, and off the Island Rosa, the depth varies from 12 to 20 fathoms up to Espirito Santo Bay. Keeping at the distance of two to seven miles from the shore, at nearly two-thirds the distance from Guarapari Santo, you meet the rocky island Jien, and a little farther distant the Pacotes rocks, which indicates the entrance of the Bay of Espirito Santo. The particulars which distinguish Espirito Santo Bay, are Monte Moreno and Mertue Alvara; Monte Moreno is a mountain on the southern end of the bay; its northern base forming the southern entrance of the river of Espirito is of a conical shape, covered in part with wood, no green grass to be seen on its eastern side, and may be discovered ten leagues distant.



Vessels going up the river, must range along it at no great distance. The two Pacotes Rocks stand two and a half miles, and are of unequal size. The inside channel is used only by small vessels.

Nearly one mile distant from Monte Moreno S. 60° W. stands the Morro de Nozza (Sembora de Poria,) a rocky hill with little wood. The church, which is built on its top, can be discovered five leagues distant. What distinguishes the hill called the Mastre Alvaro, is its great height on a low ground, appearing as entirely separated from the other mountains.

The greatest part of the bay of Espirito Santo is occupied by two islands, in a direction N. N. W. of Monte Moreno; though the space between this island and the mountain appears to be wholly obstructed by banks, and the two rocks, the Balea (the Whale) and the Casello (the Horse,) yet a vessel not drawing over 16 feet water may easily go through there without danger, as you will not have less than 18 feet water. The anchorage we occupied in the bay of Espirito Santo was not the best one, because we had no knowledge of a submarine rock not more than two cables' distance from us, where, from time to time, the sea was breaking. The safest place to anchor is the one pointed on the chart, with an anchor.

Espirito Santo is of some importance to navigators. At one league's distance from the city of Victoria, there is good water; wood and cattle can be got in plenty, and cheap; the climate appears unhealthy, being extremely damp. A rock called the Pao de Hanuar (Sugar Loaf) about 2000 yards from the city, is of some service to mariners, as you steer in its direction after weathering Monte Moreno, if you intend to get into the river. The tides are not more than 4 feet, and are regular but in the inside of the bay.

The coast north of Espirito Santo is low and covered with trees; and the shore, which runs N. 32° E. from the Tubaron (the Shark) up to the bar of Rio Doce nearly 16 leagues distant, is of a yellow red colour.

From Rio Doce (soft river) the coast runs north and south up to the bar of San Matheo, a distance of twenty leagues. The country in the interior does not appear so low as the sea-shore, but from Rio Doce to Mount Pascoal the country is very flat. There is consequently no more difficulty recognizing Espirito Santo Bay when coming from the south or from the north, as in the first instance Mount Mastre Alvaro comes next to the flat land, and in the second instance, it ends a land tolerably high.

The shore from Tubarao end up to San Matheo, may be approached every where at the distance of two or three miles. From 9 to 10 fathoms water are to be found at such a distance, bottom sandy, sometimes muddy and with broken shells.

It is reported Rio Doce runs far in the interior, but its mouth does not admit of large vessels. It is to be observed here, that the numerous islands pointed out in some charts, as existing at its mouth, is not correct.

The bar of Rio Seca lies ten leagues north of Rio Doce. Rio Seca is a stream only in the rainy season. Two miles east of Rio Seca we found no variation in the compass, July 1819.

The bar of San Matheo is ten leagues distant from Rio Seca. Being far at sea, this bar may be distinguished by the breakers of the sea, which is greater than on the surrounding places. The shallowness of the water, the impossibility for a ship to cross over the bar, and above all the little benefit to be derived from this place, are more than sufficient reasons to keep at a distance from it.

At a distance of four to five leagues from San Matheo, in a northern direction, and at three to four leagues from the land, the soundings begin to indicate the shallow water of the Abrolhos. This shallow place may be considered to extend north and south from eighteen to twenty leagues, and east and west not less than twenty leagues; and though the whole extent is not to be considered equally dangerous, yet a vessel not particularly bound to this place, will do well to keep away from it.

The Abrolhos Islands, or Sante Barbara Islands, are four in number; not including two or three flat rocks; the two northern islands are the highest; the western one is nearly one hundred and thirty feet above the sea, the other one

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hundred and fifteen: they may be perceived from the top of a frigate in fine weather from twenty leagues distance.

Nothing is to be found on this Island except some reeds and cactus; numerous tribes of birds inhabit them; a few turtle are to be met with; fishes are in plenty and the fishermen of Porto Securo repair there to fish, and dry what they call garoujas. This is consequently the only thing a vessel can expect thither.

We have already stated that the whole extent assigned to the shallow water, is not every where dangerous. In the same extent, by our observations and soundings, it appears that, from the E. S. E. up to south by north, and west, large ships may approach from one to eight miles, in fine weather. The only part we had no chance of sounding, and which remains consequently doubtful, is that part comprised between the S. and S. E.

West of this Island there is a channel, of nearly three leagues wide, where the soundings show from 10 to 15 fathoms, except in a few places where it shows only 3 fathoms. The western side of this channel is formed by more shallow water, called the Paredas or (Walls,) which is very dangerous. According to the report of the native mariners, the tides are irregular on the Abrolhos; the current runs according to the wind, and does not run over three-tenths of a mile an hour. The sounding shows no mud over the whole extent we ascribed to the shallow water of Abrolhos, and if any is to be perceived, it is a certain sign you are no longer there. The nature of the bottom in the Abrolhos is white sandy stone, mixed with broken madrepora\* in a powdered state. Sometimes that sandy gravel is very firm and combined with sand and rock, particularly in the north-east direction. In the direction of S. S. W. or N. E. by West, the bottom is very firm and like tough mortar, in which the anchors have a good hold, though they enter very little into it. We have no correct information respecting the Paredas, which are stated in the chart, according to the saying of the native mariners, beginning at the bar of Portalegra, and ending at Alcobaca.

The little city of Prado lies on the mouth of the river Ineurucu, a very deep cut amongst the trees, which are numerous on the shore, at the place where the river discharges into the sea. There is no danger near the mouth; even at three miles, there is from 10 to 14 fathoms of water: this depth remains the same as far as the village of Columbiana, situated E. S. E. of Mount Pascal. Mount Pascal is to be perceived even from the Abrolhos.

E. by S. 28 miles from Mount Pascal, in a direction north and south, and at 12 miles distance from the coast, the water is very shallow, intermixed with rocks. That dangerous place is called the Itacolomis, and runs E. S. E. and S. by W. There is not the least danger by keeping away thirteen miles from the shore, and when north of Mount Pascal the land may be neared to three miles; the depth being from 11 to 24 fathoms.

Mount Pascal, as we stated before, is the highest of the mountains perceived from the Abrolhos. The chain it belongs to runs nearly S. E. and N. W. The southern part of this mountain seems as if a large square tower had been built on its top. Viewed from the east, Mount Pascal appears of a conical shape, and being the highest of the whole, it cannot be mistaken.

The shore from Villa Prado up to Mount Pascal, runs N. 10° E. It is low, woody, and its general appearance is very much like the shore between Itacolomis, and Mount Pascal; it differs only in its yellow red colours. This red colour increases more and more towards Porto Securo, and the shore more high, and steep, and the cow-tree is more numerous amongst the trees which cover the land. If going along the coast, you will pass in succession the bars of Gramminuan, of Joasima, of Frade, the small bay of Trancoso, and the church of Mossa. In Senhorada Judea, distant only two miles from Porto Securo; the walls of that church being perfectly white, it is perceived amongst the trees at some distance: there is a small river which empties in the harbour of Porto Securo; on the bar there is 18 feet at high water, and only eleven inside; moreover, there are many banks, extending very far; taking the whole together, Porto Securo is not a good place for vessels of small size, and of no use for large ones.

\* Every kind of stone supposed to be formed by insects, is called by the French, madrepora.

From Porto Securo, to Rio Grande, there are twelve leagues distance; the coast runs N. 14° E. very woody; sandy banks and shallow water, is to be found at three miles distance. A new city called Belmonte, stands on the southern bank of Rio Grande: there is but two fathoms of water on the bar.

From Belmonte, to Fort San Georges dos Ilheos, there are twenty leagues distance, steep shore and equally woody; depth of water from seven to twenty fathoms: and at five miles distance, muddy bottom and broken madrapore. At half the distance from Belmonte to Fort St. Georges, you meet the Seras de Itaraca, a group of mountains on which terminates the flat country beginning after Mount Pascal; the southern mountain bears the name of Commandatuba, from which the small river derives its name. From thence, up the bay of All Saints, the coast offers the finest prospect, being well cultivated in the valley, and the small hills covered with wood.

From Fort St. George, up to the two Castelhanos Ends, nineteen leagues distance, the coast is perfectly secure: the largest ships may approach it within two miles, without the least danger.

The Dos Castelhanos Ends, belong to a high land joining to Ponta de Muta, at the extremity of which stands the small island of Quipe. The Muta point and the island of Quipe, form a kind of bason, into which empties the small river Acarahi, at a short distance from the small town of Camamu. The breakers which obstruct the bay, do not permit vessels to go into it.

Beginning at this place the coast seems divided into two, and appears like two islands. This appearance is produced by the low land existing between the two hilly parts, and remains the same, till you arrive at cape or Morro San Paulo.

Morro San Paulo, from the east end of the bar of Unha's River, may be very easily distinguished, though not very high, being higher than the highland, which stands on its rear, in the northern direction; there is on its top, two separated groups of cow-trees very apparent. Morro San Paulo offers this particular, that when near it, the green verdant colour of its top seems spotted on the northern side with large white stains: in fine weather these white stains may be seen from fifty-four miles distance. Two miles east of Morro San Paulo there is 17 fathoms, with good muddy bottom. North of San Paulo the coast is low, sandy, and a reef of rocks runs along within a short distance of it. This coast appears at first connected with the island of Tamarica; but the land on this island is higher: the space between the western side of Itaporica Island, and the main land, forms what is called the false entrance of Bahia. This channel is very crooked, narrow, and too difficult to admit vessels to pass.

A vessel may steer in a straight direction from Morro San Paulo to Cape St. Antonio; but if the wind blows too strong toward the land, it is better to keep a little more to the N. W. until the eastern point of Tamarica Island stands north of you.

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### *Description of the Bay of All Saints or Bahia.—Instruction to go in and out of this Harbour.*

Vessels bound to Bahia during the southern monsoon should make land near San Paulo. If during the northern monsoon they will do better to make land north of Itapuan, which is a little further north than Cape St. Antonio. Upon the whole this will depend on the accuracy of the day's work, the actual situation of the vessel, and the wind to be met with when near the coast. The main entrance of the bay of Bahia, called likewise St. Salvador, is formed by the Cape or promontory of St. Antonio on the East, and by the Island of Itaparica on the West. The meaner distance from the Cape St. Antonio to Itaparica Island is not less than four miles, but the one half only of this channel, which is towards the main land, is safe for navigation of large ships. If from the Morro San Paulo, you steer N. 46° E. with a favourable wind, you will pass at the proper distance

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of the bold shore of Itaparica Island, and of the breakers of St. Antonio, but if you are obliged to beat, it requires care to avoid both places.

Nothing is to be feared by keeping at equal distance from the main land, on which stand San Paulo, Mount Arod, Itaparica, until you discover towards the North the Jaburu Point, which is the Eastern end of Itaparica Island. Arrived opposite Point Aratuba, you are now seven miles from Jaburu and five miles S. 41° W. of Cape St. Antonio; and nearly three miles W. of the southern extremity of the breakers of St. Antonio. From that situation you must direct your course straight towards the Cape of St. Antonio until two miles only from the shore; from thence steer straight towards the church of Bom Fim, (situated on the Point of Montferrate until you reach the Fort Do Mars or Sant Marcello near which is the usual anchorage.

The Flat of St. Antonio lying four miles S.  $\frac{1}{2}$  W. of Cape St. Antonio, there is no difficulty to avoid it, and is altogether not very dangerous. It is a sandy bank of a reddish colour, no rocks are to be met there, and 4 fathoms of water are to be found every where. Such is the opinion of the natives, and of the most experienced men; but having perceived some places where the sea breaks on this bank during strong wind, I would suggest to keep a distance from this place with a large ship, which is the case when following the course we have described. The general anchorage for merchant vessels is inside of the line drawn from the Fort of Marto Montferrate Point. It is necessary when going to this anchorage to avoid the sandy bank of Panella, which we had no chance to ascertain, but it is reported by the natives as a very shallow water of 3 to 3 $\frac{1}{2}$  fathoms only, lying W.  $\frac{1}{2}$  N. W. from Fort Do Mar.

It is generally the case, that the wind permits you to come to anchor in front of St. Salvador; the most prevalent wind being from E. and from S. E. and vessels can generally go in by plying small board. During the night time, the breeze comes from several points of the compass, but more generally from the land side. The tides are perfectly regular from St. Salvador, and the flood and low water last an equal time. The harbour is very safe, and there are only a few instances when a strong wind from S. W. blows, that the water is much swelled, and the ships do not ride easy.

The course to follow when going out of St. Salvador, is very near the reverse, to the one to proceed in. When one mile distant West of Cape St. Antonio, and steering four and a half miles S. S. W. of the same, the shallow water will be avoided, and afterwards you may go round the cape into the open sea. All the lands near Cape St. Antonio are tolerably high, if compared to those of the opposite side. They are of a pleasing appearance, being covered with trees, and a luxurious vegetation of a green colour. This shore in fine weather can be discovered from thirty miles distant. On the end of St. Antonio Cape, stands a light-house not very high, which in night time can only be seen from twelve to fifteen miles; in the day time when the light-house bears W. the Fort of St. Antonio appears as separated at a small distance from the main land. Two and a half miles East, a few degrees South of the light-house, there is another land point, on the top of which stands the poles for signals. This last point forms with the Itapuanzinho point, which stands one mile E. of a small bay; many houses are to be seen along the sea coast.

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*Description of the Coast comprised between Cape St. Antonio, and Olinda Point, the mouth of the St. Francisco River, and Cape St. Augustine.*

From Itapuanzinho Point up to Itapuan, the coast bears no longer the same appearance, as it does previous to your arrival at Bahia. Here the shore is but sandy and low, few trees are to be perceived at a distance, and from place to place some coco-trees. All along the shore a ridge of rocks are to be met, and in many instances they rise above the level of the sea; the one at the Itapuan

Point particularly seems like small islands. Thirty-eight miles farther N. 45° E. of Itapuan Point, you are opposite the Torre de Garcia of Avila, a kind of Fort, built on the top of the coast, among the trees, and which is now used as a house for signals. The coast viewed from nine to ten miles distant, appears like a wall of great magnitude and equal height, except where the two rivers San Joannes and Jacuhype discharge into the sea, where a large cut appears in this wall. The depth of the sea is very great opposite this place, for being only ten miles distant, no sounding is to be met. From Torre de Avila up to Oiteras of San Miguel, the shore is more high, but with small hills.

All the coast from Rio Real up to Rio St. Francisco is low and sandy, with small broom bushes, and small hills are discovered at no great distance in the interior. A vessel may approach very near the land, the bottom is sandy, with gravel and broken rocks. The next river after Rio Real, is Rio Sergipe, which is twenty-one miles distant from Vassa Barris. The mouth of this river, when viewed at no great distance, is easily distinguished by the three small hills of an equal height, all covered with briars, lying nine miles S. W. of the bar. These hills are called the Ostres-Irmaos (or Three Brothers.)

At the mouth of the Sergipe river, a very white sand beach is to be seen, whose colour strikes with the green ground of the coast all around. At the bar, the sea breaks with great force at the time; from what we must infer a shallow water. The rivers which come next in succession are Cotombeda river near the Miserias Point, and Japarutuba points south of the mountains of Pacatuba; the country round Colindiba river is one of the most productive in Sugar, Cotton, Tobacco, &c. There are but seven feet water at the bar. When viewing the bar W. the Mount Aracajou stands a few leagues N. W. and in the West Morro Telha is discovered. The Mount Aracajou seems to run in a parallel direction with the coast, and in its Northern extremity a deep cut is to be perceived. The second mount bears the shape of a Quaker's Hat. The coast from Rio Idaparutuba, up to St. Francisco river, is very dangerous in a strong S. E. wind for vessels going near the land, they having no good chance to escape the wind, and the bottom too hard for the anchor to have a good hold in it. Prudence requires to keep at some distance from it.

Near St. Francisco river the land is very low, and cannot be seen even at a short distance, for which reason great care is required to make land near St. Francisco. The only mountain to be discovered at a distance are the Itabayanna and Pacatuba, but only in fine clear weather, and when exactly opposite the river St. Francisco. The entrance of this river lies south of Manguinha Point, which is very low and all covered with Mongel trees. It projects E. S. E. and at one and a half mile distant from it, in its direction, there are dangerous breakers. The North of the entrance is formed by a land more low than the former, having a white sand, and in its projection into the sea there are no less dangerous breakers, than on the other Southern points. It is between these breakers you must cast anchor until a Pilot comes on the bar. There are from twelve to thirteen feet water, the country is very populous, well cultivated, and produces great quantities of Sugar; when near, the land from St. Francisco river up to Alagoas is low and sandy, and a ridge of rocks at no great distance from the shore are to be seen. Many small rivers discharge into the sea, but none of a sufficient depth to be navigated; they may be approached very near without danger.

Opposite Curunipe, three miles distant from the shore, stands the rock of Dom Rodrigo; this rock, as well as several smaller ones to be seen only at low water mark, have been designated by some as the Cosmographer Banks of St. Francisco, and stated to be very dangerous, but without the least reason. We found all around this place a great depth of water, and the shallow water will not extend over three miles. In supposing it to extend as far as the Iquia, as there is no reason to keep so near the land one will do better at all events, to remain at a greater distance than four miles. An important observation is to be made on this part of the Brazil coast, and agreed to by the natives which is this, that the land breeze during the night time is hardly perceived, when four or five miles from the land, but at day-light it begins to reach that distance, and seems to attract the Eastern wind towards the north until twelve in the morning; and afterwards

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the Eastern wind returns gradually towards the East; from that fact vessels may derive some benefit on either course when obliged to beat. Near San Miguel the shore is very bold and nearly eighty feet high, and the top perfectly even and horizontal for an open space of fifteen miles. When coming from the southernmost, the village of Macayo is to be discovered on the top of a highland; the church is easily distinguished; and for this reason the place deserves notice. The Jaragua river empties below Macayo, and the point which forms the northern land of the mouth is covered with coco-trees, and the very animated breakers are to be seen at some distance in its direction. North of Macayo and from the interior, the mount of Marambaya is discovered even at forty-five miles distant. This mount offers this particular, that the country on which it stands though high, is very level on every side of its base. The shore north of Macayo is sandy, and from place to place of a reddish colour, low trees are seen not distant from the shore. The Fort of Tamandare, though not very important, deserves some notice, being the only place affording a safe shelter between Bahia and Perriambuco. This anchorage is formed by a deep cut into a bold shore, and is sufficiently large and deep for admitting large vessels.

Nine miles N.  $\frac{1}{2}$  N. E. of Tamandare harbour, lies the small island or rocks of Alexo, situated at the mouth of the small river Serenhen. Previous to your arrival there, the bar of Rio Feroso is discovered. When you observe the two rocks of Alexo together, they stand N.  $60^{\circ}$  W. then north of these two rocks Monte Do Sella is discovered in the interior, which derives its name from its shape (Little Saddle,) and may be useful to ascertain the situation of a ship.

Being a few miles East of the rocks of St. Alexo, you will distinctly perceive the Cape of St. Augustine, lying sixteen miles N.  $18^{\circ}$  E. This Cape is hardly covered with wood, and not very thick; it is of a moderate height which decreases gradually towards the sea. It offers the particular remark, that a steep beach of a red yellow colour is to be seen in many places of it; it has a barren prospect when nearing it; on its top there is a church; towards the north side, a little below the church, fortifications are to be seen.

### *Description of Pernambuco Bay, and instructions to sail in and out of it.*

Cape St. Antonio is the land, vessels bound to \*Pernambuco, must endeavour to make first. The coast north of Cape Antonio forms a bay, in the centre of which lies Pernambuco. At the extreme end of this coast N.  $17^{\circ}$  E. stands Olinda Point; half way from Olinda Point to Semambius, the church of Nossa Senhora Do Rosario is built on a height; its two towers are easily distinguished when coming from the main sea; going along the coast at two to four miles distance, there are 12 to 19 fathoms water.

When you have ascertained Cape St. Antonio, you must keep at two or three miles from the shore, until you perceive the Fort of Picao, between the N. W. and W. N. W. and then steer in a straight line to the Fort built on the breakers, and you will near it until the Coco-tree of Olinda (which stands between the two highest buildings of the city) appears N.  $\frac{1}{4}$  E. of you. In this situation you will stand within two or three thousand yards of the breakers, which form a key. This anchorage is not of the best, large ships ought never go nearer, and it is prudent never to cast anchor in bad weather. West of the meridian of the Coco-tree of Olinda, notwithstanding the contrary is generally prescribed going to Pernambuco during the northern monsoon, it is best to make land on Olinda Point. From Olinda Point up to the Fort of Picao, there is a shoal extending two miles from the shore towards the sea, which makes it necessary to keep at three miles distance, and by a depth of water from 8 to 10 fathoms, until the Fort Picao stands West, a few degrees towards the North, by which you will avoid the English bank, which is formed by sandy rocks lying at the southern end of Olinda bank. That does not extend further East than the meridian of

\* At the entrance of Pernambuco a light-house is erected, showing a revolving light.

Olinda City, nor farther south than the parallel of Fort Ciesco. The sea breaks there with great violence in heavy wind, though there are 2 fathoms of water. Small vessels may turn round it, going W. to N. keeping at half a mile from the main land from Pernambuco up to Olinda Point, but this vessel shall not require over 3 to 5 fathoms, and it is indisputable to have on board a Pilot of the place.

The harbour of Pernambuco is not a very safe one, for vessels of a great draught of water are not able to cross the bar; for the swell of the sea is very great outside, and if too near the shore, there will be great danger should the anchor drag or the ship fall to the leeward, when getting under sail, which may come indispensable should the wind turn S. S. E. or E. N. E. as is the case in the month of March and September. During the northern monsoon the prevalent winds are from the East, particularly at a time of new or full moon, and though the weather is clear and fine generally, yet it requires to be careful in the anchorage, and the surest will be not to cast anchor too near the shore, the bottom being very rocky and requisite to make use of chain cables in this place more than in any other. Large vessels will do well to be all times in readiness to get under sail, and prudence requires to let fall every evening a second anchor for safety during the night.

If there is any necessity to remain a certain time at Pernambuco, the best way will be to cast the two anchors off cat-head, toward the main sea, with another toward the W. N. W. on the stern of the ship, in order to prevent the ship from swinging during the calm which comes after every squall of wind.

The harbour of Pernambuco is sufficiently spacious and deep for vessels from 10 to 12 feet draught of water: it is divided into two parts; the interior part which is called the *Poco*, (the Well) is an anchorage situated on the northern end. The entrance is formed by several rocks or banks of small stones. There are from 17 to 30 feet water on the bar, as well as inside. The shore is sandy, and the water decreases in depth, in proportion as you go toward the land. The only guard vessels have from the winds coming from the sea, are the rocks or breakers before stated; but they are very deficient for that purpose, and during the southern monsoon this place is not at all safe. The second part of the fort is called *Recife Port*: it is comprised between the natural quay of rocks and the city: it is also called *Mosqueirao*. This harbour is better guarded than the former, by the quay of rocks, which, at low water mark, are from 8 to 10 feet above the sea; but to reach in the *Mosqueirao*, it is necessary to cross the bar, on which, at low water mark, there are but 7 feet water.

If you wish to carry your vessel in the *Poco* harbour, you must proceed as follows. Being situated as we have already stated, inside of the English bank, the coco-tree of Olinda N.  $\frac{1}{2}$  E. of you, you must see a small pyramid built on the shore, in a straight line with the church of San Amaro, which is surrounded with coco-trees; in this situation the church and pyramid stand very near the west of the wood, and you must follow that direction until you perceive south of you the Fort Picao. If you wish to go into *Mosqueirao* you will have to steer S.  $\frac{1}{2}$  W. from that place.

Small vessels sometimes used to pass through the south entrance to reach *Mosqueirao*, which is at the northern end of the quay of rocks whereon Fort Picao is built. The mark to direct your course in this case is, to keep the two corner towers of the southern end of Fort Brun in the same direction, and consequently the one covering the other, and true west; sail in this direction until you see the Fort Picao south of you; then steer along the western side of the breakers, and you will reach the harbour. There is no great danger in going near the breakers; it is customary with pilots, when called, to come to take vessels lying in the bay. We again repeat, that vessels trading with Pernambuco must not draw over from 10 to 12 feet water.

The two harbours of Pernambuco are safer than the bay, ships being sheltered from the too great swell of the sea by the breakers or quay of rocks; but when the wind stands east and blows hard, it requires to be well secured.

The prevalent winds are as in the tropical climate, from S. S. E. to N. N. E. from March to September they are more toward the south, and sometimes S. W. during the other six months they stand E. N. E. and N. N. E.

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*Description of the Cape and Banks of St. Roque.*

The Cape of St. Roque admits hardly any description, for nothing particular exists by which this cape may be distinguished from the sandy beach. The colour of the sand is white, but in some places appears of a reddish tinge, owing to the reflection of the light, and by this reason is not a very certain guide. From place to place bushes are to be seen on the top of the beach, and some trees can be discovered far in the interior, which is not the case in coming from the south. Cape St. Roque is not, in fact, the most extreme end of this great elbow of the South American land, for the direction of the shore remains nearly the same twenty miles farther, and it is only at Calcanar Point that it changes its course to N. N. W.

From St. Roque the land lowers more and more, and eight miles distant it forms Cape Petetinga, which cape offers no more particulars than St. Roque, and the beach is of the same white sand.

The Portuguese cosmographer, *Pimentel*, admits that near Cape Petetinga there is a good watering-place for ships, but we had no chance to ascertain that fact.

Near Cape Petetinga the soundings begin to indicate the shallow water of the Banks of St. Roque. This shoal runs in a direction parallel with the shore, nearly sixty miles, and the average breadth may be considered six miles. The channel between them and the main land is from five to six miles wide, and it is reported that vessels of a less draught of water than 7 or 8 feet, can pass without the least danger. The greatest distance from the northern shoal to St. Roque is twenty miles.

Notwithstanding the small height of the shore near these shoals, in fine and clear weather, it may be discovered before you reach them.

The whole extent we ascribe to the shallow water is not equally dangerous, and it is reported that places exist where large ships may cross them. As the whole coast is of very little interest, one will do better to keep at a distance from it.

The eastern breaker stands twelve miles distant from Calcanar Point; the sea seldom breaks over it. The next, west of the former, and eight miles distant from *dos tres Irmaos Point*, is called the Lavantera, and the third one, called the Urcas, stands twelve miles N.  $\frac{1}{4}$  N. E. from Tubaroa Point, and opposite St. Alberto Bay. The sea breaks constantly with great force on these two last, particularly when the wind blows from the sea.

By keeping at a reasonable distance, there is not the least danger to be apprehended. We found the soundings increasing regularly and very fast, towards the sea; the surest proof that no more shallow water is to be met, though in many charts another shoal is marked, E.  $20^{\circ}$  N. of this place: this we consider as an error, for the reasons previously stated.

The soundings are of no service to indicate the approach of this place; the nature of the bottom seems to be the same every where, and we found it always a mixture of white madrepores, intermixed with sand, and in some instances with gravel.

The green colour of the water, like every shallow water, deserves more notice, and you may consider yourself safe, as long as you have not reached this green water.

The current runs N. N. W. and N. W. at the rate of nearly two miles an hour; and the tide rises from 6 to 10 feet, according to the new or full moon.

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*Description of St. Marco Bay.*

St. Marco Bay is that part of the sea comprised between the western coast of *Maranham* and the main land; its entrance lies N. N. E. and S. S. W. its

\* Near the coast of Maranham there is a rock of the most dangerous nature which can be met with at sea—being a bank of sharp rocks, intermixed with sand, almost conical in shape, about three miles in length from the E.  $\frac{1}{4}$  S. E. to W.  $\frac{1}{4}$  N. W. and about half a mile from north to south. The rocks are separated by intervals more or less large, in which

length is over seventy-two miles, and its width six miles: every where the depth of water is sufficient for large vessels, even for frigates, which may cast anchor near the harbour of St. Luis, situated on the western coast of the island of Maranham.

The prevalent winds being from the east, vessels bound to Maranham must endeavour to make the first land east of the island, except in case of a fair and favourable wind from north to west.

It has been already stated that the white sandy beach, called *Laneves Grandes*, is the first land a vessel bound to Maranham must endeavour to make; but it is proper to observe, that, by an error in the day's work, you may be deceived, and mistake the *Laneves Pequenas* for the *Laneves Grandes*, and in such case consider yourself west of the *Perguicus*, when in fact you will be on the east of this shallow water: to prevent such an error, the surest way will be to keep at ten or twelve miles distance from the shore, with from 6 to 10 fathoms of water, and sail along the coast until you reach the green *Mangel* shore; from this point you must steer west, and very soon after you will discover the breakers of St. Ann Island, and the island itself. Now you must direct your course round the breakers of St. Ann at two or three miles distance, until north of them, and you will be certain to have passed them when St. Ann Island shall stand south a few degrees east of you.

We have already described St. Ann Island, in page 489, and what distinguishes it from the *Monigel* coast. Having passed the northern breakers of St. Ann, you must steer again west, a few degrees north, until you discover the breakers of *Corao Grande*, which you may approach as near as the former. From this point you may proceed to the harbour by two different courses: if you intend to follow the first course, then you must steer round *Corao Grande*, keeping at a regular distance, with 10 or 12 fathoms of water; if the second, you coast along the western shore of Maranham Island. We have already stated, that Maranham Island is easily distinguished from Santa Ann Island by its greater height, and its white shore towards the north.

The first point to be discovered, when keeping close to the Maranham Island, is Cape St. Marcos, from which the bay derives its name. It is a high land of very great declivity, on the top of which a house is to be discovered, with a mast for a signal. This cape and land project into the sea, and 800 yards from the sea-shore, there are many rocks and sandy breakers, which you must not approach, being very dangerous.

Keeping always the same course; S. W. and S. W.  $\frac{1}{4}$  S. you will very soon reach the parallel of the small fort of *San Antonio de la Barra*, situated at the point of *Areias*, which forms the northern point of St. Luis Harbour. That point being part of the rocks and sandy bank above stated, it will be dangerous to approach too near, as long as you stand west of it, but when you shall have sailed beyond this cape, you may cast anchor.

### Maranham to Para.

*Para* or *Grand Para*, is the northernmost province of Brazil, and is celebrated for its cotton, sugar, vanilla, chocolate, and coffee. The coast, from the Bay of Maranham to Para, is generally low and sandy, and has many little isles, of the same description, with numerous coves and rivulets. Pimentel has described the whole, but his description is not adapted to the use of the modern navigator, unused to creep along the shore. Some of it may, however, be useful. A vessel there is from 8 to 10 fathoms water, while the summits of the conical rocks are above the surface. Latitude by our observation is  $52^{\circ} 27' S.$  and longitude  $0^{\circ} 1' 30'' E.$  of the meridian of Fort San Antoni de Maranham, (long. west of Paris  $46^{\circ} 36' 14''$ ) or about twenty-five leagues north of the point of departure of vessels from Maranham, three leagues east of the small hill called *Itaculumi*; variation of the compass  $0^{\circ} 57' E.$  The above differs from *Arrowsmith's* Chart five leagues in latitude, and seven in longitude, and sufficiently accounts for the many unfortunate accidents which it has occasioned.

M. de Sylva, of the Brazilian navy, on his passage to Java, saw breakers in lat.  $0^{\circ} 32' S.$  long.  $44^{\circ} 18'$  from Greenwich; it is supposed to be a continuation of the Bank of St. Louis.

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sel, he says, bound from Maranham to Para, should take her departure in the morning, advance to the anchorage off the *Aracaji*, or cliff, already described, thence stand out to sea, to beyond the Shoals of Cuma, (or Carnveros Banks,) which may be effected in a run of eight leagues. Having passed these, you approach the sand-bank stretching from the western shore, and over which there are 6, 10, 7, 6, 5, 7, and 8 fathoms. Thus, you may proceed to the N. N. W. or N. W. by N. to the distance of twenty-two leagues, when the ground of the bank, white sand with black specks, will be succeeded by coarse sand and stones, or brown sand and broken shells, with 13 to 17 and 20 fathoms of water.\* Here you will be off the island of St. Joao, or St. John, and near the parallel of one degree south.

The island of St. Joao is nearly level with the sea, and about three leagues long, from E. N. E. to W. S. W. Between the N. E. end of this island and Point Turivazo to the W. N. W. the distance is about nine leagues. The bay between affords shelter, and vessels may anchor on the N. W. side of St. John's Island, in from 6 to 4 fathoms, sandy ground.

At the distance of eighteen leagues W. N. W. from Turivazo Point is *Cape Gurupi*, over which is a mountain, insulated, and therefore remarkable. This mount is several leagues inland, and near it is another, somewhat smaller and rounder. The coast here, as in other parts, is, however, low, level and sandy, covered with a dark brush-wood, and from the point a shoal, with breakers, extends three miles out to sea.

From Cape Gurupi to the *River Cayte*, on the western bank of which is a small town of the same name, the distance is twenty-four leagues, on a course nearly west. At the entrance of this river, on the eastern side, are several low islets, of the same name. Off the shore, throughout this extent, the bottom is generally flat, and there is commonly 7 and 8 fathoms at three leagues off, with clear ground.

From the Cayte to the *Inlet of Maracuno*, the distance, W. by N. is twelve and a half leagues. In sailing along it is proper to keep two or three leagues off shore, in soundings of 7 and 8 fathoms. The coast here is distinguished by a range or chain of white sand-hills, the highest of which, *Piraussu Hill*, is about three and a half leagues westward of Cayte Point, the western point of the mouth of the Cayte. *Piraussu Hill* appears like a high, bluff, and perpendicular point, close to the sea, with red cliffs on its eastern side.

At five and a half leagues W. by N. from *Piraussu Hill* is *Point Atasia*, distinguished by a watch-tower, having a gun, which is occasionally fired when a vessel is approaching. On making this, and keeping a good look-out, the smoke may be seen. At this place are two eminences of white sand, and immediately west of the point is the Inlet or Bay of Maracuno, having 5 and 6 fathoms of water, and good ground.

**RIO PARA.**—*Point Tigioca*, the eastern point of the mouth of the Para, is nine leagues west from *Atasia Point*: and within this, at the distance of seven miles to the S. W. is *Point Tapua*. Here an extensive bank extends two leagues from shore between the two points, and to the northward are the *Tigioca* shoals and breakers, the positions and nature of which can be understood only by reference to the charts. The passage in is between these shoals, and has a depth of 12, 11, and 15 fathoms, at about eleven miles from the southern shore, in latitude  $0^{\circ} 25' S$ . There is, also, a channel for small vessels, at five miles from shore, and along the edge of the *Bazo do Boronoco*, the bank which extends from *Point Tigioca*, as already noticed.

### Directions for Para.

Vessels bound to Para should endeavour to make the land about *Salina* or *Cayte*, which lies to the eastward of *Salina*, and is remarkable for its white sand hills, steering to the westward, keeping the land in sight 6 or 7 miles distant, you will make the point *Atasia*, which has a house near its extreme point, and immediately after will see the village of *Salina*, which faces the sea, and

\* According to a late survey.



easily perceived in clear weather by its white buildings. Here vessels take a pilot for Para, and if one should not come off by making a signal, you will have to send the boat on shore for one.

Should you not see Salinas, or find any difficulty in procuring a pilot, by attending to the following directions you will find no difficulty in passing the shoals, or going up the river.

The land between Salinas and Tigioca runs about W. by N. about 4 leagues. To the westward of Salina you will see a point of land, S. W. of which are two remarkable white sand hills, and by keeping a good look out at the mast-head you cannot pass them without seeing them, they being the only thing remarkable between Salinas and Tigioca, and is a good departure to run between the shoals. Tigioca lies about 17 miles to the westward of this land, and is a low point. You will have running along 11, 12, 14 and 15 fathoms water channel way, and be careful in sounding; come no nearer the land than 9 or 10 miles, as you approach Tigioca, for fear of getting into the swell, which is a dangerous place, and oftentimes deceives strangers by supposing it to be a good channel inside, as most of the books and charts represent, but should never be attempted by any. The well (or entrance of do.) is about 5 or 6 miles to the north and eastward of Point Tigioca, and has from 20 to 23 fathoms water; by getting that soundings you may judge immediately you are in the well, for there is no such soundings any where about that part of the coast; haul off as soon as possible to the south and east, to avoid the Braganca Bank, for in that soundings you are not far off danger, perhaps the next soundings you may not have more than 2 or 3 fathoms and less, as I have found it to be the case in going through that channel with a boat, and soundless all the way, sometimes not 6 feet, and breakers both sides. I have been the more exact in pointing out the danger of this channel, that it may never be attempted by any, and if unfortunately you should happen to get in, and your water shoalens, if flood tide, come to anchor and wait for the ebb, and then you should not haul off the land too sudden, for fear of the Braganca Bank, which is inside of you, and which you cannot avoid seeing, as it breaks constantly unless at high-water, and the sea perfectly smooth, which seldom happens to be the case that a vessel can pass it without seeing.

*Running for the channel between Tigioca and Braganca Banks.*

When you make Tigioca Point from the mast head, and running along the land so that you can see it plain from the deck (say 9 or 10 miles) you will soon discover the Braganca breakers from aloft, which break very high on the larboard hand going in, and is the best mark to run in by. The tide runs very rapid in this channel, and the sea at times, and for the most considerable. The ripple caused by the tide at times appears to a stranger like shoal water, where there is probably from 14 to 15 fathoms water, and while the Braganca is in sight you need not be apprehensive of any danger, for the bank is steep close to the breakers, and you should pass within 2 miles of them or even less, and when Tigioca Point bears about S. E. by S. Braganca distant about 2 or 3 miles, you may haul up about S. W. to avoid Tigioca shoal, which lies outside of you, and stretches to the south and west, and breaks heavy at the east part; but seldom seen going through this channel, and should your water shoalen, approaching said shoal (which will not be the case whilst the land is in sight plain from the deck) haul more to the south, and your water will deepen immediately; you may then proceed up the river by keeping the Braganca in sight, which will always be a sure guide for going in, keeping them at a distance about 2 miles more or less, as the causes given may be effected more or less by the tides.

The land between Tigioca and Point Taiper is broken, appearing in spots of small islands, which makes them more remarkable, and near to Taiper is a dry sand bank about 5 miles from the land, and to the south of which, abreast of Point Taiper, is good anchorage, in about 7 or 8 fathoms water, and is where pilots come to anchor outward-bound to wait an opportunity of running out between the shoals on account of being less exposed to the heavy sea which sets in with the flood tide, and out of the strength of it.

Point Taiper is about 11 miles from Tigioca point. The land between Taiper

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and Vigia lies about S. W. by W. and N. E. by E. distant about 17 miles, between which, keeping at a distance from 5 to 4 miles, you will have 9 to 10 fathoms water, and as you approach Vigia your water will shoalen gradually to 8 and 7 fathoms. The point of Vigia is remarkable in coming from the northward, and as you draw to the southward another point will open which shows the entrance of Vigia. Be careful not to approach too near Vigia, as there is a shoal stretches off about N. W. by N. two miles from the northern part of the land, which forms the entrance; and north from the southern part which forms the entrance of Vigia,  $2\frac{1}{2}$  or nearly 3 miles hard sand. Vigia is a small fishing town, and cannot be seen in passing, as there is an island in front of it, which stands some distance from the entrance.

Running along the land, at the distance of four miles, you will have 7, 8 and 9 fathoms towards Colares, it being a small village which faces the water, and is very easily distinguished by its white buildings, distance from the S. point of the land 6 or 7 miles; off this village or between it and Vigia, is good anchorage about 3 miles from the land, sticky bottom; be careful not to come too close to Colares, as there is a reef of rocks that stretches off nearly two miles.

If night is coming on, it is advisable not to pass Colares, but come to an anchor and wait until morning, and to know when you pass Colares, your water will deepen very soon after as you approach the Bay de Sal, which will be open to your view. Bay de Sal is a large deep bay, being about 4 or 5 miles wide at the entrance.

Be careful not to get into this bay, as it is dangerous, being full of rocks, and no safe anchorage, and has sometimes been taken for Bay St. Antony. Between Bay St. Antony and Colares there is no good anchorage that can be recommended with safety, the water being very deep, particularly abreast the Bay de Sal, where you will have from 16 to 18 and 20 fathoms water, which is not the case any where else in the river. Colares bearing West about 5 miles, steer from S. S. W. to S. S. W.  $\frac{1}{2}$  W. you will then pass two small islands on your larboard hand, one abreast of the land, which forms the Bay de Sal, (S. part) the other about 3 miles to the S. and W. In approaching these islands your course will draw you towards the land, but come no nearer than two miles, as there are rocks which stretch off about  $1\frac{1}{2}$  miles, with 7 fathoms close to them, therefore 8 or 9 fathoms is near enough. As you draw up with the S. island you make the island of Tatouck nearly ahead; be careful in drawing up for this island, and not come too close to it, as there are rocks stretching off it to North Tatouck between 2 and 3 miles; leave this island on your starboard hand after passing the small island previously mentioned, 4 or 5 miles, you may then haul in for the land which forms the Bay St. Antony; the shore becomes bold and without danger. The Bay St. Antony is a fine clear bay, good anchorage all through from 5 to 7 and 8 fathoms, and by hauling into the bay if you want to anchor, particularly the southern part close in, which forms a lee, you will have the sea perfectly smooth, good shelter from the wind, and out of the strength of the tide; but if you want to proceed to town, steer across the bay, the wind being always fair for going up: you will then see several islands; keep between them and the point which forms the south part of the bay (or Point Pinheiro,) which is close too; you will soon see a small island called Paraquet Island, open to your view, and appears at a distance to be close in to the main land. When you pass Point Pinheiro, steer directly for it, leaving it on your larboard hand close aboard, as it is on the very edge of the channel; it is so bold close to this island that you need not be afraid to pass within the length of your vessel of it, and it is requisite you should pass close to it, as the channel becomes narrow as you pass it, having a shoal flat of sand on your starboard hand; the fort which stands on a small island will open plain to your view. About two miles distance from this island steer for it, giving it a birth of half a cable's length on the larboard hand, where you must send the boat on shore with your papers, or come to anchor, the latter is preferable for a stranger, as the channel is very narrow. When you weigh anchor steer for Para or city of Belem, which will be open and plain to your view, distance about 5 miles from Fort, keeping the land distant about one mile on your larboard hand, and as you approach the town haul in for the shipping, or

custom-house, the next large building to St. Antony's church, which is the first or nearest church in coming up the river; then you may anchor abreast the custom-house, where you will have to land your cargo.

N. B. There is a shoal of considerable length runs between the island of Marajo and the main land which runs nearly north and south, which the sea constantly breaks on, nearest distance of said shoal from the main land being abreast of Colares or that part of the land which forms the Bay de Sal, distance 7 or 8 miles.

High water full and change at Para, 12 o'clock.

Do. entrance between the shoals, 10 do.

From the mouth of the river, within Point Tigioca, the distance to the Basin, or anchorage of Para, is twenty leagues. All the western side of the river is shoal, but, on the eastern side, are even soundings of 8, 7, 8, 9, 10, 7, 10, 12, 9, 7, and 6 fathoms. In the Basin itself are from 5 to 8 fathoms.

A vessel direct from sea, with good observations, may cross the equator on the meridian of  $45^{\circ}$ , where soundings, from 50 to 40 fathoms may be found. A course hence, W. by S. will lead towards Maracuno Inlet, on the east of which a pilot may be obtained. The soundings over the bank decrease gradually, from 40 to 15 fathoms: and it is to be observed that the flood-tide sets strongly to the west, while the winds are from the east.

The flood sets into the Rio Para at the rate of four miles an hour: the beginning from the eastward is very rapid, and it veers gradually to the N. E. and north. The vertical rise is 10 feet.

*Vessels outward bound*, from Point Tapua, steer according to the tide, keeping that point S. E. to the distance of fifteen or sixteen miles. With Cape Magoary then in sight, haul up N. E. or N. N. E. taking care to avoid the Banks of St. Rosa, on the west. The wind here being generally from the eastward, with frequent squalls, great caution is required. In thick weather, when Cape Magoary cannot be seen, the approach to St. Rosa's Bank may be known by the soundings becoming irregular, which is not the case to the eastward of the channel. The weather shoals should be kept on board as much as possible.

*Maranbaya*, at the western end of this sandy tract, is a single bold mountain, about seven hundred feet high. It has a church and some good springs. The inhabitants subsist by fishing, and the produce of the fields which they cultivate, without having much to spare.

The *ILHA GRANDE*, an island four leagues in length, separates the entrances of the extensive harbours of *Maranbaya* and *Gairoussu*, as shown on the Chart. The interior land is high; and the greater part of the coast presents a double range of mountains. On leaving Rio, when bound this way, the mountain Gavea is seen at two leagues to the westward. A sufficient offing must be given to the land after passing this point, as the current frequently sets strongly on the shore, to the westward.

The eastern end of the *Ilha Grande* lies at the distance of 15 leagues from Point Gavea, and opposite to the bluff point of Maranbaya Island. The channel between it and the latter is very safe, for ships of any size, which may take shelter here. Fresh water may be obtained from the springs at the west end of Maranbaya Island, and wood may be had from the other islands in the bay.

On the eastern side of the *Ilha Grande* is anchorage, in the first bay, called *Seio de Abraham*, or *Abraham's Bosom*; but a more secure roadstead is that at the western end, *Jorge Grego's Isle*, which off the southern side, is bold; it affords not only anchorage for large ships, but plenty of wood and water. On the north shore, or coast of the main, opposite to *Ilha Grande*, is the village of *Angra dos Reis*, where refreshments may be had.

**ST. SEBASTIAN, &c.**—Within the island of St. Sebastian, which lies about twenty leagues W. S. W. from the *Ilha Grande*, is a safe harbour, formed by the island and the main. Vessels should enter from the northward and keep near the island, as there is a shoal bank on the opposite side. Refreshments may be procured at the villages, both on the island and the main. The south entrance is not above a mile wide, but it will admit a frigate of war, and afford shelter during a S. E. gale.

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Within the *Ilha de Puercos*, or *Hog Island*, to the N. E. of St. Sebastian, is good anchorage, in 8 and 9 fathoms. The *Bahia de Tabaroes*, or *Shark's Road*, opposite to this isle, has likewise good and clean ground, and is capable of admitting ships of burthen.

In passing between St. Sebastian's and the Harbour of \*Santos, the *Alcatrazes*, or *Cormorant Isles*, should be approached with caution, the ground, about them being foul.

SANTOS affords anchorage and shelter from all winds excepting from the South and S. E. The whole bay is perfectly clear and safe.

The maritime district of Santos includes some excellent little harbours, viz. St. Sebastian's, already described, Bertioga, Santos, Iguape, Cananea, and Paranagua; but the intercourse of these with the interior is interrupted by the Serrero of Cubatam, which, in one part, approaches close to the shore. At Paranagua, or Pernagoa, and Cananea, many vessels are built. The principal whaling fishery of Brazil has latterly been off this coast.

### Santos to the Rio De La Plata.

At the distance of ten leagues to the S. S. W. of the entrance to Santos is the isle Redonda, a little round isle, at about six leagues from the nearest shore. It has a little reef within it, extending about four miles, in a direction nearly parallel to the coast. Those who may happen to get to the westward of Redonda should observe that, with the isle E.  $\frac{1}{2}$  N. a ship may be within half a mile of the reef.

The harbours of *Icuape*, *Cananea*, and *Paranagua*, have been already noticed. They are all bar-harbours, and in the rivers within them small vessels are built. In  $26^{\circ} 16'$  S. is the island of St. Francisco, which forms the two branches of the river of the same name; the only considerable and important river hereabout. The country here, though rich, is swampy and unhealthy, and the coast generally flat. Off shore are several small islets, which require notice.

The MORRO of ST. MARTHA'S HILL, is the termination of a range of inland mountains. About ten miles to the northward of it is the little town and bar of St. Antonio, or Laguna, whence there is some trade with Rio de Janeiro. The distance to the S. W. from the Morro de St. Martha to the bar of the Rio Grande de St. Pedro is ninety leagues. Between these places there is no port of any consequence. The coast, generally, is low and sandy.

From the want of a regular survey, it is to be observed that the Charts do not exhibit soundings on a great part of the Brazilian coast; but yet, in every part, between Rio Janeiro and the River Plata, soundings may be found at a very considerable distance from the land.

RIO GRANDE.—The district of Rio Grande de St. Pedro is of great importance to the northern parts of Brazil; its port being the channel of communication with a rich interior, which supplies pulse, grain, and other productions. It includes the whole of the great lake called the Lagoa dos Patos, and of the rivers which fall into it, from the north and west. Mr. Luccock, on proceeding to this place, in 1809, says,

"On approaching the coast of Rio Grande do Sul, we first made land in the neighbourhood of Estreito, about nine leagues north-east of the bar of the river whence the province takes its name. Little round hillocks of sand, without the slightest degree of vegetation, seemed to rise out of the water, to which a splendid sun communicated a dazzling whiteness. Soon it appeared that these were only inequalities of a sandy shore, from the midst of which arose the church of Estreito, a small building in the usual style of such edifices in the villages of Brazil. A few trees and a scanty portion of verdure about it now becoming visible, served to increase the forbidding appearance of the surrounding desert.

\* A Light-house is now building on the island of Mocha, at the entrance of the harbour of Santos, (1827.)

Long before we saw any marks, by which to guide our course, we were in shoal water, and encompassed with sand-banks.

"The captain, having stationed himself at the mast-head, saw these shoals and the channels between them more clearly than they could be discerned from the deck, and gave us directions how to steer. At length a boat came out to meet us, with a pilot on board, and, by appropriate signals, did us the same service. These signals not only point out the course which a vessel is to take, but sometimes direct her to anchor where she is, or even to proceed again to sea when there is not water enough on the bar to carry her safely over. The first of these directions is given by holding from the boat a small flag in the direction which the vessel ought to take; the two latter by lowering it altogether. The signals are explained below.

"When we had reached the boat, she did not put the pilot on board, but proceeded a little a-head, sounding with a long pole, which was dexterously turned over from end to end, as we proceeded across a broad and shallow bar, situated in a deep and dangerous bight. We entered the river between a bluff head to our left, and a long low sandy point to the east, through a passage about half a mile wide, guarded by a few miserable erections called forts and batteries. Just within the passage lie the vessels, which have received their lading, and are ready to proceed on their voyages, waiting for a sufficient depth of water.

**ST. CATHARINES.**—The entrance of the excellent harbour, formed by the island of St. Catharine, lies between  $27^{\circ} 19' 10''$  and  $27^{\circ} 21' 58''$ . This harbour was visited by the Russian captain, Krussentern, in 1804, and by captain Perouse, in 1785. Of this harbour M. Krussentern has said, "Those going round Cape Horn, or destined for the whale-fishery upon this coast, cannot desire a better harbour than St. Catharine's to run into. It is infinitely preferable to Rio Janeiro.

**SIGNALS**, by which vessels approaching to enter the Port of Rio Grande do Sul, show to the pilot-boat the water which they draw.

A vessel unacquainted with the coast should run down into 7 fathoms of water, until she observe a tall flag-staff. This stands at the entrance of the harbour, and is the station of a man on the lookout. When the vessel heaves in sight, he hoists a white flag, and a boat goes out to meet her on the bar. So soon as the boat is observed, the signals which it makes with a small red flag must be carefully noted, and the vessel luff or bear away, according to the direction in which the flag is waved. She must also declare her draught of water in palms, or eight parts of a fathom, by the following signals at the fore-mast head.

**PALMS OF WATER.**

	FLAG.
10 .....	White.
10½ .....	Blue.
11 .....	Red.
11½ .....	{ White.
	{ Blue.
	{ Blue.
12 .....	{ White.

**PALMS OF WATER.**

	FLAG.
12½ .....	{ White.
	{ Red.
13 .....	{ Red.
	{ White.
13½ .....	{ Blue.
	{ Red.
14 .....	{ Red.
	{ Blue.

The pilot, on being informed by these signals, of the vessel's draught of water, will reply either by keeping his own flag up, or by lowering it. If he keep it up, the vessel off can enter; if he lower it, she must return to sea, or anchor outside.

The following Directions for sailing to the Rio Grande were written by Mr. William Grant, in 1802.

Finding yourself in lat.  $31^{\circ} 30'$  S. and having N. E.—E. N. E. or easterly winds, (any other winds may be dangerous, that is from the sea) you may stand with security for the land, steering W. S. W. until you find yourself on soundings; and, when you find yourself in 13 fathoms, you will see the land, if to the northward of the bar; but, if you have passed it, you will not, as the bank to the southward stretches out to a greater distance; and you cannot see the land unless when you are in 8 fathoms, and then barely.

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The land, about  $31^{\circ} 40'$  S. you will know by seeing several tufts of trees, pretty high and rounding to the northward; and, standing along shore, steering S. W. you will see sundry straggling tufts, but not so high. Here, if it be very clear weather, you may see houses, which will appear in the opening of the trees. You may then stand along shore with safety, keeping in from 10 to 9 or 8 fathoms. Losing sight of the trees and houses, you will see some mountains of sand and an entire sandy beach; and, when you are within two leagues of the bar, you will see tufts of trees, and find the soundings decrease, with a bottom of mud and red shells. You must now keep in 8 fathoms, but not less, as the water sets right on shore when close to the beach. The lead must now be kept going until you find soft mud, when you will find yourself close to the bar, which may be known by seeing several stakes along the beach: you must then haul up and steer south, to keep clear of the bank, and will see to the south two long poles on with a signal-mast, and some houses which appear on the point of the northern shore, between two high mountains of sand, which are on the south side of the river; these you must bring to bear N. W. by W. and the signal or the red flag-staff W. N. W.: with these bearings you may stand in for the bank, keeping in 3 fathoms, until you see the pilot-boat, which anchors inside the bar. You may easily know the bank by the seas breaking over it, particularly from the eastward. In crossing the bar you will sometimes find two fathoms; and, at times, no more than nine or ten feet; but that seldom happens, as the bar of late years increases, and there has been from fourteen to sixteen feet found on it. When you cross the bar, you will deepen your water gradually from 3, 4, 5, 6, to 7 fathoms, and no more until you get abreast the houses above noticed. You may then stand over to the fort at the south side, and anchor in 5 or 6 fathoms.

ST. PEDRO to the \*RIVER PLATA.—From the Bar of St. Pedro to Cape St. Maria or St. Mary, at the entrance of the River Plata, the distance is 60 leagues. The coast between is generally low and flat, having within it numerous lakes and ponds. In the parallel of  $34^{\circ} 20'$ , are the remarkable rocks called the *Castelhos Grandes*, 9 leagues to the north of which are the *Castelhos Chicos*. Mr. Luccock says, "The rocks called Great Castelhos consist chiefly of three large masses of naked granite, about a hundred feet high from the water, with perpendicular sides and roundish tops. They appear close to the shore, and, at a distance, are thought to resemble castles built on the beach; but, if there be such a resemblance, at any point of view, it vanishes on a nearer approach. They are backed by low woody hills; and the beach to the northward of them, as far as the *Castelhos Chicos*, is flat and sandy. There seems an expanse of water towards the west, which ought to be surveyed, as probably a harbour might be found, useful for small vessels, when the wind blows hard from the south-east. More than once I have known these rocks mistaken for Cape St. Mary; the cape, however, is very different, being a flat sandy point. The coast between them is low and naked, with inlets, some of which are said to afford good anchorage.

"Near to the Little Castelhos is the Fort of Santa Teresa, whence the road (inland) to Maldonado is very delightful."

From the *Castelhos Grandes* to Cape St. Mary, the distance is seven leagues. The cape, which is low, is described hereafter. From Cape St. Mary to the east point of Maldonado, the distance is  $13\frac{1}{2}$  leagues, and the true bearing S. W. by W.  $\frac{1}{2}$  W.

\* *Shoal off the Rio de la Plata.*—The *Laurel*, M'Donald, from London, to Valparaiso, put into the river of La Plata, on the 19th of June, 1822, having been obliged to bear up to repair some damage sustained by a heavy sea breaking on board of her. The master reported as follows:—That, on the 15th of June, he discovered a shoal in lat.  $36^{\circ} 28'$  S. long.  $51^{\circ} 30'$  W. that it appeared to be about a mile long, and the same in breadth, with a sea breaking very high over it, that it had the appearance of sand, and little water on it. He passed within half a mile, and then hove to, sounded with 90 fathoms of line, and found no bottom. He further states, that he had a good Chronometer on board, and was six miles out of his longitude, when he made the port of Montevideo.

The North side of Plata has been described by Mr. Luccock as follows :

" On the coast, off Maldonado, lie two islands; one of them, called Lobos, displays but little verdure; the other, Gorita, (Gorriti,) is lower, has a few buildings upon it, and under its lee is the harbour; the beach of which is exposed to a heavy surf, which renders landing sometimes dangerous, at others impossible. There are two entrances; that on the eastern (S. E.) side of the island is very narrow; forced, on one occasion, to go through it, we used some extraordinary precautions, and succeeded happily. On the west, the coast is bold and stony, the entrance broad and deep, and to small vessels perfectly safe; but, about mid-way, is a rock with twenty-four feet water upon it, on which the English ship of war, Bedford, once touched and laid a buoy. The anchoring-ground is near the centre of the bay, where lies the wreck of a British ship, the Agamemnon."

The town of Maldonado, which, from the sea, has no very attractive appearance, is two miles from the shore, standing on the brow of a hill gently descending two hundred and fifty feet above the level of water. The principal buildings form a quadrangle, and include a fine new church. The common habitations are built of brick, and covered with straw. The houses in the streets, issuing from the square, are chiefly low, and constructed of earth. The whole number is about 250; that of the inhabitants from 800 to 1000.

### Rio De La Plata, or River Plata.

"The following "Remarks concerning the Winds, Weather, Tides or Currents, Soundings, &c. in the River Plata, with a few instructions for navigating therein, by Captain Peter Heywood, of H. M. S. Nereus," were first published in the year 1818, with the following Preface.

" Captain P. Heywood of His Majesty's ship Nereus, having been for three years on the Brazil station, and the greater part of that time in the River Plata, had the opportunity to observe that the loss of many vessels in that river was occasioned by the masters wanting proper directions for its intricate and dangerous navigation. Captain Heywood, on his return to England, very obligingly transmitted to the Committee for managing the affairs at Lloyd's, his observations and instructions for the safe navigation of the Plata; which the Committee are happy to publish (with Captain Heywood's permission) for the benefit of all persons navigating that river.

Lloyd's, October, 1818.

" REMARKS, &c. &c.—At the entrance of the River Plata, the prevailing winds during the summer months, from September to March, are north-easterly, with tolerably clear weather over head, but a dense atmosphere near the horizon. These winds haul gradually to the eastward as you advance up the river; and about the full and change of the moon, strong breezes from the south-eastward are common at this season, accompanied with rain and foul weather. At Buenos Ayres, during the summer months, the S. E. winds are generally fresh in the daytime, hauling round to the northward in the night.

" During the winter months, from March to September, the prevailing winds, at the entrance of the Plata, are S. W. or more westerly; but, up the river, more generally from the northward, than the southward, of west.

" The winter season is the best, in point of weather, at Buenos Ayres; for, the winds being chiefly from the N. W. to S. W. the water is smooth, and the communication can be kept up between the shore and the shipping with more facility. The weather is sometimes, but not frequently, foggy. Fogs are most common in the months of July, August, and September, and prevail more at the entrance of the river, as far up as the S. E. tail of the Ortiz, than above the banks.

" As it cannot be said that there are regular tides in the Plata, but currents as uncertain in their duration as they are irregular in their rate and direction, no certain allowance can be made for them; therefore a ground-log should always be used, to know the course made good, and distance run.

" The tides, speaking generally, when the weather is fine and settled, and the

winds moderate; the water is found, in little, son to S. S. many occasions heard, however, up, across

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winds moderate, do not, in any part of this river, rise or fall more than five or six feet; though, at Buenos Ayres, at the distance of eight miles from the city, we found, in His Majesty's ship *Nereus*, when the winds were strong at N. W. so little, sometimes, as fifteen feet water; while, with strong breezes from E. S. E. to S. S. W. the depth was upwards of 5 fathoms: but, except on such extraordinary occasions, we had between seventeen and twenty-two feet water. I have heard, however, some marvellous stories of the river having been almost dried up, across from Buenos Ayres to Colonia, during heavy westerly gales.

"The River Plata has many singularities, which I think may, in a great measure, be accounted for, from its formation being so different from any other known river. Its entrance being very wide and very shallow, it is affected by every change of wind in a most extraordinary manner: so much so, that a shift of wind may be predicted almost to a certainty, by observing carefully the state of the mercury in a barometer and the set of the currents, which usually shift before the wind. In calm weather the currents are generally very slack; and then as regular, almost, as tides; setting up and down the river alternately. When the winds are variable, the currents are equally so; and I have known the *Nereus* to be current rode four different ways in less than six hours. When the current comes in from the eastward, along the north bank of the Plata, a north-easterly wind may, generally, be expected to follow; and at the same time (should the wind have been previously to the S. E.) the mercury in the barometer will fall a little: but much more if the transition be quick from south-west, without stopping in the south-eastern quarter.

"When the wind continues in the north-east quarter, the mercury is more depressed (according to its strength) than with any other wind, and there is usually, then, a set into the river on the north bank, and out on the opposite. Indeed, whilst the winds are between N. E. and S. S. E. the current generally runs to the westward, past Monte Video, though without much augmenting the depth of water off that place, but filling the river above the banks.

"The winds between N. N. E. and W. N. W. make the water lowest: the out-set being then strongest along the south bank of the river, past the Points del Indio and Memoria; but very inconsiderable along the north bank.

"Before the setting in of a S. W. gale, or Pampero, the weather is usually very unsettled, and the winds unsteady and variable in the northern and north-western boards; preceded by a considerable fall in the mercury, though it usually rises a little again before the wind shifts to the south-west; and often continues to rise, even though the wind may increase from that quarter.

"Before these winds set in at Buenos Ayres, the current runs up, and fills the river unusually high; at the same time as strong an out-set is experienced along the north bank, which continues whilst the winds are strongest from W. S. W. to south, seeming to prove that these winds force up, from the southward, a large accumulated body of water past Cape St. Antonio, which can only find a passage out again by the north shore, where they increase the depth of water, as well as up the river, and particularly in the shallow harbour of \*Monte Video. Whilst these S. W. winds blow, the air is cold, and the atmosphere clear and elastic, in a degree rarely to be met with in any other part of the world. They are generally succeeded by some days of fine serene weather; the wind continuing moderate from the southward, or varying to the eastward.

"I have never known the velocity of the tide or current, in the River Plata, any where to exceed three knots per hour; but I have heard it said, by some, that they have found it run at the rate of six or seven miles an hour!

As the winds outside the River Plata, and particularly about Cape St. Mary, are most frequently from the north-eastward and northward, except when the S. E. summer and S. W. winter gales blow, about the times of new and full moon, I consider it, on the whole, most advisable, for ships bound into the river, to get in with the land about the latitude of that cape.

"In latitude 33° S. the bank of soundings extends off the land full thirty-six

\* There is a light-house at Monte Video, the lantern of which is four hundred and fifty feet above the level of the sea. [See page 511.]

leagues; where the depth of water, in longitude  $50^{\circ} 20' W.$  is 94 fathoms; and the quality of the bottom dark olive-coloured mud, or ooze, as it is all along the outermost verge of the bank.

"In latitude  $34^{\circ} S.$  and thirty leagues from the land, the bank is steep, and the soundings decrease quickly; in standing to the westward, to 25 fathoms, twenty leagues from land.

In latitude  $34^{\circ} 20' S.$  and longitude  $51^{\circ} 50' W.$  or about thirty leagues east of the Great Castellos Rock, the depth is 63 or 64 fathoms, dark mud. In standing in for the land, between the Great Castellos and Cape St. Mary, the water shoals, in a short distance, from 60 to 25 fathoms; and the quality of the bottom changes to sand, which grows coarser as you approach the coast; and, as far as seven leagues off shore, is intermixed with shells. This bottom is found only in, and to the northward of, the latitude of Cape St. Mary, except very close in with it.

"To the southward of  $34^{\circ} 40' S.$  the bottom is chiefly mud, intermixed with fine sand or gravel; and if a ship happen to be set to the southward of Cape St. Mary, as she hauls in for the land, yet keeps to the northward of Lobos, she will get out of fine sand into dark mud; which is the quality of the bottom (chiefly) between Cape St. Mary and Lobos; as well as eight or nine leagues to the eastward of that island; and the depth of water between them is generally 28 to 20 fathoms.

"In latitude  $35^{\circ} S.$  and longitude  $52^{\circ} W.$  or forty-two leagues true east of Lobos, there are about 90 fathoms water, dark sandy bottom; from whence the bank of soundings takes a S. W. direction. East of Lobos, twenty-seven leagues, the depth is 25 fathoms; and, in steering in, on its parallel, the same depth nearly continues till very near that island. But, if set a little to the southward of Lobos, the water will shoal even to 10 fathoms, perhaps, on a hard, sandy, or gravelly ridge, that extends all the way from the English Bank, in its parallel, as far as longitude  $52^{\circ} 30' W.$  or full eighteen leagues to the eastward of the meridian of Lobos.

"Thus the approach to this river cannot be considered dangerous, if proper care be taken in navigating, and due attention paid to the lead, and to the course steered.

"I shall here insert the Honourable Captain Bouverie's description of Cape St. Mary, &c. which I believe to be very correct, and his directions judicious.

"Cape St. Mary is a low point, with rocks all about it. The direction of the coast, to the westward of this Cape, becomes more westerly than at any other part northward of it. About six miles north of it is a house, with a row of trees northward of the house, (probably a fence of high prickly pear-bushes,) which is very remarkable.

"About a mile south of the house is a bluff point, with a few rocks at the foot, which is remarkable, being different from the rest of the coast, the general character of which is a sandy beach. One cannot fail knowing the Cape by these marks, running down the coast near it. If you are at any distance off, you will not perceive them. The water off Cape St. Mary is shoaler than to the northward. Off the Cape, in a S. E. direction, you have 84 fathoms at the distance of four or five miles."

"I am inclined to think Captain B. may have been somewhat deceived in his estimation here; for, in H. M. S. Nereus, I found more water at the distance he mentions. On the 17th of November, 1810, at noon, in latitude  $34^{\circ} 42' S.$  and longitude about  $2^{\circ} 20' E.$  of the Mount Viedo, had light winds from S. by W. and fine weather. At half-past one P. M. tacked in 25 fathoms, to stand in shore, and carried from that depth to 18 fathoms, when sights were taken for the chronometer, which made  $2^{\circ} 15' 21'' E.$  of Mount Viedo, Cape St. Mary bearing N.  $66^{\circ} W.$  and standing on, laying up west and W. by N. tacking in 124 fathoms water, the prickly pear-hedge, (mentioned by Captain Bouverie,) being on with Cape St. Mary, (which is formed by a low rocky islet nearly joining the shore,) bearing north by compass, and the breakers stretching to the S. E. of the Cape N.  $7^{\circ} E.$  about three miles was our distance from the Cape.

Captain Bouverie, in continuation says, "To the northward of the Cape, be-

tween it shore.

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"In latitude fathoms way to the Spanish for It has three the beach. tion of the

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to Monte V threaten, an harbour of which bears never been i about it.

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tween it and Palma, you have 10 or 11 fathoms at a little distance from the shore.

"Ships, in general, make the land with north or N. E. winds; therefore it is best to keep in the latitude of the Cape, or a little to the northward of it, till you get soundings, as the current sets to the S. W. It is better not to make the land north of the Cape; not that I believe there is any absolute danger; but the water in many places is shoal a long way off the land, and would alarm any one not acquainted with that circumstance.

"In latitude  $33^{\circ} 27'$  S. and longitude  $52^{\circ} 9'$  W. is a shoal, where we found 9 fathoms water. I believe it is a ridge running in that parallel of latitude all the way to the shore. In latitude  $34^{\circ}$  S. is some tolerably high land, on which is a Spanish fortress, called Fort Teresa. It is a square, with bastions at the angles. It has three guns in the face and one in the flank, and stands about a mile from the beach. About six leagues N. N. E. from it is a mark set up, as the termination of the Spanish territories.

"Being in latitude of Cape St. Mary, and having got ground in 28 or 30 fathoms water, fine sand and shells, you may reckon yourself twenty leagues off shore: with from 15 to 20 fathoms, sand and clay mixed, you are not far off the land. When you have not seen the land before night, be sure to keep to the northward of the Cape by your reckoning, to allow for the current, which sets to the southward. This the case with the above-mentioned north and N. E. winds. With south and S. W. winds the current runs strong the other way.

"I am inclined to think that the strong north-easterly currents, which are to be met with off the mouth of the Plata, when the wind is about to blow, or blowing, from the south-westward, do not extend much, if at all, beyond the bank of soundings.

"Agreeing in opinion with Captain Bouverie, that generally speaking, it is advisable to make the land about Cape S. Mary, I would also recommend, if the wind should be any where between S. E. and N. N. E. to enter the river on the north side of the English Bank, passing Lobos, on either side, according to the wind and state of the weather. There is a good passage between Lobos and the main, having 17 to 14 fathoms water. Variation  $13^{\circ}$  Easterly (1813.)

"When within three or four leagues of Cape St. Mary, in 17 or 18 fathoms, S. S. W. by compass is a fair course to steer for passing outside of Lobos in the night-time; for, with the wind from the eastward, or N. E. the set along shore into the river must be guarded against. Steering this S. S. W. course, the depth of water will increase to 20 and 22; and some casts, perhaps, of 25 or 27 fathoms, (if you are set neither to the westward nor to the southward of it,) and the bottom will change, first to sandy mud, and then to dark-blue mud, as you approach the latitude of Lobos. If you are set to the southward, in steering S. S. W. you will not deepen so much; the bottom will keep sandy; and when you approach the latitude of Lobos, you will have no more than 19, 18, and 17, fathoms; but if you are set to the southward of Lobos a few miles, you will have hard casts of from 16 to 10 fathoms, and may rest assured of being on the parallel of the English Bank, and may therefore make a west-northerly course true, till you find the bottom soften; as it is all dark-blue or greenish mud, in the channel, between the foul ridge of the English Bank and the north shore, all the way up to Monte Video, in the fair way from Lobos. When off Lobos, if the weather threaten, and it should be likely to blow, a ship will find safe anchorage in the harbour of Maldonado, sheltered from southerly winds by the Island of Goritti, which bears N.  $42^{\circ}$  W. true, eleven or twelve miles from Lobos. As I have never been in Maldonado myself, I shall insert here what Captain Bouverie says about it.

"The Spanish surveys of this bay lay down a sufficient depth of water for any ship between any part of the island and the main; however, it cannot be safely entered, but by small vessels, except to the westward; and you must not go farther in than to bring the N. W. point of Goritti to bear S. S. W.  $\frac{1}{2}$  W. or S. W. by S. by compass, with 4 or 5 fathoms, good strong clay. With southerly winds there is, in the east passage, a heavy swell; and the water, from the ground being uneven, breaks almost the whole way across in bad weather. The Diomedé (fifty-gun ship) passed through it to the anchorage before its dangers were known,

Cape, be-



and had not less than eighteen feet : but there are places where there is so little as  $1\frac{1}{2}$  fathom ; and it is very irregular. There is a bed of rocks to the south of Goritti : the marks for it are, the Tower of Maldonado north, and the outer part of Point del Este, E. N. E.  $\frac{1}{4}$  E.

"In the direct line of the entrance of the bay, from the westward, is a bed of rocks where there are parts having only 3 and quarter-less 3 fathoms. The bearings, taken from the rocks, are, N. E. point of Goritti E.  $\frac{1}{4}$  S.—N. W. point of ditto, E. by S. S. W. point of ditto, S. E. by S.—Point Ballena, W. by N.  $\frac{1}{4}$  N.—the hill of Pan de Azucar, just within the extreme of Point Ballena.

"In mid-channel, between these rocks and the island, are 6 $\frac{1}{2}$  and 7 fathoms : their distance from the island is about three-quarters of a mile. There are 7 fathoms close to them, all round the western side. The watering-place is on the main, close by a battery : the stream loses itself in the sand, except when swollen by heavy rains, and you have to roll your casks about sixty yards over the sand : the water is very good."

"Having Lobos bearing N. by W. by compass, distance three or four miles, you will have about 18 fathoms ; and, in making a compass course, W.  $\frac{1}{4}$  S. by ground log, (having due regard to the wind and current at the time) you will make the island of Flores ahead of you. In this track your soundings will gradually decrease from 18 to 12 fathoms, due south of Black Point, and to 7 or 8 fathoms when you approach within nine or ten miles of Flores.

"Though Captain Bouverie says, "You may run quite up to Monte Video, either by night or day, by making a due west course, first trying the current to make allowance for it;" and though I have frequently done it myself, yet I would not recommend it as a general rule to be followed by strangers to the River Plata. Great care and attention to the course made good, and to the soundings, are indispensably requisite in those who attempt to conduct vessels during the night, in any part of this river ; and even these have been but too often insufficient to save ships from destruction. But, in merchant-vessels, I fear we cannot always expect to find those qualities ; and, therefore, I withhold my opinion of its being adviseable for them to run in the night ; neither can it be done by men of war without some risk.

"Flores bears, by the world, W.  $40^{\circ} 30'$  N. from Lobos, distant fifty-two miles. It lies nearly N. E. and S. W. has a small hummock in the middle, and one at each end : that to the S. W. being thirty-nine feet high. Between these the land is low and marshy ; and overflowed sometimes between the central and N. E. hummock. It may be seen at the distance of five or six leagues from a ship's deck in clear weather.

"There is good anchorage all round this island, but a reef extends in a N. W. direction from the north point about a mile. Seals and sea-lions, and various aquatic birds resort to this small island as well as to Lobos ; and, in the months of August and September, great quantities of very excellent eggs may be procured. With the wind easterly, boats may land on the western side of Flores, particularly in a small cove, very near the S. W. part of the island. From Flores, W. N. W. the Caretas rocks (above water) are distant about five miles ; and there are 5 fathoms between them. True south, at the distance of eleven miles from Flores, is the north part of the English Bank ; on which, in that latitude,  $35^{\circ} 8'$  S. there is about 12 feet water. The depth of water, between Flores and the English Bank, is 7 fathoms, all the way across, to within a very little distance of both. The English Bank, in latitude  $35^{\circ} 12'$ , generally breaks ; and, with a low river, is above water in some places. Its extent, to the southward, has not yet been accurately defined ; and, for seventy or eighty miles to the south-eastward of it, the ground is said to be foul and uneven, and has not been explored.

"Between the Archimedes and the English Bank there is a swatch of 5 fathoms water, (according to Captain Beaufort, of the Royal Navy, who explored these banks in 1807) and as many miles wide.

"The shoalest part of the Archimedes Bank, about  $2\frac{1}{2}$  fathoms, is four miles in extent, about north and south : and there are four fathoms all round it. The centre of it is in latitude  $35^{\circ} 12'$  S. and the Monte Video bears N.  $22^{\circ}$  W. by

the world knoll, in 1 miles, and round it.

"Passing you have bears true point is the Monte Video, and a half the Mount town, with

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\* A lantern, of the Portuguese house was to be notice was issued stood upon the evening." The

the world from it, distance twenty miles. Besides this bank, there is a small knoll, in lat.  $35^{\circ} 14'$  S. which is true south from the Monte Video, twenty-one miles, and has not more than  $3\frac{1}{2}$  fathoms of water on it, and about 4 fathoms all round it.

"Passing to the southward of Flores, at the distance of a couple of miles, you have  $6\frac{1}{2}$  or 7 fathoms, and may steer W.  $\frac{1}{4}$  S. to pass Point Braba, which bears true W.  $4^{\circ}$  N. distant four leagues from the S. W. end of Flores. This point is bolder to than the land to the westward, between it and the town of Monte Video, and may be passed close, in  $4\frac{1}{2}$  or 5 fathoms, at a mile or a mile and a half distance. The best anchorage for a frigate, off the town of Monte Video, is with Point Braba bearing W. by N.  $\frac{1}{4}$  N. the cathedral N. E. by N. and the Mount about N. W. by N. in  $3\frac{1}{2}$  or 4 fathoms, two miles or more from the town, with the harbour quite open. The bottom is all soft mud.

"The harbour of Monte Video is very shoal, having only from 14 to 19 feet water; but the bottom is so very soft, that vessels receive no damage by grounding there. Captain Bouverie says, "A S. S. W. wind, which blows right into the harbour, and causes a good deal of sea, always occasions the water to rise a fathom or more.

"In a long continuance of fine weather, the tides sometimes assume the appearance of regularity; but this is not often the case. They are governed entirely by the winds. The winds from the southward cause the water to run out on the north shore strongest. Fine weather and a N. W. wind make the water lowest. It is usual, in Monte Video harbour, to have an anchor to the S. E. and another to the S. W. and to take one in abast from the northward; for the water, forced in by the southerly wind, sometimes rushes out with astonishing rapidity; when the anchorage to the north is of the greatest service.

"The Mount Video is in latitude  $34^{\circ} 53'$  S. longitude  $56^{\circ} 3'$  W. of Greenwich; being  $1^{\circ} 24'$  W. of the island of Lobos, and  $2^{\circ} 10'$  E. from the cathedral of Buenos Ayres. On the summit of this mount is a fortified building, whose base is forty-two feet six inches by twenty feet, used sometimes for a light-house.\* The diameter of the lantern is ten feet six inches, and its elevation above the level of the sea four hundred and fifty feet. At the base of the mount are several runs of excellent water, particularly in two small, smooth, sandy bays on the S. W. part of it, where ships in the outer road may supply themselves with ease; and another on the east side of the mount, just abreast of Rat Island, adapted to ships in the harbour.

"Giving the preference to the passage on the north side of the English Bank, especially when the wind is any where between S. S. E. and N. N. E. on passing Lobos, because it may be expected most probably to shift, if it does at all, round by the north to the westward; though, perhaps, not before that wind, and the inset, together, might carry a ship up to Monte Video; yet if the wind should be to the north-westward at the time of making the land, it may be pretty confidently expected to shift next to the westward or S. W. and therefore a ship should not strive to beat up, round Lobos and the north channel, against an outset, but stand at once over towards Cape St. Antonio; where, by the time she could stretch across, she would, most likely, find a S. S. W. wind and N. W. current to run up with, along a weather shore, to Buenos Ayres; or to Monte Video, if bound thither, passing to the westward of the bank of Archimedes, in about 5 fathoms water; or, if the mount should be seen in good time, never to bring it to bear to the westward of North, till within five leagues of it.

"In standing to the southward, from abreast of Cape St. Mary, with the wind south-westerly, a ship will have from 18 to 24 or 25 fathoms when in the latitude of Lobos, and about twelve or thirteen leagues to the eastward of it; and,

\* A lantern, with lamps and reflectors, for Monte Video, was prepared in London, by order of the Portuguese government, and shipped in May, 1819. It was then stated that the light-house was to be erected on the Isle Flores; but, on the 26th of October following, an official notice was issued from the British Admiralty, stating that "the light-house, which formerly stood upon the mountain, Monte Video, had been re-established, and is to be lighted every evening." The light has, therefore, been materially improved.

making a S. S. E. course, the water will then shoal to 18, 16, 12, or 11 fathoms, in crossing the ridge, which is generally composed of sand, gray speckled, mixed with stones, hereabouts; after which the depth increases gradually to 35 or 36 fathoms, over a sandy bottom, in latitude  $35^{\circ} 40'$  S. and longitude  $58^{\circ} 25'$  W. In the latitude of  $36^{\circ}$  S. and fifteen or twenty miles farther to the eastward, you will deepen off the bank entirely. A ship, having got as far to the southward as  $36^{\circ}$  S. may consider herself in the fair way for proceeding up on the south side of the English Bank; and, if the wind serve, a true west course may be made good.

"In latitude  $36^{\circ}$  S. the depth of water on the meridian of Cape St. Mary is 38 fathoms; and the bottom fine gray sand, like ground pepper.

"Keeping still to the westward, on that parallel of  $36^{\circ}$  S. the depth decreases to 19 or 18 fathoms, true south of Lobos; and for ten leagues farther you have from that to 15 fathoms. But if from the latitude of  $36^{\circ}$  S. on the meridian of Lobos, you make a W. by N. or W. by N.  $\frac{1}{4}$  N. course true, you will shoal the water to 8 or  $7\frac{1}{2}$  fathoms, in latitude  $35^{\circ} 45'$  S. on the meridian of the English Bank. The quality of the bottom, generally, in this track, is sandy, mixed with small stones; and the nearer you approach to the ridge of the English Bank, it is intermixed with bits of shells, and sometimes with clay or mud.

"From latitude  $35^{\circ} 45'$  South due S. of the English Bank, a W. N. W. true course to latitude  $35^{\circ} 33'$  S. will bring the Mount Video to bear North by the world, in about  $6\frac{1}{2}$  fathoms, mud, at the distance of thirteen leagues from Point Piedras; and from this position the same true course may be made to raise the land about Point del Indio, if bound up to Buenos Ayres; or N. W. or more northerly, to get sight of the Mount Video; having due regard to the set of the current, up or down the river, that you may neither be horsed on the S. E. tail of the Ortiz Flats, nor on the western part of the Archimedes' Bank. The bottom above this is soft mud, or clay, in the channels, fit for safe anchorage. In latitude  $35^{\circ} 30'$  S. or thereabouts, and due South of the Archimedes' Bank, or some miles further to the eastward, I have been told by some persons they have had as little as 4 fathoms, hard ground.

"Ships leaving Monte Video, to proceed up to Buenos Ayres, must be very attentive to the lead; and the course steered across the river must be very carefully regulated by the set of current at the time. If the weather be sufficiently clear, the Mount is the most sure guide, keeping it by an azimuth compass, on the magnetic bearing N. E. by N.; and when it sinks to an eye in the top, a more westerly course may be steered to raise the land about Point del Indio. This direction is intended to apply particularly to frigates, or any ships drawing more than sixteen feet water; because it is not advisable for them to cross the tail of the Ortiz Flats much farther to the westward than a true S. W. course from the mount will be take them; for, with a low river, I have had barely  $3\frac{1}{2}$  fathoms, in the Nereus, with the mount bearing N.  $35^{\circ}$  E. by compass, distant ten leagues. At other times, I have sunk the mount on a N.  $55^{\circ}$  E. magnetic bearing, and had as much as  $3\frac{1}{2}$  fathoms water; but the river was then well filled.

"The Ortiz Bank extends from lat.  $34^{\circ} 25'$  S. to lat.  $35^{\circ} 15'$  S. Ships passing between the Ortiz and the south shore, have only to keep the land in sight, to clear the bank. On the Chico bank (the smallest of the Ortiz and most southern) there is the wreck of a vessel, the mast of which serves as a Beacon, lying about twelve miles East from El Embudo, and eight or ten miles West from the S. E. buoy on the Ortiz, and may be passed on either side, as these are 3 fathoms very near it all around, and also four buoys. There is a good passage between the Ortiz Bank and Chico, with nothing less than 4 fathoms; the Ortiz side is the deepest, and correctly delineated on the new Chart published by E. & G. W. BLUNT, with sailing directions engraved on it 1826.

Soundings, on approaching the south side of the Ortiz Bank are regular, and shoalen gradually. When you get hard bottom, keep off a little, and deepen into  $3\frac{1}{2}$ , 4 or 5 fathoms, soft mud. The approach to the Chico is not safe on the Ortiz side, as you get from 5 into 2 fathoms directly, in some places, which makes it safest to keep on the Ortiz side of the middle passage. The middle passage is soft mud until very near the banks; the passage between the Chico and the

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shore is for the most part soft mud, but in many places it will change suddenly, and appears to be formed of hard and soft ridges alternately. You will carry 5½, 5½, and 4 fathoms in the channel, and the passage is from four to six miles broad. Tide rises in the river about five feet in settled weather.

"For the distance of full seventeen miles to the south-eastward of the Ortiz Beacon, there is generally no more, and often less, than 3½ fathoms; the bottom tough clay, nearest the bank; and in some places farther to the south-eastward, soft mud, not more than 3½ fathoms.

"After sinking the mount about N. E. by N. and having 3½ fathoms, a W. S. W. course will raise the land (if the weather is clear) about Point del Indio to the eye at the mast-head; and probably you will not have more than 3½, or, at best, 3½, fathoms. The mount and land near Point del Indio are sometimes visible at the same time.

"Point del Indio is in latitude about 35° 16' S. and 0° 56' W. of the Mount Video, from which it bears S. 65° W. by the world, distant fifty miles. There is little more than 3 fathoms at the distance of ten or eleven miles, when the river is in a mean state; farther to the southward, and off Point Piedras, there is only that depth fourteen or fifteen miles off shore. Very great caution, therefore, is required in approaching it; and a constant look-out should be kept for the land, as it is very low, and cannot be seen farther than twelve or thirteen miles, in any weather, from the deck of a frigate.

"When the land is barely raised to an eye nineteen or twenty feet above the surface of the water, a W. N. W. magnetic course will lead along-shore, between it and the south part of the Ortiz, which is distant about fourteen miles from it; and between them there is no where more water than 3½, but mostly 3½ fathoms. With a high river, I have had a quarter-less 4 fathoms. The nearer the Ortiz, the deeper the water.

"In steering up W. N. W. with the land seen from the deck, (if clear weather,) you will have 3½ or 3½ fathoms, (yet if the river is low, perhaps some casts of 3 fathoms,) and raise a remarkable clump of trees, called Embudo; which are much taller than the rest, highest at the west end, and lie in latitude 35° 8' S. and in longitude 1° 18' 30" West of the Mount Video, or 0° 57' 30" East of the cathedral of Buenos Ayres. At some distance to the westward of the Embudo trees, there is another clump about the same height; but these being highest at the east end, are sufficiently distinguished not to be mistaken for the true Embudo.

"When in 3½ or 3½ fathoms, the Embudo trees bear by compass W. S. W. the S. E. end of the Chico Bank will bear W. N. W. or thereabouts, ten or eleven miles from you; and you must now determine from the water that your ship draws, and the then direction of the wind and state of the weather, whether you will pass between the Chico and the shore, or between the Ortiz and the Chico. I have passed up and down several times between the Chico and the south shore in the Nereus, lightened in her draft to eighteen feet three inches; but I would never attempt it again from choice, now I am better acquainted with the middle channel between the Chico and the Ortiz, and have every reason to believe that the middle ground, some Charts lay down in it, does not exist.

"A ship not drawing more than fifteen feet may take either passage; and, of the two, ought perhaps to prefer that to the southward of the Chico Bank, particularly if the wind should be well to the southward, as she might take her soundings from the weather shore, and, keeping in somewhat more than her own draft, run up along it; and, by not deepening above 3 fathoms, would ensure being to the southward of the Chico.

"The S. E. end of the Chico Bank bears from the Embudo trees N. 52° E. true, distant ten miles, and E. 9° N. thirteen miles from Atalaya church. Its latitude there is 34° 56' 30" S. and longitude 1° 9' W. of the Mount Video. This bank runs in the direction of N. 52° W. true, or N. 65° W. by compass, about thirteen miles to its N. W. end, which is in latitude 34° 48' 50" S. and 0° 47' East of Buenos Ayres' cathedral. From this N. W. end, in fourteen feet water, Atalaya church bears S. 14° W. distant eleven miles; and Point Santiago, forming the Ensenada de Barragan, bears W. 4° N. fourteen miles from it.

The breadth of the Chico does not exceed two miles, or perhaps a mile and a half, and its inner edge is about nine miles from the shore. The water between it and the shore is no where more than  $3\frac{1}{2}$  fathoms, and the deepest water is along the inner edge of the shoal, at the distance of half a mile from it, or less in some places. About midway between it and the shore there is a quarter-less 3 fathoms. On some parts of the Chico there is very little water, and within the limits I have assigned to it, no where more than fourteen feet. There was, for some years, the mast of a vessel, called the Pandora, which was wrecked on this shoal, in latitude  $34^{\circ} 54'$  S. about five miles from its S. E. end, which proved an excellent beacon to guide ships passing it on either side; but it has disappeared. It is very necessary that three buoys should be placed on this dangerous shoal to mark its centre and each end.

"To ships drawing less than fifteen feet, it is only further necessary to recommend care and attention on approaching Point St. Iago, which forms bushy and distinct; and when it is brought to bear to the south-westward, haul out into the stream of  $3\frac{1}{2}$  fathoms, to round outside the Spit, which runs about N. W. by compass from Point St. Iago at least ten or eleven miles; its extreme point, in 2 fathoms, being five miles from the shore. When two remarkable trees on Point Lara are brought to bear S. by E.  $\frac{1}{2}$  E. or S. S. E. by compass, you are past the Spit. This mark will also lead a ship of that draught of water clear to the westward of the Spit, in running in towards the Ensenada.

"After passing the spit off Point St. Iago, in  $3\frac{1}{2}$  fathoms, a W. by N. northerly course by compass will lead up to the outer road of Buenos Ayres, where any ship may safely anchor in the water she draws, if the river is low.

"Frigates, or any vessels drawing more than sixteen feet water, should barely raise the land about Point del Indio to the eye on deck, and borrow nearest the Ortiz: more particularly when the Embudo trees are brought to bear as far as S. W. by W. (magnetic;) for, with the Embudo bearing from S. W. to S. S. W. the bottom is flat, off to 3 fathoms, full seven miles from the shore, and chiefly hard clay. Therefore, when the Embudo trees bear W. S. W. by compass, and you are about nine or ten miles off shore, in  $3\frac{1}{2}$  fathoms, if you have a leading wind, haul to the N. W. by W. or more northerly, as may be required to clear the S. E. tail of the Chico, on which a Red Buoy is placed, and you will soon deepen your water to 4 fathoms, and more, in the middle channel, between the Chico and the Ortiz Shoal. The fair course through, between them, is about N. W. by W.  $\frac{1}{2}$  W. (magnetic,) and in mid-channel the land can but just be distinguished from the quarter-deck of a frigate. When the Embudo trees bear S.  $20^{\circ}$  W. by compass, you will be abreast of the S. E. end of the Chico, and may either take your shoal soundings along its northern or outer edge, to about a quarter-less four, if the wind is southerly, or if the wind be northerly, or easterly, borrow into a convenient depth along the southern edge of the Ortiz. I believe the breadth of this middle channel may be five or six miles, and the depth of water from 4 to  $5\frac{1}{2}$ , and even 6 fathoms, in the fair-way, about the N. W. part of it, and abreast that end of the Chico. The quality of the ground all the way through this channel is generally soft mud, and fit for safe anchorage.

The N. W. pitch of the Chico Bank, on which is a Red Buoy as before mentioned, being passed, and the depth of water 5 or  $5\frac{1}{2}$  fathoms, you may steer by compass W. by N.  $\frac{1}{2}$  N. or W. by N. for Buenos Ayres, taking care not to shoal under quarter-less four, off \*Ensenada, till Point Lara trees bear S. S. E. A little more than half way from Point Lara to Buenos Ayres there are two other remarkable trees. When moored off Buenos Ayres, in the Nereus, in nineteen feet water, and the bottom soft mud, these trees bore by compass, S.  $17^{\circ}$  E. the cathedral S.  $67^{\circ}$  W. and the spire of the Recoleta Convent S.  $76^{\circ}$  W. var.  $12\frac{1}{2}$  E.

P. HEYWOOD.

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## CHAP. XVII.

*The RIVER PLATA to CAPE HORN, \*FALKLAND ISLANDS,  
SOUTH SHETLAND, &c.*

*The Coast of the Pampas, or Plains of Buenos Ayres, extends from the River Plata, to the Colorado or Red River, represented in latitude 39° 50' S. It is entirely flat and destitute of harbours. The interior is one vast plain, mostly covered with grass and clover, the food of millions of horned cattle. The mari-*

\* FALKLAND'S ISLANDS, the MALVINAS of the Spaniards.—These islands have borne different names, successively imparted by the older navigators. Recently they have been taken possession of, in a formal manner, as belonging to the United Provinces of South-America.

The islands and islets, in general, appear equally bleak and desolate, presenting barren shores and naked lime-stone mountains, with no other vegetation than heath and grass. In the low grounds a stratum of peat, two feet thick, covers a bed of stone or slate. The quadrupeds are wolves and foxes, which earth themselves alike. Seals and sea-birds are innumerable. The advantages of the islands are their excellent harbours, a climate commonly temperate and healthy, but subject to great vicissitudes. The running waters are abundant. Though the islands have no wood, there is no want of fuel, the peat affording it in abundance. Large quantities are sometimes found, which appear to come from the south and west.

Our information, with regard to the islands, is yet imperfect. The positions in the Table are, however, given as nearly as we could obtain them: we believe that they are very near the truth; especially in the western points.

Lieutenant Grant, commander of the *Lady Nelson*, in the relation of his voyage to New South-Wales, has given some useful remarks on these islands. He states that, on the 21st January, 1802, having before intended to touch at these islands, they came safely to anchor in Hope Bay, or Little West-Point Harbour, in the N. W.; and then proceeds as follows:

"Our intention had been first to touch at a cluster of islands to the westward, called New Islands by the Americans, who are the most constant visitors of Falkland's Islands. On New Islands are found plenty of goats and hogs. They lie about thirty miles S. S. W. by compass from West Bay, as a N. N. E. course carried us from them clear to the entrance of West-Point. They are distinguished by a particular saddle-island and a bluff, standing separately from each other. They are a little to the northward of Beaver Island, and may be easily found by the two remarkable islands just mentioned.

"As it is of the greatest consequence to mariners, when in want of water or refreshments, to obtain every possible information in order to secure a port amongst this foul-weather group of islands, which purpose may be defeated by the smallest oversight, I think that a few remarks made in the run may not be unacceptable.

"Having made New Islands, the westerly wind, which generally prevails, blowing very strong and in squalls, would not permit us to anchor; we were, therefore, under the necessity either of making the harbour of West-Point, or running in the night through a passage among the Jasons, well known to be full of rocks and shoals, many of them not laid down in any Chart. I have before observed, that, thirty miles N. N. E. by compass brought us to the entrance of West-Point Harbour. In this run there are, on the right hand, a few small flat islands, called Pass Islands: these ought to be kept on board near enough to see the surf breaking on them; and, soon after, a remarkable island, with a steep side, will present itself, having the appearance of a split in the middle, which has given it the name of Split Island. Here we observed the latitude at noon to be 51° 14' S. when it bore E. N. E. by compass,

time part, next the sea, has been called by the Spaniards, the *Pays del Diable*, or Devil's Country, (no very attractive appellation) yet the coast may be approached with safety, as the soundings are regular.

distance three miles. The Split must be brought to bear S. by W. in running in, and N. by E. in coming out: observing this, a vessel will find itself in the fair-way; and, right-a-head coming in, or right-a-stern going out, a sight will be had of West-Point entrance, making at first like three hummocks, to the right of which is the mouth of the harbour. The small harbour on the left is preferable to the larger one on the right, though anchorage may be found in both, but fresh water may more readily be had in the little harbour. Both these together form nearly an oval, divided by the passage which runs directly through, where the tides of flood and ebb alternately enter. A vessel must therefore haul close round the rocks on the south side, to get into the little harbour for the ebb-tide, with which she must go in, unless it blows very strong, so as to enable her to stem the flood; both tides running here with great rapidity, and, when it blows hard, raising a confused sea. There is a sandy beach at the top of the harbour, off which a vessel may choose her depth of water to anchor in. In going out of the harbour, the northern passage is most eligible; and a westerly wind, with a course N. by E. by compass, will carry a vessel out, provided she get under way at the first of the ebb.

"Five small perpendicular rocks, called the Needle Keys, appear when out, standing together, bearing N. E. by E. or thereabouts, from the harbour's mouth. It is best to leave them on the right; but, should there be little wind, and the tide strong, as was the case when we passed them, a vessel may go close to the right of them. The tide must be attended to, as it runs strongly betwixt them. The water close to them is very deep, as we were carried by the tide near enough to throw any thing upon them. The bottom is very foul, so that if an anchor is let go, it is a chance if it is ever recovered; and should the wind continue light, the tide of flood making, a vessel may anchor at Sedge Island, if she can get as far down, where ten fathoms water will be found, with a sandy bottom, within two or three miles of the shore. From Sedge Island, a N. by E. course will carry a vessel far out to sea.

"It is proper to observe here, that, if a vessel is obliged to leave the Needle Keys on her left hand, the nearer she keeps to them the better; and even to haul over on the larboard side after she is past, as she will have the more room to weather a ledge of rocks lying at a considerable distance out from Saunders' Point. This passage is much preferable to running through the Jasons.

"Falkland's Islands have been described by many voyagers, whose stay there gave them better opportunity of observation. I shall just observe that they lie very convenient for being touched at on long voyages, when there happens such a necessity for a supply of sea-stock as we experienced.

"The soil is light, producing a strong grass, known by the name of fussack, which, if set fire to, the turf will burn for a considerable time; and, notwithstanding heavy rains, it is not to be extinguished. I saw but little timber, and even brush-wood did not appear to be in plenty. Few birds are to be seen, but geese and penguins are in great numbers.

"We found the geese excellent eating, without the least taste of fish, as they live on grass and sea-weed. Celery was found growing plentifully. We used it freely, as its antiscorbutic virtues are well known.

"We found an American ship lying here, called the Washington, of Nantucket: her commander, Jedediah Fitz, informed me that the American sailors have discovered potatoes eaten raw to be a powerful antiscorbutic; and that their whaling-vessels constantly took a quantity with them to sea, to eat raw, as an antidote against the scurvy. He had planted a garden here, as was the custom with vessels visiting this place, and he brought some potatoes fresh dug from it, which he recommended me to taste, after setting me an example. I complied, and must say, that I have before taken a more unpalatable medicine. He made use of the young leaves of the common dock, boiling them as cabbage, to eat with his meat. He stripped the leaf from the rib or stem in the middle, which he said had a purgative quality. He made no use of the celery, as he thought the dock was preferable to it. I dined with him on board his ship, when a dish of the latter vegetable was served upon table, and, upon eating, I thought its taste not unpleasant."

It is to be observed that the Eastern or Little Island has never yet been regularly surveyed, and its true figure is yet unknown. Many dangers, not yet laid down in the charts, may, therefore, exist in the vicinity. Of this there has lately been a signal example, in the sudden loss of the French sloop *Uranie*, which was wrecked on the 13th of February, 1820, by striking on a sunken rock near the mouth of 'French Bay.' This vessel, commanded by M. Freycinet, was returning from her voyage around the world. She had been driven by a dreadful storm from Good Success Bay, in Tierra del Fuego. Happily her people and stores were saved, by an American, which happened to be near the spot. The account of this accident is so vague that we cannot gain from it the position of the rock, but it is clear that, by *French Bay* is meant the *Berkeley Sound* of our charts.

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On the coast of the Indian country, and Patagonia to the southward, there is not a single place of trade. The whole is occupied by various nomadic or wandering tribes, and the southern part is under a cold and cheerless climate. The latter was discovered in 1519, by Fernando Magalhaens, whom we called Magellan, and who passed through the strait which bears his name, and which divides Patagonia from Terra del Fuego.

Tierra or Terra del Fuego has been repeatedly described by different navigators. It is a dreary country, distinguished by craggy mountains and barren isles. The inhabitants are a race of wretched savages, who subsist on the flesh of seals and other gross substances: their dwellings are tents, rudely formed with poles, and covered with skins or the bark of trees. A chain of stupendous rocks, extending through a great part of the country, is continually covered with snow.

The Strait of Le Maire, between Tierra del Fuego and Staten Island, was so named from the navigator who discovered it, in 1816. It is said in the narrative of Anson's voyage, that it is difficult to determine exactly where the strait lies, though the appearance of Terra del Fuego be well known, without knowing also the appearance of Staten Land; and that some navigators have been deceived by three hills on Staten Land, which have been mistaken for the *Three Brothers*.

Mr. Wm. Marsh, of the brig Nancy, 1813, has favoured us with a rough sketch of the Maluinas, by which it appears that there is a group of isles at the S. W. end of Soledad, or the Little Maluina, which form a convenient harbour, the track to which is denoted by the Chart. Kelp Bay, to the eastward of this group, is full of weeds.

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

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

In January and February, the thermometer several times rose to 59°, but no higher. In August, it once fell to 20°, but was seldom lower than 32°.

Of the isles, in general, Captain M'Bride said, "We found a mass of islands and broken lands, beaten by storms almost perpetual. Yet this is summer; and, if the winds of winter hold their natural proportion, those who lie but two cables' length from the shore must pass weeks without having any communication with it."

BERKELEY SOUND is the PUERTO de la SOLEDAD of the Spaniards; and it would, perhaps, be more proper to give it that designation. It was at the N. W. part of this harbour that the French, under M. de Bougainville, had their settlement in 1764, as noticed above. A particular plan of it is given in the journal of the voyage, by which it appears to be more than a league wide at the entrance, extending east and west three leagues, to four islands which lie in the inner part of the harbour; three on the north, and one on the south side. The latter is the largest, and is called Penguin, or Burnt Island. The soundings to the space between these islands decrease from 20 to 7 fathoms; and within the isles from 7 to 3 fathoms. Here, therefore, a convenient shelter may occasionally be found, and a day's sport, if desirable, among geese, bustards, ducks, seals, &c.

L'AIGLE SHOAL.—This shoal was seen on the 1st of October, 1817. Mr. Poole places it in latitude 51° 51' S. and longitude 64° 50' W. It extends about north and south, breaking very high in an extent of 200 or 300 yards. The ship was then steering S. E. and about three quarters of a mile from it off and on. Steering south, about a mile and a half, had soundings in 87 fathoms.

on Terra del Fuego, and so overshoot the strait. But Captain Cook says, no ship can possibly miss the strait, that coasts Terra del Fuego within sight of land, for it will then of itself be sufficiently conspicuous; and Staten Land, which forms the eastern side, will be still more manifestly distinguished, for there is no land on Terra del Fuego like it. The Strait of Le Maire can be missed only by standing too far to the eastward, without keeping the land of Terra del Fuego in sight; if this be done, it may be missed, however accurately the appearance of the coast of Staten Land may have been exhibited; and if this be not done, it cannot be missed, though the appearance of that coast be not known. The entrance of the strait should not be attempted but with a fair wind and moderate weather, and upon the very beginning of the tide of flood, which happens here, at the full and change of the moon, about one o'clock. It is always best to keep as near to the Terra del Fuego shore as the winds will permit. By attending to these particulars a ship may get quite through the strait in one tide; or, at least, to the southward of Success Bay, into which it would be more prudent to put, if the wind should be southerly, than to attempt the weathering of Staten Land with a wind and lee-current, which may endanger her being driven on that island.

—Cook's First Voyage.

The Bay of Good Success, or Success Bay, is the place within which, in the year 1769, Mr. Banks and Dr. Solander found the cold so intense, that the latter had nearly fallen a sacrifice to its severity, though in the midst of summer. Dr. Solander, who had more than once crossed the mountains which divide Sweden from Norway, well knew that extreme cold, especially when joined with fatigue, produces a torpor and sleepiness which are almost irresistible; he therefore advised the company to keep moving, whatever pain it might cost them, and whatever relief they might be promised by an inclination to rest—"Whoever sits down," says he, "will sleep; and whoever sleeps, will wake no more." The doctor, who gave this advice, was the first who yielded to the sensation which he had described, but by exertion he was saved: two other persons perished.

**SOUTHERN GEORGIA.**—This land was explored by Captain Cook, in January, 1775, who gives the following description:—

"At 9 A. M. (Jan. 14) we saw an island of ice, as we then thought, but at noon were doubtful whether it was ice or land. At this time it bore E.  $\frac{1}{4}$  S. distant thirteen leagues. Our latitude was  $53^{\circ} 56'$ , longitude  $39^{\circ} 24'$  W. Several penguins, small divers, a snow-petrel, and a vast number of blue-petrels about the ship. We had but little wind all the morning, and at 2 P. M. it fell calm. It was now no longer doubted that it was land, and not ice, which we had in sight. It was, however, in a manner wholly covered with snow. We were further confirmed in our judgment of its being land by finding soundings at 175 fathoms, a muddy bottom.

"At four in the morning of the 16th, we wore and stood to the east, with the wind at S. S. E. a moderate breeze, and fair; at eight o'clock saw the land extending from E. by N. to N. E. by N. At noon observed in latitude  $54^{\circ} 25'$ , longitude  $38^{\circ} 18'$ . In this situation we had 110 fathoms of water, and the land extending N.  $\frac{1}{4}$  W. to east, eight leagues distant. The northern extreme was the same that we first discovered, and it proved to be an island, which obtained the name of Willis' Island, after the person who first saw it.

"At this time we had a great swell from the south, an indication that no land was near us in that direction; nevertheless, the vast quantity of snow on that in sight induced us to think it was extensive, and I chose, to begin with exploring the northern coast. With this view we bore up for Willis' Island, all sails set, having a fine gale at S. S. W. As we advanced to the north, we perceived another isle lying east of Willis', and between it and the main. Seeing there was a clear passage between the two isles, we steered for it; and at 5 o'clock, being in the middle of it, we found it about two miles broad.

"Willis' Isle is a high rock, of no great extent, near to which are some rocky islets. It is situated in the latitude of  $54^{\circ}$  S. longitude  $38^{\circ} 23'$  W. The other isle, which obtained the name of Bird Isle, on account of the vast number that were upon it, is not so high, but of greater extent, and is close to the N. E. point of the main land, which I called Cape North.

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"The S. E. coast of this land, as far as we saw it, lies in the direction of S. 50° E. and N. 50° W. It seemed to form several bays or inlets; and we observed large masses of snow or ice in the bottoms of them, especially in one which lies two miles to the S. S. E. of Bird Isle.

"After getting through the passage, we found the north coast tended E. by N. for about nine miles, and then east and east-southerly to Cape Buller, which is eleven miles more. We ranged the coast at one league distance, till near ten o'clock, when we brought-to for the night, and on sounding found 50 fathoms, a muddy bottom."

Captain Cook proceeded to examine the eastern coast, and took formal possession of the land. The tide seemed to rise about 4 or 5 feet. High water at about 11h. full and change. The head of Possession Bay, as well as two places on each side, was terminated by perpendicular ice-cliffs of considerable height. Pieces were continually breaking off, with a loud explosion, and floating out to sea.

"The inner parts of the country were not less savage and horrible. The wild rocks raised their lofty summits till they were lost in the clouds, and the valleys lay covered with everlasting snow. Not a tree was to be seen, nor a shrub even big enough to make a tooth-pick. The only vegetation we met with was a coarse strong-bladed grass, growing in tufts, wild burnet, and a plant like moss, which sprang from the rocks." Seals were numerous. Several flocks of large penguins were seen. The oceanic birds were albatrosses, common gulls, terns, shags, divers, &c. The land-birds were a few small larks. No quadruped was seen. Variation 11½° E.

Cooper's Isle, at the S. E. end of Georgia, is a rock of considerable height, about five miles in circuit, and one mile from the main. At this isle the main coast takes a S. W. direction, for the space of four or five leagues, to the point named Cape Disappointment. Off that are three small isles, the southernmost of which is green, low, and flat, and lies one league from the Cape.

"Who would have thought, (asks Captain Cook,) that an island of no greater extent than this, situated between the latitude of 54° and 55°, should, in the very height of summer, be, in a manner, wholly covered, many fathoms deep, with frozen snow, but more especially the S. W. coast? The very sides and craggy summits of the lofty mountains were eased with snow and ice; but the quantity which lay in the valleys is incredible; and, at the bottom of the bays, the coast was terminated by a wall of ice of considerable height."

"The island seems to abound with bays and harbours, the N. E. coast especially, but the vast quantity of ice must render them inaccessible in the greatest part of the year; or, at least, it must be dangerous lying in them, on account of the breaking up of the ice-cliffs. It is remarkable that we did not see a river, or stream of fresh water, on the whole coast. I think it highly probable that there are no perennial springs in the country; and that the interior parts, as being much elevated, never enjoy heat enough to melt the snow in such quantities as to produce a river or stream of water. The coast alone receives warmth sufficient to melt the snow, and this only on the N. E. side; for the other, besides being exposed to the cold south winds, is, in a degree, deprived of the sun's rays by the uncommon height of the mountains."

CLERKE'S ROCKS are three or four rocky islets, which were subsequently seen at the distance of two or three miles. Vast numbers of birds, especially shags, were about them.

**SANDWICH LAND.**—Mr. Pinkerton says, "These lands may be styled the SOUTHERN THRONE OF WINTER, being a mass of black rocks, covered with ice and snow." They were discovered by Captain Cook, in 1775, on proceeding to the eastward from South-Georgia. From the latitude of 59° 30' S., longitude 29° 24' W. the ship stood to the N. E. with a fresh breeze at N. N. W. and passed one of the largest ice-islands seen in the voyage, with several smaller. The weather was foggy with sleet; and, with the wind N. by W. she stood to N. E. over a sea strewn with ice.

"At half an hour past six next morning, as we were standing N. N. E. with the wind at west, the fog very fortunately clearing away a little, we discovered land a-head, three or four miles distant. On this we hauled the wind to the



north; but finding that we could not weather the land on this tack, we soon after tacked in 175 fathoms water, three miles from the shore, and about half a league from some breakers. The weather then cleared up a little more, and gave us a tolerable good sight of the land. That which we had fallen in with proved to be three rocky islets of considerable height. The outermost terminated in a lofty peak like a sugar-loaf, and obtained the name of Freezeland Peak, after the man who first discovered it. Behind this peak, that is, to the east of it, appeared an elevated coast, whose lofty snow-clad summits were seen above the clouds. It extended from N. by E. to E. S. E. and I called it Cape Bristol, in honour of the noble family of Hervey. At the same time another elevated coast appeared in sight, bearing S. W. by S. and at noon it extended from S. E. to S. S. W., from four to eight leagues distant; at this time the observed latitude was  $59^{\circ} 13' 4''$  S. longitude  $27^{\circ} 45'$  W. I called this land *Southern Thule*, because it is the most southern land that has yet been discovered. It shows a surface of vast height, and is every where covered with snow. Some thought they saw land in the space between Thule and Cape Bristol. It is more than probable that these two lands are connected, and that this space is a deep bay, which I called Foster's Bay.

"At one o'clock, finding that we could not weather Thule, we tacked and stood to the north; and, at four, Freezeland Peak bore east, distant three or four leagues. Soon after, it fell little wind, and we were left to the mercy of a great westerly swell, which set right upon the shore. We sounded, but a line of 200 fathoms found no bottom. At eight o'clock, the weather, which had been very hazy, clearing up, we saw Cape Bristol bearing E. S. E. and terminating in a point to the north, beyond which we could see no land. This discovery relieved us from the fear of being carried by the swell on the most horrible coast in the world, and we continued to stand to the north."

In this manner the other points were discovered; but the cliffs alone was all which was to be seen like land.

On the 2d of February, the Candlemas Isles were seen. They appeared to be of no great extent, but of considerable height, and covered with snow. A small rock was seen between them, and perhaps there may be more; for the weather was so hazy that the sight of them was soon lost. At noon on the 3d, the ship was in latitude  $58^{\circ} 44'$  S. longitude  $25^{\circ} 33'$  W. and was attempting to stand to the south, but a shift of wind made it necessary to tack, and proceed to the eastward. On this course several ice-islands and some loose ice were met with.

In closing his remarks on these lands, Captain Cook adds, "I concluded that what we had seen, which I named Sandwich Land, was either a group of islands, or else a point of the continent. For I firmly believe that there is a track of land near the pole, which is the source of most of the ice that is spread over this vast Southern Ocean. I also think it probable, that it extends farthest to the north opposite the Southern Atlantic and Indian Oceans; because ice was always found by us farther to the north in these oceans than any where else, which I judge could not be if there were not land to the south; I mean a land of considerable extent."

\* **SOUTH SHETLAND.**—About twelve months after the discovery of South Shetland, the British naval commander-in-chief, on the South American station,

\* **SOUTH-SHETLAND.**—Captain Cook's concluding remark, in his note respecting Sandwich Land, given in the preceding note, has been verified, in some measure, by the discovery of the archipelago now called **SOUTH-SHETLAND.** For the first notices of this discovery, the world is indebted to Mr. William Smith, commander of the brig *Williams*, of Blythe, by whom the land was first seen in the month of February, 1819. The *Williams* was, at that time, on a voyage from Buenos Ayres to Valparaiso, and stretching far to the south. On the 19th, land or ice was seen in latitude  $62^{\circ} 40'$ , and near the longitude  $60^{\circ}$  W. then bearing S. E. by S. about two leagues. Hard gales, with flying showers of snow, and fields of ice, a combination of adverse circumstances, prevented, at this time, an exploration of the coast; and, on the brig's return to the River Plata, in the month of May, similar circumstances prevented any further discovery: but, on a subsequent voyage from Monte-Video to Valparaiso, in October of the same year, the *Williams* again made the land. Captain Smith, in his journal, says, "I, to my great satisfaction, discovered land on the 15th of October, at six P. M.

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directed a farther exploration; and for this purpose a hired brig, the *Slaney*, was sent, under the command of Mr. Edward Barnsfield. "We sailed," says the reporter, "from Valparaiso on the 20th of December, 1819, but did not arrive on cruising ground till the 16th of January, 1820, having been almost constantly

in latitude  $62^{\circ} 30'$ , and longitude  $60^{\circ}$  W. by chronometer, bearing distance about three leagues; hazy weather; bore up and sailed towards it; at four miles distant sounded in 40 fathoms, fine black sand; an island bearing E. by S. At S. E. by E. bearing, sounded in 60 fathoms, same bottom; hauled off during the night to the northward; at day-light stood in for the land again, at three leagues distance. From the body of the islands sounded again, 95 fathoms, fine sand and oaze; at eight, weather clear and pleasant, saw the main land bearing S. S. E. distance from the islands about three leagues. Having ran as far as the Cape, we found the land tend off to the N. E. Coasting to the eastward, and sounding, found it similar to the former, fine sand. The point called North Foreland bearing E.  $\frac{1}{2}$  S. hauled in for it, got the island to bear N. W. distance half a league. Soundings regular from 20 to 35 fathoms, good bottom, sand and gravel. Finding the weather favourable, we down boat, and succeeded in landing; found it barren, and covered with snow. Seals in abundance.

"The boat having returned, which, when secured, made sail off shore for the ensuing night; in the morning altered the course so as to keep the land to the southward in view; at eleven A. M. the North Foreland bore S. E. by E. five leagues. The land then took a south-easterly direction, varying to the eastward; weather thick and squally, with snow. I thought proper, having property on board, and perhaps deviating from the assurance, to haul off to the westward on my intended voyage. Strong variable winds. Made Cape Williams; could perceive some high land to the westward of the Cape, and stretching in a S. W. direction. The weather becoming thick and squally, we made sail to the westward, having sailed 150 miles to W. S. W. The weather moderating, saw another head-land bearing by observation E. N. E. distance ten leagues; very high. Observed in latitude  $62^{\circ} 53'$  S. and longitude, by chronometer,  $63^{\circ} 40'$  W. of Greenwich; named this Smith's Cape. Found the land to extend from the Cape in a southerly direction. Shaped my course for Valparaiso, where I arrived on the 24th November, after a passage of sixty days from Monte Video."

The extent of land since explored is shown by the chart; and additional information has been communicated by Captain Walker, of the ship *John*, of London. This vessel, in 1821, arrived from South-Shetland, in 95 days, with 12,000 seal-skins, and has since returned for another cargo. The *John* was blown off in a gale of wind, and lost two anchors and a cable: the bottom being very rocky, other vessel, have met with similar misfortune.

The islands at present known extend from  $61^{\circ}$  to  $63\frac{1}{2}^{\circ}$  of south latitude, and land has been seen to the southward as far as the eye can reach. Captain Cook's description of the Isle Georgia well applies to South-Shetland. The country already explored consists of numerous islands, without a vestige of vegetation. A species of moss only is found upon the rocks near the shore; eternal snows covering the more remote parts, which are mountainous. Nature in these regions assumes the most sterile and forbidding features; the thermometer was at no time below the freezing point; but the melting snows near the shore so completely saturate the soil, as to check all vegetation. A species of coal was found in abundance, which burnt very well, thus affording the means, if wanted, of replenishing the fuel. The rise and fall of the tide is about twelve feet. Shrimps and penguins are beyond all conception numerous. The islands, headlands, &c. have been named, and the observations ascertaining the latitude and longitude, from repeated experiments, found true. Part of an anchor-stock, evidently Spanish, being bolted with copper, and bearing certain marks, was found on shore, and is presumed to be the only vestige now remaining of a 74-gun ship, of that nation, which sailed from Spain, bound to Lima, in 1819, and has not since been heard of.

Several United States' vessels have visited South-Shetland; and an American account states that some of the harbours are very good, vessels in them being land-locked. Of the first three months of the year 1821, the mildest experienced there was March; but the seals had mostly retired to the water. A solitary spot or two of something like grass were the only marks of vegetation. No field-ice was seen but innumerable islands were floating about. The flesh of the young seals was often eaten, and was not disagreeable. The remains of the seals were generally left on the beach, after the skins were taken off; but, if convenient, probably much oil might be made.

Captain Dan. W. Clark, of the ship *Hersilia*, reports, that he penetrated to the sixty-sixth degree of latitude, where he observed lands stretching farther to the south, the extremities of which he could not ascertain. The whole, even in summer, was blocked up with snow and ice, except in particular places frequented by seals.

The Russian frigate, *Wattack*, accompanied by a sloop of war, returned to Petersburg, from a voyage of discovery, in 1821. The periodical journals have reported that these ships have circumnavigated Sandwich Land, and discovered at the north part of it three small islands.

harrassed with baffling winds and calms, till we arrived in a high southern latitude. On that day, however, we had the good fortune to discover the land to the south-eastward, extending on both bows as far as the eye could reach. At a distance, its limits could scarcely be distinguished from the light white clouds which floated on the tops of the mountains. Upon a nearer approach, however, every object became distinct. The whole line of coast appeared high, bold, and rugged; rising abruptly from the sea, in perpendicular snowy cliffs, except here and there, where the naked face of a barren black rock showed itself among them. In the interior, the land, or rather the snow, sloped gradually and gently upwards into high hills, which appeared to be situated some miles from the sea. No attempt was made to land here, as the weather became rather threatening, and a dense fog came on, which soon shut every thing from our view, at more than a hundred yards distance. A boat had been sent away, in the mean time, to try for anchorage; but they found the coast completely surrounded by dangerous sunken rocks, and the bottom so foul, and the water so deep, that it was not thought prudent to go nearer the shore in the brig, especially as it was exposed to almost every wind. The boat brought off some seals and penguins, which had been shot among the rocks; but they reported them to be the only animated objects they had discovered. The latitude of this part of the coast was found to be  $62^{\circ} 26' S.$  and its longitude to be  $60^{\circ} 54' W.$

"Three days after this we discovered and anchored in an extensive bay, about two degrees farther to the eastward, where we were enabled to land and examine the country. Words can scarcely be found to describe its barrenness and sterility. Only one small spot of land was discovered on which a landing could be effected upon the main, every other part of the bay being bounded by the same inaccessible cliffs which we had met with before. We landed on a shingle-beach, on which there was a heavy surf beating, and from which a small stream of fresh water ran into the sea. Nothing was to be seen but the rugged surface of barren rocks, upon which myriads of sea-fowls had laid their eggs, and which they were then hatching. These birds were so little accustomed to the sight of any other animal, that, so far from being intimidated by our approach, they even disputed our landing, and we were obliged forcibly to open a passage for ourselves through them. They consisted principally of four species of the penguin, with albatrosses, gulls, pintadoes, shags, sea-swallows, and a bird about the size and shape of a common pigeon, and of a milk-white plumage, the only species we met with that was not web-footed. We also fell in with a number of the animals described in Anson's Voyage as the sea-lion, and said by him to be so plentiful at Juan Fernandez, many of which we killed. Seals were also pretty numerous; but, though we walked some distance into the country, we could observe no trace, either of inhabitants, or of any terrestrial animal. It would be impossible, indeed, for any but beasts of prey to subsist here, as we met with no sort of vegetation, except here and there small patches of stunted grass, growing upon the surface of the thick coat of dung which the sea-fowls left in the crevices of the rocks, and a species of moss, which occasionally we met with, adhering to the rocks themselves. In short, we traced the land nine or ten degrees east and west, and about three degrees north and south, and found its general appearance always the same—high, mountainous, barren, and universally covered with snow, except where the rugged summits of a black rock appeared through it, resembling a small island in the midst of the ocean; but, from the lateness of the season, and the almost constant fogs in which we were enveloped, we could not ascertain whether it formed part of a continent, or was only a group of islands. If it be insular, there must be some of an im-

It is added, "They have also surveyed the south part of South-Shetland, in latitude  $69^{\circ}$  and some odd minutes S. and have seen an island at some distance from it, or a large cape or head-land; but, on account of the ice, they could not approach nearer to it than 40 miles."

An early account of South-Shetland stated that sperm-whales were seen about the coasts; and it cannot be questioned that such whales may be occasionally here; but we have the authority of Captain Laurence Frazier for stating, that the whales hereabout are mostly finbacks.

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mense extent, as we found a gulf nearly one hundred and fifty miles in depth, out of which we had some difficulty in finding our way back again.

The report concludes with some general remarks on the advantages of the discovery, and stating that the ship was daily surrounded with whales, multitudes of the finest fur-seals, and sea-lions.

**SOUTH-ICELAND.**—Captain Cook's conjecture as to the existence of a southern continent seems to be realized; a very extensive land having been discovered in the parallel, and to the eastward, of South-Shetland. The only description of it, which we have yet seen, is vague and imperfect, and the particulars too scanty for a delineation on the chart. They have been given as follow.

"We have been favoured with interesting particulars respecting a southern continent, by Captain Nathaniel B. Palmer, of the sloop James Munroe, lately arrived at Stonington, from South-Shetland.

"Captain Palmer proceeded in the James Munroe from the Shetland Isles to the continent, (South-Iceland) and coasted it, from abreast of the isles to the eastward, as far as 44° W. longitude, keeping as near to the shore as the edge of firm ice would admit. At some places he could coast along-shore; at other parts he could not approach nearer the shore than from one to five or six leagues, owing to the firm and fast ice, although it was mid-summer there at the time, being in November, December, and January.

"In 61° 41' S. latitude, and 45° 27' W. longitude from Greenwich, the coast was clear of firm ice, and here they discovered a fine harbour, lying about one mile within the entrance of Washington Strait, which harbour was named Palmer's Harbour, where he came to anchor. He found not the least appearance of vegetation on the land excepting the winter-moss. Neither did he here discover any animals, only a few sea-leopards, beautifully spotted. Of birds there were penguins, Port Egmont or sea-hens, white pigeons, and gulls.

"There is no doubt that there exists a southern continent, and that Captain Cook's *Southern Thule* belongs to it. Captain Palmer could discern mountains covered with snow, in the interior, as he sailed along the coast."

### *Directions for sailing from the Coast of Patagonia, or Falkland Islands, to New South Icelands.*

After obtaining sight of Statten Land, bring Cape St. John's to bear west, five or six leagues distant; then, on account of the N. E. set off Cape Horn, endeavour to make a course good south, until you arrive in the latitude 62° 50' S. then steer east, keeping between the latitude of 62° 50' and 63° 5' S. until you make the land, which will be *Mount Pisco Island*; when you have got sight of this island, bring the centre of it to bear S. W. five leagues distant. If, when in this situation, the weather should set in thick or foggy, keep this situation by lying by, or on short tacks, until the weather lights up, then steer N. E. ½ E. until you make Castle Rock, situated off the south chop of Strait Despair; leave Castle Rock broad on your starboard bow, and keep steering north and eastward past the mouth of the strait, when you will make Ragged Island, which keep off your starboard bow and beam until you open the pass between the N. W. end of Ragged Island and the Main Island; then steer into the pass E. S. E. keeping Ragged Island shore nearest on board, and anchor in the harbour, around the second point of Ragged Island, in 6 or 8 fathoms. Double this second point well on board, to avoid the reefs that lie off in the pass abreast of the harbour of *Port Sheffield*, in Ragged Island.

There are some reefs in the offing off the mouth of Ragged Island pass, and in it, but with care, and a good look out, they are easily avoided, as the breakers or ripples will show where they are.

N. B. Mount Pisco is a very high round island, with a bold shore all around it, and may be seen in clear weather at least thirty leagues.

On the navigation around \*Cape Horn, Captain Colnett has made the following remarks.

"I have doubled Cape Horn in different seasons; but were I to make another voyage to this part of the globe, and could command my time, I would most certainly prefer the beginning of winter, or even winter itself, with moon-light nights; for, in that season, the winds begin to vary to the eastward; as I found them, and as Captain Macbride observed at the Falkland Isles. Another error, which, in my opinion, the commanders of vessels bound round Cape Horn commit, is, by keeping between the Falkland Isles and the main, and through the strait of Le Maire; which not only lengthens the distance, but subjects them to a heavy irregular sea, occasioned by the rapidity of the current and tides in that channel, which may be avoided by passing to the eastward. At the same time I would recommend them to keep near the coasts of Statten Land and Terra del Fuego, because the winds are more variable in with the shore than at a long offing.

"If it should be observed that a want of wood and water may render it necessary for vessels to stop in the Strait of Le Maire, I shall answer that there is plenty of water at the Falkland Isles, and Statten Land not only abounds in both, but possesses several excellent harbours. I first visited this place with Captain Cook, in the year 1774; and, on my outward-bound passage to the north-west coast of America, in the year 1786, as commander of the merchant ship Prince of Wales, I wooded and watered there, and left a party to kill seals. For my own part, I do not perceive the necessity, according to the opinion of different navigators, of going to 60° S. I never would myself exceed 57° 30', to give the Isle of Diego Ramirez a good birth: or, if winds and weather would permit, make it, for a fresh departure, had I not taken one at Cape St. John, Statten Land, or the east end of Falkland Isles. Statten Land is well situated as a place of rendezvous, both for men of war and merchant ships; while the harbours on the north and south sides, which are divided by a small neck, would answer the purpose of ships bound out or home. The north side offers the best place for an establishment."

The French captain La Perouse passed through the Strait of Le Maire in February, 1785, when the flood carried the ships violently to the southward. The horizon was so foggy towards the east, that Statten Island was not seen; but, on the shore of Terra del Fuego, by telescopes, the natives were seen lighting fires, as an invitation to the shore. Captain Perouse says, "I doubled Cape Horn with much greater facility than I expected; though I am convinced that this navigation is not more hazardous than any other in these high latitudes. The dangers we dreaded were only the chimerical offspring of an ancient prejudice, which ought no longer to exist, and which the reading of Anson's voyage contributes not a little to support."

The Russian commander, Otto Von Kotzebue, passed Cape Horn in the month of January, 1816; he proceeded to the west of the Falkland Isles, and eastward of Statten Land. "The 16th of January, in latitude 49° 5' S. long. 63° 31' W. a fresh north wind, with beautiful weather, brought us nearer to Cape Horn; at noon we sounded, and found 60 fathoms water, over a bottom of gray sand. On the 19th, at 8 o'clock A. M. we descried Cape St. John, at the distance of forty miles; at noon, the weather being very fine, the frightful country of Statten Land appeared. Cape St. John lay S. 12° W. twenty-five miles distant; the

\* This is the southern point, or head-land, of a group called Hermite Islands. Captain Cook, in the description of his passage, in December, 1774, brought Cape Horn to bear E. by S. and says, it is known at a distance by a high round hill over it. A point to the N. W. shows a surface not unlike this; but their situation alone will always distinguish the one from the other. On the N. W. side of the Cape are two peaked rocks, like sugar-loaves, lying N. W. by N. and S. E. by S. from each other. Some other straggling low rocks lie west of the Cape, and one south of it, but they are all near the shore.

In the direction of E. N. E. three leagues from Cape Horn, is Cape Enganno, the Mistaken Cape of Captain Cook; it is a rocky point, and the southern point of the easternmost of Hermite Isles.

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current set strongly to the E. N. E. Towards midnigh we had doubled Statten Land; the wind blew strong from the north. I bent my course to the S. S. W. in order for security, to keep distant from the shore; and, contrary to the custom of other navigators, I took then a more westerly course, to double Cape Horn as sharp as possible. On the 22d at four A. M. we crossed the meridian of Cape Horn, in  $57^{\circ} 33'$  S. which was evidently a great advantage to us; as we had not gone so far to the south as others used to do. We were surrounded by whales, dolphins, and albatrosses. While we were doubling Cape Horn, we were encountered by high storms from S. W. which continued several days, and it was not till the 1st. of February that we succeeded in passing the latitude of Cape Victoria. We triumphed; for now we had no fear of being driven back by westerly storms."

Captain Cook says, "It may still be questioned whether it is better to go through the Strait of Le Maire, or stand to the eastward, and go round Statten Land." The advice given in the account of Anson's Voyage is, "That all ships bound to the South Seas, instead of passing through the Strait of Le Maire, should constantly pass to the eastward of Staten Land, and should be invariably bent on running to the southward as far as the latitude of 61 or 62 degrees, before they endeavour to stand to the westward." But, in my opinion, different circumstances may at one time render it eligible to pass through the Strait, and to keep to the eastward of Staten Land at another. If the land is fallen in with to the westward of the Strait, and the wind is favourable for going through, I think it would be very injurious to lose time by going round Statten Land; as I am confident that, by attending to the directions which I have given, the Strait may be passed with the utmost safety and convenience; but if, on the contrary, the land is fallen in with to the eastward of the Strait, and the wind should prove tempestuous and unfavourable, I think it would be best to go round Statten Land. But I cannot, in any case, concur in recommending the running into the latitude of 61 or 62 degrees, before any endeavour is made to stand to the westward. We found neither the current nor the storms which the running so far to the southward is supposed necessary to avoid; and, indeed, as the winds almost constantly blow from that quarter, it is scarcely possible to pursue the advice. The navigator has no choice but to stand to the southward, close upon a wind; and, by keeping upon that tack, he will not only make southing, but westing; and if the wind varies towards the north of the west, his westing will be considerable. It will indeed be highly proper to make sure of a westing sufficient to double all the lands, before an attempt is made to the northward, and to this every man's prudence will, of necessity, direct him."

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## CHAP. XVIII.

### SOUTH PACIFIC OCEAN, *from* CAPE HORN *to the* EQUATOR, &c.

#### Cape Horn to Valparaiso.

In December, 1774, Captain Cook, on his return from his second voyage, made Landfall Island, off the western coast of Terra del Fuego, whence he proceeded to the S. E. and eastward, and described the coast as follows:

Cape Gloucester.—“Cape Gloucester shows a round surface of considerable height, and has much the appearance of being an island. It lies S. S. E.  $\frac{1}{2}$  E. true distance seventeen leagues from Landfall Island. The coast between forms two bays, strewed with rocky islets, rocks, and breakers. The coast appeared broken, with many islets, or rather it seemed to be composed of a number of islands. The land is very mountainous, rocky, and barren, spotted here and there with tufts of wood. From Cape Gloucester, off which lies a small rocky island, the direction of the coast is nearly S. E. (true;) but to Cape Noir, (Cape Negro or Black Cape,) for which we steered, the course is about S. S. E. (true) distant about ten leagues.

“At 3 o'clock we passed Cape Noir which is a steep rock, of considerable height, and the S. W. point of a large island, that seemed to lie detached, a league or a league and a half, from the main land. The land of the Cape, when at a distance from it, appeared to be an island disjoined from the other; but, on a nearer approach, we found it connected by a low neck of land. At the point of the Cape are two rocks; the one peaked like a sugar-loaf, the other not so high, and showing a rounder surface; and S. by E. (true) two leagues from the Cape are two other rocky islets.

“After passing the two islets, we steered E. S. E. true, crossing the great bay of St. Barbara. We but just saw the land in the bottom of it, which could not be less than seven or eight leagues from us. There was a space lying in the direction of E. N. E. (true) from Cape Noir, where no land was to be seen; this may be the channel of St. Barbara, which opens into the strait of Magallen, as mentioned by Frazier. We found the Cape to agree very well with his description, which shows that he laid down the channel from good memoirs. At ten o'clock, drawing near the S. E. point of the bay, which lies nearly in the direction of S. 60° E. (true,) from Cape Noir eighteen leagues distant, we shortened sail, and spent the night standing off and on.

“At two o'clock in the morning of the 19th December, having made sail, we steered S. E. by E. (true) along the coast, and soon passed the S. E. point of the bay of St. Barbara, which I called Cape Desolation, because near it commenced the most desolate country I ever saw. It is situated in latitude of 54° 55' S. longitude 72° 12' W. About four leagues to the east of this cape is a deep inlet, at the entrance of which is a pretty large island, and some others of less note. At ten o'clock, being about a league and a half from the land, we sounded, and found 60 fathoms of water, a bottom of small stones and shells.

“The wind, which had been fresh at N. by W. began to abate, and at noon it fell calm, when we observed in latitude 55° 20' S. longitude made from Cape

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Desada  $8^{\circ} 24'$  E. In this situation we were about three leagues from the nearest shore, which was that of an island. This I named Gilbert Isle, after my master. It is nearly the same height with the rest of the coast, and shows a surface composed of several peaked rocks, unequally high. A little to the S. E. of it are some smaller islands, and without them, breakers.

"I have before observed that this is the most desolate coast I ever saw: it seems entirely composed of rocky mountains, without the least appearance of vegetation. These mountains terminate in horrible precipices, whose craggy summits spire up to a vast height, so that scarcely any thing in nature can appear with a more barren and more savage aspect than the whole of this country. The inland mountains were covered with snow, but those on the sea-coast were not. We judged the former to belong to the main of Terra del Fuego, and the latter to be islands so ranged, as apparently to form a coast.

"After three hours calm we got a breeze at S. E. by E. and having made a short trip to south, stood in for the land; the most advanced point of which, that we had in sight, bore east, (true) distant ten leagues. This is a lofty promontory, lying E. S. E. nineteen leagues from Gilbert Isle, and is situated in latitude  $55^{\circ} 26'$  S. longitude  $70^{\circ} 25'$  W. Viewed from the situation we were now in, it terminated in two high towers; and within them a hill shaped like a sugar-loaf. This wild rock, therefore, obtained the name of York Minster. Two leagues to the westward of this head appeared a large inlet, the west point of which we fetched in with by nine o'clock, when we tacked in 41 fathoms water, half a league from the shore: to the westward of this islet was another, with several islands lying in the entrance.

"During the night between the 19th and 20th, we had a little wind easterly, which in the morning veered to N. E. and N. N. E. but it was too faint to be of use; and at ten we had a calm, when we observed the ship to drive from off shore out to sea. We had made the same observation before. This must have been occasioned by a current, and the melting of the snow increasing, the inland waters will cause a stream to run out of most of these inlets. At noon we observed in latitude  $55^{\circ} 39' 30''$  S. York Minster then bearing N.  $15^{\circ}$  E. (true) distant five leagues: and a round hill just peeping above the horizon, which we judged to belong to the isles of St. Ildefonso, E.  $25^{\circ}$  S. (true) ten or eleven leagues distant. At ten o'clock a breeze springing up at E. by S. I took this opportunity to stand in for the land, being desirous of going into one of the many ports which seemed open to receive us, in order to take a view of the country, and to recruit our stock of wood and water.

**CHRISTMAS SOUND.**—"In standing in for an opening, which appeared on the east side of York Minster, we had 40, 37, 50, and 60 fathoms of water, a bottom of small stones and shells. When we had the last soundings, we were nearly in the middle between the two points that form the entrance to the inlet, which we observed to branch into arms, both of them lying in nearly north, and disjoined by a high rocky point. We stood for the eastern branch, as being clear of islets, and after passing a black rocky one, lying without the point just mentioned, we sounded, and found no bottom with a line of 170 fathoms. This was altogether unexpected, and a circumstance that would not have been regarded, if the breeze had continued: but at this time it fell calm, so that it was not possible to extricate ourselves from this disagreeable situation. Two boats were hoisted out and sent ahead to tow; but they would have availed little, had not the breeze sprung up about eight o'clock at S. W. which put it in my power either to stand out to sea or up the inlet, prudence seemed to point out the former, but the desire of finding a good port, and of learning something of the country, getting the better of every other consideration, I resolved to stand in; and as night was approaching, our safety depended upon getting to an anchor. With this view we continued to sound, but always had an unfathomable depth.

"Hauling up under the east side of land which divides the two arms, and seeing a small cove a-head, I sent a boat to sound, and we kept as near the shore as the flurries from the land would permit, in order to be able to get in to this place, if there should be anchorage. The boat soon returned, and informed us there was 30 and 25 fathoms of water, a full cable's length from the shore; here we

anchored in 30 fathoms, the bottom sand and broken shells; and carried out a kedge and hawser to steady the ship for the night.

"The morning of the 21st was calm and pleasant. After breakfast I set out with two boats to look for a more secure station. We no sooner got round, or above the point, under which the ship lay, than we found a cove, in which was anchorage in 30, 20, and 15 fathoms, the bottom stones and sand. At the head of the cove was a stoney beach, a valley covered with wood, and a stream of fresh water; so that there was every thing we could expect to find in such a place, or rather more, for we shot three geese out of four that we saw, and caught some young ones, which we afterwards let go.

"After discovering and sounding this cove, I sent Lieutenant Clerke, who commanded the other boat, on board, with orders to remove the ship into this place, while I proceeded farther up the inlet. I presently saw that the land we were under, which disjoined the two arms, as mentioned before, was an island, at the north end of which the two channels united. After this I hastened on board, and found every thing in readiness to weigh, which was accordingly done, and all the boats sent a-head to tow the ship round the point. But at that moment a light breeze came in from sea too scant to fill our sails, so that we were obliged to drop the anchor again, from fear of falling upon the point, and to carry out a kedge to the windward. That being done, we hove up the anchor, warped up to and weighed the kedge, and proceeded round the point under our stay-sails, there anchored with the best bower in 20 fathoms, and moored with the other bower, which lay to the north in 13 fathoms. In this position we were shut in from the sea by the point above-mentioned, which was in one with the extremity of the inlet to the east. Some islets, off the next point above us, covered us from the N. W. from which quarter the wind had the greatest fetch, and our distance from the shore was about one-third of a mile.

"Thus situated, we went to work, to clear a place to fill water, to cut wood, and to set up a tent for the reception of a guard, which was thought necessary, as we had already discovered that, barren as this country is, it was not without people, though we had not seen any. Mr. Wales also got his observatory and instruments on shore; but it was with the greatest difficulty he could find a place of sufficient stability, and clear of the mountains, which every where surrounded us, to set them up in; and at last he was obliged to content himself with the top of a rock, not more than nine feet over.

"Next day I sent Lieutenants Clerke and Pickersgill, accompanied by some of the other officers, to examine and draw a sketch of the channel on the other side of the island; and I went myself in another boat, accompanied by the botanist, to survey the northern parts of the sound. In my way I landed on the point of a low isle covered with herbage, part of which had been lately burnt: we likewise saw a hut; signs sufficient that people were in the neighbourhood. After I had taken the necessary bearings, we proceeded round the east end of Burnt Island, and over to what we judged to be the main of Terra del Fuego, where we found a very fine harbour encompassed by steep rocks of vast height, down which ran many limpid streams of water; and at the foot of the rocks some tufts of trees, fit for little else but fuel.

"This harbour, which I shall distinguish by the name of *Devil's Basin*, is divided, as it were, into two, an inner and an outer one, and the communication between them is by a narrow channel, 5 fathoms deep. In the outer basin I found 13 and 17 fathoms of water, and in the inner, 17 and 23 fathoms. This last is as secure a place as can be, but nothing can be more gloomy. The vast height of the savage rock which encompasses it, deprived great part of it, even on this day, of the meridian sun. The outer harbour is not quite free from this inconvenience, but far more so than the other; it is also rather more commodious, and equally safe. It lies in the direction of north, a mile and a half distant from the east end of Burnt Island. I likewise found a good anchoring-place a little to the westward of this harbour, before a stream of water that comes out of a lake or large reservoir, which is continually supplied by a cascade falling into it.

"Leaving this place, we proceeded along the shore to the westward, and found other harbours, which I had not time to look into. In all of them is

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fresh water, and wood for fuel; but except these little tufts of bushes, the whole country is a barren rock, doomed by nature to everlasting sterility. The low islands, and even some of the higher, which lie scattered up and down the sound, are indeed mostly covered with shrubs and herbage, the soil of black rotten turf, evidently composed, by length of time, of decayed vegetables.

"I had an opportunity to verify what we had observed at sea, that the sea-coast is composed of a number of large and small islands, and that the numerous inlets are formed by the junction of several channels; at least, so it is here. On one of these low islands we found several huts, which had lately been inhabited; and near them was a good deal of celery, with which we loaded our boat, and returned on board at seven o'clock in the evening. In this expedition we met with little game; one duck, three or four shags, and about that number of rails or sea-pies, being all we got. The other boat returned on board some hours before, having found two harbours on the west side of the other channel, the one large, and the other small, but both of them safe and commodious; though, by the sketch Mr. Pickersgill had taken of them, the access to both appeared rather intricate.

"Having fine pleasant weather on the 23d, I sent Lieutenant Pickersgill in the cutter, to explore the east side of the sound, and went myself in the pin- nace to the west side, with an intent to go round the island under which we were at anchor, (and which I shall distinguish by the name of *Shag Island*) in order to view the passage leading to the harbours Mr. Pickersgill had discovered the day before, on which I made the following observations. In coming from sea, leave all the rocks and islands lying off and within York Minster on your lar- board side; and the black rock, which lies off the south end of Shag Island, on your starboard; and when abreast of the south end of that island, haul over for the west shore, taking care to avoid the beds of weeds you will see before you, as they always grow on rocks, some of which I have found 12 fathoms under water; but it is always best to keep clear of them. The entrance to the large harbour, or *Port Clerke*, is just to the north of some low rocks lying off a point on Shag Island. This harbour lies in W. by S. (true) a mile and a half, and has in it from 12 to 24 fathoms depth, wood and fresh water. About a mile without or to the southward of Port Clerke, is, or seemed to be, another, which I did not examine. It is formed by a large island, which covers it from the south and east winds. Without this island, that is, between it and York Minster, the sea seemed strewed with islets, rocks, and breakers.

"The festival, which we celebrated at this place, occasioned my giving it the name of *Christmas Sound*. The entrance, which is three leagues wide, is situ- ed in the latitude of  $55^{\circ}$  S. longitude  $70^{\circ} 16'$  W. and in the direction of N.  $37^{\circ}$  W. (true) from the Isles of St. Ildefonso, distant ten leagues. These isles are the best land-mark for finding the sound. York Minster, which is the only remarkable land about it, will hardly be known by a stranger, from any descrip- tion that can be given of it, because it alters its appearance according to the dif- ferent situations it is viewed from. Besides the black rock, which lies off the end of Shag Island, there is another, about mid-way between this and the east shore. A minute description of this sound would be unnecessary, as few would be benefited by it. Anchorage, tufts of wood, and fresh water will be found in all the coves and harbours. I would advise no one to anchor very near the shore for the sake of having a moderate depth of water, because there I gene- rally found a rocky bottom.

"The refreshments to be got here are precarious, as they consist chiefly of wild-fowl, and may probably never be found in such plenty as to supply the crew of a ship; and fish, so far as we can judge, are scarce. Indeed the plenty of wild-fowl made us pay less attention to fishing. Here are, however, plenty of muscles, not very large, but well-tasted; and very good celery is to be met with on several of the low islets, and where the natives have their habitations."

The STRAIT or MAGELLAN was discovered and explored by the cele- brated Magalhaens, in the year 1520, and has since been passed through by ma- ny ships. Its eastern entrance is between Virgin's Cape and Cape Spiritu San- to, or Queen Catharine's Foreland, which are eight leagues distant from each



other. The *Virgin's Cape* is a steep white cliff, resembling our South-Foreland. Though the strait possesses many harbours, affording wood, water, and fish, the heavy gales of wind that prevail in it, and the strength of the currents, have caused it to be entirely abandoned, as the route between the two oceans is far more safe and expeditious by way of Cape Horn. Westerly winds are said to be the most prevalent in the strait, while the current usually sets in from the east, and at the entrance on that side the tide rises 30 feet.

**WESTERN PATAGONIA, CHILOE, &c.**—The general nature of this broken and irregular coast can be best understood by a reference to the chart: for, passing the western entrance of the Strait of Magallen, we see it broken into a thousand shapes, and into innumerable islands, mostly rocky and inhospitable. The *Archipelago of Chiloe*, and the large island of that name, appertain to the State of Chili, and here civilization again commences. The islands of Chiloe are upwards of a hundred in number, but the great Isle alone is of any considerable size, and twenty only are inhabited. The whole appear to have been formed by convulsions of nature, which have broken the continent to pieces, being generally rugged masses of rock, separated by narrow and deep channels, the navigation of which is rendered dangerous by sunken rocks and violent currents. Most of the islands rise perpendicularly from the water, and are so rocky, that the proportion of soil capable of cultivation is very small; and this little, owing to a wet and unfavourable climate, but still more to the idleness of the inhabitants and their imperfect agriculture, is not cultivated to the greatest advantage. Hence the quantities raised of wheat, oats, French beans, and potatoes, which constitute the permanent vegetable food, are scarcely adequate to the consumption of the inhabitants.

The cultivated fruits of the province of Chiloe are apples and strawberries. The most common trees, and with which the hills are in general covered, are the cedar, oak, walnut, plum, cypress, cinnamon, laurel, orange, &c. A kind of rattan grows spontaneously, of which the natives make cordage, and which is also employed in roofing their habitations. The Archipelago has neither beast of prey nor venomous reptiles.

The climate is humid and stormy, but not unhealthy. The winter is not sufficiently cold to permit the snow to lie long on the ground, but this season is extremely wet, with heavy gales from N. N. E. and N. N. W. southerly winds, on the contrary, are accompanied with fair weather. The *traversia* is a transient storm from the east. The *Aurora Australis* is occasionally seen here. In mid-summer the heat is great, but the sensation is moderated by a sea-breeze, which blows pretty regularly from 10 till 3 o'clock. The population is composed of creole Spaniards and Indians. The women are employed in making mats, coarse linen, and woollen-cloths. The principal exports are timber, particularly cedar, and cured hams, the Archipelago abounding in hogs.

The great Isle of Chiloe is forty leagues long, north and south, and from ten to thirteen leagues broad. Its western coast is nearly straight, having no indentation of any consequence, and only a few insignificant rivers. The eastern coast, which faces the continent, is more irregular; and, nearly in the middle, forms a deep bay. The island contains two towns and thirty-eight villages, principally on the northern and eastern sides, there being but one village on the western coast, and the interior is so mountainous and barren as to be entirely uninhabited.

The only port now visited by shipping is that of St. Carlos, at the N. W. end, the access to which is safe. The town of St. Carlos contains about two hundred wooden houses of the Spaniards, and some Indian huts, scattered without regularity. Until 1768, the port of Chacao, on the N. E. side, was the chief place, but this is now reduced to a church, missionary-house, and a few Indian huts only. Castro, on the eastern side, has a good port, but, from the difficulty of the navigation, is never visited by ships.

The Port of San Carlos is formed by the bold peninsula of Lacuy. Without its entrance, on the north side, is an island, one mile and three quarters long, connected to the main by an isthmus of sand. A league and a half to the S. E. of this Point Lacuy, the N. W. point of the entrance, and two miles from

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Point Laucy to the S. E. is the fort and town of San Carlos, on the S. E. side. There are several little isles to the eastward.

Between Point Laucy and the point of San Carlos, the depths are 3, 6, and 12, to 3½, 4 and 5 fathoms; and within the harbour, to the westward, 10, 7 and 3, to 5 and 3 fathoms. The bottom chiefly of soft clay or ooze. In a cove within Point Laucy, the seine may be hauled with success.

In a manuscript survey of this harbour, with which we have been favoured by Captain Wm. H. Smyth, R. N. Fort S. Carlos is represented in 41° 52' 20" S. and 73° 52' 55" W. Variation in 1807, 19° 20' E. High water on the full and change, at the entrance, at 12h. 50m. The Spanish chart of the harbour gives the high water in the port at 11h. Tides regular, and vertical rise 16½ English feet.

**CHILOE to VALDIVIA.**—Between the island of Chiloe and Valdivia the coast is represented as generally rocky and dangerous. Of the harbour of Valdivia a particular plan is given on the Chart.

The **ISLE MOCHA**, inhabited by Indians, lies half way between Valdivia and Concepcion, and serves as a directing beacon to vessels on the coast. Capt. Colnett has described it as seen by him in passing. "It is of a height to be seen at the distance of fifteen or sixteen leagues, in clear weather, and, on approaching it, its summit appears rugged. It is about three or four leagues in length, lying in a north and south direction by the compass. The northern part of the island descends gradually into a low sandy point, or long tongue of land, on which is a rock or cross that has the resemblance of a sail. The south point, at the distance we were, appeared to end in a more abrupt manner, and there extends from it, to a considerable distance, a range of small rugged rocks, some of them on a level with the water, while others rose boldly from it, so that it was a matter of some doubt with me, whether they composed an actual part of the island. Breakers also run off from it a great way to the westward, at least three leagues. There is a bare white spot on one part of the island, having the appearance, at an offing, of eight or nine miles, as if not belonging to it. From the great number of seals which I saw off this island, I should suppose that it must abound with them. The main land of Chili, within the isle, is of moderate height, and as it appeared to me, about six or seven leagues distant."

**CONCEPTION.**—The harbour of Concepcion has been described by M. La Perouse, by whom it was visited in 1785, and who describes it as follows: "The Bay of Concepcion is one of the most commodious that can be found in any part of the world. For though the tide rises six feet three inches, the water is smooth, and there is scarcely any current. It is high water here, at the full and change of the moon, at forty-five minutes past one. The bay is open only to the north winds, which never blow out in the winter; that is, from the end of May to October. In this season also the rains fall, and continue throughout the monsoon, for so we may denominate constant winds, which are succeeded by others by the south, that continue to blow for the rest of the year, and are accompanied with fine weather. The only anchorage sheltered from the N. E. winds in the winter, is before the village of Talcahuano, on the S. W. side.

Concepcion was visited by Captain Kotzebue in 1816; and this gentleman says, "I give no description of the appearance of the coast, nor of the entrance to the bay; La Perouse has said sufficient on the subject in his voyage. The navigator may be confident of always finding, at this season of the year, (11th February) at a distance of two degrees from the coast, as well in this latitude as in one degree more to the south, beautiful and serene weather and south wind; but, on the contrary, if he go more to the west, he may expect to find gloomy weather and a north wind. It would, therefore, be advisable for ships, that intend sailing up the coast to approach it at once at 42°, as they will certainly accelerate their passage. But this applies only to summer; because in winter gloomy weather and north winds prevail.

"I think it not superfluous to advise every navigator, who visits this place, to caution his people in the use of wine. In some of the numerous public houses at Talcahuano, they mix with the wine the juice of an herb unknown to us,

which produces the most horrid effect; for it throws people into a state bordering on frenzy, which is followed by a general relaxation of the nerves. Several sailors of the *Rurick* experienced this. The portion is probably calculated for the plunder of foreigners, as this generally follows the drinking of it. Talcahuano is, for the most part, inhabited by a mixed race of Spaniards and Araucans, who have no mind for work, and who therefore try to gain subsistence by dishonourable means.

"La Perouse, in his voyage, has said so much about Conception Bay, that I could only make repetitions; the bay, however, as a place of refreshment, is to be recommended to navigators, as provision and fruits of all sorts are in abundance.

### *Directions for entering Talcahuano, the Port of Conception.*

In the winter season endeavour to make the mouth of the Port, and when you descried land, stand right in for the Island of Quiriquina, which lies in  $36^{\circ} 36'$  S. latitude off the mouth of the Port, and is protected from northerly winds.

In the summer season, when in lat.  $37^{\circ} 20'$ , or thereabouts, stand directly for the shore, keeping it distant 3 leagues, and steering for Point Carnero which is the most northerly in making the Island of Santa Maria; this island is situated in  $37^{\circ}$  S. bearing from Point Carnero S.  $\frac{1}{4}$  S. W. and N.  $\frac{1}{4}$  N. E. distant 2 leagues; from its North West Point there is a reef which extends about a league, on which you can perceive breakers. This reef bears from the Morro of Talcahuano (or the Port of Conception) N. E. and S. W. true, distance 13 or 14 leagues, advertising that if the wind is southerly the current sets N. W. and if from the northward S. W.

When clear of this reef, steer E. N. E. in search of the Paps of Biobio 8 $\frac{1}{2}$  leagues distant from the mouth of the Port of Conception. These two hills command the coast, and form two Paps: they may be seen 10 leagues off in clear weather. At the N. W. foot of these hills there is a bay in form of a Horse Shoe, called San Vicente, in which there is good anchorage, protected from all winds (with an anchor on the shore in a N. E. direction.)

The coast from Point Biobio to the shoal of Quiebra Ollas (seen above water) by compass S. S. W. and N. N. E. distant 3 leagues. Quiebra Ollas with the N. W. point of Morro of Talcahuano, bears E.  $6^{\circ}$  S. and W.  $6^{\circ}$  N. distant  $\frac{1}{2}$  league. Quiebra Ollas from the S. S. W. point of Quiriquina, bears E.  $\frac{1}{4}$  N. E. and W.  $\frac{1}{4}$  S. W. distant  $\frac{1}{2}$  league.

From the land side of Quiebra Ollas it is almost impossible to enter by that channel, as there are numerous shoals. The best entrance to this port is to the north side of Quiriquina, and to accomplish this, you have to approach near to Quiebras Ollas, because the Morro of Talcahuano conceals this island, which has also a shoal on its N. W. point, about two cables length from it, on which there are 2 $\frac{1}{2}$  fathoms water; and to which you ought to pay attention when entering the port. After passing this point, which may be approached within two cables length, there is nothing to fear, and keep standing to the southward, and if with a southerly wind, luff all you can for the larboard side of the bay of the port which from Quiriquina within is perfectly clear on that side with the exception of a shoal in front of the village of Linquien; it is under water, but covered with weeds and distant from the shore about one quarter league.

On the north side of Quiriquina there is a sand beach distant from the same about three cables length in front of a yellow mound of earth. If you can weather Point Arena (sandy) or more to windward of the bay, formed by this Point, all is clear and may be approached with a cable where you have 10 fathoms water.

On the south east side of the island there is a shoal which runs out about one quarter of a league; you ought not to approach the starboard side of the bay, as it is very foul. There are two shoals called Murinao, and to steer clear of these you must keep open the Morro of Talcahuano and west side of Hill Espi-

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nosa; if they are in one, you are close on these banks; if going from Cerno Verde to Talcahuano, although with a fair wind, do not shoal your water less than 6 fathoms, being close to the island of Rey, you may take the ground, as there is little water.

To anchor in this port in 6 fathoms, must have the Castle of Galvesto to bear S. W. and the south point of Quiriquina N. 8° E. by the compass.

### Other Instructions for entering Port Talcahuano.

Endeavour to make the Island of Santa Maria, keeping a good look out for a reef which runs from its N. N. W. point, about  $\frac{1}{2}$  league.

You may keep the coast along at a short distance, as any danger there may be seen, steering for Point Talcahuano from which there is a clump. Quiebra Ollas are surrounded by breakers; they may be approached within half a mile, and standing on for the North Point of Quiriquina which has also two rocks; the most distant one is about one quarter league, and may be approached within a stone's throw, as there is very deep water along side of it, and you require to do so in order to keep to windward; having cleared these, continue steering close to the island. It is probable you will have contrary wind in standing for the Port, in which case you should not approach the island on the east side or to the southward of the island; although the north and west side is very deep; on the south side there is a shoal.

About one-third of the distance between the Point of Talcahuano and Port Talcahuano, and nearly in a parallel with them, there is another flat which runs to the eastward, about one-half league, and near it there is a shoal surrounded by a reef which is seen at low water, and due care ought to be had for this reef when making the Port, although the discoloured water apprizes you of it. The best way when entering the mouth of the harbour with the land breeze is to steer directly for a large mound of yellow earth, which is seen on a hill of regular height, and continue so until you double the Cape or Point Talcahuano, afterwards steering for the houses on shore until distant about one-half mile, where you anchor in 5 or 6 fathoms water.

**CONCEPTION to VALPARAISO.**—From the Port of Conception, to that of Valparaiso, which is the sea port of St. Jago, the capital of Chili, the true bearing and distance are N. by E.  $\frac{1}{2}$  E. seventy-seven leagues. The coast through the whole distance is steep-to. In  $33^{\circ} 56'$  S. is the shoal of Topocalma, a reef about four miles long, and at about the same distance from the shore; with this exception, the coast is represented as generally clear, but it does not seem to have been minutely surveyed, and should, therefore, be approached with caution.\*

Captain Vancouver passed to the southward of Juan Fernandez in March, 1795, and he assigns to the S. W. point the latitude  $33^{\circ} 45'$  S. longitude by his chronometers, &c.  $78^{\circ} 51' 13''$  W. He observes, that its aspect in this point of view is not very inviting. The point terminates in a high steep bluff. Its eastern part seemed to be less elevated, and the whole composed a group of broken irregular hills, forming altogether as rude and grotesque a scene as the imagination can well fancy. Variation of compass  $15^{\circ}$  East. He thence proceeded easterly for Valparaiso, and describes his course as follows:

23d March. The wind seemed now to be fixed in the northern quarter, and being to the southward of our port, our course was directed to regain the parallel of its latitude: this was accomplished by Monday noon, being then, by observation, in latitude  $32^{\circ} 55'$  S. true longitude  $74^{\circ} 30'$ ; the wind was still at N. N. W. with fair and pleasant weather: the thermometer from  $66^{\circ}$  to  $68^{\circ}$ , and the variation of the compass  $13^{\circ} 42'$  east. Having now got to the northward of Valparaiso, our course was so ordered as to preserve that situation.

\* The highest mountains of the Chilian Andes, which generally rise at about forty leagues more or less, from the sea-coast, are *Manfla*, in  $28^{\circ} 45'$  S. *Tupungato* in  $33^{\circ} 24'$ , *Descabado* in  $36^{\circ}$ , *Blanquillo* in  $35^{\circ} 4'$ , *Longavi* in  $35^{\circ} 30'$ , *Chillan* in  $36^{\circ}$ , *Corcobado* in  $43^{\circ}$ . The summits are supposed to be nearly twenty thousand feet above the sea; and, of course, are covered with perpetual snow.

This, however, proved to be a very unnecessary precaution, as toward midnight, in latitude  $32^{\circ} 51'$ , the wind after becoming light and variable, was succeeded by a fresh breeze at south, that seemed to be equally steady and fixed in its direction as the northerly wind had been before, so that we had now again to haul to the southward, in order that we might keep to windward of our port.

On Tuesday forenoon, we gained a distant view of the lofty coast of Chili to the eastward. The observed latitude at noon was  $32^{\circ} 53' S.$  The land at this time was too far off to distinguish any of its particular parts. The wind blew fresh from the south, with which we made great progress towards the land, and by sun-set the shores were distinctly seen to extend from  $N. 56^{\circ} E.$  to  $S. 68^{\circ} E.$  about ten leagues distant. In this point of view, the sea-coast appeared to be composed of hills of various shapes and sizes, considerably elevated: behind these the interior country rose to a very lofty range of stupendous mountains, wrapped in perpetual snow. These are the Andes, and when first seen, which was shortly after noon, were at the distance, I should imagine, of nearly forty leagues; but we had not an opportunity of making the necessary observations for ascertaining that fact, we continued to stand in shore until ten at night, when, concluding we were within three or four leagues of the land, we tacked and stood to the W. S. W. under as much sail as we could venture to carry, for the purpose of fetching, if possible, to windward of Valparaiso.

At two o'clock on Wednesday morning, we again stood in for the land, which was very indistinctly seen owing to a dense haze in which it was enveloped. The wind at S. S. E. was light, and it was not until about ten in the forenoon that we were in with the shores; on which there was no one circumstance that could indicate our being in the neighbourhood of Valparaiso, nor point out whether we were to the north or south of that port, excepting our own reckoning, which showed it to be in the former direction.

I did not think it prudent, in our crippled situation, to risk a disappointment, and for that reason we stood off shore until an observation for the latitude could be procured, which, by the help of a double altitude, was accomplished about eleven o'clock, when we bore away, in latitude  $33^{\circ} 10' S.$  for a point not far distant from the place where we expected to find the Bay of Valparaiso. At noon, the above point, which was the most northern part of the coast, in sight, and appearing like a small rocky island, lying close to a low or moderately elevated projecting point of land, and terminating at the sea-side in a round hummock, like a bell, bore  $N. 48^{\circ} E.$  a rugged rocky islet lying close to the main land, near the south point of a small sandy bay, being the nearest shore,  $N. 64^{\circ} E.$  two or three miles distant: and the southernmost part of the coast in sight  $S. E.$  by  $S.$

The view we had thus gained of the coasts of the kingdom of Chili, presented but little to attract the attention, or excite the curiosity of strangers. Those parts immediately on the sea-shore were composed of rude cliffs and rocky precipices, against which the western swell broke with unremitting violence. Above these cliffs the country was variously broken by irregular eminences, some formed of naked barren rocks, and others consisting of a reddish substance almost equally unproductive, on which some verdure appeared here and there, with a few stunted shrubs and bushes, some of which were great distances from each other; but nothing like a tree was to be seen, and the landscape bounded by the frozen summits of the lofty Andes, towering above the lower barren mountains, that descend from them towards the sea-coast, exhibited an extremely dreary, desolate, and inhospitable picture.

As we proceeded, a low steep bluff point of land, beyond that which terminated our northern view of the sea-coast at noon, was now seen lying in a direction from it  $N. 51^{\circ} E.$  about three leagues distant, and which proved to be the western point of the entrance into Valparaiso Bay.

Our attention was now directed in quest of the Great Rock, or Small Island, described by Sir Richard Hawkins, in 1593, as lying a league or better to the south of, and a good mark and sure sign of the port. At first I was at a loss to discover which of the two noticed at noon was Sir Richard's rock, as both are much farther from the Bay of Valparaiso than he describes them to be; but, as we advanced, I had no doubt of the most northern being the "Great Rock or

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Small Island." This lies upwards of three leagues, in a direction S. 51° W. from the Point of Angels, which is the west point of Valparaiso Bay, and is rendered still more conspicuous for pointing out the port, by being situated close to a very projecting point, called by the Spaniards Point Quaraumilla, from whence the shores of the main land to the southward take a direction some degrees to the eastward of south, and those to the northward, as before stated, towards Valparaiso. It is also the south-western point of a spacious open bay, bounded by a sandy beach, where anchorage might probably be found, but which must be much exposed; and as several rocks were observed lying at a very little distance from the shore, the chance is that the bottom may be composed of the same materials. On the N. E. side of this bay, a house and some smaller habitations were seen near it, and the country in its neighbourhood appeared to be less sterile and forbidding than those parts to which we were opposite in the morning. Its surface, though unequal, was less broken; and although it could not boast of luxuriant vegetation, yet the naked rugged precipices, that formed a barrier against the ocean, on each side of the bay, were no longer the general characteristic of the interior country, which presented a surface of some soil, on whose withered herbage both flocks of sheep and herds of cattle were seen grazing, on the sides of the hills.

Along these shores, which seemed to be bold, we passed at the distance of from half a mile to half a league, without discovering any danger which is not sufficiently conspicuous to be avoided; and, with the assistance of a fine southerly breeze, by two in the afternoon we were abreast of the Point of Angels, off which some rocks extend to the distance of about half a cable's length. These we passed at about twice that distance, without gaining soundings. In sailing round this point, the country suddenly opened upon us, and presented a scene to which we had long been entire strangers; the whole of the bay was now exhibited to our view, terminated by a sandy beach; near the upper margin of which, and on the sides of the adjacent hills, was seen the town of Valparaiso; and, although, from its situation, it could not boast of much pleasantness, yet in this point of view it appeared to be neat, of considerable extent, and built with regularity; the churches rose above the other buildings, and the whole being defended by several forts, all conspired at once to announce that we were again approaching towards the civilized world.

In the bay and near to the shore rode several sail of merchant-ships, engaged in their respective occupations, to and from which boats were passing and repassing to the shore, where a very lively scene was exhibited of men and cattle; the whole exhibiting that sort of commercial intercourse between distant countries that the arts and civilization can alone carry into effect.

The wind from the southward blowing directly out of the bay, obliged us to make some trips for the purpose of reaching a proper situation for anchoring, which was accomplished about three o'clock, in 10 fathoms, muddy bottom.

Ships destined for the Port of Valparaiso, should endeavour, during the summer months, to make the coast well to the southward of the bay, in order that a fair wind may be ensured for entering the bay. The southerly winds, which, in general, extend from sixty to seventy leagues from the coast, mostly prevail until the month of May; and from the middle of that month, during all the months of June, July, August, and September, I was given to understand the prevailing winds were from the north. These winds are commonly attended with great quantities of rain and very foggy weather, but they do not often blow with much violence. So soon as the wind returns to the southward, the dry season commences, and so it continues, with little variation, during the remainder of the year. These winds, however, frequently blow strong, so as to break vessels adrift, though well secured by anchors on the shore, near to the town of Valparaiso. Within four or five leagues of the Point of Angels, which is the western point of the bay, is a low rocky point, near to which is a detached high barren rock: these points lie from each other S. 51° W. and N. 51° E. To the northward of the above low rocky point are some scattered rocks, that lie about two miles from the point, and about a fourth of that distance from the shore; and to the northward of these rocks is a sandy bay, on the N. E. side of

which is a house. In this bay I was led to believe that anchorage might be had, though the situation is certainly much exposed. The Point of Angels (off which are also some rocks lying very near to it) may be approached by sailing at the distance of half a league from the shore, and, as soon as the point is passed, the town of Valparaiso is instantly discovered. About seven miles to the N. E. of this point is the cluster of rocks lying at some distance from the shore, on which the sea breaks violently; but we had no opportunity of ascertaining their situation with any degree of precision. The bay is about four miles wide, and about a mile deep, apparently free from any sort of danger; but, as it is greatly exposed to the northerly winds, the trading vessels constantly moor with two good anchors and cables in that direction, and with other cables fast to anchors on shore, in 5 or 6 fathoms of water, soft sandy bottom, near to the custom-house; by which means it is expected that the officers of the revenue may be enabled to prevent any contraband trade, by vigilantly attending to their duty in the day-time, and by a rowing guard during the night. The depth of the water gradually increases with the distance from the shore to 35 fathoms, and the bottom becomes more tenacious. In the depth of 16 fathoms, in which we took our station, it was a very stiff clay. Here we moored, a cable each way, to the northward and to the southward, the Point of Angels bearing N.  $35^{\circ}$  W. the fort in the town N.  $86^{\circ}$  W. the redoubt on the hill S.  $5^{\circ}$  E. the church of Almendral S.  $65^{\circ}$  E. the east fort N.  $83^{\circ}$  E. the east point of the bay N.  $57^{\circ}$  E. and the nearest shore S.  $7^{\circ}$  W. a cable's length distant.

On the top of a hill, on the east side of the bay, is an open or barbet battery, of stone and brick, and capable of mounting ten guns; this battery commands all that side of the bay, the beach, and the village of Almendral. On the summit of another hill is a stone redoubt, of a circular form, with eleven embrasures; these command the beach and village of Almendral to the eastward, the bay to the northward, and the town and harbour of Valparaiso to the north-westward.

From the western fort, some rocks extend into the bay, and the bottom is too foul for vessels of any force to anchor nearer to this fortification than about 400 yards; but they may approach and anchor in a very eligible situation, within about 250 yards of the garrison or principal fortress; and neither of these places, in their present situation, would be able to resist a well directed fire, even from two or three frigates. (April 1795.)

The trade of this port is carried on in ships from 250 tons to 700 tons burthen; in which is annually exported to Lima about 15,000 tons of wheat and wheat-flour, large quantities of small cordage, dried salt-fish, and apples, pears, and peaches, in great abundance. All goods imported are landed on a soft sandy bank lying before the custom-house, and thence carried into the ware-houses, or removed to distant parts of the country on the backs of mules; by which conveyance the articles for exportation are, in like manner, brought down to the shore.

Captain Vancouver, from twelve meridian altitudes, gives the latitude of his observatory at Valparaiso as  $33^{\circ} 1' 30''$  S. and the longitude, from thirty-nine sets of lunar distances, at  $71^{\circ} 31' 8''$ , which is nine minutes less than the position given by the Spanish surveyors. The mean may be considered as  $71^{\circ} 38'$  W. But, probably, the result of the Spanish officers is to be preferred.

The variation, from six sets of observations, by each of two compasses, was  $14^{\circ} 49'$  E. The mean inclination of the marine dipping-needle,  $44^{\circ} 15'$ .

Valparaiso has also been visited by Lieutenant Shillibeer. This gentleman describes the town as divided into two parts, and known by the names of Port Valparaiso, and the Almendral. "The Port," he says, "is, doubtless, the most ancient; and, from its being the immediate mart for every kind of merchandise in the country, it is of the greatest consideration. The town is built as regular as the ground on which it stands will allow, and possesses two or three tolerable streets; the rest, which is by far the greatest part, occupies the sides and summits of those heights, which run with great abruptness even to the beach. Through each of these streets cross several zig-zag roads, and smaller paths leading from them to the different dwellings. The houses, with a few exceptions, (as throughout the country) are of but one story, and built of

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large unburnt bricks, have rather a mean appearance; and those situated on the beach are occupied by merchants, either as magazines for corn, or shops; and where the principal part of their commercial affairs are transacted. The chief article in commerce consists in corn, cordage, and copper, the two first being brought from the neighbouring fertile valley of Quillota, the latter from beyond St. Jago.

"The custom-house with all its establishment, is on the beach; and all boats, his British Majesty's excepted, are obliged to land there. Both officers and men belonging to this department appear to be vigilant in their stations, and steady in the performance of their duty.

"Castello Blanco, or the White Castle, stands on the beach, immediately under a high cliff, at the west point of the bay, flanking the harbour to the eastward. The anchorage here is very good, but the most secure and protected is towards the White Castle, the opposite side being a shoal, as well as having some dangerous rocks, which are at no period visible above the surface of the water. The shore from the citadel to below the custom-house is very bold, and ships of considerable burthen can anchor within a few yards of the beach, so that they can conveniently take in or discharge their cargoes.

"It is impossible for ships of force to be supplied, at any time, with water from the port, without incalculable trouble, for it is in the rainy season alone that there is any, but what is contained in the wells; however, at the Almen-dral, it may be procured at all seasons, when the surf will permit the boats to land."

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*The Track of Don Alex. Mala-Espina from Conception and Valparaiso in Chili to the Port of San Blas, for all seasons of the year. (Royal Nautical Academy of Cadiz.)*

The best course to adopt in any time of the year, is to keep 100 leagues or more to the westward of the Gallegagos Islands.

On leaving Valparaiso, steer north-west that you may cross the Equinoctial in the meridian of San Blas, which is  $33^{\circ} 13'$  west of Valparaiso; you have then only to luff all you can with easterly winds until you are in the parallel of  $30^{\circ}$  or thereabouts, when you may calculate on falling in with northerly winds, and the nearer you approach the coast of California, the winds are more from the north-east.

This Track requires some caution, as there are several charts which place the Islands of Gallegagos near the line, and in these meridians, and to evade calms on these Islands, keep well to the westward.

In the months of September, October, and November, the navigation within the Islands of Gallegagos is not so bad, although it is exposed to various incidents. Vessels from Lima to Acapulco taking this track, always carry a pilot. The track to the westward of the Gallegagos is unquestionably the best.

The coast of San Blas is frightful during the rains, and they last sometimes until October, which is the earliest period you ought to arrive there.

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*Track from Conception in Chili to San Blas, by Jose Espinosa, of H. C. M. Ship Descubierta.*

From Conception you will steer N.  $5^{\circ}$  W. or N.  $\frac{1}{4}$  N. W. in the ordinary form of navigation for Lima, inclining rather to the westward, if in the winter season, in order to avoid the northerly winds which blow very hard at that season in the latitude of Coquimba; you may steer for and make the island of Sangallon in lat.  $18^{\circ} 15' N.$  and  $76^{\circ} 38' W.$  from Greenwich; from whence coast along for the Island of San Lorenzo, whose western extremity is  $12^{\circ} 5' S.$  and  $77^{\circ} 3' W.$  keeping clear of the Island of Hormigas, distant only two miles from it.

From thence keep a short distance from the coast, steering for the Point of St. Helena, situated in  $2^{\circ} 10' S.$  and  $80^{\circ} 48' W.$  long. This point appears insulated; it is quite flat on the top, resembling a table, and is seen 8 or 9 leagues distant; in the north-east and east sides of it, there is good anchorage in 8 or 10 fathoms water, in mud and sand.

From Point St. Helena steer N. W. (nothing to the west of it) until in  $8^{\circ} 30'$  north, when steer N. W.  $\frac{1}{2}$  W. until you are in  $12^{\circ}$  or  $13^{\circ}$  north, and from thence luff all you can to the north-west, or more northerly if the wind permit it, when you will have left the Island of Cocos on your starboard, which lies in  $5^{\circ} 42' N.$  and  $87^{\circ} 8' W.$

In crossing the parallel of  $18^{\circ}$  and  $19^{\circ}$  north, keep a look out for the Islands of Socorro, (some of the charts call them Revillagigedo) and the Island of Roca Partida; the former Islands of Socorro lies in  $18^{\circ} 40' N.$  and  $110^{\circ} 10' W.$  of Greenwich; continue steering as well to the northward as you can until the  $22^{\circ}$  of latitude, when you may expect the wind from the north-west, when you will put about to the eastward, steering for the Tres Marias, situated in  $21^{\circ} 23' N.$  and  $108^{\circ} 29' W.$  Having made the Tres Marias, steer E.  $\frac{1}{4}$  N. E. 20 leagues, when you will make the Port of San Blas, in latitude  $21^{\circ} 30'$  and  $104^{\circ} 50' W.$

As soon as you pass the easternmost of the Tres Marias, there will appear the mounts of St. Juan, bearing E.  $\frac{1}{4}$  N. E. It is readily known, being round, and commands all the heights in its vicinity. After steering a few leagues E. N. E. you will perceive a white island resembling a vessel under sail ahead: you will shortly make out another also resembling a vessel under sail; this last one lies in the mouth of the Port.

From the first white Island you perceive (which you always keep on your larboard) there is 8 leagues from thence to San Blas; while steering for the second island, you see the Mount of St. John's, on passing which to the southward a short distance, and sounding in 5 or 6 fathoms water, you drop anchor two or three cables length to the eastward of it, your anchors let go east and west; there is anchorage 20 leagues from the Port of San Blas.

**COQUIMBO or LA SERENA.**—At sixty-five leagues to the northward of Valparaiso, is the Port of Coquimbo La Serena; the coast between is generally high, bold, precipitous, and destitute of harbours.

The anchorage, in the southern part of the Bay of Coquimbo, is sheltered by the Pajaros or Bird Islands, three or four islets, between which and the point of the main is a channel for ships. Another group, at the distance of eight leagues to the N. W. of Coquimbo, bears the same name; to the northward of the latter is the Isla de Choros, as represented on the Chart.

The Great Desert and Province of Atacama forms the boundary of Chili and Peru.

The River Loa, a small stream, is the largest river of this coast, and the southern boundary of the province of Arica, which is here divided from Atacama.

**COASTS of PERU.**—The first port of the State of Peru, which can be considered as of any consequence, is Arica, formerly noted as the loading port of the silver from the mines of Potosi. It is noticed in the history of Sir Francis Drake, and of the bucaniers, and was, in those days, several times pillaged. The produce of the mines having latterly been sent over land, to Buenos Ayres, Arica has fallen into insignificance, and its commerce seems limited solely to a little coasting trade with Lima, &c.

It is almost superfluous to inform the mariner, that the vast mountains, called the Andes, with their Cordilleras, or branches, extend through the western part of Peru, from north to south, and some of their highest summits are within this region, more especially in the north. These summits are lost in the clouds, and capped with snows which may be of equal duration with the earth.

The whole coast of Peru is destitute of harbours, not having a single one which can properly be so called; the anchorage in all the bays or roads being more or less open, and therefore insecure. The first place of any consequence to the northward of Arica is Pisco, which is sheltered, in some measure, by several inlets, but its town is small, and half a mile from the beach.

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## LOBOS ISLAND.

Lobos Island lies in the latitude of  $14^{\circ} 18' S.$  and longitude of  $76^{\circ} 5' W.$  and is about 2½ leagues distant from the main land.

It is high and steep upon all sides, except the S. E. which descends gradually into a low plain, on which is a salt pond of no great extent.

This island is entirely barren, without a spear of vegetation or fresh water, its only excellency therefore, is its anchorage and a few hair seal. There is a good passage quite around the island, and no dangers but what show themselves.

The best anchorage is under the lee of a low stony beach, which puts off from the N. E. side of the island, in 7 fathoms water, where is fine holding ground, clear bottom and smooth water.

**CALLAO and LIMA.**—The capital of Peru is the city of Lima, of which the sea-port is Callao.

**CALLAO**, the port of Lima, stands on a low narrow neck of land, near the ruins of the old town, and almost level with the sea. This isthmus, for it can be termed nothing else, with the island of San Lorenzo, forms the anchorage, which is one of the most spacious and beautiful in the world; and, as the wind is never tempestuous or strong, except when indicative of an earthquake, ships may anchor or moor in the greatest safety, with a rope or hawser of a comparatively small size. The jetty, or landing-place, is formed by a ship which was run on shore for that purpose, so that the surf being completely broken, boats are at all times enabled to land, and lie there with as much security as if in a still pond. To this place there are several streams of water brought for the convenience of ships, which can always be supplied with the greatest expedition.

The custom-house is situated at a little distance from the jetty; it is an extensive establishment, and here, as at Valparaiso, all departments are ready to sacrifice the public good, or rather the good of the state, to gratify their own insatiable thirst for riches. It has a governor and a numerous train of satellites. The trade carried on here is considerable from the different countries of Mexico, Quito, and Chili; whence they are supplied with pitch, tar, and sulphur; with wines, spirits, wood, coco, and Guayaquil hats. Corn, hemp, cordage, hides, &c. &c. are generally imported from Chili; and from the island of Chiloe the woollen manufactures of the natives, such as poncho, and rugs; some of the latter are curious from the strange figures represented, and are generally used as carpets for the ladies to rest their feet on.

**TRUXILLO.**—The most important city of the coast, next to Lima, is Truxillo, distant eighty-seven leagues to the N. N. W. (true) and containing a population of about twelve thousand. The chief products and articles of commerce here are wheat and sugar. The town stands on the north side of the river Moche, at about half a league from sea; but the channel of its maritime commerce is the little port Guaachaco, nearly three leagues to the northward, and which is known by being under the highest peaks of the ridge of mountains that lines the coast.

## LOBOS DE MER,

Or Weather Lobos, are situated in the latitude  $6^{\circ} 58'$  south and longitude  $80^{\circ} 44'$  west, and are about ten leagues from the main land on the coast of Peru. They are not high, but very rugged, and may be seen five or six leagues.

Those two islands form an excellent harbour, with a smooth bottom, and good holding ground.

A small vessel may come in through the weather passage, to save the trouble of beating up, but the passage is so narrow, we would not recommend it as prudent, although there is sufficient depths of water for any ship.

The water here is smooth, and a ship might be hove out to the rocks with all safety.



There are plenty of small fish about the shores, and many seal; but, like most other islands on this coast, these are cursed with sterility.

Beating up to anchor, observe and keep near the west shore, and not stretch so far over to the eastward as to shut the passage until pretty well up, (when you may reach across from shore to shore,) by which means you avoid a sunken rock that lies midway, with 9 feet wafer upon it, and is about the size of a ship's hull.

From 16 to 18 fathoms is the common depth to anchor in.

### LOBOS DE TIERRA,

Or Lee Lobos, is situated in latitude  $6^{\circ} 24'$  S. and longitude  $80^{\circ} 46'$  W. on the coast of Peru, is three leagues in length, and about five leagues from the main land.

In Shelter Bay is good anchorage in from 16 to 18 fathoms water, over a clear bottom; the best anchorage, however, is to bring said rock to bear S. S. W. where is 14 fathoms; farther in shore the bottom is rocky.

Sea Lion Harbour has very rocky bottom, otherwise would be the safest place to anchor about the island.

*Weather Bay* is dangerous, having many sunken rocks, and the whole surge of the ocean heaving into it.

On the east side of the island is a fine bay, where there is good anchorage, in from five to ten fathoms, over a clear bottom and smooth water.

This island presents a most barren prospect, and is without fresh water or vegetation, and, except anchorage and seal, is of no farther consequence. Excellent fish may be caught with hook and line near the shore.

Coming in to windward of the island, it will be prudent to give it a birth, as there are many sunken rocks lying a considerable distance off.

### SECHURA BAY.

Sechura Bay, situated in latitude  $5^{\circ} 40'$  south, on the coast of Peru, is very spacious. After doubling round Cape Noir, you soon fall into shoal water, which will decrease as you haul into the bay, from 18 to 3 fathoms, sandy bottom. Keeping well to windward you will have more regular soundings, but the bottom every where appears to be uneven, particularly so abreast the town of Sechura, where are many sand spits and shoals, with a swell setting in from sea-board, whereas in the weather part of the bay the water is perfectly smooth, and if a ship should ground, she would receive no damage, and could easily be got off again.

At the head of the bay are very extensive salt ponds, which produce abundance of salt of a superior quality, and which the inhabitants seem to set little or no store by.

The land in sight wears a most barren aspect, but back in the country are plantations which are very productive. Pumpkins and melons, eggs, &c. may be obtained from the natives, by paying a high price.

The town of Sechura appears to be large, and is situated on a river. The inhabitants, who are all Indians, are very poor, and subsist almost entirely by fishing, and appear to be industrious, and very honest people.

**GUAYAQUIL.**—The port of Guayaquil is the finest on all the western coast of the southern continent. The city of Guayaquil, St. Jago, is handsome, and the houses, though low, have arcades, which protect pedestrians from the sun and rain. The population is estimated at twenty thousand. Cocoa or chocolate is the staple commodity; and good coffee, also, is produced here.

The climate of Guayaquil, (now included in the Republic of Columbia) is humid and unhealthy. In the vicinity of the city is a marsh, which, at times, in-

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fects the city with pestilential vapours. The streets of the town are straight, and sufficiently wide, but, having no declivity, the rain-water remains, and occasions disorders, while the pools of water are made receptacles of filth. The water for drink is unwholesome, the river being tainted with streams from the marshes and filth of the town. A great advantage of Guayaquil, is its advantageous position for ship-building, having abundance of woods in the vicinity, and provisions being very cheap.

On the eastern coast, at the mouth of the Gulf of Guayaquil, is the *River Tumbez*, which has a bar across the entrance, that renders its access difficult; water of good quality may be had here. The town of Tumbez, at a small distance from the mouth of the river, is of inconsiderable extent, although of some celebrity in the history of Peru, from its having been one of the last towns subjected by the Incas, and the place where Pizarro and his companions landed on their first expedition into Peru.

### *Tracks from the Corvetts of H. C. M. Ships, the Descubierta, and Atrerido.*

#### Track of the Spanish Corvette Atrerido, from Payta to Guayaquil.\*

In the port of Payta easterly winds prevail through the night, when vessels generally embrace the opportunity of sailing. On leaving Payta steer about eight leagues to the westward, in order to clear the islands called Negritos, which lay off Point de Parina; afterwards stand to the northward, steer seven leagues, when you will find yourself nearly abreast of Cape Blanco, in latitude  $4^{\circ} 19'$  south, and longitude  $81^{\circ} 6'$  west, with N. E. variation. When you are two leagues north-west of Cape Blanco, steer a true N. E. course which will keep you at the same distance from the coast, and make the anchorage ground off Point Arena, in order to make the channel for Guayaquil, by keeping the same course and distance from the coast until you run twenty-eight leagues; you will then perceive the island of Santa Clara, distant about four leagues. This island you will keep on your larboard side in taking the channel about one and a half league.

From Cape Blanco to the channel of Guayaquil river, there are several points of land, but the one highest up is point Malpelo, from which the coast is covered with mangrove trees. The best method to take the channel of this river is to have Point Malpelo bearing S. E. or E. S. E. distant about three leagues; from whence steer N. E.  $5^{\circ}$  N. If the tide is flowing, stand directly for point Arena, but if ebbing, and finding yourself near the south Clara, you must then steer N. E. as the tide runs strong here.

At the Island of Santa Clara the tide begins to run pretty strong, and you ought to advert that at change and full moon it begins to flood at 10 A. M. and and when full at 4 P. M. This island is situated in lat.  $3^{\circ} 14'$  south.

I am of opinion, all vessels bound for the port of Guayaquil, that have not an experienced pilot on board, should make Point Malpelo early in the morning, on purpose to see the island of Santa Clara distinctly, or should you observe it before dark, steer right for it until you have it bearing N. W. one-quarter league, and steer up the channel as already directed. From point Malpelo the channel soundings are all mud, and when your soundings change to gravel, you are near the flats, at the mouth of the river on the starboard side called Payana.

Should you strike these soundings, you must then steer N. N. E. until you find mud, afterwards steer N. E. having due care to the tides, and keep your lead constantly going until you make the harbour in Puna Island, where you will find a pilot.

\* Guayaquil, situated on the river and near the bay of that name, is one of the most interesting, largest, and finest ports in all the western coast of the southern continent. It is a place of great resort for the American and English whalers, and commands a richer country than either of the principal ports of Coquimbo, Valparaiso, and Concepcion in Chili; Arica and Callao in Peru; or of Tehuantepec, Acapulco, and St. Blas in Mexico.

When steering from the Island of Santa Clara for Point Arena, take care not to mistake the Hill of Salimas for Point Arena.

There is a rise and fall of tides during the moon, of 11 feet between the Island of Santa Clara and the Point of Puna.

**SANTA ELENA.**—The little bay or port of this name, on the coast to the west of Guayaquil, is distinguished by a high point of land, that appears exactly like an island, until within a short distance from the shore.

### GALLEPAGOS ISLANDS.

Hood's Island, the south-easternmost of this group, lies between latitude  $1^{\circ} 16'$  and  $1^{\circ} 32'$  S. and longitude  $89^{\circ} 39'$  and  $89^{\circ} 54'$  W. The only bay in this island is on the N. part, and is called Com. ROGER'S Bay. A small island, which lies off, forms a secure bay, where vessels can lie at anchor in 12 fathoms water, clear white sandy bottom. Here wood is to be obtained, and land tortoises in great numbers. Off the N. W. part of this island, about  $2\frac{1}{2}$  miles from the shore, is a reef of some extent. This is the only danger I could discover, and breaks with much violence.\*

Charles' Island lies W. from Hood's Island, about 35 miles; the harbour is on the N. W. side, and is formed by a projecting point, off which lies a remarkable high black ragged rock, called Rock Dismal. Shipping lie in 12 fathoms beyond the small reef which shelters the landing; the bottom is sandy, but vessels have had their cables cut by scattering rocks. The landing here is very good. This is called Essex Bay. On the west part of the island, about six miles from Essex Bay, is a dark sandy beach, called the Black Beach; from this beach is a pathway, much trodden, which leads directly to the springs, which are about three miles from the shore. The road here is the best on the island, though in many places steep and difficult.

To the eastward of this island, are several islands, the largest of which is Gardiner's Island, in lat.  $1^{\circ} 26'$  S. and long.  $90^{\circ} 18'$  W. Three miles east from Gardiner's Island lies a reef, on which the sea breaks at low water.

Lord Chatham's island lies nearly E. N. E. and W. S. W. the east part of this island is Hobb's Bay, and lies in lat.  $0^{\circ} 47'$  S. long.  $89^{\circ} 9'$  W. A reef of rocks extends from the south point of this bay round towards the N. W. about ten miles, lying from one to three miles from the shore. Wreck Bay is the W. part of the island, and lies in lat.  $0^{\circ} 55'$  S. long.  $89^{\circ} 44'$  W. A small bank lies off the mouth of this bay, on which are three fathoms; inside of which are seven fathoms. The largest bay in this island is called Stephen's Bay, and lies on the N. W. side of the island. The surest mark for finding this bay is Hicker Rock, which lies off the mouth. This rock is very high, flat on the top, and from some points bears strongly the appearance of a castle. On the western side the rock is split from the summit to the base; and from its slender appearance seems as if ready to tumble down at every breeze. The bay is capacious and well sheltered from the prevailing winds; there is good landing on several small white sandy beaches; the northernmost point of this island lies in lat.  $0^{\circ} 41'$  S.

Barrington Island lies west from Chatham Island, distant about 20 miles from Wreck Bay; is about 15 miles long, and extends in the same direction as Chatham Island.

Albemarle Island is the largest of these islands, and lies N. and S. about 70 miles. Port Rendezvous, the only harbour known in this island, is situated inside of Narborough Island; the entrance to which is off the N. E. point of Narborough, either through Bank's Bay or Decatur's Sound. In this port you anchor in from seven to ten fathoms. From the N. point of the island, a reef extends off nearly three miles; and from Cape Rose and Point Essex the (two southernmost points,) the reefs extend above a mile. Off the S. E. part of the island, (Cape Woodford) are several small islands, the southernmost lies in lat.  $1^{\circ} 3'$  S. bearing from Cape Rose E. by S. distant ten miles.

\* Porter's Journal.

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Narborough Island is situated between the north and south head of Albemarle, and separates Banks and Elizabeth Bays; a reef extends round the south part of the island, which forms the north shore of Elizabeth Bay. Between Narborough and Albemarle is Decatur's Sound, the length of which is 15 miles, and breadth 3. The soundings obtained in mid-channel, were 80 fathoms, coarse gravel. There appears no danger lying any distance from the shore on either side, with the exception of the reef off the S. E. point of Narborough, and that does not extend more than  $1\frac{1}{2}$  mile from the shore. This passage is as safe as any other that is liable to sudden shifts of wind and rapid currents.

James Island lies east of Albemarle, towards the northernmost point. There are two bays in this island, Cowan's and Adam's; Cowan's Bay is on the west side of the island, and lies from Cape Marshal (the N. E. point of Albemarle) S. E. by E. There is good anchorage in this bay in from 10 to 6 fathoms, a quarter of a mile from the beach, over soft sandy bottom. Adam's Bay is on the N. side of the island; near the east end there is good anchorage in 13 fathoms, sandy bottom, about half a mile from the shore; this bay is about 18 miles from the former.

PORTER'S Island lies to the S. E. of James Island; it was discovered by Capt. PORTER in the Essex, and surveyed by D. P. ADAMS, who gave it the above name. On the most careful examination he could not discover either good anchorage or fresh water. It abounds in wood and land-tortoises, and green-turtle were found in abundance. From this island, James, Albemarle, Norfolk, Barrington, Crossman's, Charles, and many others were to be seen.

The S. W. landing is in lat.  $0^{\circ} 42' 14''$  S. long.  $90^{\circ} 27' 9''$  W.

N. W. do.  $0^{\circ} 32' 40''$   $90^{\circ} 23' 54''$

N. E. do.  $0^{\circ} 31' 12''$   $90^{\circ} 12' 45''$

Between James Island and Porter's Island, the easternmost in lat.  $0^{\circ} 22'$  S. long.  $90^{\circ} 18'$  W. the western in lat.  $0^{\circ} 25'$  S. long.  $90^{\circ} 31'$  W.

Abington Island lies N. E. from Point Albemarle, is about 15 miles long; good anchorage is found in HULL'S Bay on the south side of the island. Binloes Island is E.  $\frac{1}{4}$  S. from Hull's Bay, distant 27 miles; this island extends E. and W. 15 miles; affords no anchorage.

About 45 miles east of Binloes Island lies an island nearly the same size; it was seen by Lieut. J. DOWNES, U. S. N. in 1813. The latitude from the report of several whalers is  $0^{\circ} 21'$  N. Wenam's Island lies in lat.  $1^{\circ} 21'$  N. is 7 or 8 miles in circuit, and has two small inlets, one off the S. E. the other off the N. W. points, but within more than 100 yards from the island. Its sides are every where inaccessible. It affords no anchorage.

N. W. by N. from Wenam's Island, lies Culpepper's Island, distant 24 miles. This island affords no anchorage.

Redondo Rock lies N. N. W. from Cape Berkley, distant 15 miles; the U. S. ship Essex was very near being driven on the rock by the current in 1813.

There are a number of other small islands or rocks which, from the present state of knowledge of this navigation, it would be impossible to describe; they are steep and inaccessible, and danger is to be apprehended from being sent on them by the currents which run with great rapidity.

A BAY in lat.  $46^{\circ} 3'$  S. The entrance of this bay is spacious, with several small islands in the midst, affording good anchorage. The land about it is of immense height. Near the water the woods are impenetrable, and the tops of the mountains covered with snow. A ship need not let go an anchor, but haul into some of the small inlets, which are numerous, and make fast to the branches of the trees; the land above sheltering you from even a breath of wind. The water in this bay is of great depth.

The *Isle Gorgona*, on the south side of the Gulf of Panama, is surrounded by little islets. The coast hereabout is distinguished by its currents. The Bay of Choco to the N. E. is remarkable for having a communication by water with the Gulf of Darien, which is practicable for canoes loaded with cocoa, although the distance is seventy-five leagues.

PANAMA.—A particular plan of the Bay of Panama is given on the chart. Panama is still a strong city, but was almost ruined by a terrible conflagration

in 1784. Its present trade is chiefly with the villages in the neighbourhood, and Porto Velo, &c. The neighbouring mountains produce excellent wood, especially the finest mahogany and cedar, with many balsams. The voyage hence to Guayaquil is easy and safe.

### *Track from Sonronate to Acapulco, in 16° 55' N.*

Steer S.W. (true) distance fifteen leagues; when run, you will find yourself in lat. 15° 4' N. and long. 90° 33' W. of Greenwich; from whence steer W. 18° N. (true) distance one-hundred and forty leagues; then run W. 20° N. fifty-eight leagues; when done, you ought to be two leagues from the coast, and abreast of the Port of Acapulco, which is in lat. 16° 55' N. and 100° 54' W. although some navigators place it 17° N.

From this track is seen that it is too near the coast; however, endeavour to near to the westward, and keep from twelve or fifteen leagues from it, and although you make as far west as 94° 18', it is of little importance, and as the coast to the westward runs out to the northward, you will be obliged almost to steer so.

It will be requisite you pay great care in the longitude of 94° to 96°, as it blows very hard from 94° to 98°, being in the meridian of Guantepeque and the Island Ventoza (or Stormy Island.) This track is during the northerly winds.

If during the southerly winds, keep about twenty-five leagues from the coast, until you are in the meridian of Acapulco, and steer accordingly for the entrance of the port about due north, keeping in mind that the port of Acapulco is completely land-locked, and sheltered from every wind by the high mountains which surround it. It is about three miles long, and from one to one and a half wide; the entrance is about half a mile wide, and is defended by an island, which forms two outer channels to the main entrance. The town of Acapulco is situated at the western extreme of the bay, on a declivity of the hill, which is covered with huge rocks and towering trees. On entering this harbour, some black rocks or hills are seen, and the sea washing them. These rocks or hills extend about five leagues from N. W. to S. E. from the beach of Citla unto that of Maquila, and about nearly the middle of these black hills, is the Port of Acapulco. The port is easily known on both sides of these hills; the beach is low and sandy, with some palm-trees. The hills are those of the port, and they run north and south of it.

To enter the port of Acapulco, it is necessary to approach very near the coast, otherwise it will be impossible to discover the harbour: having the highest hill to bear north, the mouth of the port will bear in the same direction. Stand well in as soon as you see an island which is to the N. W. of the entrance, which you leave on the larboard side going into port. This island is a league long, and high; it is about half a league from the coast, and there is a channel between it and the main, by which the galleons generally enter, being clear of rocks, and having plenty of water. The island is called Grifo or Rosqueta; the west side of the port has also a small reef or pointed island, which is also called Grifo, but the entrance is loose and clear.

On the east point of the port, there is another port on the S. E. side of it, called the Marques; this you leave on the right hand going into Acapulco, and when abreast of it, you will descry the castle of Acapulco, which is nearly in front of the entrance to the port.

In case of contrary winds, or having occasion to tack, you may do so with safety in the bay: there is no danger but what is seen.

### *Track from Acapulco to Realeho.*

As soon as you are clear of the point of the port of Acapulco, you should keep as near the castle as possible, in order to embrace the sea-breeze, which varies from W. S. W. to N. W. and the land-breeze by night varies from north

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to N. E. If by any accident you are driven from the coast above five leagues, do all in your power to regain it, because, between five and six leagues from the coast, you may be certain of having easterly and north-east winds.

The coast is quite clear of shoals, and within a mile of the coast you have 40 fathoms water.

According to the above instructions make the best of your way for Realeho, or if bound for Guayaquil, until you make the Island of Cano or Golfo Dulce, from whence you will luff all you can, with the winds from the *seconda quadrante* or S. E. winds, which commence about the end of February, until you make Cape San Francisco.

### *Track from Acapulco to San Blas, in 21° 30' N.—104° 50' W.*

Leaving the port of Acapulco, with N. W. winds, which are general along this coast, (excepting the months of June, July, August, and September, at which time you have the wind from south to S. W.) you will steer with the winds from the third quadrante or S. W. wind, until you are seven or eight degrees west of Acapulco, when the winds prevail from N. E. and continue steering N. N. W. until you make 23° N. from whence stand in towards the shore, although you lose nothing on this tack, the more you reduces the longitude, the more northerly are the winds, and approaching they are north-westerly; if you lose nothing by standing E. S. E. on your next board to N. E. you will regain it, and on this tack you ought to pass to the northward of the Tres Marias, either inside or outside of the Island of Isabelas, until you make the port of San Blas.

N. B. In 20° 40' north and south with Cape Corrientes, there is a shoal above water, and in the parallel of 18° and 19° you have also to be on the look-out for the islands of Socorro or Revillagigedo. Variation on Tres Marias 6° 30' N. E. and San Blas 7° 15' N. E.

Fast sailing vessels will generally make a passage in less time, by working along shore, taking advantage of the little variations in the winds, but must not be discouraged if they should at times, lose ground even for several days in succession.

*Lord Anson's* description of *Acapulco* is calculated to mislead navigators. For several weeks he cruised off another part of the coast, which he mistook for *Acapulco*; this he ascribes to the incorrect description given by the bucaniers or pirates, who state that *Acapulco* is the only part of the coast in that neighbourhood where the highland extends down to the sea. This his Lordship states, is not the case; but this, in reality, is the case, and is the best mark by which it can be distinguished. *Anson*, it appears, cruised too far from the coast to see the low land. "Under favourable circumstances," says an experienced Navigator well known to the Author, "I made the latitude of the anchorage in 18° 51' N. and the longitude by lunar distances with the stars, on each side of the moon, and confirmed by chronometers to be 100° 9' W. This position, agrees very nearly with the observations of the Spanish Mathematicians, and of the celebrated Captain *Basil Hall*, of the British Navy. *Arrowsmith*, whose charts of the south coast of Mexico are very inaccurate, places it nearly a degree too far west, and *Humboldt*, who made some observations at this place, makes it too far eastward. *Dr. Mackay*, who is most out of the way, places it in lat. 17° 10' N. and long. 101° 45' W.

*Acapulco* and *San Blas*, although the two principal Mexican ports in the Pacific, are unnoticed; the former in some of the latest American globes, and the latter in some splendid Atlases lately published in Philadelphia.

Although *San Blas* and the coast in its vicinity, should on no account be visited from the middle of June, till the beginning of November, owing to the violent and changeable gales of wind, accompanied by constant thunder and lightning, with torrents of rain, together with fevers and unparalleled numbers of mos-

quettos and sand flies, from which even the natives are compelled to fly into the mountainous country, yet a short distance to the northward, in the gulf of California, the weather is fine, and the navigation is pleasant at all seasons of the year, with the exception of short but violent gales, which may be expected about the beginning of October.

**QUIBO.**—The island Quibo, off the coast Veragua, to the westward of the Bay of Panama, was visited in 1794 by Captain Colnett, who made a survey of its S. E. bay, called *Puerto de Damas*. "Quibo," says Captain Colnett, "is the most commodious place for cruisers of any I have seen in these seas, as all parts of it furnish plenty of wood and water. A vessel may lie so near the shore as to haul off its water; but the time of anchoring must be considered, as the flats run off a long way, and it is possible to be deceived in the distance. The high water, by my calculation, is at half-past three o'clock at full and change; the flood comes from the north, and returns the same way, flowing seven hours and ebbing five, and the perpendicular rise of the tide two fathoms.

"It would not be adviseable for men of war and armed vessels, acting upon the offensive and defensive, to anchor far in, as the wind throughout the day blows fresh from the eastward, and right on shore, so that an enemy would have a very great advantage over ships in such a situation. There is good anchorage throughout the bay, at five or six miles distance from shore, in 33 and 35 fathoms, with a mud bottom, and firm holding ground.

"The *Rattler* anchored in the bay in 19 fathoms, with the north point in a line with the north point of the Isle Sebacco, bore N. N. E. the watering-place N. 44° W. and the south point of the Isla Quibo S. 32° E.

**ISLANDS OFF VERAGUA.**—Captain Colnett has, also, described the isles to the westward and southward of Quibo: namely, *Ladrones*,\* *Montuoso*,† and *Quicaras*. "The *Ladrones* consist of small barren rocks. *Montuoso* rises to a considerable height, and is five or six miles in circumference: its summit is covered with trees; the greater part are those which bear the coco-nut, and give it a very pleasant appearance, but islets and breakers extend off its east and west ends to the distance of three or four miles. The bottom is rocky on the south side, as is the shore near the sea. There is a beach of sand behind some little creeks that run in between the rocks, which makes a safe landing for boats. The *Quicaras* consist of two isles; the larger one is about six or seven miles, and the lesser about two or three miles in length; they lie north and south of each other, with but a small space between them, and distant from the south end of Quibo about twelve miles. The least of these isles is entirely covered with coco-trees; and the larger one bears an equal appearance of leafy verdure, but very few of the trees which produce it are of the coco kind."

The most commanding look-out for Quibo is the top of *Quicara*, which is supposed to have been mistaken by Lord Anson for a part of that island. It commands the whole coast and bay which have been described.

**VARIATIONS OF THE COMPASS.**—These are shown generally on the Chart. On reference it will be seen that, at South-Shetland, the variation is about 24° E. near Cape Horn, 22°; about Cape St. Lucia nearly the same; near the Isle Madre de Dios it is 21°; at the N. E. end of Chiloe 16°; near Concepcion Bay, 14°; off Coquimbo, 13°; Isles of St. Felix, 11½°; near Arica, 11°; near Callao, 10°; off Pativilca, 9½°; off Truxillo, 9°; Gulf of Guayaquil, 10°; near Cape St. Lorenzo, 9°; off Point Guascama, 8½°; Bay of Panama, 9°; near Quibo, 9° 50' E.

\* Misspelt, Zedzones.

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## CHAP. XIX.

## COAST OF NEWFOUNDLAND.

[It was the intention of the Author to omit part of the Coast of Newfoundland, at the time he commenced this work, but being requested by some of his friends to insert it entire, is his reason for introducing it nearly at the close of the Book.]

*Remarks made between the Island of Groias and Cape Bonavista.*

The island Groias lies 2 leagues from the main, is about 5 leagues round. The north end of it lies in the latitude of  $51^{\circ}$  N. off from which, at  $\frac{1}{2}$  mile distance, are several rocks, high above water, also off from the N. W. part; otherwise this island is bold-to all round. Between it and the main is from 20 to 40 fathoms water.

The harbours of Great and Little St. Julien's and Grandsway, lie within the island of St. Julien, which bears N. W.  $\frac{1}{2}$  N. distant  $\frac{3}{4}$  miles from the north end of Groias. The S. W. end of it is but very little separated from the main, and is not to be distinguished as an island, till you are near it. There is no passage at the S. W. end but for boats. To sail into these harbours, you may keep close to the N. E. end of the island, as you pass which the harbours will appear open to you. There is no danger in the way to Great St. Julien's, which is the easternmost harbour, until you are within the entrance, then the starboard side is shoal near  $\frac{1}{2}$  over; when you are past the first stages, you may anchor from 8 to 4 fathoms water: To sail into Little St. Julien's, you must, (to avoid a sunken rock, which lies directly before the mouth of the harbour,) first steer directly for Great St. Julien's, till you are abreast of the entrance of Grandsway: then you may steer directly into Little St. Julien's, and anchor in 4 or 5 fathoms water. Ships in both these harbours commonly moor head and stern.

Grandsway is not a harbour for ships; but very convenient for fishing craft.

Croque harbour lies 4 miles to the southward of St. Julien's island, and is after described.

Four miles and a half to the southward of Groias lies Belle Isle, which is above 20 miles round; there is a little harbour at the south part of this island fit for fishing craft, but it is too difficult for shipping. There are some other coves about this island, where shallows may shelter occasionally.

S. S. W. 7 miles from Croque harbour lies Carouge harbour, which bears W.  $\frac{1}{2}$  N. from the south end of the island Groias. Immediately within the entrance of this harbour it divides into two arms, one to the N. W. the other to the S. W. Directly in the middle of the S. W. arm is a shoal, on which is only 7 or 8 feet water at low water; you may pass on either side of it, and anchor from 20 to 8 fathoms water, in good holding ground: There is also good anchoring in the N. W. arm; but, in general is not so good as in the S. W. arm.

S. S. W. 3 miles from the south point of Carouge harbour lies Fox head, round which, to the N. W. lies Conch harbour, in which is good anchorage, well up to the head of it, in good holding ground, in 11 fathoms water. It is open to the S. S. E.

About 2 leagues to the S. W. from Conch, is Hilliard's harbour, by the French

called *Bottot*; this is but a very indifferent place for shipping, but convenient for fishing craft.

Four miles and a half further to the S. S. W. is the harbour of Englee. This harbour is situated on the north side of Canada bay. To sail into this place, you must pass a remarkable low white point on Englee island, which forms the north entrance of Canada bay; then keep near the shore, until you are abreast of the next point which makes the harbour; then haul round to the S. E. taking care not to borrow too near the point, it being shoal a cable's length off; and you may anchor from 15 to 7 fathoms, very good holding ground; but this is well up in the cove, which is too small to lie in, unless moored head and stern. In Bide's arm, which runs up north from Englee, near 2 leagues, there is no good anchorage, it being very deep water: Within the south end of Englee island there is a good harbour for shallows; but there is no passage even for boats, from thence to the place where the ships lie, except at high water, or, at least, half tide.

Canada bay lies up N. N. W. from Point Canada, (which is the south point that forms the entrance of Canada bay) upwards of 4 leagues. This bay cannot be of any use for shipping, otherwise than as a place of shelter in case of necessity. On being caught near the shore in a hard gale of easterly wind, ships may with the greatest safety, run up and anchor in this bay, free from all danger. In such case, when you are above two small rocky isles, which lie near Bide's head, called the Cross islands, you will observe a low white point, and another low black one a little above it. Off the latter a sunken rock lies about 2 cables' length; therefore keep the middle of the bay, and you will meet with no danger, except a rock above water, which lies a mile below the point of the narrows; leave this rock on the larboard hand, keeping the middle of the water, and you will carry 18 fathoms through the narrowest part; soon after you are above which, the bay widens to upwards of a mile across; and you may anchor in 18 and 20 fathoms water, good holding ground, and secure from all winds.

Three miles south from Canada point is Canada head. It is pretty high, and very distinguishable, either to the northward or to the southward; but when you are directly to the eastward of it, it is rather hid by the high lands, in the country, called the Clouds.

Upwards of 4 miles to the S. W. from Canada head is Hooping harbour, by the French called *Sansford*. This place has two arms, or rather bays, the one lying up the northward, and the other to the westward. There is very deep water in the north arm, until you approach near the head; it is a loose sandy bottom, entirely open to southerly winds, and not a place of safety for shipping. In the westward arm a ship may safely anchor in a moderate depth of water.

About 4 miles to the southward of Hooping harbour is Fouchée. There is no anchorage in this place until you approach near the head, where there is a cove on the north side. The land is extremely high on both sides, and deep water close to the shore. This cove is about 2 or 3 miles from the entrance, in which there is anchorage in 18 fathoms water, but so small, that a ship must moor head and stern. There is another arm, which runs near two miles above this; it is extremely narrow, and so deep water, that it is never used by shipping.

Three leagues to the S. W. from Fouchée, is Great harbour deep, by the French called Bay Orange: It may be known from any other place, by the land at its entrance being much lower than any land on the north side of White's bay, and bears N. W. ½ N. from Partridge point. This is a large bay. A little within the entrance there is a small cove on each side, generally used by the fishing ships, though very dangerous for a ship to lie in: They always moor head and stern; notwithstanding, if a gale of wind happens to the eastward, they are in the greatest danger. Near three miles within the entrance of this bay, it branches out in three arms. In the north arm, which is much the largest, there is so deep water, you will have no anchorage until you approach near the head; the middle arm is the best place for ships to anchor, in 7 fathoms water, and a good bottom.

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From Orange bay, 2 leagues to the S. W. is Grandfather's cove, by the French called l'Ance l'Union. This is an inlet of about 2 miles, directly open to the S. E. winds; it may be known when near the shore, by the north point of it appearing like an island, and bears N. W. by W.  $\frac{1}{4}$  W. from Partridge point. It is but an indifferent harbour for shipping. Scarcely 2 miles further, is another inlet, called Little harbour deep, by the French, la Vache. This is also directly open to the S. E. winds; off the north point of this inlet, are some rocks, half a mile from the shore, which always show above water, about which is good fishing ground; the water is not very deep in any part of this inlet, and when you are half way from the entrance to the head, it becomes quite shoal.

About 2 leagues further to the S. W. is Little cat arm, which is an inlet that lies up west 2 miles. This inlet is about 2 miles from Great cat arm. Off the north head there are some rocks, which show above water; to avoid which, in sailing in, keep nearest to the south side; but you will find no anchorage till you approach near the head of this arm, where you will be securely land-locked.

Upwards of 3 leagues to the S. S. W. from Great cat arm, is Coney arm head. This is the most remarkable land on the west side of White bay: it bears W. S. W. distance 3 leagues from Partridge point. The land, all the way, runs nearly straight, until you come to this head, which projects out nearly  $\frac{1}{4}$  mile, forming a deep bight, which is called Great Coney arm. There is no kind of shelter for shipping at this place. N. W. from the head, is Little Coney arm; which is a convenient little place for fishing craft, but at the entrance it is too shallow for a ship.

From Coney Head about four miles further up the bay, is a cove called Frenchman's cove, in which a ship might safely anchor.

From Frenchman's cove, about a league further to the south, round a low ragged point, is Jackson's arm, in which is pretty deep water, except in a small cove on the starboard hand, where a ship may moor head and stern. This place affords the largest timber in White's bay.

From Jackson's arm, four miles further to the southward, is the north end of Sop's island, which bears S. W.  $\frac{1}{4}$  W. distance about ten and a half miles from Partridge point. This island is eleven miles in circuit, by which, and Goat Island, is formed a long passage, or arm, called Sop's arm; in the north of which a ship may safely anchor, just within the north end of Sop's Island. The best passage into this arm is by the north side of Sop's Island. There is also anchorage between Sop's Island and the main, before you come the length of Goat Island, but the water is deep; there is a cove at the north end of this island called Sop's cove, and two other small coves opposite on the main, called Hart's Coves, in all of which a fishery is carried on, but ships generally anchor in the upper part of the arm, within Goat Island.

From the north end of Sop's Island, to the river at the head of the bay, the distance is upwards of six leagues. This place is called Gold Cove. Here the river branches out into several small streams of water.

Near five leagues down from the river head, and nearest the S. E. side of the bay, lies Granby's island, by some called Mid-bay island. This island affords no cove nor shelter for boats. On the south-east part, about two cables' length off, there is a shoal, whereon is not above  $1\frac{1}{2}$  fathoms water. Nearly abreast, or rather below this island, on the south-east side of White bay, is Purwick cove, in which shipping may safely anchor, and good conveniences for the fishery. About five miles to the N. E. of this cove, and W. by S.  $\frac{1}{4}$  S. from the north end of Sop's Island, lies Westward arm. This arm lies up about S. E. four miles, in which ships may safely anchor, in about 18 fathoms water: there is a cove on each side of this arm, at its entrance: that on the N. E. side, called Bear cove, is much the best, where small ships may securely moor, sheltered from all winds, in 12 fathoms water; the other cove, which is called Wild cove, is but an indifferent place, being open to the northwest winds, and a foul rocky bottom; the point on the N. E. side of Western arm, is called Hauling point.

Two leagues to the N. E. of Hauling point, is another arm, lying up about S. E. by S. three or four miles, called Middle arm. At the entrance of this arm is a rocky island, from which, quite home to both shores, is a shoal, whereon is



from 1 to 2, and in some places 3 fathoms water. The best passage into this arm is to keep the larboard shore on board; but this is not proper for large shipping. Between this arm and Hauling point lie the Pigeon Islands, about which is good fishing ground.

About one and half mile to the N. E. from Middle arm, is another, called Southward arm, in which a ship may safely anchor in 17 fathoms water, entirely land-locked; here she will be nearly three miles within the heads, but there is good anchorage in any part below, from 20 to 25 fathoms, before you are near so far up. A little above the inner point, on the north side, is a mussel bank entirely across the arm, which is nearly dry at low water; and above this bank you will again have 11 and 12 fathoms, and continues deep to the river head. This arm is nearly five leagues above Partridge point, and may be known, when sailing up the S. E. side of the White bay, by its being the first inlet, and bears W. by S. from Coney arm head, which lies on the other side of the bay, and which head is always very conspicuous.

Near a league from Southward arm, towards Partridge point, is Lobster Harbour. This is a small round harbour, with a shoal narrow entrance; at low water, at some places in the entrance, there is not above 3 or 9 feet water, but after you are in, you will have 12 and 13 fathoms all over the harbour. Small ships may enter at proper times of tide.

It flows on full and change days, nearest E. by S. and W. by N. in all places in White bay. From Canada head the current generally sets up the White bay, on the N. W. side, and down the bay on the other side; and between Partridge point and cape John, it generally runs about S. E. by E. It is observed that the flood or ebb, scarce ever makes any alteration in the course of the current.

From Canada head to Fleur de Lys, the course is south nearly ten leagues. This harbour is situated about four miles to the S. E. from Partridge point, and bears S. W. by W.  $\frac{1}{2}$  W. distance about 10 miles from the west end of the westernmost of the Horse Islands. The entrance of this harbour is not distinguishable, until you come pretty near the shore: but it may be known at a distance by a mountain over it appearing something like a top of a fleur de lys, from which it takes its name. There is no danger in sailing into this harbour, until you come within 2 cables' length of the harbour island, which is on the south side, at which distance there lies a rock, whereon there is not above 6 feet at low water; it is shoal from this rock home to the island; to avoid which keep the starboard or north shore on board, and you may come too in any part of this harbour above the said island, in  $4\frac{1}{2}$  and 5 fathoms water, sheltered from all winds.

The two Horse islands are situated between Partridge point and cape John. The west end of the westernmost Horse island bears E.  $\frac{1}{2}$  N. distance 10 or 11 miles from Partridge point; and the S. E. part of the easternmost island bears N. W. by W. from cape John, distance near 5 leagues. These islands are about 6 leagues in circuit, and tolerable high; there are 3 rocks above water, lying to the northward of the easternmost, and on the east side of the said island are sunken rocks, at some places near a mile from the shore. There is a small harbour, fit for shallops, at the S. E. part of this island.

Bay Verte and Mynx lie to the S. E. from Fleur de Lys, are small places not fit for shipping. At Mynx it is impossible for more than one ship to lie, which is between a small rock island and the main, moored head and stern. Between these places is the bay of Verte or Little bay, which runs up S. E. full 3 leagues; and towards the head there is plenty of good timber. Bay of Pine, or Mynx, is an inlet of about five miles, affords no anchorage, except at Mynx, which is at the entrance as before-mentioned.

Near 5 leagues to S. E. from Fleur de Lys, is the harbour of Pacquet, at half a mile within the entrance. This harbour divides into 2 arms, the one extending to the N. W. and the other to the S. W. The N. W. arm is a very good place for shipping to lie in entirely land-locked; the S. W. arm is a mile long, but narrow, yet is a safe snug harbour. This harbour is not very distinguishable until you approach pretty near; it bears S.  $\frac{1}{2}$  W. from the passage between the Horse islands, and may be known by the south head, it being a high rock mountain; the

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About two leagues from Pacquet, to the S. E. is Great Round Harbour. This is a convenient little harbour for fishing-ships; there is no danger in sailing into it; both shores being bold-to, you may anchor within the two inner points, in 4 and 5 fathoms, entirely land-locked. Little Round Harbour, which is about one and a half mile round a point to the N. E. from this, is not fit for shipping; it is only a cove, wherein is but two fathoms, and a loose sandy bottom.

About four miles to the S. W. from Cape John, is the small harbour of La Cey. This place is open to the N. N. W. There is no danger in sailing in; you may anchor in any depth you please, from 3 to 3 fathoms water.

Cape John is a lofty ragged point of land. It lies in lat.  $50^{\circ} 6' N.$  and may be known by the Bull Isle, which is a small, high, round island, bearing nearly east, about four miles from the pitch of the cape.

From Cape John to the Bay of Twilingate, the course is S. E. by E. distance eleven or twelve leagues. This is but an indifferent place for shipping, it being directly open to the N. E. winds, which heave in a very great sea. N.  $\frac{1}{4}$  W. about four miles from the entrance of this bay, there is a bank, on which, in the winter, the sea has been seen to break, between which and the shore there are from 50 to 80 fathoms water.

Wire Cape Cove, which lies on the west side of the westernmost Twilingate Island, that makes Twilingate Bay, is a place for fishing craft only.

From Cape John to Fogo Head, the course is E. by S.  $\frac{1}{4}$  S. distance seven-teen or eighteen leagues. Immediately to the eastward of this head is Fogo Har- bour. This is a pretty good harbour for fishing-ships, &c. but the entrance is intricate and dangerous. To sail into this harbour with a westerly wind, and coming from the westward, keep close on board of Fogo Head; it is very bold- to, and nothing to fear until you open a narrow entrance, scarcely half a cable's length wide. Steer directly in, keeping right in the middle, and you will carry from 8 to 4 fathoms water through. When you are through this passage, which is commonly called the West Tickle, if you intend to anchor in the westward bight, steer to the S. E. till you bring the point between the bights to bear W. by N. to avoid the harbour rock, which is a sunken rock, that scarcely ever shows but at dead low-water spring-tides; then you may haul up to the west- ward, and anchor in from 6 to 5 fathoms, good holding ground, and sheltered from all winds.

Coming from the westward, you must not be afraid to make bold with Fogo Head, otherwise you will miss the West Tickle: and as there is generally (more particularly with a westerly wind) a strong current running to the eastward, ships making that mistake seldom can work up again. Coming from the eastward, and bound into Fogo, to avoid Dean's Rock, (which is a sunken rock, in the passage between Joe Batt's Point and Fogo Harbour) when abreast of Joe Batt's Point you must steer W. N. W. until a remarkable round hill, called Brimstone Hill, appears in the hollow of the harbour. Then you may steer directly for the East Tickle, which may be known by the lantern on the top of Sim's Isle, which makes the west side of the Tickle; as you approach, you will discover the entrance. Give birth to the point on the starboard hand, which is that on Sim's Isle, and steer directly up the harbour, keeping nearest the south side, and you will carry from 5 to 3 fathoms water through: immediately when you are round the point, steer S. S. W. to avoid the harbour rock, and follow the above directions for anchoring. As there are two entrances to this harbour, and both narrow, you may choose according to the wind. The Middle Tickle is only fit, and even intricate for shallops, though it appears the widest.

About seven miles to the N. E. from the entrance of Fogo Harbour lies Lit- tle Fogo Island; from which, above two leagues distance, to the northward, eastward, and westward, lies a great number of small rocks, above and under water, which makes this part of the coast exceeding dangerous, especially in foggy weather.

Between the Bay of Twilingate and Fogo Head, nearly midway, lies the Isle of Bacalean. To the S. W. from this island, near three miles, is the harbour of Herring Neck, which is a fine harbour, sufficient for any ships.

From the round head of Fogo, which is the N. E. part of the island, to the outermost Wadham's Island, the course is S. E. by E. distance fourteen or fifteen miles. There is a very good passage between these islands, often used by shipping. This passage is above a mile wide, and is between the second and third island; that is, you are to leave two of the islands without, or to the northward of you. Those islands are about five leagues in circuit, and lie nearly two leagues from the main land.

From the outermost of Wadham's Islands, that is the N. E. isle to the Gull Isles off Cape Freels, the course is S. E. distance ten leagues. Gull Isle is a small rock island, and lies about a mile and a half from the pitch of Cape Freels, which is a low point of land; between this cape and Green's Pond Island are several small islands and sunken rocks along shore. There is no passage from the cape towards Green's Pond for shipping within the Stinking Isles, without being very well acquainted.

The Stinking Islands lie S. S. E. two leagues from Gull Island, and N. N. W. thirteen leagues from Cape Bonavista.

N.  $\frac{1}{2}$  E. from Cape Bonavista, and N.  $27^{\circ}$  E. about ten leagues from Cape Freels, lies Funk Island. This island lies in the latitude of  $49^{\circ} 52' N.$  it is but small and low, not to be seen above four or five leagues in clear weather. There are two small isles, or rather rocks, at a small distance from the N. W. part. This island is much frequented by sea-birds of various kinds.

About W. N. W. distance seven leagues from Funk Island, lie the dangerous rocks, called Darel's Ledge, upon which the sea almost always breaks.

Green's Pond Harbour is situated on the west side of Bonavista Bay, and bears from the Stinking Isles S.  $65^{\circ}$  W. distance upwards of four leagues. It may be known by the Copper Islands, which lie to the southward of the harbour, and are pretty high, and sugar-loaf topped. This harbour is formed by several islands, that are detached about half a mile from the main land, the largest of which is called Pond Isle, and makes the north side of the harbour. This island is tolerably high, and near five miles in circuit. The other islands, making the south side, are but small. This is but a small harbour. Towards the upper part two ships can scarcely lie abreast. There is no danger in sailing into this harbour, until you approach its entrance, where you must be careful of a shoal; it is but of very small extent, whereon is not above 6 or 7 feet at low water; you may pass on either side of this shoal, but the north side is the widest and best passage.

S.  $70^{\circ}$  W. about four miles from the Copper Island is Shoe Cove Point. About two miles to the northward of this point lies New Harbour, in which ships may safely anchor, though it is but a small harbour.

Indian Bay runs up west about four leagues above this harbour; at the head of which there is plenty of good timber.

From Copper Island to the Gull Isle of Cape Bonavista, the course is S. E.  $\frac{1}{4}$  S. distance ten and a half leagues; and S.  $20^{\circ}$  W. distance two leagues from Gull Island, lies Port Bonavista. It is a very unsafe place for ships to ride in, being directly open to the winds between the N. and W. and a loose sandy bottom.

Barrow Harbour bears W.  $\frac{1}{4}$  N. eight leagues from Port Bonavista. This is a very good harbour.

From Port Bonavista, W.  $\frac{1}{4}$  S. about ten miles, lies the little harbour of Keels, which is only fit for fishing-craft.

### *Directions for navigating from Cape Race to Cape Bonavista, with remarks upon the Fishing Banks.*

From Cape Race to Cape Ballard, is N. N. E. about  $8\frac{1}{2}$  or 4 leagues, between which, about half way, is Clam cove, which is only for boats: and near to Cape Ballard is another cove, called Chain cove, where are several rocks lying before it (but there is no harbour, or bay, for ships to ride in) and fish between the two capes.

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But to the northward of Cape Ballard is another cove for boats; and about 4 miles from the cape is Freshwater bay, near half way between Cape Ballard and Renowes, the latter being the southernmost harbour the English have in Newfoundland.

From Cape Ballard to the south point of Renowes, the course is N. N. E. about two leagues. Renowes is but a bad harbour, by reason of sunken rocks going in, lying off the fairway, besides other rocks on each side, but it is a good place for fishing.

Those who go in there should be very well acquainted; when you are in, where ships usually ride, you have not above 15 feet water, and but small drift, by reason of shoals about you, and a S. S. E. wind brings in a great sea, so that it is very bad riding, and only used in summer time: the harbour lies N. W. about a league in; but you must keep the south side going in, for that is the clearest.

Off the south point of the entrance of the harbour is an island, a small distance from the shore; and off the said south point of the harbour, S. E. by E. about half a league, is a great rock high above water, called Renowes Rock, which you may see at least 3 leagues off in fair weather, but the rock is bold to go on either side.

From Renowes point to Fermowes is  $1\frac{1}{2}$  leagues N. E. by N. N. E. and N. tending about, but being a little without Renowes, the course will be N. N. E. till you come open of the harbour of Fermowes. Between the said two harbours is a cove, called Bears' Cove: a place only for boats to stop at if the wind be contrary, but no inhabitants.

Fermowes is a very good harbour, and bold going in, no danger but the shore itself; it lies in N. W. and N. W. by W. Being past the entrance, there are several coves on each side of the harbour, where ships may and often do ride; the first cove on the starboard side (going in) or north side, is called Clear's Cove, where ships seldom (but may) ride; the next within it, a little distance on the north side, is the Admiral's Cove (where lives a planter;) in this cove you lie land-locked from all winds, and ride in 7 or 8 fathoms, good ground.

The Vice-Admiral's Cove (so called) is on the south side, farther in, or more westerly, and is a very good place to ride in for many ships, good ground, and above the said cove, on the south side, farther in, is another arm or cove, where also you lie secure. You have about 20 fathoms water in the entrance of the harbour; but within you have from 14 to 12, 10, 8, 7, and 6 fathoms, as you please, and the head runs up at least  $4\frac{1}{2}$  miles.

From Fermowes to Agua Fort, the course is N. by E. about a league, between which are two heads, or points of land, about a mile from each other, the southernmost, or next to Fermowes, is called Bald Head, about a mile from the harbour's mouth of Fermowes; between which is a pretty deep bay, but all full of rocks, and no safety for boats to come on shore at in a storm; it is but a mile from the harbour, which is safe for ships or boats, and not above 2 miles to the entering of Agua Fort.

The next head to the northward of Bald Head is Black Head, lying N. and S. one from the other, about a mile asunder; and from Black Head to the point of Agua Fort harbour, is N. W. by N. one mile, which harbour is very good, and safe for ships; it lies in W. N. W. There is a great rock above water going in on the south side, which is bold too; you run up about 2 miles within the harbour's mouth, and ride on the north side, and lie land-locked, as it were a pond, like to Ferryland Pool, but larger, where, with a piece of timber, you may make a stage from your ship to your stage on shore, being an excellent harbour, and water deep enough.

From Agua Fort to Ferryland Head (the south part of the head) the course is east, about three miles. Crow Island, being about a mile from Agua Fort, lies E. N. E. from the harbour's mouth, and from the S. E. end of Crow Island lies a shoal about a cable's length.

From the north part of Ferryland Head to Ferryland, the course is W. by N. about two miles; to go into Ferryland port or harbour, you must sail between the north part of Ferryland Head and Buoy Island; it is not very broad, but

there is water enough, and clean ground; being within the said Buoy Island, you may run in and anchor where you please, it being of a good handsome breadth; or you may go into the Pool, which is a place on the larboard side (going in) with a point of beach, where you ride in 12 feet water at low water, and where the Admiral's ships generally ride, (the stages being near, several planters, inhabitants, live in this place.) From Buoy Island, almost in to the land to the westward, are small islands and rocks, which make Ferryland harbour or port, and divide it from Caplin's Bay; between the said rocks, in some places, is a passage for boats, and the water rises hereabouts  $3\frac{1}{2}$ , 4, and sometimes 5 feet, and sometimes 3 feet, and so it does generally in all the harbours of this land.

From Ferryland Head to Cape Broyle Head, is N. by E. almost 4 miles, between which are three islands, which lie before Caplin's Bay; there are channels to sail between them to Caplin's Bay, that is, between Buoy Island, which is the sternmost and greatest; and Goose Island, which is the middlemost, and is the second in bigness next to Buoy Island; also you may sail through between Goose Island, which is the middlemost, and Stone Island, which is the northernmost; but these passages are large enough for ships to sail or turn in or out; but between Stone Island and the north shore (that is, Cape Broyle) there is no passage for a ship, only for boats, there being a great rock between Stone Island and the north shore.

Caplin's Bay is large and good, and runs in a great way W. N. W. at least 6 miles within the said islands, where many ships may ride in good ground, and where sometimes the Newfoundland ships meet that are bound with convoy to the Straights, but generally rendezvous at the bay of Bulls.

From Cape Broyle head (the north part of it) which lies in the bay or harbour of Cape Broyle, W. N. W. and N. W. by W. about  $7\frac{1}{2}$  miles, and from the south point of the entrance to the north point or head, is about 2 miles broad, and lies N. by W. and S. by E. one from the other.

Cape Broyle is the most remarkable land on all the south coast of Newfoundland, for coming out of the sea either from the southward or northward, it makes a swamp in the middle and appears like a saddle. E. S. E. from the north point of Cape Broyle, about  $\frac{1}{2}$  or  $\frac{3}{4}$  of a mile, lies a sunken rock called Old Harry, on which is but 18 feet water; the sea breaks upon it in bad weather, but between the shore and it, is water enough of 12 and 13 fathoms, and without it is a ledge of about the same depth, where they used to fish, but off the ledge is deep water of 40 or 50 fathoms and deeper. In very bad weather the sea breaks home almost to the shore from Old Harry, by reason of the current that sets strong generally to the southward.

From Cape Broyle to Brigus by south (so called to distinguish it from another Brigus in the Bay of Conception) is a league, but from the north head of Cape Broyle bay to Brigus is but a little more than a mile, and lies in N. W. and N. W. by W. Brigus is a place only for small ships of not above 7 or 8 feet draught of water to ride in the cove, which is not altogether safe neither; it is a place for fishing, where live two planters; there is an island so called, where they build their stages, and make their fish upon, who come there fishing, but the water comes not quite round, unless in a great storm or rage: it is a place of little consequence.

From Cape Broyle to Cape Neddick, the course is N. by E. northerly, 5 leagues; and from Brigus point to Cape Neddick, is N. E. almost  $\frac{1}{2}$  mile between which is Freshwater bay, but of no note. Cape Neddick is a high point, flat at top, and straight down to the water.

From Cape Neddick to Baline Head is about  $\frac{1}{2}$  a league N. E. by E. between which is Lamanche. Lamanche is only a cove in the bay, where is no safe riding for any ship.

From Baline Head to Baline Cove is near  $\frac{1}{2}$  of a mile; it is a place where ships use to keep 2 or 3 boats with a stage for fishing, where one planter lives; the place is not for ships, only small vessels may come in to lade, and lie within the rock called the Whale's Back, which rock breaks off any sea, and there are 2 rocks above water, one on each side going in, and the Whale's Back in the middle, but without the said rocks that are above water.

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Against Baline Cove lies Goose Island, about a mile, or half a league to the seaward of Baline. Goose Island is a pretty large island,  $\frac{1}{2}$  or near a mile long.

From Baline Head to Isle de Spear is N. N. E. a mile within the greatest of the said islands, which is the northernmost. Ships every year fish there; on this island is a stage on the inside, that is, on the west side, and good riding in summer season, the island being pretty large, but the northernmost island is only a round hill fit for no use.

The next to the Isle de Spear is Toad's Cove, where a planter lives, a place for boat's to fish, but not for ships to ride.

A little without Toad's Cove (or to the eastward) is Boxes Island, between which and it is no passage, but only for boats to go through at high water.

From Baline Head to the Momables Bay is N. by E. about four miles, and lies N. W. near two miles; it lies open to the sea, yet is a good place for fishing.

From Baline Head to the north point of Momables Bay (which is the south point of Whittless Bay) the course is N. N. E. northerly, four miles off, which point is a shoal of rocks that lie a great way off, so that men must be well acquainted to go with ships between the said point and Green Island, which is a small island right off against the said point, a little more than a mile; for if you intend to come through between them, then it is best to keep the island side, which is clearest.

From the said shoal point, or south point of Whittless Bay, the land on the south side of the bay lies in, first part N. N. W. and after more westerly.

From the south point of Whittless Bay to the north point of the said bay is N. E. by N. about a league, so that it is a large going into the bay, and about a league within Gull Island to the head of the bay, there is turning in or out, but about half way into the bay, on the north side, (where the planters live and the Admiral's stage is) there is a ledge of rocks which you must avoid: the most part of them may be seen above water: you may lie but little without the outermost, which appears dry. This is a far better bay than Momables, by reason of the Gull and Green Islands lying without before it; you may sail between the islands, or between Green Island and the south point of Bay Bulls, yet ships, after the beginning of September, will not care to ride in Whittless Bay, but rather come to Bay Bulls, which is but one and a half league by sea to it, and not above two and a half miles over land.

From Cape Broyle to Bay Bulls is N. N. E. half easterly, five leagues from the south head of Bay Bulls to the north head, called Bull Head, the course is N. E. northerly, one and a quarter mile, or thereabouts, between which two heads go in the Bay Bulls, lying W. N. W. for at least two miles, and after that N. W. for about a mile, to the river head. In this bay is good riding, from 20 fathoms at the first entrance between the heads, to 18, 16, &c. after you are shot within Bread and Cheese Point, which is a point half the bay in, on the north side, where there is a cove in which the Admirals keep their stage. You must give this point a little birth, for a sunken rock that lies off that point not half a cable's length, else all the bay is bold-to, and nothing to hurt you but what you see. Being past that point, run up and anchor (or turn up) against the high hills called Joan Clay's Hill, (bring it N. E.) in 13 or 14 fathoms, which you will have there almost from side to side; but merchantmen run farther in, and anchor, some in 10, 9, or 8 fathoms, not above a point open, and others not above half a point. Men of war ride not three points open. Here, generally, the fleet is made up; that is, here they meet ready to sail (commonly for the Straights) by the 15th or 20th of September. It is from side to side against Joan Clay's Hill, as aforesaid, 430 fathoms, so that it wants but 10 fathoms of half an English mile broad.

From Bay Bulls to Petty Harbour, the course is N. E. by N. three and a half or four leagues, between which is nothing remarkable of bays or coves, but a steep dead shore only. About midway is a place called the Spout, being a hollow place which the sea runs into, and having a vent on the top of the land, near the water side, spouts up the water in such a manner that you may see it a great way off, especially if there be any sea, which causes the greater violence.

The entrance to Petty Harbour is a large bay, for from the south point to the north point, is a league distance, N. N. E. and S. S. W. and it is a league in, where the ship's ride that fish there, being but a little cove. It lies in W. N. W.

From the north point of Petty Harbour to Cape Spear, the course is N. E. by N. two miles, or thereabouts, and from thence the land tends into the N. W. to Black Head, and so to the harbour of St. John's.

From Cape Spear to the harbour of St. John's is N. W. by N. four miles; between which are three bays; the first is from Cape Spear to Black Head, and is called Cape Bay; the second is from Black Head to Low Point, and is called Deadman's Bay, several men and boats being formerly lost in that bay; the third is from Low Point to St. John's harbour, and is called Fresh-water Bay.

The harbour of St. John's is an excellent good harbour, (though narrow in the entrance) and the chief in Newfoundland, for the number of ships used and employed in fishing, and for smacks; as also for the number of inhabitants here dwelling and remaining all the year; it is narrow going in, not above 160 fathoms broad from the south point to the north point, but bold to the very rocks, on shore itself, and you have 16 or 17 fathoms, the deepest between the two heads; it lies N. N. W. but it is yet more narrow after the first entrance, by reason of two rocks lying within, on each side, but above water, between which you are to sail, it being just 95 fathoms broad between them. But being past them you may run in boldly, (it being then wider by a great deal,) and can take no hurt but from the shore, only within the aforesaid rock. On the south side of it, a point within Ring-noon (which is a small bay) there lies a sunken rock about 30 fathoms off the shore, which has not above 8 feet water on it. Being in the harbour, you may anchor in 8, 7, 6, 5, or 4 fathoms, as you please, and be land-locked from all winds, for it lies up W. S. W. You must observe that you cannot expect to sail in, unless the wind be at S. W. or to the southward of it, and then the wind casts in between the two hills, till you are quite within the narrow, and there you have room enough. But if it be W. S. W. or more westerly, the wind will cast out, and you must warp in.

But be sure, if unacquainted, that you mistake not the harbour of St. John's for a place called (Quiddy Viddy or) Kitty Vitty, which is within a mile of it, and shows an opening like a good harbour, as St. John's, but is not so, being a place only for boats to go in; it is narrow and dangerous, even for boats, at low water; you may know it by a round bare hill (head like) in the form of a bay-cock, which is called Cuckhold's head, and is just at the south part of the entrance of this Kitty Vitty, and to the northward of St. John's three quarters of a mile, or more: but besides this your course from Cape Spear will guide you.

From St. John's to Torbay, the course is between N. by E. (being at a little distance without the harbour) and N. About two and a half leagues between St. John's and Torbay, are several points which have names given them, that is, from St. John's to Cuckhold's Head, going into Kitty Vitty; the next is Small Point, which lies N. E. by N. about two miles from St. John's; the third is Sugar-loaf Point, and lies N. by E. from Small Point, half a league; the fourth is Red Head, and lies north from Sugar-loaf; about two miles between which, that is Sugar-loaf and Red Head, is a bay called Logy Bay; and the fifth point is the south point of Torbay, and lies N. by W. half a point westerly, from Red Head, about 2 miles. The point of Torbay is lower than all the rest. From the said south point of Torbay to the anchoring place where ships usually ride, the course is W. by N. two miles and more, where you anchor in 14 fathoms against Green Cove. But if you are open of the bay, the course is W. S. W. for the bay is large, and at least one league from the south point to the north point, which north point is called Flat Rock; so that if you come from the northward by Flat Rock, (which is a low black point, with a flat rock lying off it, and breaks on it) your course then into Torbay is S. W. a league. There live two planters at Torbay. It is a bad place for ships to ride in with the wind out at sea, for being open to the ocean there falls in a great sea.

From the north point of Torbay (called Flat Rock) to Red Head by N. the course is N. by W. about half a league; but from Flat Rock to Black Head by N. the course is N. by W. 4 W. two leagues.

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From Black Head to Cape St. Francis is N. W. five miles; Cape St. Francis is a whitish point, and low in comparison to the other land, but at sea the high land over it is taken for the cape. Within the point of the cape to the southward of it is a cove, called Shoe Cove, where boats used to come a tilting (using the fisherman's expression) that is to split and salt the fish they catch, when blowing hard and in bad weather, cannot get to places they belong to in time: In this cove you may haul up a boat to save her, if the wind be out, for with northerly, westerly, and southerly winds you will lie safe. There is a good place off it to catch fish.

About half a league off, triangular-ways, from Cape St. Francis, lie sunken rocks; the outermost lie E. N. E. from the Cape, about one quarter mile. There are also great rocks above water, like small islands, the outermost of which lies about three quarters of a mile east from the Cape; and the innermost not half a mile off shore, between which rocks (or island) and the sunken rocks you may go (as has been done) with boats, and find water enough for any ship; but men are unwilling to venture, there being no advantage in the case. These great rocks make the aforesaid Shoe Cove the better and more safe.

There is also another Cove to the northward of the point of the Cape, for boats when the wind is off the shore, but else not safe.

From Cape St. Francis to Belle Isle is S. W. and S. W. by S. five, or five and a half leagues, being a large island, not above a league from the shore, against which island, on the main, is a cove called Portugal Cove, where they used to catch and cure fish in summer time, and lies to the eastward. Belle Isle is about two leagues in length, and about three miles broad, and the ships that fish there lie in a little cove on the south side of the island, which will contain five or six ships, according to the rate as they lie in Bay Verds.

From Cape St. Francis to the island of Bacalieu, is N. by E. about ten leagues. Bacalieu is an island two leagues long, and above half a league broad, about which boats used to fish; there are no inhabitants on it, but abundance of fowls of several sorts, which breed there in the summer time. Between this island and the main is about a league, where you may sail through with ships, if you please. Bay of Verd's Head and the S. W. end of Bacalieu lie E. by N. and W. by S. one from the other about one and a half leagues.

From Cape St. Francis to the bay of Verd's Head, is N. about eight and a half leagues; and from the head, to the bay or cove where ships ride, is about three quarters of a mile to the westward of the head; the place where ships ride is not above a cable's length from one point to the other, which lie N. and S. one from the other; you lay your anchors in 10 fathoms, and your ships lie in 5 fathoms, with a cable out; your stem then is not above a half cable's length from the stages. The ships that ride there, are forced to seize their cable's one to another, and you cannot ride above seven or eight ships at most; it is a bad place, and hazardous for ships to ride, except in the summer time, by reason of the great plenty of fish, and they being so near them, make fishing ships desire that place the more, although there are several inconveniences in it, as being a very bad place for wood and water, &c.

The ships lie open to the S. W. in the bay of Consumption. There is a cove also on the east side of the bay Verd's head, about a musket shot over from bay Verd's itself, called Black cove, where stages are, and boats kept to catch fish.

Bay Verds is easily to be known by the island Bacalieu, and also by another head within Bacalieu, shooting out, called Split point, and also Bay Verds head itself, which is the westernmost; these three heads show very bluff, and very like one another, when you come from the southward; there is no danger in going into Bay Verds but what you see. Here dwell several planters.

From Bay Verds head to Split point, which is against Bacalieu island, your course is E. N. E. about half a league.

From Bay Verds head to Flamborough head, is S. W. by W. about two leagues. Flamborough head is a black steep point, but no place of shelter for a boat, but when the wind is off the shore, neither is there any safety between Bay Verds and Carbonera (which is about ten and a half leagues, and lies S. W. by S.) only two places for boats, the one in the S. W. cove of Green bay, which is but an in

different place, and lies S. W. about four and a half leagues from Bay Verds; the other in Salmon cove, which is about three leagues to the northward of Carbonera.

From Bay Verds head to Green bay is S. W. about four and a half leagues. This bay is above a league over, but has nothing considerable in it, only the aforesaid S. W. cove, and a place in the bottom of the bay, where the Indians come every year to dig ochre, to ochre themselves.

From the south point of Green bay to Black head is S. W. a league; and from Black head to Salmon cove is S. W. by W. four miles; it is a place of shelter for boats, an island lying in the middle; a river in the said cove runs up, in which are plenty of Salmon.

From Black head to Carbonera is S. W.  $\frac{1}{2}$  S. between four and five leagues.

From Salmon cove to Carbonera, the course is S. W. about three leagues. The south end of Carbonera island is low, upon which is a fort of 20 guns, which the merchantmen made for their defence. The harbour of Carbonera is very bold on both sides, so is the island, between which and the main are rocks, which are just under water. This is a good place for ships to ride in, and for catching and curing fish, having several inhabitants, with good pasturage, and about 100 head of cattle, which afford good milk and butter in the summer time. There is very good anchoring, in clear ground, fair turning in or out, being a mile broad, and three miles in the river, riding in 5, 6, 7, and 8 fathoms, or deeper water, if you please. But to the northward of this point of Carbonera, are two coves, where planters live, and keep boats for fishing; the northernmost of these two coves is Clown cove, not good for ships, but boats, being about two miles from Carbonera; the other is called Crocket's cove, where live two families, and is but a little to the northward of the entrance of Carbonera bay or port.

If you are bound or intend for Carbonera, you may go on which side the island you please, which lies without the bay (or entrance) about a mile from the shore; but if you go to the southward of the island, you must keep the middle between the point of the island and the south point of Carbonera, because it is foul off the S. W. end of the island, and off the south point of the main, therefore your best going in is to the northward of Carbonera Island, and so is the going into Harbour Grace, to the northward of Harbour Grace island; Carbonera lies in W. S. W. two and a half or three miles, and from Carbonera to Harbour Grace S. S. E. a league or more.

Carbonera and Harbour Grace lie N. N. W. and S. S. E. one from the other, above a league; but Harbour Grace lies from the entrance W. S. W. at least eight miles, and is a mile broad. But between Carbonera and Harbour Grace is Musketa cove, where ships may ride, but seldom use it. Here live two planters. It is not so convenient for fishing ships as other places, although clean ground, water enough, and large.

You may turn into Harbour Grace all the bay over, from side to side, and come off which side you please of the rock, called Salvages, which is almost in the middle of the channel. But there is another rock on the north side, called Long Harry, something without Salvages, near the north shore, where you go between the main and it with boats, but needless for ships, although water enough. Both the rocks are a great height above water. Being within or to the westward of the rock Salvages, you may turn from side to side, by your lead, till you draw towards a mile of the point of the beach (within which the ships ride;) you may then keep the north shore, because there is a bar or ledge shoots over from the south side, almost to the north shore.

To know when you are near the said bar, or ledge, observe this mark: you will see two white rocks on the land, by the water side, in a bank on the north side; which shows whiter than any place else, and is about a mile below, or to the eastward of the beach, which is good to be known, being a low point, nothing but beach for some distance; keep the said north shore pretty near, where you will have 3 $\frac{1}{2}$  fathoms on the bar, and presently after 4, 5, 6, and 7 fathoms; but if you stand over to the southward till you are got within the said bar or ledge, you will not have above 7, 8, and 9 feet water; this sand tends S. E. from athwart the aforesaid two white rocks, and runs over close to the south side, but being past that as aforesaid, you may turn from side to side, till within the beach,

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and ride land-locked in 4, 5, or 6 fathoms, or higher up in 7, 8, 9, or 10 fathoms, as you please. The harbour or river runs up S. W. by W. at least two leagues above the beach, navigable.

Being bound to Harbour Grace, be sure to go to the northward of Harbour Grace Islands, which lie before the harbour, above a mile off, for the southward of the islands, between it and the south shore of the harbour, is foul ground: the harbour lies in W. S. W. From Harbour Grace to Cape St. Francis, is east, northerly, seven and a half leagues.

From Harbour Grace to Bryan's cove, is S. W. about half a league, but is no place where ships use: one planter lives there, it being a good place for catching of fish. In the entrance of this cove lies a rock in the middle, but above water. You may go in on either side with a ship, and have 4 or 5 fathoms, and anchor within it in clean ground.

From Harbour Grace to Spaniard's bay, is S. S. W. about three leagues. This bay is deep and large, almost like Bay Roberts: but there are no inhabitants, neither do men use this place for fishing, but there is good anchoring all over the bay; it is but a small neck of land over Bay Roberts.

From Spaniard's Bay to Bay Roberts is S. E. by E. southerly, about two miles. This bay is about two and a half miles broad, from the north point to the south point, which lie N. W. and S. E. from one another; there is very good turning into the bay, and no danger but what you see. You may borrow on either side, and go close to the island, which lies on the starboard side going in. The bay is at least three leagues long from the first entrance; it runs up with two arms, after you are a league in, the one lies up W. N. W. and is the deepest, and the other S. W. Being past the island, or to the westward of it, which is bold-to, you may run up about a mile and lie land-locked in 9 or 10 fathoms, within the island.

From Bay Roberts to Port Grave is three or four miles about the point; this bay is large, deep, and very bold, as the other bays are; there is a cove on the starboard side going into this bay, called Sheep's Cove, where you may moor your ship by head and stern, and ride in  $4\frac{1}{2}$  and 5 fathoms, but your anchor to the S. W. lies in 22 fathoms, about a cable and a quarter's length from your ship.

From Sheep's Cove to Port Grave, is W. by S. one mile, or somewhat more, but ships ride not within the small islands which are by Port Grave, it being shoal water within them, but ride off without them.

From Sheep's Cove to Cupid's Cove the course is S. S. W. about 4 miles: it is a good place for a ship or two to ride in, in 4, 5, or 6 fathoms, and not above a point open; the cove lies in S. W. and the south side of the bay to Burnt Head lies N. E. by E. and S. W. by W. one from the other, about a league; for Sheep's Cove, and Cupid's Cove are in the same bay of Port Grave; but Cupid's Cove is on the south side, and the other on the north side; the bay runs up W. S. W. and is about three leagues long.

Burnt Head, which is the south point of the bay and Port Grave, lies S. E. by E. and N. W. by W. two and a half or three miles. Burnt Head is so called by reason the trees that were on it are burnt down.

From Burnt Head to Brigus is S. by W. one league. The south point of Brigus is a high ragged point, which is good to know it by: the bay of Brigus is not above half the breadth of Port Grave Bay, and you run up S. W. by W. and W. S. W. about half a league, and anchor on the north side, where two planters live in a small bay. Only small ships use this place, it being so far up the Bay of Conception.

From Brigus to Collier's Bay is S. S. W. two and a half or three miles: and from Collier's Bay to Salmon Cove is S. about two and a half miles, but no considerable place. It is sometimes called Salmon Pool.

From Salmon Cove to Harbour Main the course is S. S. E. about two miles. It is a good place for fishing, but ships seldom go so high up in the bay.

From Burnt Head to Harbour Main is about three and a half leagues: and from Harbour Main to Holy Road is S. E. by S. about two miles; then the land tends about to the eastward towards Belle Isle. Holy Road has 11 fathoms water, good ground.

From Bay Verds Head to Split Point the course is E. N. E. half a league.



From Split Point to the point of the Grates, N. N. W. two leagues.

From the point of the Grates to the N. W. or north end of the island Becanien, the course is E. by S. four and a half or five miles.

From the Grates to Break-heart Point, N. N. W.—W. N. W. and W. tending about two points. Between the Grates and this point is a bay, where boats may lie with a wind off the land of Break-heart Point; there is a ledge of rocks, but above water.

From Break-heart Point to Sherwick Point, going into Old Perlican, the course is S. W. by S. five or six miles. To the southward of Break-heart Point is a small island some little distance off the shore, called Scurvy Island; between the said island and Sherwick Point runs in a pretty deep bay, and lies in S. E. from Sherwick Point, about three-quarters of a mile.

Sherwick Point is bold, off which is a rock above water; this point is the north point of Old Perlican. Those who are bound to Old Perlican, cannot go with a ship to the northward of the island, that is, between the island and Sherwick Point. Although it seems a fair passage, yet it is altogether foul ground, and a shoal of rocks from the main to the island (which island is about a mile and a quarter round, and about half a mile in length); therefore, whoever intends for Old Perlican with a ship, must go to the southward of the island, between that and the main, and run in within the island, and anchor in 4 or 5 fathoms. But there is a rock just even with the water, and some under water, that lie about the middle of the bay, within the island, or rather nearest to the main. Old Perlican is but an indifferent road; if the wind comes out at W. N. W. you are forced to buoy your cables for the badness of the ground, and the boats go a great way to catch fish, about five or six miles, unless it be in the very middle of summer. In this place live several planters.

From Old Perlican to Sille Cove is W. S. W. southerly, about seven leagues; Sille Cove is but an indifferent place for ships, such as Bay Verda.

From Old Perlican to New Perlican, the course is W. S. W. eight leagues. This is a good harbour, where you may lie land-locked in 5, 6, 7, 8, 9, or 10 fathoms. It is very bold and large going in, so that if you can see the point before night, you may safely run in, nothing to hurt you but the shore itself; the easternmost point going in is called Smutty-no Point, and the westernmost Gorlob Point, between which is the entrance, which is almost two miles broad, and has about 20 fathoms water; and as you sail in, it grows narrower and shoaler, lying in first W. S. W. after runs up to the westward in a bight, where you lie land-locked and above half a mile broad, so that you may turn in or out, and anchor in what depth you please, from 12, 10, 8, 6, 5, or 4 fathoms, very good ground. From New Perlican it is about five leagues over to Random Head, and they lie nearest N. W. and S. E. one from the other. In the river or bay of Random are several arms and harbours, for Random and Smith's Sound come all into one, but it is nine or ten leagues under the head of each where they meet, and there is a little island at the head, where is 4 and 5 fathoms; only at the island going through you have not above 12 feet water, and it is not a mile broad there. Smith's Sound runs in W. S. W. about fifteen leagues from Bonaventure to Tickle Harbour, the bottom of Trinity Bay; but there is a bay called Bay Bulls, which runs in three or four leagues, and is not over from thence to Placencia Bay (the back or west side of the land) about two miles; and the islands of Placencia Bay are about nine or ten leagues long each, and five broad, on which are many deer; they lie N. W. and S. E.

From Bonaventure to Ireland's Eye is S. W. two or two and a half leagues.

From Bonaventure Head to Bonaventure, the course is N. W. half a point westerly, about two miles, or more; but being got a mile from the head, then the harbour lies N. W. by N. about a mile to the Admiral's Stage. The Port Bonaventure lies within two small islands, between which you sail in, but you may go on either side of the island between that and the main, if you have a leading-wind no danger, and have 4 or 5 fathoms at least, and run within the said islands, and anchor in that depth, in good ground. You have there a very secure place for boats in bad weather, running in within a point behind, or to the northward of the Admiral's Stages, like a great pond, leaving the planter's house on the larboard side; this place will contain above one hundred boats in security.

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There is an island which lies off the west point of the harbour, called Gull Island, off which they used to fish; from the said island the harbour lies in N. about a mile. There are several islands which are without, off Bonaventure, the one is from the port S. S. W. 5 or 6 miles, called Green Island, which is a pretty large island, and you see it as soon as you come out of Trinity harbour, in fair weather; another island lies S. W. by S. 3 miles, and another island without that, about four or five miles from Bonaventure: the course is S. W. by S.

From Bonaventure Head to the Horsechops is E. N. E. three and a half leagues.

From Bonaventure Head to Trinity harbour, is N. E. by N. about three leagues: between which are some bays, but not for ships to ride in, unless the wind is off the shore.

The Horsechops and Sherwick point (being the north point of Trinity harbour) lie W. N. W. and E. S. E. one from the other, two leagues. Between the Horsechops and Trinity harbour are two places where ships used to fish; the one is English harbour, and is W. N. W. from the Horsechops two miles, and after you are about a point, tends E. N. E. again; it is a clean bay, and you ride in four or five fathoms water: a planter or two live here.

From English harbour to Salmon Cove, the course is N. W. by W. westerly about half a league; it is a place for fishing, and there is a river which runs up about two miles to the northward.

Without Salmon Cove is a headland, called Foxes Island, yet joins to the main by the neck of beach. To the northward of the said island, or headland, between it and Sherwick point, runs in a bay, called Robin Hood's; and in the said bay behind a point which lies out, small ships ride, and fish there.

From the Horsechops to Trinity harbour, the course is W. N. W. about two leagues. Trinity harbour is the best and largest harbour in all the land, having several arms or coves, where many hundred ships may all ride land-locked: it is a place which you may turn in or out, being bold-to on either side, neither is there any danger but what you see, only going into the S. W. arm, where the Admiral's stage usually is, lies a shoal called the Muschel Bank, which shoots off from the point, within the small island, on the larboard side going in, and lies over N. W. about a third of the breadth of that arm, which you must avoid: being within that bank, which will discover itself by the colour of the water, you may edge close to the south shore, if you please, or keep your lead going, to avoid the Muschel Bank, giving it a little distance; you may anchor in fourteen, twelve or ten fathoms, and you may come so near to the stage on shore, as to make a stage with topmasts to your stage on shore, to lade or unlade your ship. It is a most excellent harbour; for after you are in this S. W. arm, there is another runs up W. N. W. near two miles, and near the head of that another runs up S. S. W. but there is a bar or ledge at the entrance of this S. S. W. arm, but the former W. N. W. is a large place, and good anchoring for five hundred sail of ships. You have besides these afore-mentioned arms, the main harbour, turning or lying up N. N. W. and being within the harbour's mouth, you may ride in a cove, large and good on the starboard or east side, and land-locked in good ground, where planters live; and over against that cove, on the larboard or west side, are two other coves; the northernmost of them is called the Vice-Admiral's Cove, for the convenience of curing fish; and above, or to the northward of this, is a large cove or arm, called God Almighty's Cove, where there is room enough for three or four hundred sail of ships to ride, all in clear ground, neither winds nor sea can hurt you, nor any tide, in which place ships may lay undiscovered, until you run up so far as to bring it open. Several other places there are in this excellent harbour, good clean ground, tough clay in all the arms and coves of Trinity, and have four and five fathoms water, within two boat's length off the shore, any where, in six, seven, eight, nine, ten, twelve, and fourteen fathoms, and some places more, in the middle of the arms and channels, as you please; you may turn in or out as aforesaid, observing your tide, which rises there about four feet, sometimes more. For not only Sherwick point is bold, which is the northernmost, but also Salvages which is the southernmost.

From the Horsechops to the south head of Cattalina bay, is N. E. by N. and N. E. five leagues. About a league to the northward of the Horsechops, is Green Bay, which runs pretty deep in, but no place where ships use to ride or fish. Being past Green Bay, there is no place or cove for boats, till you come to Ragged Harbour, or Cattalina.

From the south head of Cattalina Bay to the north head, is N. N. E. three leagues, between which two heads is Ragged Harbour and Cattalina Harbour. Cattalina Harbour lies from the south head N. by E. northerly about two miles.

Ragged Harbour is so called by reason of the abundance of ragged and craggy rocks, which lie before and within the harbour; there is no going into the southward with ships, but only for boats, and that you must be well acquainted with, for there are very many rocks above and under water.

Those who intend for Ragged Harbour, with a ship, must go to the northward of all the aforesaid ragged rocks or islands, that lie before it (which make the harbour) and run so far to the northward till they bring ragged harbour open; then sail in between a round island which lies close to the main, and a great black rock, which lies off the north end of all the ragged islands; sail in till they are about the middle of the aforesaid islands, which will be to seaward of them, and anchor there. There is a river of fresh water at the head of the harbour, but no inhabitants.

Two miles to the northward of Ragged Harbour, is the harbour of Cattalina, which is a very good and safe harbour, and good ground, not above 8 fathoms, from 3 to 4, 5, 6, 7 or 8 fathoms, as you please. You may, with a leading wind, sail between the small island, which is a little to the southward of the harbour, and have 4 or 5 fathoms at the least going through, but it is not above a cable's length broad; or you may go without the said island, to the eastward of it, giving the island a small birth, and so sail in with the middle of the harbour; for about a mile distance from the south point of the harbour, E. N. E. is a shoal, upon which, if there be ever so small a sea it breaks; but you may sail between the island and the shoal, or you may go to the northward of it, between the shoal and the north shore, and borrow off the north side of the main, off Little Cattalina, a bay which lies in.

Being off Little Cattalina, all the way to the harbour, you have not above 10 fathoms, and from 10 to 8 and 7 fathoms, then 8 and 9 fathoms again. It is reported there is a rock which lies about three-fourths of a cable's length from the south point of the entering into the harbour, which has but 9 or 10 feet water on it; however, it is easily avoided, if any such, by keeping something nearer to the north shore, till you are shut within the said point; for all the harbour over is good sounding. Close to the shore within the harbour, you may anchor in 5 fathoms, land-locked. In the S. W. arm the harbour lies in W. S. W. or you may anchor in  $3\frac{1}{2}$  fathoms within, to the southward of the little small green island, within the said harbour, or run up two miles towards the river head, where fresh water runs down. In this harbour you may anchor in 7, 6, 5 or 4 fathoms. There is a kind of a hoar rises in this place very often, that will cause the water to rise 3 feet suddenly, and then down again, and you have it 2 or 3 times in 3 or 4 hours at certain seasons. It is a very good harbour, and abundance of herb Alexander grows on that small island in the harbour. Here is store of salmon to be caught at the head of the harbour, if you have nets; and near a small cove in the W. N. W. within the small island, is a fire stone, of a glittering colour, a kind of mineral; excellent good wheel-locks growing in the rocks.

From Cattalina harbour to Little Cattalina is N. N. E. about half a league; it seems to be a good sandy bay.

From Cattalina harbour to the north head of the bay, is N. E. easterly one and a half league.

From the north head of Cattalina Bay to Flower's point, the course is N. by E. one and a half league, off which point are sunken rocks, called Flower's Rocks: the sea breaks upon them in a swelling (or great) sea, and they discover themselves plain, they lie about half a league off shore; you may go between the point of the Flower's (which has some rocks lying off it) and the said sunken rocks: you have a mark, if in the day time, to go without them, which is to keep Cape Lar-

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From Flower's Point to Bird's Island the course is N. by W. about three and a half miles. Within the said Bird's Island is a large bay, one arm within the south point of the land, which runs up W. S. W. a good distance, where ships may ride; there is another arm also runs up within some rocks, which are above water; the bay runs to Cape Larjan. Bird's Island abounds with willocks, pigeons, gulls, &c. which breed there in summer.

From Bird's Island to Cape Larjan, the course is north easterly, between two and three miles.

From Flower's Point to Cape Larjan is N. half a point westerly; Cape Larjan is but a low point, off which lies a great rock, above water.

From Cape Larjan to Spiller's Point is N. N. W. a small league; between which cape and Spiller's point runs in a pretty deep bay, over which point between that and Cape Larjan, you will see the high land of Port Bonavista, when you are a good distance off at sea, being high land. Spiller's Point is indifferent high, steep up and bold-to.

From Spiller's Point to Cape Bonavista, the course is N. N. W. about a league, between which is a very great and deep bay, so that men unacquainted, would judge that there went in the harbour of Bonavista. It is but a small distance of two and a half miles over, from the bottom of the bay to Port Bonavista, by land, and is but a mere neck of land. From Red Head bay to this bay is not above half a musket shot. The head of Cape Bonavista appears at a distance of a sky colour. About three-fourths of a mile N. by W. from the cape is a small island, called Gull Island, easy to be known, being different heights, and highest in the middle; and makes something like the form of a Fleur de Lys, or a hat with great brims; you may see it four or five leagues off, in clear weather; and N. E. about a league from Cape Bonavista, is a ledge of about 10 fathoms water on it, where boats used to fish. Cape Bonavista lies in lat.  $49^{\circ} 10' N$ .

From Cape Bonavista, to Port Bonavista, the course is E. W. about five miles. If you come from the southward, and intend for Bonavista, you may sail between Gull Island and the cape, they being bold-to, and about three-fourths of a mile asunder, but you must leave Green Island on your larboard side, going to Bonavista, for between it and the main is but narrow, and some places shoal rocks, not safe for ships to pass through; but you may sail between the said Green Island and the Stone Island, with any ship without danger, being safe and bold; or you may go to the westward of Stone Island and run to the southward till you open the bay or harbour of Bonavista, and are past Moses point, and so to the southward of the rocks, called the Sweetes, which are high rocks, within which you ride (for there is no passage to the northward of them) and lie in 11, 10, 9, 8, 7, 6 or 5 fathoms, as you please, and must always have a good anchor in the S. W. and another fast in the Sweetes, or anchor in the N. W. for westerly winds blow right into the road. It flows generally to the northward about Bonavista, and the places adjacent, W. N. W. that is, a W. N. W. moon makes the highest water, which most masters of ships using these parts have observed.

With small vessels you may go between Green Island and the main (but not with great ships) and so to Red Head; but the bay between the points (over against Green Island) and Red Head, is all foul ground to anchor in. A little distance, about a cable's length from the shore, is a sunken rock, but with boats you may go between the shore and it; the sea breaks on it. Being past Red Head, you sail S. W. to Moses point; between which two points is a large bay or cove, called Baylis Cove, where you may anchor on occasion. There is a stage kept generally for fishing every year, on the larboard or north side of the bay.

From the east part of the Grand Bank of Newfoundland, in latitude  $45^{\circ} 00'$  to the east part of the bank Queco, in lat.  $44^{\circ} 16'$  is considered by those who have run it, one hundred and twenty leagues distant. The north part of the bank Queco, in lat.  $45^{\circ} 06'$ —the S. W. of Queco. in  $44^{\circ} 10'$  and the Isle of Sables, in the latitude  $44^{\circ} 10'$ , and about fourteen leagues to the westward, of

bank Queco; the N. part of Queco, on a west course, is about eighteen leagues in length; from the N. W. part of Queco, to the harbour of Causo, is N. W. by W.  $\frac{1}{2}$  W. thirty-nine leagues, after you have lost soundings off Queco, on which is commonly about 85 fathoms, unless on the S. E. part, where (and on a certain spot near the middle) there is but 18 fathoms after you are to the westward of Queco, and also before you have 100 and 95 fathoms black mud; there is a small narrow bank, about two leagues to the N. W. of the middle of Queco, but it reaches not so far to the northward as the north part of Queco: about 20 leagues W. N. W. from the N. W. point of Queco you will strike ground on Frenchman's Bank, which is a narrow bank, that stretches E. S. E. and W. N. W. athwart the harbour of Causo, about nine leagues off; you must keep your lead going when you reckon yourself nigh this bank, or else on the N. W. course you will soon be over it, being not past three leagues broad, and when over it you will have 100 and 95 fathoms, black mud; it is the best way to fall to the westward of Causo, because on the French coast you have no soundings, and the winds in the summer are generally S. W. and W. S. W. and very often foggy.

The ground to the westward of Causo rises very sudden, from 100, 95, 70 to 40 fathoms, hard ground; then you are not past two or three miles off the land; be careful of sailing in with Causo in foggy weather, for S. E. and E. S. E. from it lie sunken rocks, which in fair weather seldom appear at high water.

The Virgins are rocks lying about twenty-three leagues east from Cape Race; they lie E. N. E. about four miles in length, and the shoalest is about 20 feet water. Sometimes the sea breaks very high upon them, which renders them very dangerous, besides a very strong current often sets about them. Ships sometimes anchor on them a fishing, in about 12 and 14 fathoms.

As to the bank of Newfoundland, there are soundings from the outer edge of the main bank to the height of the ground, where generally ships lie to catch fish, and which is about forty leagues distant from the land, and then the soundings in along are uncertain. The bank goes quite to the land to the northward of Cape Ballard, where the bank falls more to the eastward, and the water is deeper, and so increases along to the northward. To the southward of Cape Race, and to the westward, is shoal water, two leagues off the shore, not above 20 or 22 fathoms; and to the westward of Cape Pine it is still shoaler, at the same distance.

The outer or false bank is about one hundred and ten or one hundred and fifteen leagues from the land, and is thought to be about fourteen or fifteen leagues broad in the middle; and from the inner edge of it to the main bank are near thirty leagues, and no soundings between them. In the spring of the year many islands of ice lie between these banks, very dangerous, when foggy. The best part for fishing is from one hundred to one hundred and forty miles off the shore, which is the shoalest part of the bank.

From Mistaken Point to the Powles, or entering of Trepassy, is W. N. W. five leagues; there is a deep bay on the back side or east side of Powles, and a neck of beach, so that you see the ship's masts over it, but very dangerous to be embayed in that place, the sea commonly falling in there, and no current to help you out; therefore, if you intend for Trepassy, stand over to Cape Pine till you see the harbour open, and then bear into the harbour according as you have the wind, Cape Pine being safe and bold to sail along that side, &c.

### *Directions for navigating part of the Coast of Newfoundland, from Cape St. Mary's to Cape Spear, including St. Mary's and Trepassy Bay.*

N. B. All bearings and courses hereafter mentioned are the true bearings and courses, and not by compass.

The entrance of St. Mary's Bay is formed by Cape Lance on the west, and Cape Pine on the east side. The land from Point Lance lies E. by N.  $\frac{1}{4}$  N.

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three leagues, to a high bluff cape, from which the land along the west side of the bay lies N. E. by N. and S. W. by S. ten leagues up to the head of the bay. From the afore-mentioned bluff cape, to Cape English, on the east shore, the course is S. E.  $\frac{1}{4}$  E. distance five leagues.

Cape St. Mary's is a very high bluff point, makes, in all directions, much like Cape St. Vincent on the coast of Portugal, and the land along shore from it, for a considerable distance, appears even, and nearly of equal height with the cape itself, which lies due west, distance between seventeen or eighteen leagues from Cape Chapeaurouge, and is in the latitude of  $46^{\circ} 52' N.$  A little to the northward of this cape is a small cove, where fishing shallops shelter with southerly and easterly winds.

From Cape St. Mary's S. E. by E. distance five and a half miles, lie the Bull and Cow rocks, which are two flat rocks, and very near together, with several smaller rocks about them, all above water; they may be seen four leagues from the deck, when open from the land, but when shut on with the land, they are not distinguishable so far. They bear west, distant three miles from Point Lance, which is a low ragged point which forms the entrance on the west side of St. Mary's Bay. The Bull and Cow lie one mile from the nearest part of the main land; at two-thirds of the distance from them to the main, is a small rock that appears above water at half tide: there is 10 fathoms between this rock and the main, and 15 fathoms between it and the Bull and Cow. Ships may safely pass within the Bull and Cow occasionally.

St. Mary's Rocks lie S. by W. distant seven and a half miles from Cape St. Mary's, and S. W. by W. from Point Lance, and S. W.  $\frac{1}{4}$  W. from the Bull and Cow. These are two rocks which appear just above water, upon which the sea almost always breaks very high. They lie S. E. and N. W. from each other, distance about three cables' length; in the middle, between them, is a channel of a cable's length broad, in which is 15 fathoms water; there is also 15 fathoms at a cable's length all round them, except to the S. E. at two cables' length; distance is 6 fathoms. Between these rocks and Cape St. Mary's is 25 and 30 fathoms water, and all about Cape St. Mary's, at two and three leagues distance, is the same depth of water.

Point Lance is a low point near the sea, but the land within it is high, and is the west point of the entrance into the bay of St. Mary's. It lies in latitude  $46^{\circ} 50' N.$

From Point Lance to the eastern head of St. Shot's (the east point of the entrance into St. Mary's Bay) the course is S. E. by E.  $\frac{1}{4}$  E. distant twenty-two miles. This bay runs nine and a half leagues to the N. E. with several very good harbours in it, the land on each side being moderately high, and mostly barren.

From the eastern head of St. Shot's to the western head, the course is N.  $41^{\circ}$  W. distance two miles: this bay is entirely open to the sea, and about one mile deep.

From the western head of St. Shot's to Gull Island, the course is N.  $20^{\circ}$  W. distant four miles. This island is small, of the same height with the main land, and so near it that it cannot be distinguished, unless you are close in shore.

From Gull Island to Cape English, the course is N.  $7^{\circ}$  W. distance two leagues; this cape is high table land, terminating in a low rocky point, forming a bay about a mile deep to the southward of it; at the bottom of this bay is a low stony beach within which is a pond, called Holy Rood pond, running to the N. E. for about 7 leagues, and is from half a mile to 2 or 3 broad; this pond makes Cape English appear from the southward like an island.

From Cape English to False Cape, the course is N.  $20^{\circ}$  E. one mile.

From Cape English to Point Le Haye, the course is N. E. three leagues. This is a low point, off from which there runs a ridge of rocks of three-quarters of a mile to the sea, and above a mile along shore, on which the sea breaks in bad weather. This is the only danger in all St. Mary's Bay, that will take a ship up.

From Point Le Haye to the south point of the entrance into St. Mary's Harbour (called Double Road Point) the course is N. E. distance one and a half mile; the land between these points is low and barren.

From Point Le Haye to the low point on the starboard side going into St. Mary's Harbour, called Ellis' Point, the course is N. E. by E. two miles, and from Point Lance to St. Mary's Harbour, is E.  $\frac{1}{4}$  N. distance nine leagues. The entrance to this harbour is above a mile wide. Within the points that form the entrance, it divides into two branches, one to the E. S. E. the other to the N. E. When you are past Ellis' Point, haul in to the southward, and anchor abreast of the fishing-stages and houses, upon a flat, in 4 or 5 fathoms. Here you will lie land-locked. This flat runs off about half a mile from the shore, without it is from 15 to 40 fathoms water over to the other side; but the best anchorage in this harbour is about two miles above the town, where it is above half a mile wide, opposite Brown's Pond, which is on the starboard side, and may be seen over the low beach; here you will lie land-locked in 12 fathoms, and excellent ground all the way up to the head of the harbour. One mile above the said point on the opposite shore, is a beach point, close to which is 4 fathoms, where ships may heave down; and here is plenty of wood and water. The N. B. arm of St. Mary's Harbour runs up two miles from the entrance; about half-way up it is a mile broad, and above that it is half a mile broad, where ships may anchor, but being open to the sea, this place is not resorted to by ships.

Two leagues above St. Mary's Harbour, lie two islands, the largest of which is about two leagues long. There is a good passage for ships between those islands, also between them and each shore. The passage on the west side is two and a half leagues wide. Above those islands, are many good anchoring-places on each shore, and at the head of the bay is a fresh water river, which is navigable two or three leagues up.

Mall Bay lies to the westward of North-East Point, and is about one mile broad, and better than two miles deep. There is no good anchorage in this bay, being open to the sea, and generally a heavy swell setting into it: vessels may occasionally anchor near the head in 5 or 6 fathoms water, good ground.

From Cape English to the south part of Great Colinet Island, the course is N.  $10^{\circ}$  W. distance three leagues. This island is of a moderate height, about one league long, and one mile broad. On either side of this island is a safe passage up the bay, taking care to give Shoal Bay Point a birth of a quarter of a mile, there being several sunken rocks lying off this point.

Shoal Bay Point lies one mile distant off the east side of Great Colinet Island. On the north side of Great Colinet Island, is a stony beach, from off which lies a bank for about one-quarter of a mile, on which is from 7 to 17 fathoms water, rocky bottom.

Little Colinet Island lies one and a half mile from Great Colinet Island, is about a mile long, and half a mile broad.

The entrance into Great Salmon River lies N.  $50^{\circ}$  E. distance two leagues from the north point of Little Colinet Island, is about three-quarters of a mile broad, and runs to the N. E. seven or eight miles; in it is very good anchorage; the best is about three miles from the entrance on the north side, in a sandy cove, in 5 or 6 fathoms water.

North Harbour lies N. by W. three-quarters of a mile from the north part of Little Colinet Island, is about a mile broad at the entrance, and runs to the northward about three miles; in it is very good anchorage, in about 6 or 7 fathoms water, at about two miles from the entrance, where it is not above half a mile wide; or you may run up the narrows, which are formed by two low sandy points, about half a cable's length asunder, taking care to keep the starboard point close on board, and anchor close within the point on the starboard shore.

Colinet Bay lies N. N. E.  $\frac{1}{4}$  E.  $5\frac{1}{4}$  miles from the north part of Little Colinet Island; in it is very good anchorage from 5 to 12 fathoms water.

From the eastern end of St. Shot's the land to the eastward tends away E. by S.  $\frac{1}{4}$  S. for about one mile, then E.  $\frac{1}{4}$  S. one mile to Cape Freels.

From Cape Freels to Cape Pine, the course is E. N. E.  $\frac{1}{4}$  mile. The land about Cape Pine, to the eastward and westward, is moderately high and barren.

From Cape Pine to Mistaken Point, the course is E.  $\frac{1}{4}$  N. distance four and a half leagues. Between these points lies Trepassey Bay, in which is Trepassey Harbour.

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is about three-quarters of a mile wide, and runs nearly the same breadth for about two and a half miles, and is here little more than a quarter of a mile wide, but afterwards increases to three-quarters of a mile wide; here vessels generally ride. The dangers in sailing into this harbour are a small rock that lies on the east shore, about a mile within the entrance, and is about one-third of a cable's length from the shore; and on the west shore, within the harbour, off a stony beach, lies a shoal, and runs along shore, up the harbour, to a low green point. Baker's Point, on with a low rocky point in the entrance of the harbour, will carry you clear of this shoal. When you are nearly up with the low green point, you may borrow more to the westward, and anchor either in the N. W. or N. E. arm, where you will be very handy for wooding and watering.

From the Powles (the east point of the entrance into Trepassey harbour) to Cape Mutton, the course is E. three quarters N. distance one mile. Between these points lies Mutton Bay, and is about two miles deep; in it is from 12 to 3 fathoms water, rocky bottom. The N. W. part of the head of this bay is separated from the harbour of Trepassey by a low, narrow, stony beach, over which may be seen the vessels in the harbour.

Biscay Bay lies about one and a half mile to the eastward of Mutton Bay, the entrance of which is about one mile wide, and about two miles deep; in it is from 9 to 3 fathoms water, sandy bottom, but is quite open to the sea.

From Mistaken Point to French Mistaken Point, the course is N. 80° W. distance two miles.

From French Mistaken Point to the Powles, the course is W. N. W. distance eight miles.

The land from Mistaken Point to the eastward tends away E. N. E. one league, then N. E. by E. one and a half mile to Cape Race, which is table land of a moderate height, having a high black rock lying close off the Cape, with several small low rocks to the northward of it. This cape lies in the latitude of 46° 42' N.

From Cape Race to Cape Ballard, the course is N. E. by N. distance three leagues; nearly one mile to the southward of Cape Ballard, lies a high black head, called Chain Cove Head. Between these points is a cove, and to the westward of Chain Cove head lies Chain Cove, before which lies a black rock above water.

Due east from Cape Race, and S. by E.  $\frac{1}{4}$  E. from Cape Ballard, lies a fishing bank, called New Bank, about five miles long, and nearly two miles broad; on it is from 9 to 25 fathoms water.

From Cape Ballard to Renowe's Rocks, the course is N. 20° E. distance two leagues. These rocks are small, of a moderate height, and lie one mile from the main land, and are bold too.

From Renowe's Rocks to the harbour of Renowe, the course is N. by W.  $\frac{1}{4}$  W. distance two and a half miles. This is but a small harbour, and hath not above fifteen or sixteen feet at low water; it is but an indifferent harbour, having several rocks in the entrance, and the S. E. winds heave in a great sea. To sail into it, you must keep the north shore on board.

Fermouse Harbour lies about three and a half miles from Renowe's; between these harbours lies Bear's Cove, off which lies a sunken rock, about a cable's length from shore. Fermouse Harbour is an exceeding good harbour, there being no danger in sailing into it. The entrance is not more than a cable's length wide: just within the entrance, on the north shore, is a small cove in which a fishery is carried on, but no safe place for anchoring, about a quarter of a mile farther in, on the same side, lies another cove, called Admiral's Cove; in this cove the merchant's ships generally ride, in 7 or 8 fathoms water, land-locked. About one mile farther up the harbour is a cove, called Vice Admiral's cove. On the south side is the best anchorage for large ships, in 12 or 15 fathoms water, muddy ground; here you will be handy for wooding and watering. Farther up on the same side lies a cove, called Sheep's Head Cove. Directly off this cove, near the middle of the passage up the harbour, lies a shoal, on which is only nine feet water. This is the only danger in this harbour.

Bald Head lies N. 30° E. one mile nearly from Fermouse Harbour.

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Cape Pine,

From Bald Head to Black Head, the course is N. by W. one mile.

From Black Head to the entrance into the harbour of Aqua Fort, the course is N. W. by N. one mile nearly; in the entrance is a high rock above water. The passage into the harbour is to the northward of this rock in which you have 15 fathoms water. This harbour lies in west about three miles; at about two and a half miles from the entrance it is very narrow, where you have 4 fathoms water; but just within the narrows, on the north shore, is a small cove, in which you will have 7 fathoms water; this is a good place for vessels to heave down, the shore being steep. To sail up through the narrows, take care to give the stony beach on the north shore, without the narrows, a birth, it being a shoal along that beach, except at the point of the narrows, which is bold too.

Ferryland Head lies E. N. E.  $\frac{1}{2}$  E. distant two miles from Aqua Fort, and N.  $30^{\circ}$  E. distant three and three quarter miles from Fermouse. Ferryland Head is moderately high, having two high rocks above water lying close off the head, called the Hare's Ears. This head is not easily distinguished by reason of the main land within it being much higher. The entrance into Ferryland Harbour lies to the northward of Ferryland Head, between it and Isle Bois, and is little more than half a cable's length wide; but after you are within Isle Bois, it is better than a quarter of a mile wide, and tolerable good anchorage, in 8 or 10 fathoms water; but the N. E. winds heave in a very great sea over the low rocks that run from Isle Bois to the main.

From Isle Bois to Goose Island the course is N.  $\frac{1}{2}$  E. distant half a mile; and from Goose Island to Stone Island, the course is N.  $50^{\circ}$  W. distant half a mile.

Caplin Bay runs in N. W. by W. distant two and a half miles from Goose Island, is a tolerable good bay, with a safe passage into it on either side of Goose Island. To the northward of Goose Island, between it and Stone Islands, there is not the least danger, the island being bold too. If you pass to the southward of Goose Island; between it and Isle Bois, be sure to keep the point of Ferryland Head open to the eastward of Isle Bois, in order to avoid a sunken rock, on which is only 2 fathoms water, and lies nearly midway between Goose Island, and Cold East Point; after you are within this rock, there is not the least danger in sailing up the bay. The best anchorage is abreast of a cove on the larboard hand, about half a mile within Scogin's Head, in 16 or 17 fathoms water.

From the Hare's Ears off Ferryland Head, to Cape Broyle, the course is N.  $\frac{1}{4}$  W. distant two and three quarter miles. This cape is high table land, and makes in a saddle, either coming from the northward or southward. From the north part of the cape E. S. E. three quarters of a mile, lies a small rock, called Old Harry, on which is only 5 fathoms water; but between it and the main is upwards of 20 fathoms water. About three quarters of a mile to the N. E. of the north part of Cape Broyle lies a ledge of rocks, called horse rocks, on which you have from 7 to 14 fathoms water. In bad weather the sea breaks very high on these rocks. The mark for these rocks is a white house on Ferryland downs, open with Stone Islands, and the head of Cape Broyle Harbour open will carry you on them.

From the north part of Cape Broyle to the south part of Brigus Head, the course is N. W. by N. distance one and a half mile. These points form the entrance into Cape Broyle Harbour, which runs three and three quarter miles up. About one and a quarter mile within the entrance on the north shore, is a cove, called Admiral's Cove, in which you may anchor in about 12 fathoms water good ground; but here you will lie open to the south-east. The best anchorage is above the narrows, in about 7 fathoms water. The only danger in sailing up the harbour is a ledge, called Saturday's ledge, and lies about one and a half cables' length without the narrows, on the north shore; if you are coming in from the northward, keep the saddle on Brigus head open with the point of Admiral's Cove, it will carry you clear off this ledge. After you are above the narrows, you may anchor in about 7 fathoms water, good ground. Here you will be very handy for wooding and watering.

Brigus by south is a small harbour, only fit for boats, and lies close to the northward of Brigus head.

Cape Neddick lies N. 5 miles from Cape Broyle, and N.  $20^{\circ}$  W. distance seven

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and three-quarters miles from the Hare's ears off Ferryland. This cape is table land, of a moderate height, and steep towards the sea.

From Cape Neddick to Baline head the course is N.  $15^{\circ}$  E. distance one and a half mile. Baline cove is about one quarter of a mile to the northward of Baline head. This is but a small cove, fit only for boats.

From Cape Neddick to the outer point of Great Island, the course is N.  $40^{\circ}$  E. distance two and a half miles. This island is about half a mile in length, and of a moderate height.

From Baline head to Isle Spear, the course is N.  $4^{\circ}$  E. distance one mile. Nearly within this island a fishery is carried on, but no safe anchorage, the bottom being rocky.

Toad's cove is a small cove, about one mile to the northward of Isle Spear, and is only fit for boats.

About one and a half mile from Isle Spear, lies the south point of Momable's bay; from this point to the north point of the said bay, being the south point of Whitless bay, the course is N. E. by E. distance one and three-quarters mile. Momable's bay is an open bay, about one mile deep.

Green Island is a small round island, about three-quarters of a mile from the south point of Whitless bay. From this point lies a ledge of rocks, about one-third of the distance over to Green island.

The south point of Gull island lies about three-quarters of a mile to the northward of Green Island, and is about one mile long, and one-quarter of a mile broad, and is pretty high land.

Whitless bay runs in about two miles from Gull Island. In it is a moderate depth of water, good ground but open to the sea. About half way up on the north shore, lies a ledge of rocks; part of these rocks show above the water at about half tide.

One mile and a half to the northward of Gull Island lies the south point of the entrance into the bay of Bulls; from this point to the north point of said bay, called Bull head, the course is N. E.  $4^{\circ}$  E. distance one mile. The best anchorage in this bay for large vessels is about half a mile from the head, in about 14 fathoms water; but small vessels may anchor higher up, and moor to the north shore, and will then lie land-locked. The only dangers in this harbour are, a small rock off Bread and Cheese point, but is not above 20 yards off, and a rock on which is 9 feet water lying off Magotty cove, about half a cable's length off shore.

From Bull's head to the south point of Petty harbour, the course is N. N. E. distance eight and a half miles. From this point runs a ledge of rocks for about one-quarter of a mile.

From the south point of Petty harbour to the north point, the course is N. by E.  $4^{\circ}$  E. distance two and a half miles. Between these points lies Petty harbour bay, which runs in about two miles. At the bottom is a small cove, where a fishery is carried on.

From the north point of Petty harbour to Cape Spear, the course is N. N. E.  $4^{\circ}$  E. distance two miles. This point is rather low and ragged, and may be known by the land to the northward tending away to the W. N. W.

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### *Directions for navigating the Bay of Placentia, on the South Coast of Newfoundland, from Cape Chapeaurouge to Cape St. Mary's.*

[N. B. The Bearings and Courses are true Bearings and Distances, and not by Compass, the variation of the Compass being  $19^{\circ}$   $30'$  W.]

CAPE St. Mary's to the east, and Cape Chapeaurouge to the west, form the entrance of Placentia Bay; they lie east and west of each other, in lat.  $46^{\circ}$   $53'$  N. distant from each other sixteen leagues.



From Cape Chapeaurouge to Soker head (which is a high hill in the shape of a sugar loaf) the course is E. N. E. distant three miles; between them lie the harbours of Great and Little St. Laurence.

From Soker Head to Small Point (which is the lowest land hereabouts) the course is N. 65° E. two miles: and from Small Point to Corbin Head, (which is a very high bluff head) is N. E. two and a half miles: There are many high head lands between them, which form several coves, the bottom of which may be seen in sailing along shore. The coast is clear of rocks, and 30 fathoms close to the shore, but no shelter for any thing. From Corbin head to Shalloway Point, the course is N. N. E.  $\frac{1}{4}$  E. four and one-fourth miles. Between them, and nearly on the same course, lie two very high round islands, called Corbin and Little Burin. Corbin Island has very much the appearance of Chapeaurouge, when coming in with the land, and seen through the fog. These islands are high, and are little more than a cable's length from the shore.

From Corbin Head to Cat Island, the course is N. E. four miles nearly; this is a high round island near the south end of Great Burin Island.

About a mile to the northward of Corbin Head, in a bight, lies Corbin harbour, which is very good for small vessels. The best anchorage is in the N. arm, at about a quarter of a mile within the entrance, opposite a cove on the starboard side. One quarter of a mile to the eastward of this harbour, and two cable's length from the shore, is a sunken rock, on which the sea breaks in bad weather, and has not depth sufficient at low water for a boat to go over it. Vessels bound for this harbour must avoid a shoal which lies one quarter of a mile to the east of the south point of the entrance to the harbour, on which is only two fathoms water. Between the two high round islands, aforementioned, and the main, there are from 7 to 15 fathoms, and no danger but what may be seen: In case ships should fall in close with the land in the fog, they may occasionally sail within them, although the passage is little more than a cable's length wide.

Great Burin Island lies nearly N. and S. is two and a half miles in length, and high land: near the north end is another high island, about three-fourths of a mile in length, called Pardy's Island. On the main, within these islands, lie the harbours of Great and Little Burin.

Shalloway Island lies N. W.  $\frac{1}{4}$  W. one mile from Cat Island, and N. E. by N.  $\frac{1}{4}$  E. one quarter of a mile from Little Burin Island: the passage into Burin harbours, from the southward, is to the westward of Shalloway Island, between that and the Neck Point: take care to give Poor Island a birth on your larboard hand: After you are within Shalloway Island, you may anchor in safety between that and Great Burin Island, from 12 to 18 fathoms water. The best anchorage in Great Burin harbour, is in Ship cove. The course up to it, after you are within Neck Point, is north about one and a half mile, and is better than one quarter of a mile wide; to sail up to it, keep the west shore on board, in order to avoid a sunken rock on the eastern shore at about half the way up, and about half a cable's length from the shore, directly off, is a remarkable hole in the rock on the same side, and a remarkable gully in the land, from the top to the bottom, on the western shore. There is another rock, on which is only 2  $\frac{1}{2}$  fathoms water; it lies better than a cable's length to the southward of Harbour Point, which is a round green point, of a moderate height, joined to Great Burin Island by a low narrow sandy neck.

After passing Little Burin Island, one mile north, you come into Burin Bay, which is a clear bay, about a mile broad every way, and where ships may occasionally anchor safely, being almost land-locked. The course into this bay from Little Burin Island is north. All the land about this bay is very high. In it are two islands, one a low barren island, called Poor Island; the other which runs to the north, is high and woody, and lies before the mouth of Burin inlet, on the other side of which vessels may pass up the inlet. A little within the entrance, on the east side, half a cable's length from the shore, is a rock covered at  $\frac{1}{2}$  flood, at one and three-fourths mile from the entrance; near the middle is another rock, in the west of which is very good anchorage.

The S. W. entrance into Burin harbour, which is one quarter of a mile wide,

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is formed by Shalloway Island and the Neck point, in which there is no danger, giving a birth to Poor Island on the larboard side. When in Burin Bay, the course through the S. W. entrance into the harbour is E. N. E. and when past the points that form the entrance, the course is north up the harbour, which is better than one quarter of a mile wide, and one and a half mile long up to Ship's cove, where it is half a mile wide every way. This is the best anchorage.

There are only two dangers within Burin harbour that do not appear above water: the first is a small shoal on the starboard side, about half way up the harbour, directly off a remarkable hole in the cliff on the starboard side, going up, called the Oven, and about half a cable's length from the shore; there is also on the other side, directly opposite, a remarkable gully in the land, from the top to the bottom. The long mark to keep to the westward of this rock is, not to bring Little Burin Island to the eastward of Neck point. The other shoal, on which there are 8 fathoms, is very small, and lies about a cable's length S. S. W. from Harbour point.

The east passage into Burin harbour is not very safe to sail in without a commanding gale, and that between the N. N. E. and S. E. To sail into this passage, and coming from the westward, come not within two miles of the shore on the east side of Burin Island, (because of several clusters of rocks) till you bring the north point of Pardy's Island open to the northward of Iron Island; then sail right in for Iron Island, leaving it on your larboard side going in; then steer for the said point of Pardy's Island, and that will avoid all danger. It must be observed, with the afore-mentioned winds there is commonly a great swell sets to the shore on the starboard side going in; therefore, in case of little winds, (which often happens when you are past Iron Island) endeavour to borrow on Pardy's Island, except the wind be from the N. E.

At the bottom of Burin Bay there is an inlet, which runs inland five miles; there is a small woody island just before the entrance; ships may sail on either side; the east side is the widest. A little within the east head that forms the entrance, and half a cable's length from the shore, there is a sunken rock, which is dry at low water; therefore, in sailing into the inlet, keep the west shore close on board, for about a mile up; it lies north, and is about two cable's length wide, then N. N. W. for a mile, and is there half a mile wide with a sunken rock right in the middle; to the westward of that rock there is good room and good anchorage, from 7 to 12 and 15 fathoms water in the entrance, and in the middle, two miles up, is from 15 to 23 fathoms, and from thence up to the head is from 10 to 5 fathoms.

Iron Island is a small high island, lying N. N. E.  $\frac{1}{2}$  E. one league from the S. E. point of Great Burin Island, and S. S. W.  $\frac{1}{4}$  W. one mile from Mortier west head, and E. one and a half mile from the north part of Pardy's Island. Vessels bound for the harbours of Burin may pass on either side of Iron Island, the only danger passing to the northward is the Brandys, which almost always break; they lie near a quarter of a mile to the southward of a low rock above water, close under the land of Mortier west head. If the wind should take you a-head after you are within Iron Island, take care to keep Mortier west head open to the westward of Iron Island, in order to avoid Grigory's rock, on which is only 2 fathoms water. The mark to carry you on this rock is, to bring the flag-staff on St. George's Island (in the centre of the passage between Great Burin and Pardy's Islands and Mortimer west head) on with the west side of Iron Island; this rock almost always breaks: Vessels may pass with safety between this rock and Iron Island, taking care to give Iron Island a birth of one cable's length.

On the main within Pardy's Island, are two remarkable white marks in the rocks; the northernmost of these marks brought on with the north part of Pardy's Island and Iron Island, N. by E.  $\frac{1}{4}$  E. will carry you on the Galloping Andrew, a shoal on which is 5 fathoms water.

S. W. one mile from Iron Island lies a shoal on which is 8 fathoms water, called the White Horse.

Dodding rock lies about one quarter of a mile from the easternmost part of Great Burin Island.

Mortier bank lies E. by S. two leagues from Iron Island, and N. 25° E. five leagues from Cape Jude: the shoal part of this bank is about one league over. On it you have not less than 7 fathoms water, but, by the fishermen's account, there is not more than 4 fathoms on one part of it; in bad weather, the sea breaks very high on it.

About three miles to the N. N. E. from Iron Island is the opening of Mortier Bay, at the entrance of which is a round island, called Mortier Island, lying a third of the distance from the west side. Ships may sail in on either side of it. It is bold to all around. Close to the first point beyond the island, on the larboard side going in, is another little island, scarcely perceptible, as it lies close under the land; and, two cable's length from it, in a direct line towards the outer island, is a sunken rock, on which the sea breaks in bad weather; there is no other danger in this bay. At the bottom of it, one and a half mile from Mortier Island, on the east side, there is a cove, called Fox Cove, wherein is good anchorage, and room for one ship to moor in 9 fathoms, good holding ground. They will lie two points open to the sea, that is, from S. S. E. to S. E. A ground swell tumbles into the cove in bad weather, but no anchor was ever known to come home here. Fishing ships sometimes ride here the season. On the west side of the bay is the harbour, which is small and narrow, but a very good one for small vessels, where they lie moored to the shore. There is 7 and 8 fathoms through the entrance, and 2 fathoms when in the harbour, and sufficient room for fifty shallops at the head of it. Off the starboard point going in, is a rock, which at high water is always covered.

Croney Island lies N. by E. nearly two miles from Mortier east point. This is a round island, and lies close to the shore.

Two miles and a half from Croney Island is the entrance into Mortier bay; at the entrance on the west side is a small harbour, called Boboy; in it is nine feet water at low water. The course into Mortier bay is north, for about two miles, and is three-fourths of a mile wide, in which you have from 50 to 70 fathoms water, the land on each side being high: it then runs to the westward about two miles, and is near two miles wide. In the S. E. corner of the bay is a river, which runs to the S. W. about 7 miles. On the east side, at about three miles from the entrance, is an exceeding good harbour, called Spanish Room, in which you may anchor from 4 to 6 fathoms water, good bottom, and lie secure from all winds. There is not the least danger in sailing into this harbour, giving the low rocks above water at the entrance on the larboard hand, a birth of one cable's length.

Two miles to the N. E. of the entrance into Mortier Bay lies Rock Harbour, fit only for boats by reason of the infinite number of rocks in it, both above and under water.

From Mortier east point to John the bay point, the course is N. 25° E. distance eight miles. Between John the bay point and Rock Harbour, lie two sunken rocks, half a mile from the shore.

Two miles to the N. W. of John the bay point lies John the bay, in which is tolerable good anchorage, in about 8 fathoms water, with sandy bottom.

The Saddle Back is a small island lying N. 47° E. eight leagues from Corbin Head, and N. 55° E. from Mortier west point, and N. 83° E. three leagues from John the bay point. Between it and the main are a great number of rocks and islands, which render this part of the coast very dangerous. There is a chain of rocks lying one and a half mile to the N. E. by N. of the Saddle Back.

Cape Jude is an island about two and a half miles in length, and two in breadth; it lies one and a half miles to the N. N. W. of the Saddle Back; on the south end of it is a remarkable round hill, which is called the Cape. Between this island and the main are a cluster of islands and low rocks, with a great number of sunken rocks about them, called the Flat Islands, the innermost of which lies about one mile from the main.

Audearn Island lies half a mile to the northward of Cape Jude Island, on the west side of which is a tolerable good harbour. Vessels bound for this harbour

may pass between and Patrick's Island, Audearn's Island, and the harbour, the southward, in point on the south shore, just within Green point on the

Off the east point the west side of the bay, and another on the

Broad Cove lies in this cove

Cross Island lies three-fourths of the distance between this island and the main. With the passage into there is sufficient

Boat Harbour up N. N. E. one round the eastern point E. better than

Long Island is making in several the Saddle Back,

N. W. two miles and a half mile from all round near on

From Green Island from Ford's Island Vessels may pass which lies one mile good anchorage in stony point, taking which is covered by

Little Gallows Harbour, and is above a rock above lies before the mouth

Cape Roger is a high round barren point of Long Island point of the entrance, on the west and the main, is visible further up, and another

One mile and a half there are several islands get within all of them

Petit Fort is a very good bottom. The island lies N. N. E. about two and a half miles danger in sailing in the S. E. winds being

One mile to the north which runs up N. E. in it is very deep water Just within the entrance

may pass between Cape Jude Island and Audearn Island, and between Crow and Patrick's Island, which are two small islands, lying off the S. W. point of Audearn's Island. About a cable's length from Audearn Island to the southward of the harbour, is a sunken rock; the mark for avoiding it in coming from the southward, is, not to haul in for the harbour till you open a remarkable green point on the south side of the harbour. The best anchorage is on the north shore, just within a small island. There is a spit of rocks stretches just off the Green point on the south shore, which are covered at high water.

Off the east point of Audearn Island is a small island, called Ford's Island, on the west side of which is a sunken rock about a cable's length from the island, and another on the east side, which almost always breaks.

Broad Cove lies on the main, W.  $\frac{1}{4}$  N. five and a half miles from Ford's Island; in this cove is exceeding good anchorage, in 8 or 9 fathoms water.

Cross Island lies three miles to the N. W. of Ford's Island, is about one and three-fourths of a mile in length, and one mile in breadth; is high woody land; between this island and the main are several other islands. Bane Harbour lies on the main. Within these islands is an exceeding good harbour for small vessels, the passage into it is very narrow, and hath in it 2 fathoms water, but when in, there is sufficient room to moor in 3 fathoms, good bottom.

Boat Harbour lies about one mile to the northward of Cross Island, and runs up N. N. E. one league with deep water to about half a mile of the head; close round the eastern point of Boat Harbour lies Bay de Leau, which runs in N. N. E.  $\frac{1}{4}$  E. better than a league.

Long Island is about four miles long, and not half a mile broad, is high land making in several peaks; the south point of it lies N.  $37^{\circ}$  E. two leagues from the Saddle Back, and E. by S. three miles from Ford's Island.

N. W. two miles from the south point of Long Island, and N. E. by E. one and a half mile from Ford's Island, lies a small Green Island, which has a shoal all round near one cable's length.

From Green Island N. W. two and a half miles, and N.  $19^{\circ}$  E. three miles from Ford's Island, lies Great Gallows Harbour Island, which is high land. Vessels may pass on either side of this island into Great Gallows Harbour, which lies one mile to the N. E. of the Island. In this Harbour is exceeding good anchorage in 7 fathoms water on the starboard side, just within a low stony point, taking care to give the point a small birth, in order to avoid a rock, which is covered at high water.

Little Gallows Harbour lies close round to the eastward of Great Gallows Harbour, and is only fit for small vessels, which must lie moored to the shore. Above a rock above water, on the larboard hand, Little Gallows Harbour Island lies before the mouth of the harbour.

Cape Roger Harbour lies close to the westward of Cape Roger, which is a high round barren head, lying N.  $15^{\circ}$  W. three and a half miles from the south point of Long Island. There are several low rocks and islands lying off the east point of the entrance. In the harbour, one and a quarter mile within the entrance, on the west side, lies a small island; to the northward of it, between that and the main, is very good anchorage in 7 or 8 fathoms water; or you may run further up, and anchor in 6 or 7 fathoms.

One mile and a quarter to the eastward of Cape Roger Harbour lies Nonsuch; there are several islands lying in the mouth of it, and no safe anchorage till you get within all of them.

Petit Fort is a very good harbour, having in it from 14 to 7 fathoms water, good bottom. The entrance into it is better than one quarter of a mile wide, and lies N. N. E. five miles from the south point of Long Island, and N. by W. two and a half miles from the north point of Long Island. There is not the least danger in sailing into this harbour; the best anchorage is on the starboard side, the S. E. winds heaving in a great swell on the west shore when they blow hard.

One mile to the eastward of Petit Fort lies the entrance into Paradise sound, which runs up N. E. by E. four and a half leagues, and is about one mile broad; in it is very deep water, and no safe anchorage till you get near the head of it. Just within the entrance on the east side, is a cove (in which are several rocks

above water) is 10 fathoms water, but not safe to anchor in, the bottom being rocky.

From Corbin Head to Marticot Island, the course is N. 48° E. eleven and a half leagues, nearly; this course will carry you just without the Saddle Back. Between Marticot and the main is Fox Island; there is a safe passage for vessels between these islands, with not less than 9 fathoms water, but no passage between Fox Island and the main. On the main, within Marticot island, lie the harbours of Great and Little Paradise. The harbour of Great Paradise is only fit for boats. The harbour of Little Paradise lies one mile to the northward of the east point of Marticot Island: the only safe anchorage is in a cove, at the head, on the larboard side; here they lie moored to the shore and are entirely land-locked.

One mile to the eastward of Little Paradise lies La Perche, in which is no safe anchorage, the ground being bad, and lies entirely exposed to the S. E. winds.

E. N. E. two miles from Marticot Island is a rock above water, called the Black Rock; one quarter of a mile, within this rock lies a sunken rock; N. N. E.  $\frac{1}{2}$  E. two miles from this rock lies Presque; in it is very deep water, but no safe passage into it, by reason of a number of rocks, both above and under water,  $\frac{1}{2}$  g before the entrance.

East four miles from Presque, and N. E. by E. six leagues from the Saddle Back, lies the west point of Merasheen Island. This island is high, and runs to the N. E. by N. better than six leagues, and is very narrow, the broadest part not being more than two miles. At the south part of the island, near the west end, is a very good harbour, but small in which is from 6 to 10 fathoms water. To sail into it keep the starboard shore on board, in order to avoid a sunken rock that lies one cable's length off a ragged rocky point on the larboard hand going in.

Indian Harbour lies on the east side of Merasheen Island, at about three leagues from the south point; this harbour is formed by a small island, on either side of which is a safe passage into it; the only anchorage is to the westward of the island, and between it and the main, and here the ground is uncertain.

N. 20° W. two and a half miles from the west point of Merasheen Island is the Little Isle of Valen; this is high and round, and lies within about half a mile of the main; one quarter of a mile from Little Isle of Valen lies the Great Isle of Valen, on the S. E. part of which is a small harbour.

On the main, within the Great Isle of Valen lies Clatise Harbour; the entrance into it is about half a mile wide: in it is 40 or 50 fathoms water. The best anchorage is in the west cove, which is a mile long, but not a quarter of a mile broad; in it is from 17 to 20 fathoms water, good bottom.

Grummer's Rocks are low rocks above water, and lie in one and a half mile from the north end of Great Isle of Valen.

Little Sandy Harbour lies on the main, and is a tolerable good harbour; in it you have 6 and 7 fathoms water, good bottom; in the mouth of which is a low rock above water. Vessels bound for the harbour must pass to the northward of this rock. This harbour may be known by the island called Bell Island which lies E. S. E.  $\frac{1}{2}$  E. one and a half mile from the mouth of it, and N. by E.  $\frac{1}{2}$  E. thirteen miles from the west point of Merasheen Island; off the south point of the island is a remarkable rock, resembling a bell with the bottom upwards.

Great Sandy Harbour lies three quarters of a mile to the northward of Little Sandy Harbour; the passage into it is narrow, but in it you have 6 or 7 fathoms water. There are two arms in this harbour, one running to the S. W. which almost dries at low water: the other runs to the N. E. in which is tolerable good anchorage. There are several low rocks and islands lying before this harbour.

Barren Island is about three and a half miles long, and one mile broad, is high land and lies better than one league from the north part of Merasheen Island, and about half a mile from the main. On the east side of this island, near the south end, is a cove in which is tolerable good anchorage, from 10 to 16 fathoms water. Along the west side of this island, between it and the main, is very good anchorage.

On the main, opposite the north end of Barren Island, lies La Plant, a harbour only fit for boats.

From Barren three leagues from a mile from the way to Pip.

Cape St. Ma in the latitude Cape St. Vincent is a small early winds. T even. S. by V which are two breaks.

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The Gibraltar Rock and a quarter mile afore-mentioned the said mark of there is regular water, under the where you lie in bottom of the rock which stand the Hill is the entrance fathoms water, but runs up N. N. E. rity, in 6 or 7 fath

Near the bottom stands a castle; you may haul in near two cable's length about 6 fathoms



From Barren Island are a string of islands quite to Piper's hole, which lies three leagues from the north part of Barren Island. These islands are about half a mile from the main, having from 17 to 7 fathoms water, good anchorage all the way to Piper's hole.

Cape St. Mary's is the east point of the entrance into Placentia bay, and lies in the latitude of  $46^{\circ} 52' N.$  is a pretty high bluff point, and looks much like Cape St. Vincent on the coast of Portugal; a little to the northward of the cape is a small cove where fishing shallops shelter from the easterly and southerly winds. The land from Cape St. Mary's to Placentia is pretty high and even. S. by W. seven and a half miles from the cape, lie St. Mary's keys, which are two rocks just above water, and on which the sea almost always breaks.

From the Virgin rocks to Cape St. Mary's the course is south, distance three and a half leagues; between Green point and Cape St. Mary's, there is no shelter for ships or vessels. The land from Placentia road to Cape St. Mary's is of a moderate, and appears nearly of an equal height all the way; but over Placentia, and to the northward of it, the land is very high and uneven, with many pecked hills.

Bull and Cow rocks are a cluster of rocks above water, lying S. E. by E. two leagues from Cape St. Mary's, about one mile from the main, and S. W. by W. from Point Lance, which is a low ragged point, and is the west point of the entrance into St. Mary's bay; at about one-third of the distance from the main to the Bull and Cow rocks is a sunken rock which shows above water at half ebb.

From Cape St. Mary's to Point Breme the course is N. by W.  $\frac{1}{4}$  W. eight miles.

From Point Breme to the Virgin rocks, the course is N. N. E. distance ten miles; these rocks show above water, and lie about one mile from the main.

Three leagues south from Green point, and a league from the shore, lie the Virgin rocks, which are a cluster of rocks above water. A little to the southward of these rocks there are some whitish cliffs in the land, by which that part of the coast may be known, on coming in with it in thick weather.

From Virgin rocks to Point Verd, the course is N.  $38^{\circ}$  E. distance five and a half miles. This is a low green point, and is the south point of the entrance into the road of Placentia.

Placentia road and harbour is situated on the east side of the great bay of that name, at eleven leagues distance from Cape St. Mary's. To sail into the road, and coming from the southward, you must keep a league from the shore to avoid the Gibraltar Rock, which lies W. S. W. from Point Verd, till you bring the Castle Hill open to the northward of Green Point. The Castle Hill's on the north side of the road on which stands the Castle, and is distinguishable far out at sea. Green Point is a low level point, which forms the south side of the road. The Gibraltar Rock has sixteen feet water upon it, and lies W.  $\frac{1}{4}$  S. distant two and a quarter miles from Green Point, and two miles from shore. The mark afore-mentioned will carry you a quarter of a mile without it, and when you have the said mark open, you may steer in for the Castle, keeping your lead going; there is regular sound on both sides. Along the south side is a flat, to which you may borrow into 4 fathoms. The best anchorage is in 6 or 7 fathoms water, under the Castle Hill, at three quarters of the distance over from that side, where you lie in good ground, and open about four points to the sea. At the bottom of the road is a long beach, which terminates to the north in a point, on which stand the inhabitants' houses and a fort. Between this point and Castle Hill is the entrance into Placentia Harbour, which is very narrow, in which is 3  $\frac{1}{2}$  fathoms water, but within the narrows it widens to one third of a mile broad, and runs up N. N. E. above one and a half mile, where ships may lie in perfect security, in 6 or 7 fathoms. To sail in you must keep nearest to the starboard side.

Near the bottom of Placentia Road, on the north shore, at the top of a hill, stands a castle; when you have this castle open to the northward of Point Verd, you may haul in for the road in safety, taking care to give Point Verd a birth of near two cable's length. The best anchorage in the road is under Castle Hill, in about 6 fathoms water. The entrance into the harbour is very narrow; in it you

have 8½ fathoms water; after you are within the narrows it is about one third of a mile broad, and about one and a half mile long; here you may anchor in perfect safety, in 6 or 7 fathoms water.

The coast is easily known in clear weather, by the Chapeaurouge, and other remarkable head lands. The best directions that can be given in coming in with it in thick weather, are to observe that between Burin and Laun there are no islands except Ferryland head, which is very near the main, so as not to be distinguished as an island till very close to the shore: also, that the islands about Burin are large and full as high as the main land; those about Laun are small, and scarce half the height of the main land, and the Lamelins are two low flat islands. There are several small rocks just above water between Laun and Lameline, and there are none such any where else along the coast. The land from Mortier head up the bay, is high, rocky, and uneven, with several islands near the coast, which form many capes and ragged points.

From Mortier head to Red island, the course is N. E. by E. distance 16 leagues. This island is high, and may be seen in clear weather twelve leagues from the deck. The south end of it bears from Placentia road N. W. distance four and a half leagues.

Red island is high barren land, about five miles long and three miles broad. The south point lies N. W. eleven miles from Placentia road. On the east side near the north end is a small harbour, which is only fit for shallops.

Point Latina lies about five miles to the northward of Placentia road; between these places the land is low and even near the sea, but just within it high and ragged, there are several sunken rocks lying along the shore about half a mile off.

Point Roche lies more than a mile to the eastward of Point Latina; there is a shoal stretches off Point Roche more than a quarter of a mile.

S. E. by S. ¼ E. one and a quarter mile from Point Roche is the entrance into the harbour of Little Placentia, which runs up S. W. by W. ¼ W. about one and a half mile, and is near half a mile broad; there is exceeding good anchorage in this harbour, in a cove on the north shore; this cove may be known by the west point being woody, and the land to the eastward being barren; off the east point of the cove lies a shoal for near one-third the distance over to the south side of the harbour; in this cove is 7 and 8 fathoms water.

From Point Latina to Ship harbour, the course is E. N. E. distance five and a half miles. This harbour runs up north two and three quarters miles, and is about one quarter of a mile broad; the best anchorage is in a cove on the west side in about 10 fathoms water, at about one mile from the entrance.

Fox Island is a small round island, lying N. by E. ¼ E. three miles from Point Latina, and W. by N. one league from Ship Harbour Point, which is a low stony point, lying about one and half mile to the westward of Ship Harbour; between Fox Island and this point are a range of rocks, which in bad weather break almost quite across.

N. W. one and a half mile from Fox Island, is a steep rock above water, called Fishing Rock; north one and a half mile from Fishing Rock lies a sunken rock, which almost always breaks.

The Ram Islands are a cluster of high islands, lying about three miles to the N. N. E. ¼ E. of Fox Island. E. N. E. three miles from the south point of Ram Islands is the entrance into Long Harbour; there is not the least danger in sailing into it; the best anchorage is on the north side to the eastward of Harbour Island, between it and the main; here you will lie secure from all winds in 7 or 8 fathoms water.

From Ram Islands to Little harbour is north about five leagues; there are several low islands and rocks along shore; between these places there is not the least shelter for vessels, or scarcely for boats, along that coast. Little Harbour is small, with 7 fathoms water; the ground is bad, and lies entirely exposed to the S. W. winds, which heave in a very great sea.

From Point Latina to the south point of Long Island, the course is N. by W. ¼ W. four and a half leagues; this island is near three leagues long, is high land, the south point being remarkable high steep rocks. On the east side of the island, about one league from the south point, lies Harbour Buffet, a tolerable good

harbour; there are two arms northward; This harbour southward of from the entrance in the mouth

About four Muscle Harbour and Barren one-third of the distance to the north starboard harbour two miles long

Little South fore the mouth must leave a safe which is a safe and, is a safe breaks: nearly length from the and a half mile

Great South Harbour; the anchorage in 6 One mile to round island n The entrance and runs up N bottom; is entrance swell.

North Harbour E. by E. two the entrance is

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Cape Chapeau side of Placentia 18 leagues from that part of the and may be seen

Close to the Little St. Lawrence most, there is n terly, and partic avoid the flerry N. W. till you c best place for la east side of the which is the first may anchor any same side near t the ground is not the harbour abo

harbour; the entrance into it is narrow, but has 13 fathoms water in it. There are two arms in this harbour, one running to the westward, the other to the northward; the best anchorage is in the north arm, in about 15 fathoms water. This harbour may be known by the islands that lie in the mouth and to the southward of it, and by Harbour Buffet Island, that lies E. N. E.  $\frac{1}{4}$  E. one mile from the entrance. To sail into it you must pass to the northward of the islands in the mouth.

About four miles from the south point of Long Island, on the west side, lies Muscle Harbour; vessels bound for this harbour may pass between Long Island and Barren Island, which is a high barren island, about a mile long, and about one-third of a mile from Long Island. The entrance into the harbour lies opposite the north end of Barren Island, and is between a low green point on your starboard hand, and a small island on your larboard hand; this harbour is near two miles long, and one broad; in it is from 10 to 22 fathoms water, rocky bottom.

Little South Harbour lies one mile to the westward of Little Harbour; before the mouth of it are several rocky islands: in sailing into the harbour you must leave all the islands on your starboard hand, except one, on either side of which is a safe passage of 15 fathoms water. On the east shore, within the islands, is a sunken rock about one cable's length from the shore, which generally breaks: nearly opposite, on the west shore, are some rocks about half a cable's length from the shore, that show at one third ebb. This harbour is about one and a half mile long, near half a mile wide, with 7 fathoms water, good bottom.

Great South Harbour lies about one mile to the northward of Little South Harbour; there is no danger in sailing into it; near the head is very good anchorage in 6 or 7 fathoms water.

One mile to the westward of Great South Harbour is Isle au Bordeaux, a high round island near the main.

The entrance in Come-by-chance, lies north four miles from Isle au Bordeaux, and runs up N. E. by N. three miles; in it is from 20 to 3 fathoms water, sandy bottom; is entirely exposed to the S. W. winds, which heave in a very great swell.

North Harbour is N. W. two and a half miles from Come-by-chance, and S. E. by E. two and a half miles from Piper's Hoie; about two miles from the entrance is good anchorage in 7 fathoms water, and no danger sailing into it.

### *Directions for navigating on part of the south Coast of Newfoundland.*

[N. B. All bearings, and courses, hereafter mentioned are the true bearings, and courses, and not by compass.]

Cape Chapeaurouge, or the mountain of the Red Hat, is situated on the west side of Placentia bay, in the latitude of  $46^{\circ} 53'$  North, and lies nearly west 17 or 18 leagues from Cape St. Maries; it is the highest and most remarkable land on that part of the coast, appearing above the rest somewhat like the crown of a hat, and may be seen in clear weather 12 leagues.

Close to the eastward of Cape Chapeaurouge are the harbours of Great and Little St. Lawrence. To sail into Great St. Lawrence, which is the westernmost, there is no danger but what lies very near the shore; taking care with westerly, and particularly S. W. winds, not to come too near the Hat Mountain, to avoid the flerrys and eddy winds under the high lands. The course in, is first N. W. till you open the upper part of the harbour, then N. N. W.  $\frac{1}{4}$  West; the best place for large ships to anchor, and the best ground is before a cove on the east side of the harbour in 13 fathoms water, a little above Blue Beach Point, which is the first point on the west side; here you lie only two points open: you may anchor any where between this point and the point of Low Beach, on the same side near the head of the harbour, observing that close to the west shore, the ground is not so good as on the other side. Fishing vessels lay at the head of the harbour above the beach, sheltered from all winds.

To sail into Little St. Lawrence, you must keep the west shore on board, in order to avoid a sunken rock which lies a little without the point of the Peninsula which stretches off from the east side of the harbour: you anchor above this peninsula (which covers you from the sea winds) in 3 and 4 fathoms water, a fine sandy bottom. In these harbours are good fishing conveniences, and plenty of wood and water. Ships may anchor without the Peninsula in 12 fathoms good ground, but open to the S. S. E.

Sanker Head lies 3 miles to the eastward of Cape Chapeaurouge; it is a pretty high round point, off which lie some sunken rocks, about a cable's length from the shore.

Garden Bank, whereon is from 7 to 17 fathoms water, lies about half a mile off from Little St. Lawrence, with Blue Beach Point on with the east point of Great St. Lawrence.

Ferryland Head lies S. W. one mile from Cape Chapeaurouge; it is a high rocky island, just separated from the main: this head and Cape Chapeaurouge, are sufficient marks to know the harbours of St. Lawrence.

West, five miles from Ferryland Head, lies the bay of Laun, in the bottom of which are two small inlets, called Great and Little Laun. Little Laun, which is the easternmost, lies open to the S. W. winds, which generally prevail upon this coast; and therefore no place to anchor in. Great Laun lies in about N. by E. two miles, is near half a mile wide, whereon is from 14 to 3 fathoms water. To sail into it, you must be careful to avoid a sunken rock, which lies about a quarter of a mile off from the east point. The best place to anchor is on the east side, about half a mile from the head, in 6 and 5 fathoms; the bottom is pretty good, and you are sheltered from all winds, except S. and S. by W. which blow right in and cause a great swell. At the head of this place is a bar harbour, into which boats can go at half tide, and conveniences for a fishery, and plenty of wood and water.

Off the west point of Laun Bay lie the islands of the same name, not far from the shore; the westernmost and outermost of which lie west; southerly, ten miles from Ferryland Head: near a quarter of a mile to the southward of this island is a rock whereon the sea breaks in very bad weather: there are other sunken rocks about these islands, but they are no ways dangerous, being very near the shore.

Taylor's Bay, which lies open to the sea, is three miles to the westward of Laun Islands; off the east point are some sunken rocks, near a quarter of a mile from the shore.

A little to the westward of Taylor's Bay, there stretches out a low point of land, called Point Aux Gaul; off which lies a rock above water, half a mile from the shore, called Gaul Shag Rock; this rock lies W.  $\frac{1}{2}$  S. five leagues from Ferryland Head; you have 14 fathoms close to the off side of it, but between it and the point are some sunken rocks.

From Point Aux Gaul Shag Rock to the Islands of Lamelin, is W.  $\frac{1}{2}$  N. one league; between them is the Bay of Lamelin, wherein is very shallow water, and several small islands and rocks, both above and under water, and in the bottom of it is a salmon river.

The two islands of Lamelin (which are but low) lie off the west point of the bay of the same name, and lie W.  $\frac{1}{2}$  S. six leagues from the mountains of the Red Hat; but in steering along shore making a W. by S. course good, will carry you clear of all danger. Small vessels may anchor in the road between these islands in 4 or 5 fathoms, tolerably well sheltered from the weather. Nearly in the middle of the passage, going in between the two islands, is a sunken rock, which you avoid by keeping nearer to one side than the other; the most room is on the east side. The easternmost island communicates with the main at low water, by a narrow beach, over which boats can go at high water into the N. W. arm of Lamelin Bay, where they lie in safety. Here are conveniences for a fishery, but little or no wood of any sort. Near to the south point of the westernmost island is a rock pretty high above water, called Lamelin Shag Rock; in going into the road between the islands, you leave this rock on your larboard side.

Lamelin Ledges lie along the shore, between Lamelin Islands and Point May,

which is three leagues from the land; the extremity of northward with foggy weather in 30 fathoms the main are

All the land sea; from La Point May, the way inland are

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which is three leagues, and are very dangerous, some of them being three miles from the land. To avoid these ledges in the day time, you must not bring the Islands of Lamelin to the southward of east, until Point May, or the western extremity of the land bears N. by E. from you; you may then steer to the northward with safety, between Point May and Green Island. In the night, or foggy weather, you ought to be very careful not to approach these ledges within 30 fathoms water, lest you get entangled amongst them. Between them and the main are various soundings from 16 to 5 fathoms.

All the land about Cape Chapeaurouge and Laun, is high and hilly close to the sea; from Laun Islands to Lamelin it is of a moderate height; from Lamelin to Point May, the land near the shore is very low, with sandy beaches, but a little way inland are mountains.

The island of St. Peter's lies in the latitude  $46^{\circ} 46'$  north, W. by S. near twelve leagues from Cape Chapeaurouge, and W. by S.  $\frac{1}{2}$  S. five leagues from the islands of Lamelin; it is about five leagues in circuit, and pretty high, with a craggy, broken, uneven surface. Coming from the westward, as soon as you raise Gallantry Head, which is the south point of the island, it will make in a round hummock, like a small island, and appears as if separated from St. Peter's. On the east side of the island, a little to the N. E. of Gallantry Head, lie three small islands, the innermost of which is the largest, called Dog Island; within this island is the road and harbour of St. Peter's; the harbour is but small, and hath in it from 12 to 20 feet water; but there is a bar across the entrance, whereon there is but 6 feet at low water, and 12 or 14 feet at high water. The road which lies on the N. W. side of Dog Island will admit ships of any burden, but it is only fit for the summer season, being open to the N. E. winds; you may lie in 8, 10, or 12 fathoms, and for the most part is a hard rocky bottom; there is very little clear ground; ships of war commonly buoy their cables; the best ground is near the north shore. Going in or out, you must not range too near the east side of Boar Island, which is the easternmost of the three islands above-mentioned, for fear of some sunken rocks which lie east about one mile from it, and which is the only danger about St. Peter's, but what lies very near the shore.

The island of Columbo is a small circuit, but pretty high, and lies very near the N. E. point of St. Peter's; between them is a very good passage, one-third of a mile wide, wherein is 12 fathoms water. On the north side of the island is a rock pretty high above water called Little Columbo: and about a quarter of a mile N. E. from this rock is a sunken rock, whereon is 2 fathoms water.

The island of Langly, which lies on the N. W. side of St. Peter's, is about eight leagues in circuit, of a moderate and pretty equal height, except the north end, which is a low point, with sand hills along it; it is flat a little way off the low land on both sides of it; but all the high part of the island is very bold-to, and the passage between it and St. Peter's (which is one league broad) is clear of danger. You may anchor on the N. E. side of the island, a little to the southward of the Sand Hills, in 5 and 6 fathoms, a fine sandy bottom, sheltered from the southerly, S. W. and N. W. winds.

There is no passage between the north point of Langly and the south point of the island of Miquelon, which island is four leagues in length from north to south, but of an unequal breadth; the middle of the island is high land, called the high land of Dunn; but down by the shore it is low, except Cape Miquelon, which is a lofty promontory at the northern extremity of the island.

On the S. E. side of the island, to the southward of the high land, is a pretty large bar harbour, called Dunn Harbour, which will admit fishing shallops at half flood, but can never be of any utility for a fishery.

Miquelon Rock stretches off from the east point of the island, under the high land one and a quarter mile to the eastward, some are above and some under water; the outermost of these rocks are above water, and you have 12 fathoms close to them, and 13 and 20 fathoms one mile off. N. E.  $\frac{1}{2}$  N. four or five miles from these rocks lies Miquelon bank, whereon is 6 fathoms water.

The road of Miquelon (which is large and spacious) lies at the north end, and on the east side of the island, between Cape Miquelon and a very remarkable



round mountain near the shore, called Chapeaux: off the south point of the road are some sunken rocks, about a quarter of a mile from the shore, but every where else it is clear of danger. The best anchorage is near the bottom of the road in 6 and 7 fathoms, fine sandy bottom; you lie open to the easterly winds, which seldom blow in the summer.

Cape Miquelon, or the northern extremity of the island, is high bluff land; and when you are four or five leagues to the eastward or westward of it, you would take it for an island, by reason the land at the bottom of the road is very low.

The Seal Rocks are two rocks above water, lying one league and a half off from the middle of the west side of the island Miquelon; the passage between them and the island is very safe, and you have 14 or 15 fathoms within a cable's length all round them.

Green Island, which is about three-fourths of a mile in circuit, and low, lies N. E. five miles from St. Peter's, and nearly in the middle of the channel, between it and Point May on Newfoundland: on the south side of this island are some rocks both above and under water, extending themselves one mile and a quarter to the S. W.

### *Description of Fortune Bay.*

Fortune Bay is very large; the entrance is formed by Point May and Pass Island, which are twelve leagues N. by E. and S. by W. from each other, and it is about twenty-three leagues deep, wherein are a great many bays, harbours and islands.

The island of Brunet is situated nearly in the middle of the entrance into Fortune Bay; it is about five leagues in circuit, and of a tolerable height; the east end appears, at some points of view, like islands, by reason it is very low and narrow in two places. On the N. E. side of the island is a bay, wherein is tolerable good anchorage for ships in 14 and 16 fathoms, sheltered from southerly and westerly winds; you must not run too far in for fear of some sunken rocks in the bottom of it, a quarter of a mile from the shore; opposite this bay, on the south side of the island, is a small cove, wherein small vessels and shallows can lie pretty secure from the weather, in 6 fathoms water; in the middle of the cove is a rock above water, and a channel on each side of it. The islands lying at the west end of Brunet, called Little Brunets, afford indifferent shelter for shallows in blowing weather; you may approach these islands, and the island of Brunet, within a quarter of a mile all round, there being no danger but what lies very near the shore.

Plate islands are three rocks of a moderate height, lying S. W. one league from the west end of Great Brunet. The southernmost and outermost of these rocks lie W. by S.  $\frac{1}{4}$  S. eleven miles from Cape Miquelon, and in a direct line between Point May and Pass island, seventeen miles from the former, and nineteen from the latter; S. E. a quarter of a mile from the Great Plate (which is the northernmost) is a sunken rock, whereon the sea breaks, which is the only danger about them.

There are several strong and irregular settings of the tides or currents about the Plate and Brunet Islands which seem to have no dependency on the moon, and the course of the tides on the coast.

The island of Sagona, which lies N. N. E. two leagues from the east end of Brunet, is about three miles and a half in circuit, of a moderate height, and bold to all round; at the S. W. end is a small creek that will admit fishing shallows; in the middle of the entrance is a sunken rock, which makes it exceeding narrow, and difficult to get in or out, except in fine weather.

Point May is the southern extremity of Fortune Bay, and the S. W. extremity of this part of Newfoundland; it may be known by a great black rock nearly joining to the pitch of the point and something higher than the land, which makes it look like a black hummock on the point; near a quarter of a mile right off from the point, or this round black rock, are three sunken rocks whereon the sea always breaks.

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Near two miles north from Point May, is Little Dantzick Cove, and half a league from Little Dantzick is Great Dantzick Cove; these coves are no places of safety, being open to the westerly winds; the land about them is of a moderate height, bold too, and clear of wood.

From Dantzick Point (which is the north point of the coves) to Fortune, the course is N. E. near three leagues; the land between them near the shore is of a moderate height, and bold-to; you will have in most places 10 and 12 fathoms two cables length from the shore, 30 and 40 one mile off, and 70 and 80 two miles off. Fortune lies north from the east end of Brunet; it is a bar place that will admit fishing boats at a quarter flood; and a fishing village situated in the bottom of a small bay wherein is anchorage for shipping in 6, 8, 10 and 12 fathoms; the ground is none of the best; and you lay open to near half the compass.

Cape of Grand Bank, is a pretty high point, lying one league N. E. from Fortune; into the eastward of the cape is Ship Cove, wherein is good anchorage for shipping, in 8 and 10 fathoms, sheltered from southerly, westerly, and N. W. winds. Grand Bank lies E. S. E. a half league from the cape; it is a fishing village and a bar harbour, that will admit of fishing shallops at a quarter flood; to this place and Fortune, resort the crews of fishing ships, who lay their ships up in harbour Britain. From the Cape of Grand Bank to Point Enragee, the course is N. E.  $\frac{1}{4}$  E. eight leagues, forming a bay between them, in which the shore is low, with several sandy beaches, behind which are bar harbours that will admit boats on the tide of flood, the largest of which is Great Garnish, five leagues from Grand Bank; it may be known by several rocks above water, lying before it; two miles from the shore, the outmost of these rocks are steep too, but between them and the shore are dangerous sunken rocks. To the eastward, and within these rocks, is Frenchman's Cove, wherein you may anchor with small vessels in 4 and 5 fathoms water, tolerably well sheltered from the sea winds, and seems a convenient place for the cod fishery.—The passage is to the eastward of the rocks that are the highest above water; between them and some other lower rocks lying off to the eastward from the east point of the cove, there is a sunken rock nearly in the middle of this passage which you must be aware of. You may anchor any where under the shore, between Grand Bank and Great Garnish in 8 and 10 fathoms water, but you are only sheltered from the land winds.

Point Enragee is but low, but a little way in the country is high land; this point may be known by two hummocks upon it close to the shore, but you must be very near, otherwise the elevation of the high lands will hinder you from discovering them; close to the point is a rock under water.

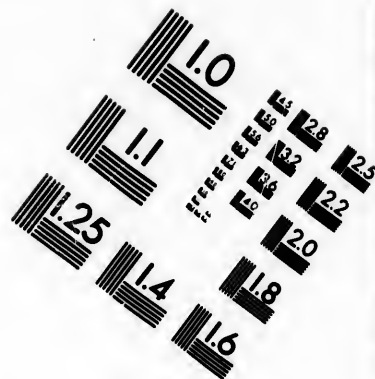
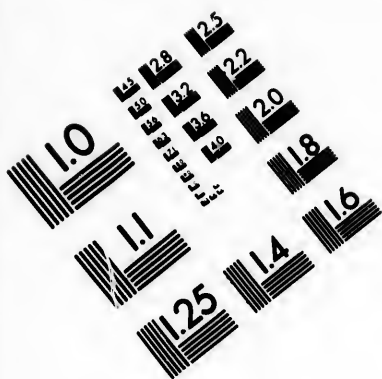
From Point Enragee to the head of the bay the course is first N. E.  $\frac{1}{4}$  E. three leagues to Grand Jervey; then N. E. by E.  $\frac{1}{4}$  E. seven and a half leagues to the head of the bay; the land in general along the south side is high, bold-to, and of an uneven height, with hills and valleys of various extent; the valleys for the most part clothed with wood, and watered with small rivulets.

Seven leagues to the eastward of Point Enragee, is the bay L'Argent, wherein you may anchor in 30 or 40 fathoms water, sheltered from all winds.

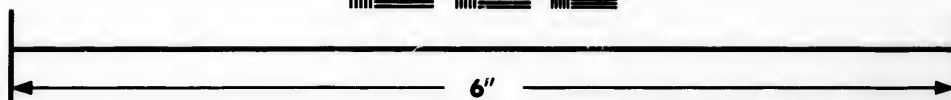
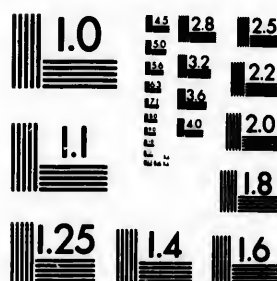
The entrance of harbour Mille is to the eastward of the east point of L'Argent; before this harbour and the bay L'Argent, is a remarkable rock, that at a distance appears like a shallop under sail. Harbour Mille branches into two arms, one lying in to the N. E. and the other towards the E. at the upper part of both is good anchorage, and various sorts of wood. Between this harbour and Point Enragee, are several bar harbours in small bays, wherein are sandy beaches, off which vessels may anchor, but they must be very near the shore to be in a moderate depth of water.

Cape Mille lies N. N. E.  $\frac{1}{4}$  E. one league from the before-mentioned Shallop Rock, and near three leagues from the head of Fortune Bay is a high, reddish barren rock. The width of Fortune Bay at Cape Mille, does not exceed half a league, but immediately below it, it is twice as wide, by which this cape may easily be known: above this cape the land on both sides is high, with steep craggy cliffs. The head of the bay is terminated by a low beach, behind which is a large pond or bar harbour, into which boats can go at quarter flood. In this and all the bar harbours between it and Grand Bank, are convenient places for building of stages, and good beaches for drying of fish, for great numbers of boats.





# IMAGE EVALUATION TEST TARGET (MT-3)



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Grand L'Pierre is a good harbour, situated on the north side of the bay, half a league from the head; you can see no entrance until you are abreast of it; there is not the least danger in going in, and you may anchor in any depth from 8 to 4 fathoms, sheltered from all winds.

English Harbour lies a little to the westward of Grand L'Pierre; it is very small and fit only for boats and small vessels.

To the westward of English Harbour is a small bay called Little bay de Leau, wherein are some small islands, behind which is shelter for small vessels.

New Harbour is situated opposite Cape Mille, to the westward of Bay de Leau; it is but a small inlet, yet hath good anchorage on the west side in 9, 8, 7 and 5 fathoms water, sheltered from the S. W. winds.

Harbour Femme, which lies half a league to the westward of New Harbour, lies in N. E. half a league, is very narrow, and hath in it 23 fathoms water; before the entrance is an island, near to which are some rocks above water: the passage into the harbour is to the eastward of the island.

One league to the westward of Harbour Femme, is a small cove called Brewer's Hole, wherein is shelter for fishing boats; before this cove is a small island near the shore, and some rocks above water.

Harbour le Conte is situated one mile to the westward of Brewer's Hole, before which are two islands, one without the other; the outermost of which is the largest, is of a tolerable height, and lies in a line with the coast, and is not easy to be distinguished from the main in sailing along the shore. To sail into this harbour, the best passage is on the west side of the outer island, and between the two; as soon as you begin to open the harbour, you must keep in the inner island close on board, in order to avoid some sunken rocks that lay near a small island which you will discover between the N. E. point of the outer island and the opposite point on the main; and likewise another rock under water, which lays higher up on the side of the main; this rock appears at low water. As soon as you are above these dangers, you may steer up in the middle of the channel, until you open a fine spacious basin, wherein you may anchor in any depth from 5 to 17 fathoms water, shut up from all winds; the bottom is sand and mud. In to the eastward of the outer island, is a small cove fit for small vessels and boats, and conveniences for the fishery.

Long harbour lies four miles to the westward of the harbour le Conte, and N. E. by N. five leagues from Point Enragee; it may be known by a small island in the mouth of it, called Gull island; and half a mile without this island is a rock above water, that hath the appearance of a small boat. There is a passage into the harbour on each side of the island, but the broadest is the westernmost. Nearly in the middle of this passage, a little without the island, is a ledge of rocks, whereon is two fathoms water: a little within the island on the S. E. are some sunken rocks, about two cables' length from the shore, lying off two sandy coves; some of these rocks appear at low water. On the N. W. side of the harbour two miles within the island is Morgan's Cove, wherein you may anchor in 15 fathoms water, and the only place you can anchor unless you run into, or above the Narrows, being every where else very deep water. This harbour runs five leagues into the country, at the head of which is a salmon fishery.

A little to the westward of Long harbour is Bell bay, which extends three leagues every way, and contains several bays and harbours. On the east point of this bay is Hare harbour, which is fit only for small vessels and boats, before which are two small islands, and some rocks above and under water.

Two miles to the northward of Hare harbour, or the point of Bell bay, is Mall bay, being a narrow arm, lying in N. E. by N. five miles, wherein is deep water, and no anchorage until at the head.

Rencontre islands lie to the westward of Mall bay, near the shore: the westernmost which is the largest, has a communication with the main at low water; in and about this island are shelter for small vessels and boats.

Bell harbour lies one league to the westward of Rencontre islands: the passage into the harbour is on the west side of the island: in the mouth of it, as soon as you are within the island, you will open a small cove on the east side, wherein small vessels anchor, but large ships must run up to the head of the harbour, and anchor in 20 fathoms water, there being most room.

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Lally cove lies a little to the westward of Bell harbour: it is a very snug place for small vessels, being covered from all winds behind the island in the cove.

Lally head is the west point of Lally cove; it is a high bluff white point: to the northward of the head is Lally cove back cove, wherein you may anchor in 18 fathoms water.

Two miles to the northward of Lally cove head, is the bay of the east, and bay of the north; in both is deep water, and no anchorage, unless very near the shore. At the head of the north bay is the largest river in Fortune bay, and seems a good place for a salmon fishery.

The bay of Cinq isles lie to the southward of the North bay; and opposite to Lally cove head there is tolerable good anchorage for large ships on the S. W. side of the island in the bottom of the bay. The north arm is a very snug place for small vessels; at the head of this arm is a salmon river.

A little to the southward of the bay of Cinq isles is Corben bay, wherein is good anchorage for any ships in 22 or 24 fathoms water.

South-east about two miles from Lally cove head, are two islands about a mile from each other; the north-easternmost is called Bell Island, and the other Dog Island; they are of a tolerable height, and bold-to all round.

Between Dog Island and Lord and Lady Island, which lies off the south point of Corben bay, is a sunken rock (somewhat nearer to Lord and Lady, than Dog Island) whereon the sea breaks in very bad weather, and every where round it very deep water. About a quarter of a mile to the northward of the north end of Lord and Lady Island, is a rock that appears at low water.

Bande de La'rier bay lies on the west point of Bell bay and N. N. W. 4 W. near three leagues from Point Euragee; it may be known by a very high mountain over the bay, which rises almost perpendicular from the sea, called Iron head. Chappel Island, which forms the east side of the bay, is high land also. The harbour lies on the west side of the bay, just within the point, formed by a narrow low beach; it is very small, but a snug place, and conveniently situated for the cod fishery. There is a tolerable good anchorage along the west side of the bay, from the harbour up towards Iron head, in 18 and 20 fathoms water.

The bank of Bande de La'rier, whereon is no less than 7 fathoms, lies with the beach of Bande de La'rier harbour, just open of the west point of the bay, and Boxy point on with the north end of St. Jacques island.

Two miles to the westward of Bande de La'rier, is the harbour of St. Jacques, which may be easily known by the island before it. This island is high at each end, and low in the middle, and at a distance looks like two islands, it lies N. 30° E. eight and a half leagues from the cape of Grand bank, and N. E. by E. seven leagues from the east end of Brunet. The passage into the harbour is on the west side of the island; there is not the least danger in going in, or in any part of the harbour; you may anchor in any depth from 17 to 4 fathoms.

Two miles to the westward of St. Jacques is the harbour of Blue Pinion; it is not near so large, or so safe as that of St. Jacques; near to the head of the harbour, on the west side, is a shoal, whereon is two fathoms at low water.

A little to the westward of Blue Pinion is English cove, which is very small, wherein small vessels and boats can anchor; before it and very near the shore is a small island.

Boxy point lies S. W. by W. 4 W. two and a half leagues from St. Jacques island, N. N. E. near seven leagues from the cape of Grand Bank, and N. E. 4 E. thirteen miles from the east end of Brunet island; it is of a moderate height, the most advanced to the southward of any land on the coast, and may be distinguished at a considerable distance; there are some sunken rocks off it, but they lay very near the shore, and are no way dangerous.

N. N. E. three miles from Boxy point, is the harbour of Boxy; to sail into it you must keep Boxy point just open of Freyer's head (a black head a little within the point) in this direction you will keep in the middle of the channel between the shoals which lay off from each point of the harbour, where the stages are; as soon as you are within these shoals which cover you from the sea winds, you may anchor in 5 and 4 fathoms water, fine sandy ground.

West one mile from Boxy point is the island of St. John's, which is of a tole-

able height, and steep-to, except at the N. E. point where is a shoal a little way off.

N. W. half a league from St. John's island is St. John's head, which is a high, steep, craggy point. Between St. John's head and Boxy point is St. John's bay, in the bottom of which is St. John's harbour, wherein is only water for boats.

On the north side of St. John's head are two rocky islands, called the Gull and Shag; at the west end of these islands are some sunken rocks.

One league and a half to the northward of St. John's head is the Great bay de Leau, wherein is good anchorage in various depths of water, sheltered from all winds. The best passage in, is on the east side of the island, lying in the mouth of it; nothing can enter in on the west side but small vessels and shallops.

To the westward of Bay de Leau, three miles N. N. W. from St. John's head, is Little Bay Barrisway, on the west side of which is good anchorage for large ships in 7, 8, or 10 fathoms water; here is good fishing conveniences, with plenty of wood and water.

Harbour Britain lies to the westward of Little Bay Barrisway, north one and a half league from the island of Sagona, and N. by E. from the east end of Brunet. The two heads which form the entrance of this harbour or bay are pretty high, and lay from each other E. N. E. and W. S. W. above two miles; near the east head is a rock above water, by which it may be known; there are no dangers in going in until you are the length of the south point of the S. W. arm, which is more than a mile within the west head; from off this point stretches out a ledge of rocks N. E. about two cable's length; the only place for king's ships to anchor is above this point, before the S. W. arm, in 16 or 18 fathoms water, mooring nearly E. and W. and so near the shore as to have the east head on with the point above mentioned; the bottom is very good, and the place convenient for wooding and watering. In the S. W. arm is room for a great number of merchant ships, and many conveniences for fishing vessels.

Opposite to the S. W. arm is the N. E. arm, or Jerseyman's harbour, which is capable of holding a great number of ships securely sheltered from all winds. To sail into it you must keep the point of Thorpison's beach (which is the beach point at the entrance into the S. W. arm) open of Jerseyman's head (which is a high bluff head at the north entrance into Jerseyman's harbour) this mark will lead you over the bar in the best channel, where you will have 3 fathoms at low water; as soon as you open the harbour, haul up north, and anchor where it is most convenient, in 8, 7, or 6 fathoms water, good ground, and sheltered from all winds. In this harbour are several convenient places for erecting many stages, and good beach room. Jerseymen generally lay their ships up in this harbour, and cure their fish at Fortune and Grand bank.

From Harbour Briton to the west end of Brunet, and to the Plate Islands, the course is S. W. by S. 6 $\frac{1}{2}$  leagues to the southernmost Plate. From the harbour Briton to Cape Miquelon is S. W.  $\frac{1}{2}$  W. 10 leagues. From the west head of harbour Briton to Cannagre head, the course is W. by S. distant two leagues; between them are Gull Island and Deadman's Bay. Gull Island lies close under the land, two miles to the westward of harbour Briton. Deadman's Bay is to the westward of Gull Island, wherein you may anchor with the land winds. Between harbour Briton and Cannagre head, is a bank stretching off from the shore between two and three miles, whereon is various depths of water from 34 to 4 fathoms. Fishermen say that they have seen the sea break, in very bad weather, a good way without Gull Island.

Cannagre head, which forms the east point of the bay of the same name, lies north easterly three and a half leagues from the west end of Brunet; it is a high craggy point, easy to be distinguished from any point of view. From this head to Bassaterre point, the course is W. by N.  $\frac{1}{2}$  N. two leagues, and likewise W. by N.  $\frac{1}{2}$  N. three and a half leagues to the rocks of Pass Island; but to give them a birth, make a W. by N. course good. Between Cannagre head and Bassaterre point is Cannagre bay, which extends itself about four leagues inland, at the head of which is a salmon river. In the mouth of the bay lay the rocks of

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the same name above water; you may approach these rocks very near, there being no danger but what discovers itself. The channel between them and the north shore is something dangerous, by reason of a range of rocks which lie along shore, and extend themselves one mile off.

Cannaigre harbour, which is very small, with 7 fathoms water in it, is within a point on the south side of the bay, five miles above the head; the passage into the harbour is on the S. E. side of the land lying before it. Nearly in the middle of the bay, abreast of this harbour, are two islands of a tolerable height; on the south side of the westernmost island, which is the largest, are some rocks above water.

Dawson's cove is on the N. W. side of the bay, bears north, distance about four miles from the head, and east two miles from the west end of the Great island. In it are good fishing conveniences, and anchorage for vessels in 6 and 5 fathoms water, but they will lay open to the southerly winds. Between the S. W. point of this cove and Bassaterre point, which is five miles distance, lays the range of rocks before-mentioned.

Bassaterre point, which forms the west point of Cannaigre bay, is of a moderate height, clear of wood, and bold-to; all the way from it to Pass island, which bears N. W. by W. one league from Bassaterre point.

The land on the north side of Fortune bay, for the most part, is hilly, rising directly from the sea, with craggy, barren hills, which extend four or five leagues inland, with a great number of rivulets and ponds. The land on the south side of Fortune bay, has a different appearance to that on the north side, being not so full of craggy mountains, and better clothed with woods, which are of a short brushy kind, which makes the face of the country look green.

Pass island lies N.  $16^{\circ}$   $30'$  E. seven and a half leagues from Cape Miquelon; it is the N. W. extremity of Fortune bay, and lies very near the shore, is more than two miles in circuit, and is pretty high. On the S. W. side are several rocks above water, which extend themselves one mile from the island; and on the N. W. side is a sunken rock, at a quarter of a mile from the island: the passage between this island and the main, which is near two cable's length wide, is very safe for small vessels, wherein you may anchor in 6 fathoms, a fine sandy bottom. This island is well situated for the cod fishery, there being very good fishing ground about it.

In the night time, or in foggy weather, ships ought to place no great dependence on the soundings in Fortune bay, lest they may be deceived thereby: for you have more water in many parts near the shore, and in several of its contained bays and harbours, than in the middle of the bay itself.

### *Description of Hermitage Bay.*

From Pass Island to Great Jarvis harbour, at the entrance into the bay of Despair, the course is N. by E.  $\frac{1}{2}$  E. near three leagues; and from Pass Island to the west end of Long Island, the course is N. N. E. eight miles, between them is the bay of Hermitage, which lies in E. N. E. eight leagues from Pass Island, with very deep water in most parts of it.

The two Fox islands, which are but small, lie nearly in the middle of Hermitage bay, three leagues and a half from Pass island; near to these islands is good fishing ground.

Hermitage cove is on the south side of the bay, opposite to Fox's island; to sail into it, you must keep between the islands and the south shore, where there is not the least danger; in this cove is good anchorage for shipping in 8 and 10 fathoms water, and good fishing conveniences with plenty of wood and water.

Long island, which separates the bay of Despair from Hermitage, is of a triangular form, about eight leagues in circuit, of a tolerable height, is hilly, uneven, and barren. The east entrance into the bay of Despair from Hermitage bay, is by the west end of Long island: about half a mile from the S. W. point of the said island, are two rocks above water, with deep water all round them.



Long island harbour lies on the south side of Long island, two and a half miles from the west end; before which is an island, and several rocks above water; there is a narrow passage into the harbour on each side of the island; this harbour is formed by two arms, one lying into the north, and the other to the eastward; they are both very narrow, and have in them from 42 to 7 fathoms water; the east arm is the deepest and best anchorage.

Round harbour, wherein is 6 fathoms water, lies near two miles to the eastward of Long island harbour, and is also in Long island; it will only admit very small vessels, by reason the channel going in is very narrow.

Harbour Picarre lies N. by W. half a league from Little Fox island, (which is the westernmost of Fox islands;) to sail into it, you must keep near the west point, to avoid some sunken rocks off the other, and anchor in the first cove on the east side, in 9 or 10 fathoms, sheltered from all winds.

Galtaus harbour, which is but small, lies near the east point of Long island; at the entrance are several rocky islands. The best channel into the harbour is on the west side of these islands, wherein is 4 fathoms water, but in the harbour is from 15 to 24 fathoms. Here are several places proper for erecting stages; and both this harbour and Picarre are conveniently situated for a fishery, they lying contiguous to the fishing grounds about Fox islands.

Between the east end of Long island and the main, is a very good passage out of Hermitage bay, into the bay of Despair.

### *Description of the Bay of Despair.*

The entrance of the bay of Despair lies between the west end of Long island and Great Jervis island (an island in the mouth of the harbour of the same name) the distance from one to the other is one and a quarter mile, and in the middle between them is no soundings with 280 fathoms.

The bay of Despair forms two capacious arms, one extending to the N. E. eight leagues, and the other to the northward five leagues; in the north arm is very deep water, and no anchorage, but in the small bays and coves which lay on each side of it. At the head of the bay of the east, which is an arm of the north bay, is a very fine salmon river, and plenty of wood. In the N. E. arm of the bay of Despair are several arms and islands, and tolerable good anchorage in some parts of it. Little river and Conne river are counted good places for salmon fisheries: about these rivers and the head of the bay are great plenty of all sorts of wood common to this country, such as fir, pine, birch, witch-hazel, spruce, &c. All the country about the entrance into the bay of Despair, and for a good way up it, is very mountainous and barren, but about the head of the bay it appears to be pretty level, and well clothed with wood.

Great Jervis harbour is situated at the west entrance into the bay of Despair, is a snug and safe harbour, with good anchorage in every part of it in 16, 18, or 20 fathoms; though but small, will contain a great number of shipping, securely sheltered from all winds, and very convenient for wooding and watering. There is a passage into this harbour on either side of Great Jervis island, the southernmost is the safest, there being in it no danger but the shore itself. To sail in on the north side of the island, you must keep in the middle of the passage, until you are within two small rocks above water near to each other on your starboard side, a little within the north point of the passage; you must then bring the said north point between these rocks, and steer into the harbour in that direction, which will carry you clear of some sunken rocks which lie off the west point of the island; these rocks appear at low water. The entrance into this harbour may be known by the east end of Great Jervis island, which is a high steep craggy point called Great Jervis Head, and is the north point of the south entrance into this harbour.

Bonne Bay lies one league to the westward from Cape Jervis Head, and north seven miles from Pass island, there are several islands in the mouth of it, the westernmost of which is the largest and highest. The best passage into the bay is to the eastward of the largest island, between it and the two easternmost islands; which two islands may be known by a rock above water, off the south

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point of each of them. The bay lies in N. N. W. four miles, and is near half a mile broad in the narrowest part; there is no danger going in but what shows itself; you may go on either side of Drake island, which is a small island nearly in the middle of the bay; between this island and two small islands, lying on the west side of the bay within Great island, is anchorage in 20 and 30 fathoms, but the best place for large ships is at the head of the bay in 12 or 14 fathoms, clear ground, and convenient for wooding and watering. On the west side of the bay, abreast of Drake Island, is a very snug harbour for small vessels, wherein is 7 fathoms water, and good conveniences for a fishery; off the south point of the entrance are some sunken rocks about a cable's length from the shore. On the N. W. side of the Great island, within the two small islands, is very good anchorage in 16, 20, and 24 fathoms water, sheltered from all winds. The passage into this place to the westward of the Great island from the sea is very dangerous, by reason there are several sunken rocks in the passage and shallow water; but there is a very good passage into it from the bay, passing to the northward of the two small islands between them and the west shore. In sailing in or out of the bay you must not approach too near the south point of the Great island, because of some sunken rocks which lie a quarter of a mile from the shore.

A little to the westward of Bonne Bay, between it and Facheux, is Musketa Cove, a small inlet, wherein is from 30 to 47 fathoms of water.

The entrance of the bays of Facheux and Dragon, lies west four miles from Bonne Bay, and N. W. by N. near three leagues from Pass Island; this entrance is very conspicuous at sea, by which this part of the coast is easily known. Facheux, which is the easternmost branch, lies in north, two leagues, and is a third of a mile broad in the narrowest part, which is at the entrance, with deep water in most parts of it. One mile up the bay, on the west side, is a cove wherein is anchorage in 10 fathoms, with gradual soundings into the shore, and a clear bottom; and farther up the bay, on the same side, are two other coves, wherein is anchorage and plenty of wood and water. Dragon Bay lies in W. N. W. one league, and is near half a mile broad, wherein is 60 and 70 fathoms water, and no anchorage till you come to the head, and then you must be very near the shore to be in a moderate depth of water.

One mile to the westward of Facheux is a little hole, wherein is shelter for shallops. And one league to the westward of Facheux is Richard's Harbour, a snug place for small vessels and fishing shallops, wherein is not more than twenty-three fathoms. The east point of this harbour is a very conspicuous high head, lying W.  $\frac{1}{2}$  S. seven miles from Bonne Bay, and N. W.  $\frac{1}{4}$  W. three leagues from Pass Island.

W. by N. one and a half league from Richard's Harbour, is Hare Bay, which lies in north about five miles, is about a third of a mile broad in the narrowest part, with very high land on both sides, and deep water close home to both shores in most parts of it. Near one mile up the bay, on the east side, is a small cove, wherein is anchorage in 20 fathoms, with gradual soundings into the shore, and one league up the bay on the west side, is a very good harbour, wherein is good anchorage in 8, 10, 12, and 15 fathoms, and plenty of wood and water.

W. by N. four miles from Hare Bay, and one league N. by W. from Hare's Ears Point is Devil's Bay, a narrow inlet, lying into the northward one league, wherein is deep water, and no anchorage till you come close to the head.

The Bay of Rencontre, which lies to the northward of Hare's Ear Point lies in W. by N. two leagues; it is near half a mile broad in the narrowest part, with deep water in most parts of it. To anchor in this bay, you must run up above a low woody point on the south side, then haul under the south shore, until you are land-locked, and anchor in 30 fathoms water.

Hare's Ears Point is a pretty large point, with a ragged rock upon it, that from some points of view looks like the ears of a hare; it lies west, southerly, eleven miles from the point of Richard's Harbour, and W. by N.  $\frac{1}{4}$  N. six leagues from Pass Island: off this point is a fishing bank that extends a mile from the shore, whereon is from 20 to 36 fathoms water.

One mile to the northward of Hare's Ears Point, at the S. W. entrance into

Rencontre, is New Harbour, a small harbour, wherein is anchorage for small vessels in 18 fathoms water, and good conveniences for a fishery.

West, two miles from Hare's Ears Point is the Bay of Chaleur, which lies in first N. W. then more northerly, is the whole two leagues; it is about half a mile broad, and has very deep water in most parts. A: the north entrance into the bay, close to the shore, is a small island of a tolerable height, and half a league within the island, on the N. E. side of the bay, is a rock above water; a little within this rock, on the same side, is a small cove with a sandy beach, off which you may anchor in 28 fathoms, a cable's length from the shore.

W. S. W. near half a league from the Bay of Chaleur, is the Bay Francois, which is a small inlet, lying in N. N. W.  $\frac{1}{2}$  W. one mile; it is near one quarter of a mile broad at the entrance, and 17 fathoms deep; but just within is 50 and 60 fathoms: at the head is from 30 to 20 fathoms, good anchorage; and conveniences for a fishery.

W. S. W. four miles from the Bay Francois, on the east side of Cape la Hune lies Oar Bay; off the east point of the entrance is a low rocky island, close to the shore; from this point to the entrance into the Bay of Despair, the course is W.  $\frac{1}{2}$  N. nine leagues. In the mouth of this bay is a rocky island, and a passage on each side of it: the bay lies in first N. N. E. near one league, then N. two miles; it is one-third of a mile broad in the narrowest part, with deep water close to both shores all the way up; the least water is at the entrance; at the head is a small snug harbour, fit only for small vessels and fishing shallops, wherein is 5 fathoms water: at the west side of the entrance into the bay N. W. by N. from the rocky island before-mentioned, is a small snug cove, called Cul de Sac, wherein is 3 and 4 fathoms water and good shelter for fishing-vessels.

Cape La Hune is the southernmost point of land on this part of the coast, and lies in the latitude of  $47^{\circ} 51' 42''$  N. W.  $\frac{1}{2}$  N. from Pass Island, and N. W.  $\frac{1}{2}$  N. ten and a half leagues from Cape Miquillon; it may be easily known by its figure, which much resembles a sugar-loaf; but in order to distinguish this, you must approach the shore at least within three leagues, (unless you are directly to the eastward or westward of it) otherwise the elevation of the high land within it will hinder you from distinguishing the sugar-loaf hill; but the cape may always be known by the high land of la Hune, which lies one league to the westward of it: this land rises directly from the sea to a tolerable height, appears pretty flat at top, and may be seen in clear weather sixteen leagues.

S.  $29^{\circ}$  W. three and a half leagues from Cape la Hune, and N.  $61^{\circ}$  W. near ten leagues from Cape Miquillon, lies the Penguin Islands, which are a parcel of barren rocks lying near to each other, and altogether about two leagues in circuit; you may approach these islands in the day time to half a league all round, there being no danger at that distance off. On the S. W. side of the large island and which is the highest, is a small cove, wherein is shelter for fishing shallops, and good conveniences for a fishery, and there is good fishing round about the island.

E.  $5^{\circ}$  N. seven miles from the Penguin Islands, and S.  $9^{\circ}$  E. three leagues from Cape la Hune, is a dangerous rock, called the Whale Rock, whereon the sea generally breaks; it is about 100 fathoms in circuit, with 10, 12, and 14 fathoms water close to all round it. From this rock stretches out a narrow bank one league to the westward, and half a league to the eastward, whereon is from 24 to 58 fathoms, a rocky and gravelly bottom. In the channel between the shore and this rock, also between the shore and Penguin Islands is 120 and 130 fathoms water, a muddy bottom, and the same bottom and nearly the same depth of water one league without.

Round the west point of Cape la Hune is la Hune Bay, which lies in north near two leagues, and is about one-third of a mile broad in the narrowest part, which is at the entrance, with deep water in most parts of it. In sailing in or out of the bay, you must keep the cape or east shore on board, in order to avoid a sunken rock which lies off the west point of the entrance into the bay, near one-third channel over. Two miles up the bay, on the east side, is Lance Cove, wherein is anchorage in 10 and 14 fathoms water, clear ground, and good conveniences for a fishery: one cable's length off from the south point of the cove

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(which is low) is a small shoal, whereon is  $1\frac{1}{2}$  fathoms, and between it and the point 5 fathoms water. To sail into the cove, keep the point of the cape, or east entrance into the bay, open of a red cliff point on the same side, (off which is a rock above water) until a round hill you will see over the valley of the cove, be brought on the north side of the valley: you will then be above the shoal, and may haul into the cove with safety. There is a narrow bank which stretches quite across the bay, from the south point of the cove, to a point on the opposite shore, whereon is from 27 to 45 fathoms.

La Hune Harbour, wherein is only room for the admittance of small vessels open to the westerly winds, lies half a league to the westward of Cape la Hune; before which is an island close under the shore. The passage into the harbour is on the N. W. side of the island; there is no danger in going in, and you must anchor close up to the head, in 10 fathoms water. This harbour is well situated for a fishery, there being good fishing ground about it, and other conveniences, such as a large beach quite across from the head of the harbour to la Hune bay, which is eight hundred feet, exposed to an open air, which is a great advantage for drying of fish.

Between Cape la Hune and Little River, the land is tolerable high, and the shore forms a bay, wherein lie several small islands and rocks above water, the outermost of which lies north three leagues from the Penguin Islands; near these rocks and within them are sunken rocks and foul ground; the passage is very safe between the rocks and the Penguin Islands.

W. by S. four leagues from Cape la Hune, is the entrance of Little River, which may be known by the land near it, which forms a very conspicuous point on the coast and tolerably high; the river is about 100 fathoms broad at the entrance, and 10 fathoms deep, and affords good anchorage a little way up it, in 10, 8 and 7 fathoms water: its banks are tolerably high and clothed with wood.

S.  $\frac{1}{2}$  E. two leagues from the entrance of Little River, N. W.  $\frac{1}{2}$  N. two and a half leagues from the Penguin Islands, and E. S. E.  $\frac{1}{2}$  E. three and a half leagues from the isles of Ramea, lie the Little River rocks, which are just above water, and of a very small circuit, with very deep water all around them.

The isles of Ramea, which are of various extent both for height and circuit, lay N. W.  $\frac{1}{2}$  N. near six leagues from the Penguin Islands and one league from the main; they extend E. and W. five miles, and N. and S. two miles: there are several rocks and breakers about them, but more on the south side than the north, the easternmost island, which is the largest, is very high and hilly; the westernmost, called Columbe, is a remarkable high round island, of a small circuit, near to which are some rocky islands and sunken rocks.

The harbour of Ramea (which is a small commodious harbour for fishing vessels) is formed by the islands which lie between Great Ramea and Columbe, the entrance from the westward (which is the broadest) lies E. from Columbe, give the south point of the entrance a small birth, (off which are some rocks above water) and steer N. E. into the harbour, keeping in the middle of the channel which is more than a cable's length broad in the narrowest part, and anchor in Ship Cove, which is the second on the N. W. side, in 5 fathoms clear ground, and sheltered from all winds. To sail into it from the eastward, keep the north side of Great Ramea on board until you are at the west end thereof, then steer S. W. into the harbour, keeping in the middle of the channel, wherein is 3 fathoms at low water, and anchor as above directed. In this harbour, and about these islands, are several convenient places for erecting of stages and drying of fish, and seem well situated for that purpose.

S. E.  $\frac{1}{2}$  S. four miles from Ramea, are two rocks above water, close to each other, called Ramea rocks: S. W. one league from these rocks is a small fishing bank, whereon is 6 fathoms water; it lies, with the rocks above-mentioned, on with the west entrance of Little River, bearing N. E. and Ramea Columbe on with a high saddle hill, (called Richard's head) on the main within the isles of Burges, being nearly N. W. Nearly in the middle between Ramea and the Penguin Islands, two leagues from the land, is a fishing bank, whereon is from 50 to 14 fathoms. To run upon the shoalest part of this bank, bring the two Ramea rocks (which lie S. E.  $\frac{1}{2}$  S. from Ramea Islands) on with the S. W. part of the islands,

or between them and Columbe, and the entrance into Little River to bear N. by E.  $\frac{1}{2}$  E.

Four miles to the westward of Little River, and N. E. by E. from Ramea Islands, is Old Man's Bay, which lies in N. seven miles, and is a mile broad at the entrance, with deep water in most parts of it. N. E. half a league up the bay on the east side, is Adam's Island, behind which is anchorage in 30 and 40 fathoms, but the best anchorage is at the head of the bay in 14 and 16 fathoms.

Half a league to the westward of Old Man's Bay, and N. E. from Ramea isles, is Musketa Harbour, which is a very snug and safe harbour, that will hold a great number of shipping in perfect security; but it is difficult to get in or out unless the wind is favourable, by reason the entrance is so very narrow (being but 48 fathoms broad) and the land high on both sides; the S. E. point of the entrance into the harbour is a high white rock; near a cable's length from this white rock, or point, is a black rock above water, on the south side of which is a sunken rock, whereon the sea breaks: from this black rock to the narrow entrance into the harbour, is N. W. half of a mile. In sailing in or out of the harbour, give the black rock a small birth, and keep the west side most on board, it being the safest. If you are obliged to anchor, you must be very brisk in getting a rope on shore, lest you tail upon the rocks. In the harbour is from 18 to 30 fathoms, every where good anchorage, and plenty of wood and water, and fishing conveniences. In the Narrows is 12 fathoms bold to both shores there; with southerly and easterly winds it blows right in, with northerly winds out, and with westerly winds it is either calm, or blows in variable puffs.

Fox Island Harbour, which is formed by an island of the same name, lies N. E. by N. from Ramea Isles, and a half league to the westward of Musketa Harbour; between them are several rocky islands, and some sunken rocks. This harbour may be known by a high white rock, lying south half a mile from the outer part of the island. There are two passages into the harbour, one on each side of the island, and no danger in either of them but what discovers itself; it is a small commodious harbour for the fishery, wherein are 6, 8 and 10 fathoms water, and some beach.

White Bear Bay lies two miles to the westward of Fox Island Harbour, and N. one league from Ramea isles; there are several islands in the mouth of it. The best passage into the bay is to the eastward of all the islands; it lies in N. E. by E.  $\frac{1}{2}$  E. four leagues, and is near half a mile broad in the narrowest part, with high land on both sides, and deep water close to both shores in most parts of it, until you are eight miles up it, you will then rise the ground at once to 9 fathoms, and will afterwards have gradual soundings up to the head, and good anchorage. A little way inland from the head of the bay, you have a very extensive prospect of the interior part of the country, which appears to be all a barren rock, of a pretty even height, and watered by a great number of ponds, with which the whole country very much abounds. On the S. W. side of Bear Island (which is the easternmost and largest in the mouth of the bay) is a small harbour, lying E. N. E. half a mile, wherein is from 10 to 22 fathoms water, before the mouth of which are sunken rocks that do not break but in bad weather. At the west entrance into White Bear Bay, is a high round white island; and S. S. W. half a mile from the White Island is a black rock above water. The best passage into the bay from the westward, is on the west side of this rock, and between the White Island and Bear Island; there are sunken rocks half a league to the westward of the White Island, some of which are above a mile from the shore.

Five miles to the westward of White Bear bay, and N. by W.  $\frac{1}{4}$  W. from Ramea Columbe, are two small harbours called Red island harbours, formed by an island of the same name, lying close under the land; that lying to the westward of the island is the largest and best, wherein is from 10 to 6 fathoms, good anchorage: to sail into it, keep the island close aboard, the outer part of which is red steep cliffs.

N. W. by W. three leagues from Ramea Columbe, lie the Burgeo isles, which are a cluster of islands extending along the shore, east and west about five miles, forming several snug and commodious harbours among them for fishing vessels,

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and are well situated for that purpose, there being good fishing ground about them. To sail into Burgeo from the eastward, the safest passage is on the N. E. side of Boar island, which is the northernmost, and lies N. W. from Ramea Columbe; S. E. by E. half a league from this island is a rock that uncovers at low water, on which the sea generally breaks; you may go on any side of this rock, there being very deep water all round it; as soon as you are to the N. W. of it, keep the north side of Boar island on board, and steer W. by S.  $\frac{1}{2}$  S. for Grandy's cove, the north point of which is the first low point on your starboard bow, haul round that point, and anchor in the cove in 14 fathoms, and moor with a fast on shore: but the best place for great ships to anchor, is between Grandy's cove and a small island lying near the west point of Boar island, in 20 or 24 fathoms, good ground and sheltered from all winds. To sail into Grandy's cove from the westward within the islands, it is dangerous, unless well acquainted, by reason of sunken rocks in the passage; but there is a good passage from the southward between Burgo Columbe, which is a high round island, and Rencontre (which is the highest of all the islands) you must steer in N. W. between the rocks above water lying to the eastward of Columbe, and then to the southward of Rencontre; as soon as you are within these rocks, keep the islands on board; there are several safe passages in from the southward and eastward, between the islands, and good anchorage; and in bad weather all the sunken rocks discover themselves, and you may run in any where without fear; these isles do not abound with either wood or water.

Wolfe bay lies in N. E.  $\frac{1}{4}$  N. one league, the entrance is N. E. two miles from Boar island, and two miles to the westward of Fox island harbours; the east point of the entrance is low ragged rocks, off which is a sunken rock, one-quarter of a mile from the shore, whereon the sea breaks in bad weather. Near the head of the bay is tolerable good anchorage, and plenty of wood and water.

Round the west point of Wolfe bay is King's harbour, which lies in N. E. by N. three-quarters of a mile, before the mouth of which is a cluster of little islands, one of which is pretty high: to sail into it keep the east point of the islands on board, and steer N. W. by N. and N. N. W. for the entrance of the harbour, and anchor under the east shore, in 9 fathoms water.

On the south side of the islands, before King's harbour, and N. N. E. one mile from Boar island, is the entrance into the Ha Ha, which lies in west one mile, is about one quarter of a mile broad, wherein is from 20 to 10 fathoms, and good anchorage in every part of it: over the south point of the entrance into this harbour is a high green hill, and a cable's length and a half from the point, is a sunken rock that always shows itself: over the head of the Ha Ha, is Richard's head, mentioned as a mark for running upon Ramea shoal.

Four miles to the westward of the Burgeo isles is the Great Barrysway point, which is a low white rocky point, and N. W. by N. half a league from this point is the west entrance into the Great Barrysway, wherein is room and depth of water for small vessels: between the Burgeo isles and the Great Barrysway point are several sunken rocks, some of which are half a league from the shore.

N. W. by W.  $\frac{1}{4}$  W. four leagues from the Burgeo isles, is the bay of Connoir, the east point of which is something remarkable, rising with an easy ascent to a moderate height, and much higher than the land within it; the top of it is green, but down by the shore is white; the west point of the bay is low and flat, to the westward of which are several small islands: the bay lies in N. by E. one league from the entrance to the middle head, which lies between the two arms, and is half a league broad, with 14, 12, 10, and 8 fathoms close to both shores, good anchorage and clear ground, open to the S. S. W. and southerly winds; but the N. E. arm affords shelter for small vessels from all winds. To sail into it, keep the starboard shore best on board, and anchor before a small cove on the same side near the head of the arm, in 3  $\frac{1}{2}$  fathoms; towards the head of the arm on the N. W. side is a bank of sand and mud, whereon one might run a ship and receive no damage.

Two leagues to the westward of Connoir, lies the bay of Catteau, wherein is only shelter and depth of water for small vessels and fishing shallops: in sailing in or out of the bay keep the west point close on board, in order to avoid the many sunken rocks in the mouth of it.



Round the west point of Cutteau is Cinq Serf, wherein are a great many islands which form several small snug harbours, wherein is room and depth of water sufficient for fishing vessels, with conveniences for fisheries. Right off Cinq Serf, about half a league from the shore, is a low rocky island. The safest passage into the largest harbour is to the westward of this rock, keep in pretty near it, and steer in N. E.  $\frac{1}{2}$  E. keeping the S. E. shore on board, until you are abreast of a small woody island, which is the easternmost but one, and lies about one quarter of a mile to the N. E. of a white rock in the middle of the passage, then haul short round this island, and anchor behind it in 7 fathoms water, covered from all winds, or you may continue your course up to the head of the arm and anchor in 4 fathoms water.

Four miles to the westward of the rocky island off Cinq Serf, is the harbour of Grand Bruit, which is a small commodious harbour, and well situated for a fishery: it may be known by a very high remarkable mountain over it, half a league inland, which is the highest land on all the coast, down which runs a considerable brook, which empties itself in a cascade into the harbour of Grand Bruit. Before the mouth of the harbour are several small islands, the largest of which is of tolerable height with three green hillocks upon it. A little without this island is a round rock, pretty high above water, called Columbe of Grand Bruit; and one quarter of a mile to the southward of this rock, is a low rock; in the direct line between this low rock and the rocky island off Cinq Serf, half a league from the former, is a sunken rock, whereon the sea doth not break in fine weather. The safest passage into Grand Bruit is to the N. E. of this rock, and off the islands lying before the harbour between them and the three islands (which are low and lay under the shore) and after you are to the northward of the sunken rock above-mentioned, there is no danger but what shows itself. The passage into the harbour is very narrow, but bold to both sides. The harbour lies in north half a mile, and is a quarter of a mile broad in the broadest part, wherein is from 4 to 7 fathoms water.

To the westward of Grand Bruit, between it and La Poil Bay, lies the bay of Rotte, wherein are a great many islands and sunken rocks. The southernmost island is a remarkable high round rock, called Columbe of Rotte; and lies W. by N. nine leagues from the southernmost of the Burgeos. Between this island and Grand Bruit is a reef of rocks, some above and some under water, but do not lay to the southward of the direct line between the islands. Within the isles of Rotte is shelter for shipping. The safest passage in, is to the westward of the islands between them and the island called Little Ireland, which lies off the east point of La Poil Bay.

The bay of La Poil, which is large and spacious, with several commodious harbours, lies W.  $10^{\circ}$  N. ten leagues from the southernmost of the Burgeos; W. by N. fourteen leagues from the isles of Ramea; and near twelve leagues to the eastward of Cape Ray. It may be known by the high land of Grand Bruit, which is only five miles to the eastward of it; and likewise by the land on the east side of the bay which rises in remarkable high craggy hills. One mile S. S. W. from the east point lies Little Ireland, a small low island environed with sunken rocks, some of which are one third of a mile off; N. N. W. half a mile from this island, is a sunken rock that shows itself at low water, which is the only danger going into the bay, but what lies very near the shore. Two miles within the west point of the bay, and N. N. W.  $\frac{1}{2}$  W. two miles from Little Ireland, is Tweeds, or Great Harbour, the south point of which is low; it lies in west one mile, and is one and a half cable's length broad in the narrowest part. To sail into it keep the north shore on board, and anchor near the head of the harbour, in 18 or 20 fathoms clear ground, and sheltered from all winds. In this harbour are several conveniences for erecting of stages and drying of fish. Half a mile to the northward of Great Harbour, is Little Harbeur, the north point of which is the first high bluff-head on the west side of the bay (called Tooth's head) the harbour lies in west one mile, is not quite two cable's length broad in the broadest part. To sail into it, give the south point a small birth, and anchor about half way up the harbour, in 10 fathoms water before the stage, which is on the north side.

Opposite to Tooth's Head, on the east side of the bay, is Gally Boys Har-

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hour, a small snug and commodious harbour for ships bound to the westward: near the south point of the harbour are some hillocks close to the shore; but the north point is high and steep, with a white spot in the cliff. In sailing in or out of the harbour keep the north side on board; you must anchor as soon as you are within the inner south point, in 9 or 10 fathoms, good ground, and sheltered from all winds.

Two miles to the northward of Tooth's Head, on the same side of the bay, is Broad Cove, wherein is good anchorage in 12 and 14 fathoms water. Off from the north point of the cove, stretches out a bank into the middle of the bay, whereon is from 20 to 30 fathoms, a stony and gravelly bottom. One mile to the northward of Gally Boys Harbour, between two sandy coves on the east side of the bay, and near two cables' length from the shore, is a sunken rock that just uncovers at low water.

Two leagues up the bay, on the east side, is the N. E. arm, which is a spacious, safe, and commodious harbour. To sail into it give the low sandy point on the S. E. side a small birth, and anchor above it where you please, in 10 fathoms water, good holding ground, and sheltered from all winds, and very convenient for wooding and watering.

A little within the west point of La Poil Bay, is Indian Harbour, and de Plate, two small coves conveniently situated for a fishery, and into which small vessels can go at high water.

From Little Ireland, Island to Harbour La Cove, and Moine Bay, the course is W.  $\frac{1}{2}$  S. four leagues; between them lies the bay of Garia, and several small coves, wherein are shelter for small vessels, and conveniences for fisheries; before which are several small islands, and sunken rocks lying along the shore, but none of them lie without the above course. In bad weather the sunken rocks all discover themselves. To sail into the bay of Garia, which lies midway between Poil and Harbour La Cove, you, will, in coasting along the shore, discover a white head, which is the south point of an island lying under the land, off the east point of the bay, a little to the westward of two green hillocks on the main: you must bring this white point to bear north, and steer in directly for it; keep between it and the several islands that lie to the S. W. from it. From this point, the course into the bay is N. W. by N. keeping the east point on board, which is low. In this bay is plenty of timber, not only for erecting of stages, but large enough for building of shipping.

The S. W. point of the entrance into Harbour La Cove, called Rose Blanche Point (near to which are rocks above water) is tolerable high, and the land near the shore over Harbour La Cove and La Moine Bay is much higher than any land near them, by which they may be known. La Moine Bay lies in N. N. E.  $\frac{1}{2}$  E. one and a half league, and is a quarter of a mile broad in the narrowest part. Off the east point are some small islands, and rocks above water. To sail into it, keep the west point on board until you have entered the bay, then edge over to the east shore and steer up to the head of the bay, where there is good anchorage in 10 and 11 fathoms, and plenty of wood and water. Your course into Harbour La Cove, which lies at the west entrance into La Moine Bay, is N. W. between a rock above water in the mouth of the harbour, and the west shore; as soon as you are within the rock, haul to the westward, into the harbour, and anchor in 3 or 6 fathoms water, and moored with a fast on shore; or you may steer into the arm, which lies in N. E. by N. from the harbour, and anchor in 20 fathoms, sheltered from all winds. Harbour La Cove is a small snug harbour for small vessels, and well situated for a fishery, where there has been one for several years.

Round to the westward of Rose Blanche Point, is the harbour of the same name, a small snug harbour, well situated for a fishery, with good conveniences. The channel into the harbour is between the island lying off the west point, and Rose Blanche Point; you must give the island a good birth, because of some sunken rocks which lie on the east side of it, and keep the west side of a small island, which lies close under Point Blanche, close on board, and anchor within the N. E. point of the said island, in 9 fathoms water. To sail into the N. W. part of the harbour is dangerous, unless acquainted, by reason of several small islands, and sunken rocks in it.

Mull Face is a small cove two miles to the westward of Rose Blanche point, wherein is anchorage for small vessels in 4 fathoms. Off the west point of the cove are two small islands, and several sunken rocks. The passage in, is to the eastward of the islands and sunken rocks.

Two leagues to the westward of Rose Blanche point are the Burnt isles, which lie close under the shore, and are not to be distinguished from it, behind which are shelter for small vessels, and good fishing conveniences. Off these islands are sunken rocks, some of which are half a mile from the shore.

Three leagues and a half to the westward of Rose Blanche point, is Conny bay, and Otter bay; in the latter is good anchorage for shipping in 7, 8, and 9 fathoms, but it is dangerous going in, because of several sunken rocks without the passage, which in fine weather do not show themselves.

West three-fourths S. four leagues from Rose Blanche point, are the Dead islands, which lay close under the shore; in the passage between them and the main is good anchorage for shipping, in 6, 7, and 8 fathoms, sheltered from all winds, but it is very dangerous going in unless well acquainted, by reason of several sunken rocks lying in both the east and west entrance. The entrance from the eastward may be known by a very white spot on one of the islands; bring this white spot to bear N. W. by N. and steer in for it, keeping the rocks on the starboard hand nearest on board, and leave the island on which the white spot is, on your larboard side. The west entrance may be known by a tolerable high white point on the main, a little to the westward of the islands; on the west part of this point is a green hillock; keep this white point close on board, until you are within a little round rock, lying close to the westernmost island at the east point of the entrance; then haul over to the eastward for the Great island, (on which is a high hill) and steer in N. E. by E.  $\frac{1}{2}$  E. keeping the little rock before-mentioned in sight.

From the Dead Isles to Port aux Basque, the course is west four miles: between them lie several small islands close under the shore, and sunken rocks, some of which are half a mile from the shore. Port aux Basque, which is a small commodious harbour, lies two and a half leagues to the eastward of Cape Ray. To steer in for it, bring the Sugar Loaf over Cape Ray to bear N. W.  $\frac{1}{2}$  W. or the west end of the Table mountains to bear N. W. Steer in for the land, with either of them as above, and you will fall directly in with the harbour, the S. W. point of which is of a moderate height, and white, called Point Blanche, but the N. E. point is low and flat, close to which is a black rock above water; in order to avoid the outer shoal (on which is 3 fathoms) and which lies east three-fourths of a mile from Point Blanche, keep the said point on board, and bring the flag-staff which is on the hill, that is over the west side of the head of the harbour, on with the S. W. point of Road island, and keeping in that direction will carry you in the middle of the channel, between the east and west rocks, the former of which always show themselves, and which you leave on your starboard hand. You must continue this course up to Road island, and keep the west point on board, in order to avoid the Frying-pan rock, which stretches out from a cove on the west shore, opposite the island; and as soon as you are above the island, haul to the N. E. and anchor between it and harbour island, where it is most convenient in 9 or 10 fathoms, good ground, and sheltered from all winds; this is what is called the Road or Outer harbour, and is the only anchoring place for men of war: but fishing ships always lie up in the inner harbour. To sail into it, you must steer in between the west shore and the S. W. end of Harbour island, and anchor behind the said island, in 3 or 4 fathoms. In some parts of this harbour ships can lie their broadsides so near the shore as to reach it with a plank. This harbour has been frequented by fishermen for many years, and is well situated for that purpose, and has excellent conveniences.

One mile to the eastward of Port aux Basque is Little bay, a narrow creek, lying in N. E. near half a league, wherein is room and depth of water sufficient for small vessels.

Two miles to the westward of Port aux Basque is Grand bay, in and before which are several islands and sunken rocks, the outermost of which are not

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above a quarter of a mile from the shore, on which the sea generally breaks. In this bay is anchorage for small vessels, but not water sufficient for large ships. From Port aux Basque to Cape Ray, the course is west one league to point Enragee, then N. W. one and a half league to the cape; off point Enragee (which is a low point) and to the eastward of it are some sunken rocks, one mile from the shore, on which the sea breaks.

Cape Ray is the S. W. extremity of Newfoundland, situated in the latitude  $47^{\circ} 37' N.$  The land of the cape is very remarkable near the shore; it is low, and three miles inland is a very high Table mountain, which rises almost perpendicular from the low land, and appears to be quite flat at top, except a small hillock on the S. W. point of it. This land may be seen in clear weather sixteen or eighteen leagues. Close to the foot of the Table mountain, between it and the point of the cape, is a high round hill, resembling a sugar loaf (called the Sugar Loaf of Cape Ray) whose summit is something lower than the top of the Table mountain; and to the northward of this hill, under the Table mountain, are two other hills resembling sugar loaves, which are not so high as the former; one or other of those Sugar Loaf hills are from all points of view seen detached from the Table mountain. On the east side of the cape, between it and point Enragee, is a sandy bay, wherein shipping may anchor with N. W. northerly and N. E. winds, but they must take care not to be surprised there with the S. W. winds, which blow right in and cause a great sea, and the ground is not the best for holding, being all a fine sand. Towards the east side of this bay is a small ledge of rocks, one mile from the shore, on which the sea does not break in fine weather. The best place for great ships to anchor is to bring the point of the cape to bear W. by N. and the high white sand hill in the bottom of the bay N. N. E. in 10 fathoms water, but small vessels may lie much farther in. You must take care not to run so far to the eastward as to bring the end of the Table mountain on with the sand hill in the bottom of the bay, for fear of the ledge of rocks before-mentioned. W. by N.  $\frac{1}{2}$  N. near one mile from the point of the cape, is a small ledge of rocks, whereon the sea always breaks; and one mile to the northward of the cape, close under the land, is a low rocky island in the channel between the ledge and the cape: also between it and the island is 14 and 15 fathoms, but it is not safe for shipping, on account of the tides, which run here with great rapidity. The soundings under 100 fathoms do not extend above one league from the land to the westward and northward of the cape, nor to the southward and eastward of it, except on a bank which lies off Port aux Basque, between two or three leagues from the land, whereon is from 70 to 100 fathoms good fishing ground. S. E. by E.  $\frac{1}{2}$  E. eight leagues from Port aux Basque, in the latitude of  $47^{\circ} 14' N.$  is a bank whereon is 70 fathoms. *Note.*—The true form and extent of these banks are not yet sufficiently known to be described in the AMERICAN COAST PILOT.

From Cape Ray to Cape Anguille, the course is N.  $10^{\circ}$  W. distant six leagues; Cape Anguille is the northernmost point of land you can see, after passing to the northward of Cape Ray. In the country, over the cape, is high Table Land, covered with wood; between the high land of the two capes, the land is low, and the shore forms a bay, wherein are the Great and Little rivers of Cod Roy; the Great river, which is the northernmost, is a bar harbour, and will admit vessels of 8 and 10 feet draft at high water, and in fine weather. It is a good place for a salmon fishery, and for building of small vessels and boats, &c. there being plenty of timber. You may approach the shore between the two capes to half a league, there being no danger that distance off.

The island of Cod Roy lies two miles to the southward of Cape Anguille, close under the high land; it is a low, flat, green island, of near two miles in compass; it forms (between it and the main) a small snug harbour for fishing shallops, and is frequented by vessels of 10 and 12 feet draft, but they lie aground the greatest part of the time, there being not much above that depth of water in the safest part of the harbour at high water; the channel in is from the southward, wherein is two fathoms at low water. In that from the northward, is not above 3 feet; this harbour is very convenient for the fishery, with good beaches for drying of fish.



In the road of Cod Roy is very good anchorage for shipping in 8, 7, and 6 fathoms, a clay bottom, sheltered from the N. W. northerly, and S. E. winds: the best place is to bring the south point of the island to bear west, and the point of the beach, on the inside of the island, at the south entrance into the harbour on with a point on the main to the northward of the island, you will then be in 7 fathoms, and nearly half a mile from the shore. One league to the southward of Cod Roy is a high bluff point, called Stormy Point, off which stretches out a shoal half a mile; this point covers the road from the S. E. winds, and it is good anchoring any where along the shore between it and the islands.

The island of St. Paul lies S. 75° W. thirteen and a half leagues from Cape Ray in Newfoundland, and N. 42° E. three leagues from the north cape in the island of Cape Breton, in the latitude of 47° 12' 00" N. it is about five miles in compass (including the small island at the N. E. end of it) with three high hills upon it, and deep water close to the shore all round.

Cape North is a lofty promontory at the N. E. extremity of the island Cape Breton, in the latitude 47° 5' N. The entrance into the gulf of St. Lawrence is formed by this cape and Cape Ray; they lie from each other N. 52° E. and S. 52° W. distant seventeen leagues; in the channel between them is no ground under 200 fathoms.

A south-east moon makes high water by the shore in most places, and flows up and down, or upon a perpendicular 7 or 8 feet; but it must be observed, that they are every where greatly governed by the winds and weather. On the sea coast between Cape Chapeaurouge and St. Peter's, the current sets generally to the S. W. On the south side of Fortune bay it sets to the eastward, and on the north side to the westward. Between Cape la Hune and Cape Ray, the flood sets to the westward in the offing, sometimes two or three hours after it is high water by the shore; but this tide or current (which is no where strong but at Cape Ray) is very variable, both with respect to its course and velocity, sometimes it sets quite the contrary to what might be expected from the common course of the tides, and much stronger at one time than another, which irregularities cannot be accounted for with certainty, but seem to depend mostly on the winds.

N. B. The Burgeo Isles, by an observation of the eclipse of the sun, on the 5th of August, 1766, are  $50^{\circ} 4''$  or  $57^{\circ} 31'$  W. from the meridian of London.

From this observation the longitude of the following places are deduced, and their latitudes are from astronomical observations made on shore, except that of Cape Race, which was observed at sea; some one of those places being generally the first that ships make bound to southern parts of Newfoundland, or into the gulf or river of St. Lawrence, or from which they take their departure, at leaving those parts; it is hoped the determining their true position will prove useful to navigators.

	Latitude.	Longitude.
Burgeo Isles . . . . .	47 36 N.	57 31 W.
Cape Ray . . . . .	47 37	59 8
Island of St. Paul . . . . .	47 12	59 57
Cape North, N. E. extremity of Cape Breton . . . . .	47 8	60 8
Island of Scataria, which lies off the S. E. point of Cape Breton . . . . .	46 1	61 57
Island of St. Peter's . . . . .	46 46	56 5
Cape Chapeaurouge, or the Mountain of the Red Hat . . . . .	46 53	55 17
Cape Race . . . . .	46 40	52 33
St. John's . . . . .	47 34	53 18

### *Directions for navigating the West Coast of Newfoundland.*

N. B. All the bearings and courses hereafter mentioned are the true bearings and courses, and not by compass.

Cape Anguille lies six leagues to the northward of Cape Ray, N. E. by N. seventeen leagues from the Island of St. Paul, and is in the latitude of 47° 55'

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N. it is high land, covered with wood; two miles to the southward of this cape lies the small island and harbour of Cod Roy, before described. From Cape Anguille to Cape St. George, the course is N.  $\frac{1}{2}$  E. distant eleven leagues; these two capes form the Bay of St. George, which lies in N. E. eighteen leagues from the former, and east fifteen leagues from the latter; at the head of this bay on the south side, round a low point of land, is a very good harbour, wherein is good anchorage in 8, 10, or 12 fathoms water. In several parts about this harbour are convenient places for fishing-works, with large beaches, and good fishing ground in the bay, which, early in the spring, abounds with fish, and formerly was much frequented; a very considerable river empties itself into the head of this bay, but it is not navigable for any thing but boats, by reason of a bar across the entrance, which lies exposed to the westerly winds. On the north side of this bay, before the Isthmus of Port-a-Port, is good anchorage in 7 or 8 fathoms water, with northerly winds: from off this place stretches out a fishing-bank two-thirds across the bay, whereon is from 7 to 18 fathoms water, a dark sandy bottom.

Cape St. George lies in the latitude of  $48^{\circ} 28'$ ; it may be easily known, not only by its being the north point of the bay of the same name, but by the steep cliffs on the north part of it, which rises perpendicularly from the sea to a considerable height, and by Red Island, which lies five miles to the northward of the cape, and half a mile from the shore: this island is about one league in circuit, and tolerably high, and the steep cliffs round it are of a reddish colour. Under the N. E. end of the island, and before a sandy cove on the main, which lies just to the northward of the steep cliffs, is anchorage in 12 or 14 fathoms water, where you are covered from the S. W. winds by the island, and from the southerly and easterly winds by the main, but there is no riding here with northerly and N. W. winds; this place formerly was much frequented by fishers.

From Red Island to Long Point, at the entrance into the Bay of Port-a-Port, the course is N.  $52^{\circ}$  E. distant seven and a half leagues. From Red Island to Guernsey Island in the mouth of the Bay of Islands, the course is N. E.  $\frac{1}{2}$  N. fifteen and a half leagues. From Red Island to Cape St. Gregory, the course is N. E.  $\frac{1}{2}$  N. twenty leagues. From Red Island to the Bay of Ingornachoix, the course is N. N. E.  $\frac{1}{2}$  E. distant forty-eight leagues; and from Red Island to Point Rich, the course is N.  $29^{\circ}$  E. distant forty-eight leagues and two miles.

The land between Red Island and the entrance into Port-a-Port, is of a moderate height, or rather low, with sandy beaches, except one remarkable high hill-lock (called Round-head) close to the shore, and is two leagues to the N. E. of Red Island; but up in the country over Port-a-Port, are high lands, and if you are four leagues at sea you will not discern the long point of land which forms the Bay of Port-a-Port: this bay is capacious, being near five miles broad at the entrance, and lies in to the southward four leagues, with good anchorage in most parts of it. The west point of the bay (called Long Point) is a low rocky point, from which stretches out a reef of rocks N. E. nearly one mile; S. E. by S. four miles from Long Point, and half a league from the east shore, lies Fox Island, which is small, but tolerably high; from the north end of this island stretches out a shoal, near two miles to the northward, called Fox's Tails; nearly in the middle of the bay, between the island and the west shore, lies the middle ground, on one place of which, near the S. W. end, is not above 3 or 4 feet water, at low water; at the head of the bay is a low point, called Middle Point, stretching out into the middle of the bay; from off this point is a shoal pit, which extends near two miles to the northward, part of which dries at low water: from the head of the east bay over to the Bay St. George, is a little more than a quarter of a mile: this isthmus is very low, with a pond in the middle of it, into which the sea washes in gales of wind from the southward at high tides. On the east side of the isthmus is a tolerable high mountain, which appears flat at top, and rises directly from the isthmus, on the north side of the mountain; and about five miles from the isthmus is a conspicuous valley or hollow, which, together with Fox Island, serves as a leading mark for coming in and out of this bay, as is hereafter described: two leagues to the N. E. from the entrance of the bay, and half a league from the shore lies Shag Island, which appears at a

distance like a high rock, and is easy to be distinguished from the main; west, one league from the Shag Island, lies the middle of Long Ledge, which is a narrow ledge of rocks stretching N. E. and S. W. four miles, the N. E. part of them are above water; the channel into the Bay of Port-a-Port, between the S. W. end of this ledge, and the reef off the west point of the bay is one league wide. To sail into Port-a-Port, coming from the S. W. come not nearer the pitch of the Long Point of the bay than one and a half mile, or haul not in for the bay, until you have brought the valley in the side of the mountain before mentioned (which is on the east side of the isthmus) over the east end of Fox Island, or to the eastward of it, which will then bear S. S. E.  $\frac{1}{4}$  E. you will be then clear of the Long Point Reef, and may haul into the bay with safety; coming from the N. E. and without the Long Ledge, or turning into the bay in order to keep clear of the S. W. point of the Long Ledge, bringing the isthmus or the foot of the mountain (which is on the east side of the isthmus) open to the westward of Fox Island, near twice the breadth of the island (the island will then bear S.  $\frac{1}{4}$  E.) you may haul into the bay with this mark, and when Shag Island is brought on with the foot of the high land which is on the south side of Coal River, and will then bear E. by N.  $\frac{1}{4}$  N. you will be within the Long Ledge; there is a safe passage into the bay between the Long Ledge and the main, passing on either side of Shag Island, taking care to avoid a small round shoal which lies S. W. one mile from the island, on which is  $2\frac{1}{2}$  fathoms water. To sail up into what is called the West Bay, and into Head Harbour, (which are the safest anchorages, and the best places to wood and water at) keep the west shore on board, and in turning between it and the middle ground, observe on standing over to the middle to put about as soon as you shoalen your water to 8 fathoms, you may stand to the spit of the middle point, to 6 or 5 fathoms. To sail up to what is called the East Road, which lies between Fox Island and the east shore, observe about one league N. E. from the island, a high bluff head, being the south part of the high land that rises steep directly from the shore, keep this head bearing to the southward of east until the isthmus is brought to the eastward of Fox Island, which will then bear S. S. W. you will then be within the shoal (called Fox's Tail) and may then haul to the southward, and anchor any where between the island and the main: to sail up the east bay passing between the island and the east shore, observe the foregoing directions; and after you are above the island, come not nearer the main than half a mile until you are abreast of a bluff point above the island, called Road Point; just above which, in 12 fathoms, is the best anchorage with N. E. winds; and to sail up to this anchorage between the middle ground and the Fox's Tail, bring the said point on with the S. W. point of the island, this mark will lead you up in the fair way between the two shoals. What is called the West road lies before a high stone beach; about two miles within Long point, where you ride secure with westerly and N. W. winds in 10 or 12 fathoms water, the said beach is steep-to, and is an excellent place for landing and drying of fish, for which it has been formerly used; there is likewise a good place at the north end of Fox island for the same purpose; and the whole bay and adjacent coast abound with cod, and extensive fishing banks lie along the sea coast.

From Long Point, at the entrance of Port-a-Port, to the bay of Islands, the direct course is N.  $85^{\circ}$  E. distant eight leagues, but coming out of Port-a-Port, you must first steer north one or one and a half league, in order to clear the Long Ledge, then N. E. by N. or N. E.; the land between them is of considerable height, rising in craggy barren hills directly from the shore.—The Bay of Islands may be known by the many islands in the mouth of it, particularly the three named Guernsey Island, Tweed Island, and Pearl Island, which are nearly of equal height with the lands on the main; if you are bound for York or Lark Harbours which lay on the S. W. side of this bay, and coming from the southward, steer in between Guernsey Island and the south head, either of which you may approach as near as you please; but with S. S. W. and southerly winds come not near the south head, for fear of calms and gusts of wind under the high land, where you cannot anchor with safety; you may sail in or out of the bay by several other channels, formed by the different islands, there being no danger but

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what shows itself, except a small ledge of rocks which lies half a mile from the north Shag Rock, and in a line with the two Shag Rocks in one; if you bring the south Shag Rock open on either side of the north rock, you will be clear either to the eastward or westward of the ledge; the safest passage into this bay from the northward, is between the two Shag rocks, and then between Tweed Island and Pearl Island. From Guernsey Island to Tortoise Head (which is the north point of York Harbour, and the S. E. point of Lark Harbour) the course is S. by E. five miles; Lark Harbour lies in S. W. near two miles, and is one-third of a mile broad in the narrowest part, which is at the entrance. To sail into it with large ships keep the larboard shore on board, but with small vessels there is no danger; you may anchor with a low point on the starboard side bearing west, N. W. or north, and ride secure from all winds.

From Tortoise head into York harbour, the course is S. W. near one league; between the said head and Governor's island, which lies before the harbour, is good room to turn, and anchorage all the way, but regard must be had to a shoal which spits off from a low beach point (called Sword point) on the west end of Governor's island; to avoid which keep a good part of Seal island open to the northward of Governor's island, until you are above this point; in turning up the harbour, stand not nearer the next point on the island (off which it is flat) then to bring Tortoise head touching Sword point, the best anchorages is to keep Tortoise head open to the said point, and anchor in 10 fathoms along the sandy beach on the main; farther up within the island is too deep water for anchoring all the way through the passage within the island: this harbour is very convenient to wood and water at. W. S. W. and S. W. winds blow here sometimes with great violence, occasioned by the nature of the lands, there being a valley or low land between this harbour and Coal river, which is bounded on each side with high hills; this causeth these winds to blow very strong over the low land.

Harbour island lies at the entrance of the river Humber, and S. E. seven miles from Guernsey island at the S. W. point of which is a small snug harbour (called Wood's harbour) wherein is 5 and 4 fathoms water, but the entrance is too narrow for strangers to attempt, and but two fathoms deep.

The river Humber, at about five leagues within the entrance, becomes narrow, and the stream is so rapid in places, for about four leagues up, to a lake, that it is with great difficulty a boat can be got up it; and at sometimes quite impracticable; this lake, which stretches N. E. & N. is in length seven or eight leagues, and from two to five miles broad: the banks of this river, and the shores of the lake are well clothed with timber, such as are common in this country. This river is said to abound with salmon, in which has been formerly a very great salmon fishery.

The north and south arms are the only long inlets, in which is very deep water until you come to their heads.

A little within the entrance of the north arm, on the starboard side, is a small cove, wherein a vessel might anchor in 30 fathoms water; one league within the entrance of the south arm, on the starboard side, is a sandy cove (being the second on that side) wherein is anchorage in 16 fathoms water and a good place to wood and water at; haul into the cove until the west point of it is brought on with the north point of the entrance of this arm, and there anchor; if you miss laying hold of this anchoring ground, there is a very good harbour at the head of the S. E. branch of this arm; on the east side of Eagle island between the north and south arms, is anchorage in 8, 10, or 12 fathoms water: under the north side of Harbour island is good anchorage with S. W. winds, at a quarter of a mile from the island you will have a muddy bottom: opposite to the S. E. end of Harbour island, on the south side of this bay, is Frenchman's cove, wherein is good anchorage in 20, 16 or 12 fathoms water; it is very probable that none of these anchorages will ever be frequented by shipping; yet it is necessary to point them out, as it may happen, that in coming into the bay with a gale of wind at S. W. it may blow so hard out of York harbour, that no vessel can carry sail to work into anchoring ground; at such times they will be glad to get to an anchor in any place of safety.

The Bay of Islands has been much frequented formerly for the cod fishery;

the best place for fishing ships to erect stages and keep boats, in small harbour, which lies a little without the South head, and the large beach on Sword point; on Governor's island is an excellent place for drying of fish.

From Guernsey island to Bonne bay, the course is first N. N. E. six leagues, then N. E. three leagues: the land near the shore, from the north Shag rock to Cape St. Gregory, is low, along which lay sunken rocks, some of which are one quarter of a mile from the shore, but a very little way inland, it rises into a mountain terminating at top in round hills: from Cape St. Gregory to Bonne bay, the land rises in hills directly from the sea to a considerable height: Cape St. Gregory is high, and the northernmost land you can see, when coasting along shore between Red island and the Bay of Islands.

Bonne bay may be easily known if you are not above four or five leagues off at sea by the lands about it, all the land on the S. W. side of the bay being very high and hilly; the land on the N. E. side, and from thence along the sea coast to the northward, is low and flat; but about one league up inland, are a range of mountains which run parallel with the sea coast: you cannot distinguish the low land if you are six or seven leagues off at sea. Over the south side of this bay is a very high mountain, terminating at top in a remarkable round hill, which is very conspicuous when you are to the northward of the bay. This bay lies in S. E. two leagues, then branches into two arms, one tending to the southward and the other to the eastward; the best anchorage is in the southern arm; small vessels must anchor just above a low woody point (which is on the starboard side of the bay, at the entrance into this arm) before a sandy beach, in 8 or 10 fathoms water, about a cable's length from shore: but large ships must run higher up, unless they moor to the shore, they cannot anchor in less than 30 or 40 fathoms, but at the head of the arm, where there is but 24 fathoms: notwithstanding the great depth of water, you lay every where in perfect security, and very convenient to wood and water, there being great plenty of both. To sail into the east arm, keep the S. E. point or starboard shore on board; short round that point is a small snug cove, wherein is good anchorage in 16 or 18 fathoms water, and moor to the shore; a little within the north point of this arm is a very snug harbour for small vessels, wherein is 7 and 6 fathoms water. In sailing in or out of this bay with S. W. winds come not near the weather shore, for fear of being becalmed under the high land, or meeting with heavy gusts of wind, which is still worse, and the depth of water is too great to anchor.

From Bonne Bay to Point Rich, the course along shore is N. N. E. distance twenty four leagues; but in coming out of the bay, you must first steer N. N. W. and N. by W. for the first three leagues, in order to get an offing. Ten miles to the northward of Bonne Bay is a pretty high white point (called Martin Point) three quarters of a mile right off from this point is a small ledge of rocks whereon the sea breaks: one league to the northward of Martin Point, is a low white rocky point (called Broom Point;) half a mile S. W. from this lies a sunken rock that seldom shows itself. On the N. E. side of Broom Point lies the bay of St. Paul, wherein vessels may anchor with southerly and easterly winds, but lies quite exposed to the sea winds.

One league to the northward of the bay of St. Paul, is a pretty high point of land (called Cow Head;) it will have the appearance of an island, being only joined to the main by a very low and narrow neck of land; three quarters of a mile off this heap lies Steering Island, which is low and rocky, and the only island on the coast between the Bay of Islands and Point Rich. On the south side of Cow Head is Cow Cove, wherein is shelter for vessels with easterly and northerly winds; and on the north side of this head is Shallow Bay, wherein is water sufficient for small vessels, and good fishing conveniences; at the N. E. entrance into this bay are a cluster of rocky islands, which range themselves N. E. and S. W. and at the S. W. entrance are two rocks close to each other, which generally show themselves; they lay a full cable's length from the shore, and there is a channel into the bay on either side of them. In sailing in or out of this bay, you may go on either side of Steering Island, which lies right before it, but come not too near the N. E. end there being sunken rocks off that end. This place is the best situated for a fishery of any on the coast, there being excellent fishing ground about it.

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From Steering Island to Point Rich, the course is N.  $20^{\circ} 45'$  E. distance seventeen leagues: from Shallow Bay to the south part of Ingornachois Bay is nearly a straight shore all the way, and neither creek or cove where a vessel can shelter herself from the sea winds; there are some small sandy bays, where vessels may anchor with the land winds; six leagues to the northward of Steering Island, and about a half a mile inland, is a remarkable hill (called Portland;) it makes not unlike Portland in the English Channel, and alters not in its appearance from any point of view.

Hawke's Harbour and Port Saunders are safe and commodious harbours, situated in the bay of Ingoanachois, S. E. two leagues from Point Rich: at the entrance of these harbours lies an island (called Kepple Island) which is not easily to be distinguished by strangers from the main; the channel into Hawke's Harbour (which is the southernmost) lies between the island and the south shore: on the starboard shore entering into this harbour, and opposite to the west end of the island begins a shoal, which stretches up along that shore one mile, the middle of which runs out into the harbour two thirds the breadth thereof, great part of this shoal dries at low water: your course into the harbour is east, keeping mid-channel, or rather nearest to Kepple Island, until the east end thereof (which is a low stone beach) bears N. by E. or N. then steer S. E.  $\frac{1}{2}$  E. for a small island you will see up the harbour, keeping the N. E. or larboard shore pretty well on board, and steer for the said little island; as soon as you have brought the point at the south entrance of the harbour to bear W. by N.  $\frac{1}{2}$  N. and are the length of the S. E. point of a bay which is on the starboard side of the harbour, you will then be above the shoal, and may anchor in 12 fathoms water, or you may run within half a mile of the small island and there anchor, where you will lay more convenient to take in wood and water. To sail into Port Saunders, there is not the least danger; leave Kepple Island on your starboard side, and anchor as soon as you are half a mile within the entrance, in 10 or 11 fathoms water; but if you run up towards the head of this harbour, keep the larboard shore on board, in order to avoid a ledge of rocks which lies nearly in the middle of the harbour. This is the best harbour for ships to lay in that are bound to the southward, as the other is for those bound to the northward; all the lands near these harbours are in general low, and covered with wood; you may occasionally anchor without these harbours, in the bay of Ingornachois, according as the winds are.

Point Rich lies in the latitude of  $51^{\circ} 41' 30''$ : it is the S. W. point of a peninsula, which is almost surrounded by the sea; it is every where of a moderate and pretty equal height, and is the most remarkable point of land along the west side of Newfoundland, it projecting out into the sea farther than any other, from whence the coast each way takes a different direction.

Two miles N. E. from Point Rich is the harbour of Port-aux-Choix; it is but small, yet will admit of ships of large burthen, but they must moor head and stern, there not being room to moor otherwise. To sail into it, keep the starboard shore on board, and anchor just above a small island which lies in the middle of the harbour. In this harbour, and in Boat Cove, which lies a little to the northward, are several stages, and good places for drying of fish.

Round the N. E. point of the peninsula, lies the harbour of old Port-aux-Choix, which is a small but safe harbour in the entrance of which lies a small island called Harbour Island, and between this island and the west point of the harbour are rocks, some above and some under water. To sail into this harbour on the west side of the island, keep the island close on board; but to sail on the east side, give the N. E. point of this island a small birth; you may anchor any where on the S. E. or larboard side of the harbour, but come not near the N. W. or starboard-side, there being a shoal of sand and mud all along that side.

From Point Rich to the Twin Islands (which are low, and the outermost islands in the bay of St. John) the course is N. N. E. distance four leagues, and from the Twin Islands to Point Ferolle, the course is N. E.  $\frac{1}{2}$  N. eleven miles.

The bay of St. John lies between Point Rich and Point Ferolle; there are in it a great many islands and sunken rocks; the only island of any extent is that of St. John, which lies N. E. three leagues from Point Rich; on the S. W. side



of this island is a small harbour, which seems not badly situated for the cod fishery, and it hath good conveniencies for that purpose, but it is not a good place for shipping—they would be too much exposed to the S. W. winds, which send in a great sea. On the S. E. side of this island, opposite to the west end of Head Island, is a small bay, wherein is anchorage in 16 or 14 fathoms water, and sheltered from most winds, and is the only anchoring place in the whole bay.

From the south part of Point Ferolle stretches out a ledge of rocks S. S. W. near one league; and along the shore to the river of Casters (which is in the bottom of St. John's Bay) are sunken rocks two miles off.

Over the middle of the bay of St. John, is high table land, which is very steep on that side next the bay, and terminates that chain of mountains which runs parallel with the coast from Bonne Bay. The course of the tides along this coast are generally governed by the winds, but when not interrupted by strong gales of long continuance, a S. E. by S. or S. S. E. moon, makes high water, and flows up and down, or upon a perpendicular, seven or eight feet.

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*Directions for Navigating on part of the N. E. side of Newfoundland, and in the Straights of Belle-Isle, from Red Bay to Cape Bluff, on the Coast of Labrador.*

[N. B. All Bearings and Courses hereafter mentioned, are the true Bearings and Courses, and not by Compass.]

On the N. E. coast of Newfoundland, about 2 leagues from the main, are two islands, the northernmost of which is called Groias; the north end of this island is in the latitude of  $51^{\circ} 00'$  north: at about 2 miles distance from this north end, are some rocks high above water.

The harbour of Croc bears N. W. by W.  $\frac{1}{2}$  W. 2 leagues from the north end of Groias island; the entrance is not easily distinguished by strangers till you draw near it; then you will discover a small island, or rock, close to the south head of the harbour; you may stand boldly in with the land, there being no danger but what shows itself, and lies very near the shore: as soon as you are within the heads, you will open the 2 arms: that to the S. W. is not safe to anchor in, being foul ground, and open to the N. E. winds; you may run up into the N. W. arm until you are land-locked, and anchor where you please, from 16 to 10 fathoms water, every where very good ground. This is an excellent harbour, very convenient for the fishery, and plenty of wood and water.

From the north end of Groias island, along the coast to the White island, the true course is N. by E. 12 leagues, but to give these islands and the Braka shoal a proper birth, make a N. N. E. course.

Between Croc and the bay of Griquet, are several good harbours, with excellent fishing conveniences, particularly Great and Little St. Julian's, Grandsway, Waterman's cove, White's arm, Zealot, Feshot, Gouge cove, Craimiliere, St. Anthony, and St. Lunnair, which are not yet accurately described; there is no danger on the coast but what lies very near the shore, except the small shoal of Braka, which lies directly off the bay of the same name, 4 miles from the land, on which the sea breaks in bad weather.

The bay of Griquet is situated on the N. E. coast of Newfoundland, in the latitude of  $51^{\circ} 32'$  north; it is formed by Stormy cape to the north, and White cape to the south, and contains several good harbours for shipping of all kinds, wherein are many fishing conveniences.

Camel island lies in Griquet bay, is very high in the middle, like the back of a camel, and in sailing along the shore, is difficult to be distinguished from the main.

The north harbour lies within Stormy cape, at the entrance of which is a rock above water: you may go on either side of this rock, it being bold too all around, and anchor near the head of the harbour, in 6 fathom water; in the entrance that leads to the N. W. and S. W. harbours, is a small rocky island, which makes the

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passage into those harbours narrow: the safest passage is to the northward of this island, giving the point at the entrance of the N. W. harbour a little birth; as soon as you are within the island, you will open the two harbours; that of the N. W. which is the largest, runs in N. W. near 2 miles; to sail up to the head of the harbour, the west side is the safest; you will at first have 14, 16, and 18 fathoms water, and after you are a little within the point, will meet with a bank whereon is 7 and 8 fathoms; being over it, you will again have 16 and 17 fathoms, and as you approach the head, will shoalen your water gradually to 5 fathoms, every where good anchoring, and sheltered from all winds.

The S. W. harbour runs in near 2 miles behind Camel's island: it is but a narrow arm, and hath in it from 10 to 4 fathoms water; there is a shoal at the entrance, but neither it nor the harbour are yet sufficiently examined, to give any direction about it here.

The two islands of Griquet lay on the outside of Camel's island, and together form between them several small, but very snug harbours for fishing vessels.

From Stormy cape to Cape de Grat, on the island of Quirpen, is N. by E. distant  $\frac{3}{4}$  miles; between which is the harbour of Little Quirpen, formed by the island of that name; there is no danger going in, but the shore itself; it is a small, safe, snug harbour, where fishing ships moor head and stern.

Quirpen island, which is the S. E. point that forms the entrance of the Streights of Belle-isle, is barren and mountainous; Cape de Grat on the S. E. side, and the highest part of this island may be seen in clear weather 12 leagues.

White islands lay between Griquet and Cape de Grat, about  $\frac{1}{4}$  miles from the land; they are but small, and of a moderate height; on the inside of them are some rocks, both above and under water, but not dangerous, as they discover themselves even in fine weather; and the passage between them and the main, which is half a league wide, is very safe.

De Grat and Pigeon coves lay on the S. E. side of the island of Quirpen, and to the northward of Cape de Grat, in the mouth of which are some small islands, and rocks above water; behind these islands are shelter for shipping, in 4 fathoms water, and convenient places for fishing.

The passage into Great Quirpen harbour is on the N. W. side of the island of the same name, between it and Grave's island, which is an island in the mouth of the harbour; in approaching the entrance, you may make as free as you please with the island Quirpen, there being no danger but what shows itself, until you come to the entrance of the harbour, where there are shoals on your larboard side, which you avoid by keeping Black head, upon Quirpen, open of all the other land, until Cape Raven is brought over Noddy point; then haul in for the harbour, keeping about half a cable's length from the point of Grave's island: it is every where good anchoring within the said island, and room and depth of water for any ships, and good ground; the best place is in 9 fathoms water, up towards the upper end of Grave's island, abreast of Green island, which lies about the middle of the harbour; the passage to the inner harbour, on either side of Green island, is very good for ships of a moderate draught of water, through which you will carry 3 fathoms; and above the island is exceeding good anchoring, in 7 fathoms; there is a passage into this place through Little Quirpen, but it is too narrow and intricate for vessels to attempt, unless well acquainted: in and about Quirpen are excellent conveniences for a great number of ships, and good fishing grounds about those parts: all the land about Griquet and Quirpen is mountainous, and appears a barren rock.

Noddy harbour, which lies a little to the westward of Quirpen, runs in S. S. W. between Noddy point and Cape Raven, which form the entrance of the harbour; there is no danger in going in; the passage is on the west side of a small island, that lies about  $\frac{1}{4}$  of a mile within the heads, and you anchor as soon as above it, in 5 fathoms water; or with small vessels you may run up into the basin, and anchor in  $2\frac{1}{2}$  or 3 fathoms; within the island, on the east side of the harbour, is a stage, and very convenient rooms for many fishing ships.

In turning up towards Quirpen and Noddy harbour, you may stand pretty near to the Bull rock and Maria ledge, which are above water; and both of them about  $\frac{1}{4}$  a league from the land of Quirpen; the passage between them is also  $\frac{1}{4}$  a league wide, and very safe, taking care only to keep near to Gull rock, to avoid the N. W.

ledge, which ledge does not appear but in bad weather; in the passage between the N. W. ledge and the main, are many rocks and shallow water.

The course from Bauld cape, which is the northern extremity of Quirpen, to the Great Sacred island, is west 2 leagues; this course will carry you the same distance without Gull rock, as you pass without Bauld cape. Little Sacred island lies E. S. E. from the main, and 1 mile; the passage between them is very safe, and you may sail round them both; they are high and bold; within them, to the S. W. is Sacred bay, which is pretty large, wherein are a great number of small islands, and rocks above water; the land at the bottom of this bay is covered with wood; this place is only resorted to for wood for the use of the fishery at Quirpen, Griquet, and places adjacent, where wood is scarce.

From Great Sacred island to Cape Norman, the course is west 13 miles, and to Cape Onion is S. W. by W. 2 miles; this cape is the north point of Sacred bay; it is pretty high and steep, near to which is a very remarkable rock, called the Mewstone; to the southward of the Mewstone is a small cove, where a vessel may lie in safety.

From Cape Onion to Burnt cape, the course is W. S. W. distance 5 miles; the shore between them is bold, and of a moderate height; Burnt cape appears white, and rises gradually from the sea to a tolerable height; on the east side of the cape lies the entrance to the bay Ha-ha, which runs in S. S. W. 2 miles; when without Burnt cape, you may anchor in 6 or 7 fathoms, open only to the N. E. winds; or you may run up into the harbour, where you lie land-locked in 8 fathoms; here are good conveniences for fishing ships, and plenty of wood for their use. Cape Norman, from Burnt cape, bears N. W. by W.  $\frac{3}{4}$  W. 7 miles; between them is the bay of Pistoles, which runs in S. S. W. and extends several miles every way, with good anchoring in most parts of it, particularly on the west side, a little above the islands, which lie on the same side, in 5 fathoms water; the shore about this bay is tolerably well covered with wood; boats frequently come here for wood from Quirpen.

Cook's harbour is small, and lies within the islands, at the N. W. part of Pistoles bay, and 2 miles to the S. E. of Cape Norman; to sail into it you must take care and give the Norman ledges, which lie E. N. E. 1 mile off the north point, a good birth; in going along shore, the mark to keep without these ledges is, to keep all the land of Burnt cape open without the outermost rocks, which lie on the south side of the entrance to this harbour; if you are going in, as soon as you judge yourself to be the southward of the Norman ledges, you must steer in for the harbour, leaving the islands on your larboard side; you must keep the south shore close on board for fear of a ledge of rocks which spits out from a small rocky island on the other side; as soon as you are within that island you must haul over for the north shore, and anchor in 4 or 5 fathoms water. In this harbour might be made several very convenient fishing rooms, and in the coves between it and Cape Norman, might be built stages for the boats to resort to, and to cure fish.

Cape Norman is the northernmost point of land in Newfoundland, lies in the latitude of  $51^{\circ} 38' 25''$  N. is of a moderate and even height, and a barren rock for some miles in the country; from Cape Norman, a W. S. W. course, between 9 and 10 leagues, will carry you a league without Green island; all the shore between them is bold, and of a moderate and equal height for several miles into the country; but a good way inland is a chain of high mountains, lying parallel with the coast; between 3 and 4 miles to the westward of the cape is a cove, wherein small vessels and boats may lie very secure from all winds except N. E.; from this place to Green island there is no shelter on the coast. In turning between Cape Norman and Green island in the night, or in foggy weather, you may stand in for the land with great safety, in 25 fathoms water, until you are nearly the length of Green island; you will then have that depth of water very near the shore, and likewise on the outside of the island itself.

Green island lies  $\frac{3}{4}$  of a mile from the main, is  $\frac{3}{4}$  of a mile in length, very low, narrow, and agreeable in colour to the name it bears; from the east end stretches out a ledge of rocks  $\frac{3}{4}$  of a mile to the eastward, whereon the sea breaks in bad weather; the channel between the island and the main, wherein is 4 and 5 fathoms water, is very safe, and where vessels may anchor if they find occasion; the only

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From Green island to Flower ledge, (which lies near  $\frac{1}{2}$  a league from the shore,) a W. S. W. course, 3 leagues, will carry you  $\frac{1}{2}$  a league without the ledge; from Flower ledge to the bay of St. Barbe, the course is S. S. W. 5 miles, and to point Ferolle, S. W.  $\frac{1}{2}$  S. 7 leagues; 5 miles to the westward of Green island is Sandy bay, wherein small vessels might ride in 3 and 4 fathoms water, with southerly and S. W. winds; between Green island and Sandy bay is Double ledge, which stretches off from the shore near half a mile, whereon is 8 and 9 feet water.

Savage cove, which is 2 miles to the westward of Sandy bay, is small, will admit only small vessels and boats, in the mouth of which is a small, low island; the passage in (which is very narrow) is on the east side of the island, and you must anchor as soon as you are within it, in  $2\frac{1}{2}$  and 2 fathoms water; one mile to the westward of this cove is Mistaken cove, which is something larger than Savage cove, but not near so good, being shoal water in every part of it. Nameless cove lies 1 mile farther to the westward, wherein is very shoal water, and several sunken rocks; one mile right off from the east point of this cove lies Flower ledge, part of which just appears at low water; you will have 10 fathoms water close to the off side of it; between it and Mistaken cove,  $\frac{1}{2}$  a mile from the land, lies Grenville ledge, whereon is 6 feet water. Flower cove (wherein is  $2\frac{1}{2}$  fathoms water) lies just to the southward of Nameless cove; it may be known by some white rocky islands, called Seal islands, lying a little to the westward of it; you must not come too near the outermost of these islands, for fear of some sunken rocks near it. A little within the entrance lies a rock above water, and a channel on each side of it; this cove lies in east, as does Nameless cove, and you must mind not to mistake one for the other: between Seal islands and the main is a passage for boats, and conveniences for a seal fishery.

From Seal islands to Anchor point, which is the east point of the bay of St. Barbe, the course is S. W. by S. 1 league; there is no danger but what lies very near the shore, until you are the length of the point where lies a rocky island, from which stretches out a ledge of rocks S. S. W.  $\frac{1}{2}$  of a mile, which you must be mindful of in going in or out of the bay of St. Barbe. A little within Anchor point, is Anchor cove, wherein is 3 fathoms water; it is so very small, that there is no room in it to bring a ship up, unless it be little wind or calm; the safest way is to anchor without, and warp in; there is room in it for one ship, and is a very snug and convenient place for one fishing ship, and for a seal fishery.

The bay of St. Barbe lies between Anchor point and St. Barbe's point, which is the S. W. point of the bay; they lie from each other S. by E. and N. by W. half a league; it lies in S. E. about 2 miles from Anchor point; to sail into the bottom of the bay or harbour, you must give Anchor point a good birth, and all the east side of the bay, to avoid the sunken rocks which lay along that shore; the bay will not appear to be of any depth, and you must be well in before you can discover the entrance into the harbour, which is but narrow; you must then steer S. S. E. keeping in the middle of the channel, and anchor as soon as you are within the two points, in a small cove, on the west side, in 5 fathoms water; the bottom is sand and mud, and you lay land-locked. Near this place branches out two arms or rivers, one called the south and the other the east: in the east river is 3 fathoms water a good way up, but the other is shoal; in these rivers are plenty of salmon, and their banks are stored with various sorts of wood. Between the S. W. point of the bay and west point of the harbour is a cove, wherein are sunken rocks, which stretch off a little without the line of the two points; in the open bay is 7, 8 and 9 fathoms water, but no safe anchorage, because of the N. W. and W. winds, which blow right in, and cause a very great sea.

About 1 league to the S. W. of the bay of St. Barbe lies the bay of St. Genevieve; in and before this bay lie several small islands, two only of which are of any considerable extent; the northernmost of these two, which is the largest, called

Current island, is of a moderate height, and when you are to the N. E. of it, the west point will appear bluff, but is not high; if to the westward, it will appear flat, and white like stone beach; near half a mile S. W. by S. from the point is a shoal, upon which is 3 fathoms water; the other island (called the Gooseberry island) lying to the southward (and within Current island) hath a cross on the S. W. point of it, from which point stretches out a ledge of rocks, near half a mile to the southward; on the south point of this ledge is a rock that just covers at high water; the best channel into the bay is to the southward of these islands, between the rocks above mentioned, and a small island lying south from it (which island lies near the south shore); this channel is very narrow, and hath not less than 5 fathoms at low water in it; the course is E. by N.; before you come the length of the aforementioned rock, you must be careful not to approach too near the S. W. end of Gooseberry island, nor yet to the main, but keep nearly in the middle between both; if you get out of the channel on either side, you will immediately fall into 3 and 2 fathoms water; as soon as you are within the small island above mentioned, you must haul to the southward, and bring St. Genevieve head (which is the S. W. point of the bay) between the small island and the main, in order to avoid the middle bank; you may either anchor behind the small island in 5 and 6 fathoms water, or steer over with the said mark into the middle of the bay, and anchor, with the S. W. arm open, in 7 and 8 fathoms water; it is very good anchoring in most parts of the bay, and pretty convenient for wooding and watering; the best place is in the S. W. arm, the channel going into which is narrow, and 4 fathoms deep.

There is a channel into the bay between Current island and Gooseberry island, wherein is not less than 3 fathoms water; it is but narrow, and lies close to the N. E. end of Gooseberry island: there is also a channel for boats to the eastward of all the islands. The middle bank is a shoal lying in the middle of the bay, and nearly dries at low water; it is pretty large, and hath not less than 4 fathoms water all round it.

Four miles to the westward of the bay of St. Genevieve, is the harbour of Old Ferolle, which is a very good and safe harbour, formed by an island called Ferolle island, lying parallel with the shore. The best passage into this harbour is at the S. W. end of the island, passing to the southward of a small island, in the entrance, which island is very bold too; when you are within this island you must haul up N. E. and anchor behind the S. W. end of Ferolle island, in 8 and 9 fathoms water, where you lie land-locked in good ground; you may also anchor any where along the inside of the said island, and find a good channel up to the N. E. end thereof, where there is an exceeding good place for fishing ships to lie in, like a basin, in 5 and 6 fathoms water, formed by 3 islands, lying at the N. E. end of Ferolle island; there is also a narrow channel into this place from the sea, of 2 fathoms at low water, between the northernmost of these islands and the main; here are convenient places for many fishing ships, and plenty of wood and water; on the outside of these islands are some ledges of rocks a small distance off.

From the S. W. end of Ferolle island to Dog island, is W. S. W. between 4 and 5 miles; Dog island is only divided from the main at high water, is much higher than any land near it, which makes it appear, when you are a good way to the eastward, to be some distance from the main.

From Dog island to point Ferolle is W. S. W. 3 miles; between them is the bay of St. Margaret, which is large and spacious, with several arms and islands in the bottom of it, abounding with great plenty of timber of the spruce and fir kind, and watered by small rivers; it affords good anchorage in many parts of it, particularly on the west side, which is the best place, as being the clearest of danger, and most convenient for wood and water.

Between St. Margaret's bay and point Ferolle, is a small bay, called New Ferolle, which lies in S. S. W. about 1 mile, and is quite flat all over, having not quite 3 fathoms in any part of it, and in some places not more than 2, and open to the N. E. winds; there is a stage on each side of the bay, and room for as many more.

Point Ferolle is situated in latitude  $51^{\circ} 02'$  N. is 2 miles in length, of a moderate height, and joins to the main by a low neck of land, which divides New Ferolle bay from the bay of St. John's, which makes it appear like an island at a dis-

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tance; all the north side of the point is very bold too, having 20 fathoms water very near it; but from the S. W. part stretches out a ledge of rocks into the bay of St. John's.

This part of the coast may be easily known by a long table mountain, in the country above the bay of St. John's: the west end of this mountain, from the middle of the point of Ferrolle, bears S. by E. and the east end S. 59° 30' E.

In turning between Green island and point Ferrolle, you ought not to stand nearer the shore (until you are to the westward of Flower ledge) than half a league, unless well acquainted; you will have for the most part, at that distance off, 20 and 24 fathoms water; after you are above the ledges (that is to the westward of them) the shore is much bolder, but the soundings not quite so regular; you will have in some places 15 and 16 fathoms water close to the shore, and in others not above that depth 2 miles off: the land between Green island and St. Barbe, next the sea, is very low, and in some places woody. The land between the bay of St. Barbe and point Ferrolle is higher and hilly, the most part covered with wood, and watered with numbers of ponds and small rivers.

The tides in the harbour of Grique, Quirpen, and Noddy harbour, flows full, and change about E. by N.; in the bay of Pistoles, and places adjacent, E. by S.

In all which places it flows up and down, or upon a perpendicular, spring tides 5 feet, and neap tides 3 feet.

At Green island S. E. bay St. Barbe and bay St. Genevieve, S. S. E. Old and New Ferrolle about S. by E.

In all which places it flows up and down, or upon a perpendicular, spring tides 7 feet, and neap tides 4 feet.

Before Quirpen, in settled weather, the tide or current sets to the southward nine hours out of twelve, and stronger than the other stream; in the streights the flood in the offing sets to the westward two hours after it is high water by the shore, but this stream is subject to alteration in blowing weather.

On the coast of Labrador, a little way inland from Labrador harbour, or bay Phillippeaux, is a very remarkable mountain, forming at the top three round hills called Our Ladies Bubbies. This mountain bears from the bay of St. Barbe N. W. 4 N. from the bay of St. Genevieve N. 90° W. and from Dog island N. 14° 45' W.

Belle-isle, which lies at the entrance of the streights to which it gives name, is about 7 leagues in circuit, and pretty high; on the N. W. side of it is a very small harbour, fit for small craft, called Lark harbour, within a little island that lies close to the shore: and at the east point of the island is a small cove, that will only admit fishing shallows; 2 miles N. by E. from this point lies a ledge of rocks, part of which appears above water, and on which the sea always breaks very high; you will have 20 fathoms close to this ledge, and 55 fathoms between it and the island; all about this island is irregular soundings, but you will not find less than 20 fathoms home to the island, excepting on a small bank lying N. W. 4 miles from the N. E. end, whereon is only 5 fathoms.

Red bay, on the coast of Labrador, about 8 leagues to the westward of Chateau, is an exceeding good harbour, with excellent conveniences for the fishery.

York, or Chateau bay, on the coast of Labrador, lies W. N. W. 4 W. 54 leagues from the west end of Belle-isle, and N. W. 4 N. 84 leagues from the island of Quirpen. In crossing the strait from Quirpen to Chateau bay, it is advisable to fall in with the coast a little to the westward of the bay, unless the wind be eastwardly, and clear weather, as there is not the least danger to the westward, but to the eastward are several low rocky islands. This bay may be known by two very remarkable rocky hills on Castle and Henley islands, which islands lie in the mouth of the bay; those hills are flat at top, and the steep cliffs round them have something the resemblance of castle walls; but as these hills are not distinguishable at a distance, because of the highland on the main within them, the best marks for knowing the bay, when in the offing, is as follows: all the land to the westward of it is high, of a uniform, even figure, terminating at the west side of the bay with a conspicuous nob or hillock; about Chateau bay, and to the eastward of it, is hilly, broken lands, with many islands along shore, but there is no islands to the westward of it: to sail into the bay, you leave both the islands on which stand two castle hills, on the star-

board side: and for large ships to keep clear of all danger, they must keep point Grenville (which point is known by a beacon upon it) on with the west point of Henley island (which point is a smooth black rock, and may be known by a small black rock just above water, about a cable's length without it) until you are abreast of the east point of Whale island: then to avoid the middle rock, on which is only 9 feet, and which lies nearly in the middle between the east point of Whale island and the said black point of Henley island, you must haul over either close to the little black rock, lying off the said point of Henley island, or else borrow on the Whale island, but not too near it, it being flat a little way off; when you are so far in as to open the narrow passage into Temple bay, in order to sail up into Pitt's harbour, haul to the westward, until you bring the outer point of Castle island a little open with Whale island; that mark will lead you up into Pitt's harbour, which is large and spacious, with a good bottom in every part of it, and covered from all winds; you lie in 10 or 14 fathoms; here are excellent conveniences for the fishery, and plenty of timber at hand. There is a good though narrow passage into the northward of Henley island, through which you carry  $3\frac{1}{2}$  fathoms water; 1 mile to the eastward of Henley islands lie Seal islands; from them to Duck island is  $3\frac{1}{2}$  miles; between Seal islands and Duck island is Bad bay, which is open to the easterly winds, and full of rocks, some above and some under water.

Crossing the streights from Quirpen to Chateau, you will meet with irregular soundings, from 20 to 30 fathoms on the Newfoundland side, and in places near the shore you will have 30 to 40 fathoms: in the middle of the streights in the stream of Belle-isle, is from 20 to 30 fathoms, and between that and Chateau bay from 45 to 80 fathoms; within a mile of the coast of Labrador, to the westward of Chateau bay, you will have 25, 30, and 35 fathoms; further up the streights, as far as Cape Norman and Green island, you will have 40 and 45 fathoms in the middle, less towards Newfoundland, and more towards the coast of Labrador.

About 7 miles to the eastward of Seal islands, is St. Peter's islands, a parcel of small barren rocks; within them is St. Peter's bay, which is a good bay, open only to the S. E. winds.

Cape Charles makes with a high steep towards the sea, and sloping inland, so that when you are to the westward of Chateau, Cape Charles will make like an island.

From St. Peter's islands to Cape Charles island, the course is N. E.  $\frac{1}{2}$  N. distance near 4 leagues; between them lies Niger sound, which is an inlet 2 leagues deep, before which lies several islands. You may pass to the northward or southward of any of those islands into the sound; the course in is N. W.; the best anchorage is on the north side, in 9 fathoms water.

From Cape Charles to the Battle islands, (which are the outermost of the Caribou islands) the course is N. by E.  $\frac{1}{2}$  E. 4 miles, and from the northernmost of the Battle islands to Point Lewis, is N. N. W.  $\frac{1}{2}$  W. 5 miles; between the Battle islands and the great Caribou island, is a good harbour for small vessels; the south entrance is very narrow, and has only 3 fathoms water; this entrance is not easily distinguished, by reason of a small island before it; the north entrance is much wider, passing to the westward of the three small northernmost of the Battle islands; you may anchor from 5 to 10 fathoms water. This place is much resorted to by the savages, and is by them named Ca-tuc-to; and Cape Charles they call Ikkegaucheacteuc.

Between the Caribou islands and Cape Lewis, lies St. Lewis' bay, in which are many islands and inlets which have not yet been examined.

From the north part of Cape Lewis, at a quarter of a mile from the shore, are two flat rocks, and also several sunken rocks, all which are within that distance from the shore; round this point is the entrance of a small cove, running in S. S. W.  $\frac{1}{2}$  a mile, named Deep-water creek, but very narrow, and has from 20 to 40 fathoms water in it.

From the north part of Point Lewis to the south head of Petty harbour bay, the course is north  $1\frac{1}{2}$  mile; it is a high bold shore; from the south head to the north head of this bay, the course is N.  $\frac{1}{2}$  E.  $1\frac{1}{2}$  mile; this bay runs up W. N. W. 1 mile; in it is 20 to 40 fathoms water. At the bottom of it is Petty harbour; the entrance is to the northward of a low point of land which shuts the harbour in from the sea,

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so as not to be seen till very near it; the entrance is very narrow, it is not above 50 fathoms broad; there is 5 fathoms in the middle, and 3 fathoms close to the sides; the narrow part is but short, and after you are within the entrance the harbour becomes wider, running up W. by N.  $1\frac{1}{2}$  mile, and  $\frac{1}{2}$  of a mile broad, wherein ships may anchor in any part, from 12 to 7 fathoms, and lie entirely land-locked. From the north head of Petty harbour bay to Point Spear, the course is N.  $\frac{1}{2}$  E.  $2\frac{1}{2}$  miles; between them is Barren bay and Spear harbour; Barren bay is to the northward of the north head of Petty harbour bay; in it is no shelter.

Spear harbour is to the southward of Spear point; this is a very good harbour; coming from the northward, about Point Spear, you will open two islands in the bottom of a small bay; the best passage in, is between the 2 islands, and to keep the north island close on board; there is 4 fathoms along side of it; after you are half a cable's length within the islands, steer for the middle of the harbour, and anchor in 7 or 8 fathoms, where is good room to moor; small vessels may go on either side of the island; there is 2 fathoms at low water; but observe, in coming from the southward you will only distinguish one island, for the northernmost island will be shut in under the land so as not to be discerned till you get within the heads.

From Point Spear to the entrance of the Three harbours, the course is W. N. W.; about 3 miles between them are several small high islands lying within half a mile of the shore, called Spear islands; they are all bold too, and there is 20 fathoms within them: N. N. E.  $\frac{1}{2}$  E. from the S. E. head of the entrance of the Three harbours, lies 2 small islands close together, called Double island, about as high as they are broad, and about half a cable's length to the eastward of those islands are 2 sunken rocks, on which the sea breaks in bad weather. Nearly in the middle of the entrance of the Three harbours lie 2 islands close together, which mostly appear as one island by being so close together; they are steep too: ships may pass on either side of them in 12 and 14 fathoms, and anchor within them, in Queen road, in 16 fathoms; by the S. E. end of the islands is the widest passage, and room for ships to work in or out.

The first and southernmost harbour within Queen road is Sophia harbour; it runs up S. by E.  $1\frac{1}{2}$  mile, and has from 15 to 10 fathoms water for that distance; then it tends away round a low point to the eastward, and becomes a mile broad, but thence is very shoal water, and only fit for small vessels.

Port Charlotte is the middle harbour, and a very good one for any ships; there is a low flat island on the starboard side of the entrance, and from this island runs a reef of rocks a third of the channel over to the south side; to avoid which keep the south side nearest on board, for it is steep too, having 9 fathoms close to the shore, therefore keep the south side nearest until you are a quarter of a mile within the entrance, then you may anchor in any part of the harbour between 12 and 17 fathoms, only giving the starboard side a birth of half a cable's length, to avoid a small reef that lies along that side.

Mecklinburg harbour is the northernmost of the 3, and lies up N. W.  $\frac{1}{2}$  W. and W. N. W. 2 miles; in the lower part of this harbour is 20 fathoms, but in the upper part is no more than 12 fathoms, room for ships to moor; to sail up the head, keep the larboard side nearest, to avoid the ledge of rocks that lie along the starboard side, about 30 fathoms from the shore. These rocks lie within the narrowest part of the harbour, and above the low point on the starboard side; the best anchorage is at the head of the harbour.

From the islands at the entrance of the Three harbours to Cape St. Francis, the course is N.  $\frac{1}{2}$  E. about 5 miles; between them is the entrance into St. Francis or Alexis river, between 2 low points about a mile across; this river runs up about 10 leagues, where the water is fresh, and a very strong tide; in it are many bays, harbours and islands; the first part of this river runs up W. N. W. 3 miles and a half. There are 4 islands within the entrance, 2 of which are on the larboard side, and further up, 2 on the starboard side; the outermost island on the larboard side, which is about a mile within the entrance, is a high round island in the shape of a sugar-loaf, with the top part cut off, and is a very good mark to sail in by; there is a ledge of rocks about half a cable's length from the S. E. point of the entrance; and E. S. E. half a mile from the said point, there is a flat rock, always above water, with a ledge of sunken rocks half a cable's length to the N. E. from it, and

half a mile without this flat rock, on the same line with the point, there is another flat island with a ledge of sunken rocks a cable's length to the N. E. from it. In sailing into this river, to avoid these ledges, keep to the northward of the flat islands, till you bring the Sugar-loaf island, which is within the river, a third of the channel over from the S. E. point; that mark will keep you clear of the ledges, and to the northward of them you may either sail or work in, taking care not to shut the Sugar-loaf island in with the N. W. point, and bring it no nearer the S. E. point than a third of the breadth of the channel; after being within the points, there is no danger but what is to be seen; there is anchorage within the two islands, on the larboard side, in 12 and 14 fathoms, but you will lay open to the N. E.; the best place to anchor within the first part of the river is in Ship's harbour, which is on the larboard side, about  $2\frac{1}{2}$  miles from the entrance, where the course into it is S. S. W.  $1\frac{1}{2}$  miles; at the entrance it is  $\frac{1}{2}$  of a mile broad, at the head it is broader; there is 12 and 15 fathoms water, and good anchorage in security against all winds; at  $3\frac{1}{2}$  miles from the entrance the course of the river is W. by S. 7 miles; in the middle of it are several great and small islands; sailing up along the south side of the islands there is no danger, and not less than 40 or 50 fathoms water, but on the starboard or north side of the islands, there is much less water, and anchorage all the way up in 12 and 17 fathoms. The course up the third part of the river is W. S. W. 4 miles; here is only 2 islands, on the larboard or south side of which is very good anchoring in 12 fathoms; on the north side is 30 fathoms water; the land about here is very high and well covered with wood; here the water is fresh, and 7 miles further up is a bar, on which there is not above 3 feet at low water, the river above that bar runs W. and W. N. W. 6 miles, but the head of it is not yet known; by the rapid stream, probably it comes from great lakes afar off.

One mile northward of St. Francis river, there is a harbour, called Merchant-men's harbour; between the river and this harbour there are 2 or 3 sunken rocks, lying a cable's length off from the second point from the river; there is no danger in sailing into this harbour; it runs in first W. N. W. and then W. about a mile, is 2 cable's length wide at the entrance, and 3 at the head of it, where ships may anchor in 12 fathoms water.

To the northward of this harbour, round a small point, there is an inlet which runs up W. N. W. 5 miles, where it turns to the southward into St. Francis river; it is about  $\frac{1}{2}$  of a mile broad at the entrance, and continues the same breadth about 3 miles up, and then becomes very broad, with an island in the middle, shaped not unlike a leg; there is no danger in this inlet but what appears above water; along the south side of Leg island there is anchorage in 12 and 13 fathoms. At about  $3\frac{1}{2}$  miles within the entrance, the lower part of Leg island forms 3 very good harbours, with 7 and 12 fathoms water in them; on the north side of Leg island there is a large space, about a mile broad, and 2 miles long; in it is from 60 to 80 fathoms water, from which to the N. W. is a passage into Gilbert's river, which runs from thence W. N. W. 6 miles, and is about  $\frac{1}{2}$  a mile broad, and from 50 to 60 fathoms water in it; then Gilbert's river divides into 2 branches, one to the W. N. W. 7 or 8 miles, the other S. S. W. 6 miles, the head of which is within a mile of St. Francis river; both these branches are full of small islands, rocks and shoals on each side, but in the middle is good anchorage all the way up, from 10 to 40 fathoms; this river has also a passage out to the sea to the northward of Cape St. Francis, between Hare island and Fishing islands; from St. Francis' island to the north end of Hare island, is W. N. W.  $2\frac{1}{2}$  miles; within Hare island there is a small harbour; to sail into it you must pass round the north end of Hare island; there is from 12 to 5 fathoms water within this harbour, and no shoals in it; but the harbour hereabouts is Fishing ship harbour, which is formed by 3 islands, lying along shore a mile to the northward of Hare island; the best passage into it is between the 2 westernmost islands, which entrance bears from Hare island N. W. There is no danger in this passage: ships may sail right in N. W. up the head of the harbour, and anchor in 12 fathoms; there is good room for any ships to moor; there are 2 other passages to this harbour, one to the westward from the entrance of Gilbert's river, the other to the eastward, passing to the northward of all the Fishing islands, and hath 7 fathoms through, but this is a very narrow passage, and

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difficult for those not acquainted. From the northernmost Fishing island to Cape St. Michael, the course is N. by W.  $\frac{3}{4}$  W. distance 6 miles: this part of the coast is bold too, and very high land.

Two miles to the southward of Cape St. Michael, lies Occasional harbour, which may be easily known by 2 large rocks, called Twin rocks, which lie about two-thirds of a mile without the entrance; they lie close together; ships may pass on either side of them; the entrance to this harbour is between 2 high lands, and runs up S. W. about 2 miles, then W. N. W. There is no danger in this harbour, both sides being steep too; and about 2 miles up there is good anchorage in 7 and 10 fathoms; the winds between the high land at the entrance always sets right into the harbour, or right out.

From Cape St. Michael to Cape Bluff, the course is N. by W. 4 leagues; these 2 capes form the great bay of St. Michael, which contains a great number of islands, inlets, rivers, &c. which are not yet known. Cape Bluff is a high bluff land, and may be seen 15 or 16 leagues; the best place yet known for large ships to anchor within St. Michael's bay, is on the south side, that is, first keep Cape St. Michael shore on board, then keep along the south side of the first island you meet with, which is called Long island, till you come near as far as the west end of it, and there anchor from 12 to 20 fathoms; you will there lie land-locked, and may work out again to sea on either side of Long island. At the entrance of this bay is a large square island, within which are many small islands, which form several harbours.

The land from Cape Bluff to the northward lies N. N. E. 5 or 6 leagues, and makes in several high points.



## CHAP. XX.



## COAST OF LABRADOR.

*Description of part of the Coast of Labrador, from Grand Point of Great Mecatina to Shecatica.*

[N. B. All Bearings and Courses hereafter mentioned, are the true Bearings and Courses, and not by Compass.]

The Grand Point of Great Mecatina lies in the latitude of  $50^{\circ} 41'$  N. and is the extreme point of a promontory which stretches off from the main. The extreme of this point is low; from thence it rises gradually to a moderate height, and may be easily known from several adjacent islands and rocks, which lie off S. E. by E.  $\frac{1}{4}$  E. from it; the nearest of which is a small low rock, and is within one third of a cable's length from the point. Two of these islands are much larger and higher than the others; the outermost are small low rocky islands, and lie  $2\frac{1}{2}$  miles from the Grand point.

From Grand point, E. by S.  $5\frac{1}{2}$  miles, lie the two Murr islands, which are the southernmost islands on this part of the coast. The northernmost Murr island lies from the other N. N. W.  $\frac{1}{4}$  W. about a quarter of a mile. These islands are very remarkable, being two flat barren rocks, of a moderate height, and steep cliffs all round. About half a mile to the S. E. of the southernmost Murr island, lie the two Murr rocks, which are above water. And E. N. E.  $\frac{1}{4}$  E.  $1\frac{1}{2}$  mile from the southernmost Murr island, lies a ledge of rocks under water, on which the sea generally breaks.

From Murr islands N. W. by W. 2 leagues, lies the Bay de Portage. The land over this bay makes in a valley, each side being high; at the entrance lies an island of a moderate height, which forms the harbour. You may sail into this harbour on either side of the island, but the eastern passage is only fit for small vessels, there being only 2 fathoms water in the entrance at low water. The western passage is sufficiently large and safe for any vessel to turn in, there being in it from 6 to 8 fathoms at low water. Large vessels bound for this harbour must be careful to avoid 2 sunken rocks, on which there is  $2\frac{1}{2}$  fathoms water at low water. The northernmost of these rocks lies from Mutton island, S. by E.  $1\frac{1}{2}$  mile, and the southernmost lies from the Seal rocks, N. by E.  $\frac{1}{4}$  E. half a mile. Vessels may borrow within one cable's length of Mutton island, or Seal rocks.

The harbour of Great Mecatina lies N. W.  $\frac{1}{4}$  W. 2 leagues from Murr islands, and N. by E.  $2\frac{1}{2}$  miles from Grand point. This harbour is formed by Mecatina island and the main, and is a safe, but small harbour, yet will admit ships of burthen, there being not less than 3 fathoms water in either passage at low water; but they must moor head and stern, not being room to moor otherwise. To sail into this harbour through the western passage, there is not the least danger. To sail in through the eastern passage, observe the following directions: from the eastern point of the island run N. N. W. for the main, and keep the main close on board, till you bring the western point of the island on with the point of Dead cove, (this is a small cove on the main, which lies open to the eastward; the land which forms it is very low, with some brush wood on it,) and sail in that direction till you are above a stony point, which is the north point of the said cove, or till you bring the

north point of Mecatina island within a spit haul directly from the south passage open eastward, and ward of Gull on board, in island and the water.

The highest over the harbour.

The great island from north to land, but much island makes in this head, to the which is a good from the said is 20 fathoms water.

The great island from the coast from give the bearing and harbours from.

The harbour an island covers island, but to the island, lies a ledge of a mile from of a mile from 2 fathoms water island in 7 or 8 Here is both wood this harbour, call is a seal fishery.

Between the round hill, which either of those points.

The bay of H mouth of which is between Seal side; this is a wide water. This bay are several islands ing places, from the eastern shore western side it is a high bluff h is a safe harbour for safe harbour for safe harbour is formed passage.

After you leave the main land (till number of great each other, that them.

Amongst these best and the easiest Eagle harbour of islands, on which

north point of Gull island (which is a small island lying N. E. by E. 1 mile from Mecatina island) on with the N. E. point of Mecatina island; you will then be within a spit of rocks, which stretches off from Mecatina island, and must then haul directly over for Mecatina island, in order to avoid a ledge which stretches off from the south point of Dead cove, and may anchor, when you bring the western passage open, in 6 or 7 fathoms water, in great safety. Vessels coming from the eastward, and bound for the harbour of Mecatina, and would pass to the northward of Gull island, must be careful either to keep Gull island or the main close on board, in order to avoid a sunken rock that lies near half way between Gull island and the main, on one part of which there is not above 3 feet water at low water.

The highest part of the land between Grand point and Ha-Ha bay, is directly over the harbour of Mecatina.

The great island of Mecatina lies three miles from the main, and is in length, from north to south,  $8\frac{1}{2}$  miles, and in breadth, from east to west, 3 miles; is high land, but much higher in the middle than either end. The N. E. point of this island makes in a remarkable bluff head, which is in latitude  $50^{\circ} 46'$  N. Round this head, to the northward, and within a cluster of small islands (on either side of which is a good passage) lies a cove, which runs in S. by W.  $\frac{1}{2}$  W. about  $1\frac{1}{2}$  mile from the said islands; vessels may anchor in this cove, in great safety, from 14 to 20 fathoms water, good ground. Here is wood and water to be had.

The great island of Mecatina being the most remarkable land about this part of the coast from whence vessels may best shape a course for other places, I will here give the bearings and distances of the most remarkable points, head lands, rocks and harbours from it.

The harbour of Little Fish lies in east and west, is but small, and is formed by an island covered with wood. You may sail into this harbour on either side of the island, but to the northward is the best passage. In the bay to the southward of the island, lies a ledge of rocks, part of which is always to be seen. E. by S. one third of a mile from the east point of Wood island, lies a rock, on which there is only 2 fathoms water at low water. You may anchor in this harbour at the back of the island in 7 or 8 fathoms water, good bottom, and have room sufficient to moor. Here is both wood and water to be had. Off the northern point of the entrance into this harbour, called Seal point, lies 2 small islands, and a sandy cove, where there is a seal fishery carried on.

Between the harbour of Little Fish and the bay of Ha-Ha, is a remarkable high round hill, which makes in a peak, and may serve as a good mark for knowing either of those places by.

The bay of Ha-Ha lies from La Boule point, N. N. W.  $\frac{1}{4}$  W.  $5\frac{1}{2}$  miles, in the mouth of which there are several islands, which form several passages, but the best is between Seal point and Round island, leaving all the islands on the starboard side; this is a wide and safe passage, there being no danger but what appears above water. This bay runs up north 7 miles, at the head of which on the starboard side are several islands: within these islands, to the eastward, are many good anchoring places, from 9 to 20 fathoms water. Vessels may occasionally anchor all along the eastern shore within this bay, in 12 and 14 fathoms water, mud ground; on the western side it is deep water. N.  $\frac{1}{4}$  W. 2 miles from the entrance of the west side, is a high bluff head; round this head W. by N.  $\frac{1}{4}$  W. half a mile, is a small but safe harbour for small vessels, in which you have 12 fathoms, good ground. This harbour is formed by an island, on either side of which there is a safe but narrow passage.

After you leave the bay of Ha-Ha, proceeding to the eastward, you lose sight of the main land (till you come to the bay of Shecatika) which is hid from you by the number of great and small islands of different height, so numerous, and so near each other, that they are scarce to be distinguished as islands till you get in amongst them.

Amongst these islands are a great many good roads and harbours; some of the best and the easiest of access are as follow:

Eagle harbour lies near the west end of Long-island, and is formed by a cluster of islands, on which a French ship of war of that name was lost. This harbour is

capable of holding a number of shipping with great security, having in it from 10 to 20 fathoms, good bottom, but it is not easily to be distinguished by strangers; the best way to find it, is to shape a course as before directed, from the great island of Mecatina, to Fox islands, which lie from the westernmost entrance of the harbour S. E. by S.  $\frac{1}{2}$  E.  $1\frac{1}{2}$  mile. It is also to be known by a large deep bay, which forms to the eastward of it, without any islands in it, but to the westward is a vast number. If you intend for the east passage into this harbour, you must first steer from Fox islands, N.  $\frac{1}{2}$  E.  $2\frac{1}{2}$  miles into the bay, when you will observe to the N. W. of you, a remarkable high island, round which, to the northward, there is a safe passage of 3 fathoms into the harbour, where you may anchor in great safety from all winds. In the western passage into this harbour is  $2\frac{1}{2}$  fathoms water, fit only for small vessels, being a narrow passage between many islands. This part of the coast is very dangerous for a vessel to fall in with, in thick weather, by reason of the infinite number of small and low islands, and some rocks under water.

From the Bluff head of Great Mecatina island to St. Augustine's chain, the course is N. E.  $8\frac{1}{2}$  leagues. The west island of St. Augustine, is of a moderate height, the west part being highest and quite low in the middle, but is not as easy to be distinguished at a distance, by reason of the islands within being much higher. Half a mile to the eastward of this island is the East island, something larger, but not quite so high and is even at top. Between these two islands, after passing between the Chain and Square islands, is a safe passage for small vessels into this port; they may anchor between the West island and Round island, or they may run to the northward past Round island, and anchor in 6 or 7 fathoms water, where they will have good room to moor. S. by W.  $\frac{1}{2}$  W. about half a league to the west of St. Augustine's island, runs a chain of small islands, called St. Augustine's chain, the outermost of which is a remarkable round smooth rock. At  $\frac{1}{4}$  of a mile to the westward of this island lie rocks under water, which always break, and show above water at  $\frac{1}{2}$  ebb. About half a mile to the S. W. of these rocks is a high black rock, above water; between these two is the best passage for large vessels into the port of St. Augustine. You must steer from this black rock, for a remarkable low point which will bear N.  $\frac{1}{2}$  W. till you open the port of St. Augustine, and then haul in and anchor as before; or you may steer up the passage between this point and Round island, and anchor as before directed.

The entrance of the river St. Augustine, lies from the port of St. Augustine  $4\frac{1}{2}$  leagues to the N. W. with several large and small islands between them. The river is not navigable for any thing but boats, by reason of a bar across the entrance, which dries at low water. This river, at two miles up, branches into two arms, both tending to the N. W. 14 or 16 leagues. There is plenty of wood to be had in this river.

From St. Augustine's chain to Shag island, the course is N. E.  $\frac{1}{2}$  E.  $2\frac{1}{2}$  leagues. This island is very remarkable, being small, high, and in the middle is a round peaked hill. From this island to the eastward are a number of small rocks above water, the outermost lies E. by S.  $\frac{1}{2}$  E.  $1\frac{1}{2}$  mile from Shag island. N. W. by W.  $2\frac{1}{2}$  miles from Shag island, lies the bay and harbour of Sandy island, which is a very safe harbour. To sail into this harbour, you must pass to the eastward of Murr rocks, and keep the starboard point of the bay on board; you will then see a small rock above water to the N. W. which lies off the entrance of the harbour; you may pass on either side of this rock, and then steer in N.  $\frac{1}{2}$  W. for the harbour, there being no danger but what appears. In this harbour there is good room to moor, in 5 and 6 fathoms water, and a good bottom: there is not any wood to be had, but plenty of water.

Cumberland harbour lies N.  $\frac{1}{2}$  W. 1 league from the outer Shag rocks, and is to be known by a remarkable high hill on the main, which is the highest hereabouts, and makes at the top like a castle, being steep cliffs appearing like walls. This hill lies N. W. by N. about  $3\frac{1}{2}$  leagues from the entrance of the harbour. The outer islands, named Duke and Cumberland islands, which form the harbour, are of a moderate height, the easternmost making in two round hills. To sail into this harbour there is no danger but what appears above water, except a small rock, which lies S. S. E. half a mile from the west head; the entrance is a quarter of a mile wide, and half a mile long: from the east head, steer for the inner point on the

west side; after anchor where cellent roomy access on this bay.

The bay of land harbour, branches and good harbours very well acqui-

To the east outer Shag rocks before the moon 15 fathoms water you may pass it end between it vessels. There which is long a barren, but then to the eastward sage for small vessels to the N. miles to the N. runs up north 5 row, bad ground

N. B. All the low rocky islands, No wood to be The course and count can be given weather I have found at Mecatina, at h

### Directions for Shes

[N. E. All Bearings and no

Bowl island lies from the main; is About this island and sunken rocks, fresh wind, and th

From Bowl island E. distance 2 miles on both sides; is a western shore is the cable's length off s at about 2 miles w you may lie secure wooding and water remarkable green mile to the eastward chorage for small gins a chain of islands distant from the middle islands; the middle

west side; after you are the length of that point, you may haul to the eastward, and anchor where you please, from 20 to 7 fathoms water, in good ground, and an excellent roomy harbour, fit for any ships, and is the best harbour and the easiest of access on this coast. Here is good water, but for wood you must go up Shecatica bay.

The bay of Shecatica lies  $2\frac{1}{2}$  miles to the N. E. from the entrance of Cumberland harbour, and runs many miles up the country to the northward, in several branches and narrow crooked passages, with many islands, which form several good harbours; the passages are too narrow for vessels to attempt without being very well acquainted.

To the eastward of the bay of Shecatica, and N. N. E.  $\frac{3}{4}$  E.  $2\frac{1}{2}$  leagues from the outer Shag rocks lies the island of Mistanogue; within it, to the northward, and before the mouth of the bay of the same name, is very good anchorage, from 20 to 15 fathoms water, good ground, and sufficient room to moor: to go into the road you may pass round the west end of the island, which is bold too, or round the east end between it and the island of Shecatica, but this last passage is only for small vessels. There is good anchorage quite to the head of the bay of Mistanogue, which is long and narrow. This island, and the main land about it, is high and barren, but there is both wood and water to be had in the bay of Mistanogue. A little to the eastward lies the island of Shecatica: between it and the main is a good passage for small vessels, where there is a considerable seal fishery carried on. Three miles to the N. E. of the island of Shecatica lies the bay of Petit Pene, which runs up north 5 miles, but is not fit for vessels to anchor in, being deep water, narrow, bad ground, and entirely exposed to the southerly winds.

N. B. All the islands along the coast are quite barren, the outer ones being small and low rocky islands, the inner ones are large and high, covered mostly with green moss.

No wood to be got but at such places as are mentioned in the foregoing directions.

The course and the flowing of the tides along this coast are so irregular, no certain account can be given thereof; they depend much upon the winds, but in settled moderate weather I have found it high water at Shecatica, on the full and change, at 11 o'clock, and at Mecatina, at half past 2 o'clock, and rises and falls upon a perpendicular about 7 feet.

### *Directions for navigating on that part of the coast of Labrador from Shecatica to Chateaux, in the straits of Belle-Isle.*

[N. E. All Bearings and Courses hereafter mentioned, are the true Bearings and Courses, and not by compass; the variation was  $26^{\circ}$  W. in the year 1769.]

Bowl island lies E. by N. 2 leagues from the island of Shecatica, and 1 mile from the main; is a remarkable round island of a moderate height.

About this island, and between it and Shecatica, are a number of small islands and sunken rocks, which render this part of the coast dangerous, unless there is a fresh wind, and then the sea breaks on the rocks.

From Bowl island to the entrance of bay D'Omar, the course is N. E. by N.  $\frac{1}{4}$  E. distance 2 miles. This bay runs up N. by E. nearly three miles, with high land on both sides; is about 2 cables length off shore. Off the coves it is wider. The western shore is the highest. Without the east point lie two small islands about 1 cable's length off shore. In this bay there is very good anchorage, the best being at about 2 miles within the entrance, opposite a woody cove on the west side, where you may lie secure from all winds in 14 or 16 fathoms water, and be very handy for wooding and watering. About 1 mile within the entrance on the west side, lies a remarkable green cove, off which it is shoal a small distance from the shore; one mile to the eastward of bay D'Omar lies Little Bay, in which is tolerable good anchorage for small vessels. E. N. E.  $\frac{1}{4}$  E. distant 3 leagues from Bowl island, begins a chain of islands and rocks, lying E. N. E. 3 leagues, and from 3 to 5 miles distant from the main, the easternmost of which is called Outer, or Esquimaux islands; the middle part is called Old Fort islands; and the westernmost is called

Dog islands. Within these islands on the main are several good bays and harbours, but are too difficult to attempt, unless very well acquainted, the passages being very narrow, and a number of sunken rocks.

N.  $\frac{1}{2}$  W. 4 miles from the west side of the outer Esquimaux islands, is very good anchorage for small vessels, between two high islands. Within these islands lies the river Esquimaux.

From outer Esquimaux island to Point Belles Amour, the course is N.  $59^{\circ}$  E. distant 13 miles. This point is low and green, but about 1 mile inland is high. Round this point to the eastward is a cove, in which is anchorage for small vessels in 7 fathoms water, but open to easterly winds.

From Point Belles Amour to the entrance of the harbour of Bradore, the course is E. by N. 2 leagues nearly. This harbour is to be known by the land between it and Point Belles Amour, being high table land, the land on the east side of it being low near the sea, and tending to the southward, or by our Ladies Bubbles, which are three remarkable round hills, seen all along this coast, lying N. by E.  $\frac{3}{4}$  E. 2 leagues from the island of Ledges, which forms this harbour. This island is of a moderate height, having a great number of small islands and rocks about it. On the east side of this island is a cove, called Blubber cove, wherein is anchorage in  $2\frac{1}{2}$  fathoms water, for small vessels. There are two passages into the harbour of Bradore; but that to the northward of the island of Ledges is by no means safe, there being a number of sunken rocks in that passage. The eastern passage is safe, taking care to avoid a small rock, which lies S.  $32^{\circ}$  W.  $\frac{1}{4}$  of a mile from the low point on the main where the houses stand. On this rock the sea mostly breaks, and shows above water at  $\frac{1}{4}$  ebb. On the east side, within the rock, is a small cove, called Shallop cove. From the point above the cove, called Shallop cove head, stretches off a shoal, one cable's length from the shore, and continues near the same distance, quite to the head of the harbour.

From the island of Ledges to Green island, the course is S.  $30^{\circ}$  W. distant 5 miles. On the east side of this island is a cove, wherein a fishery is carried on. Between this island and the main, and between it and the island Bois, is a clear, safe passage.

The island of Bois lies 2 miles to the eastward of Green island, and is of a moderate height, and a safe passage all round it. To the northward of this island lies Blanche Sablon, in which is anchorage, but the ground is not very good, being a loose sand.

From the south point of the Isle aux Baus, to the west point of Forteaux bay, the course is N.  $70^{\circ}$  E. distant  $8\frac{1}{2}$  miles. This bay is 3 miles broad, and nearly the same depth, at the head of which, on the west side, is good anchorage, from 10 to 16 fathoms water, but is open to the southward. Off the east point of this bay is a rock, which makes in the form of a shallop under sail, either coming from the eastward or the westward. On the west side of the bay is a fall of water, which may be seen in coming from the eastward.

Wolfe cove, or l'Ance a Loup, lies 1 league to the eastward of Forteaux bay. The land between these bays, being rather low near the shore, at the head of this cove is tolerable good anchorage in 12 fathoms. On the west side lies Schooner cove, in which is very good anchorage for small vessels in 7 fathoms water, sandy bottom. The two points that form the entrance of this cove, bear N. N. E.  $\frac{1}{4}$  E. and S. S. W.  $\frac{1}{4}$  W. distant 2 miles. The east point is high table land, with steep cliffs to the sea, stretching N. E. 2 miles nearly, and called the Red cliffs.

From the Red cliffs to the west point of St. Modeste bay, the course is N.  $38^{\circ}$  E. distant 7 miles, then N. by E.  $\frac{1}{4}$  E. 1 mile to St. Modeste island, which is a small low island, within which small craft may anchor, but is a bad place.

Ship head lies  $1\frac{1}{2}$  mile to the N. by E. from St. Modeste island. Round this head to the northward, is Black bay, in which there is tolerable good anchorage in 10 fathoms water.

From the west end of Red cliffs, to the west point of Red bay, the course is N.  $47^{\circ}$  E. distant 6 leagues. This is an excellent harbour, and may be known by Saddle island, which lies at the entrance of this bay, and is high at each end, and low in the middle, and by a remarkable round hill on the west side of the bay, opposite the west end of Saddle island; the land on the west side the bay is high, and on the east side rather low. At the head of this bay it is high and woody.

There is island, and main, (white a cable's length the northward of Saddle island, a small rocky island. The foregoing on Saddle island. Two leagues tolerable good E. winds. From miles, and from leagues.

At Red bay At Forteaux At Bradore. In all which 7 feet; neap t

### Description of

[N. B. The Bea

Cape Charles moderate height, w

From the north W. N. W. 4 miles is an excellent harbour is very good into it on either

From Cape Charles This course will eastward of the north

From the north distance  $7\frac{1}{2}$  miles age for vessels in the southward of

From the south course is S.  $50^{\circ}$  W. age for small vessels

From the north course is N.  $61^{\circ}$  W. miles; then N.  $58^{\circ}$  W. low land for about woody; at the head fir, juniper, and spruce 4 miles up the river high as Woody island

One mile to the of St. Louis' sound very good anchorage sandy beach on the



There is no danger in sailing into this bay, passing to the westward of Saddle island, and taking care to avoid a small rock that lies near the west point on the main, (which shows above water at a  $\frac{1}{2}$  ebb,) and a shoal which stretches off about a cable's length from the inner side of Saddle island. The Western bay lies in to the northward of the west point, in which is very good anchorage from the westerly winds, but open to the eastward. There is no passage, except for boats, to the eastward of Saddle island. In coming from the eastward, care must be taken to avoid a small rock, which lies 1 mile from the Twin islands (which are two small black rocky islands, lying off the east end of Saddle island) and near 1 mile off shore. The aforementioned high round hill on the west side of the bay, on with the saddle on Saddle island, will carry you on this rock; the sea generally breaks on it.

Two leagues and a half to the eastward of Red bay, lies Green bay, in which is tolerable good anchorage for small vessels, in 12 fathoms water, but open to the S. E. winds. From Saddle island to Barge point, the course is E. N. E. distant 10 miles, and from thence to the entrance of Chateaux bay, is N. E. by E. distant  $5\frac{1}{2}$  leagues.

At Red bay, the tide flows, full and change, at  $\frac{1}{4}$  past 9 o'clock.

At Forteaux bay, at 11 o'clock.

At Bradore, at  $\frac{1}{4}$  past 11 o'clock.

In all which places it flows up and down, or upon a perpendicular; spring tides 7 feet; neap tides, 4 feet.

### *Description of the Coast of Labrador from Cape Charles to Cape Lewis.*

[N. B. The Bearings hereafter mentioned, are the true Bearings, and not by Compass; the variation was  $27^{\circ}$  W. in the year 1770.]

Cape Charles island lies E. distance  $1\frac{1}{2}$  mile from Cape Charles, and is of a moderate height, with several small rocks to the eastward and westward of it.

From the north point of Cape Charles island into Alexis harbour, the course is W. N. W. 4 miles. This island is very small and rather low. Within this island is an excellent harbour, formed by several high islands and the main; in this harbour is very good anchorage from 17 to 22 fathoms water, muddy. You may sail into it on either side of Centre island, but to the northward of it is the best passage.

From Cape Charles island to the Battle islands, the course is N. N. E.  $5\frac{1}{2}$  miles. This course will carry you to the eastward of the rocks, which lie 1 mile to the eastward of the northernmost Battle island. This island is high and round at the top.

From the northernmost Battle island to the River islands, the course is N.  $76^{\circ}$  W. distance  $7\frac{1}{2}$  miles. To the westward of the easternmost River island, is anchorage for vessels in 30 or 35 fathoms water, muddy bottom. Vessels may pass to the southward of these islands, up the river St. Lewis.

From the south point of the easternmost River island to Cutter harbour, the course is S.  $50^{\circ}$  W. distant 1 mile. In this harbour there is tolerable good anchorage for small vessels.

From the northernmost Battle island to the entrance of the river St. Lewis, the course is N.  $61^{\circ}$  W.  $7\frac{1}{2}$  miles; from thence the course up the river is W. by N. 5 miles; then N.  $58^{\circ}$  W. 3 miles to Woody island. (The north point of the river is low land for about 2 miles up, then the land is rather high on both sides, and woody; at the head of the river is very fine wood of different kinds, such as birch, fir, juniper, and spruce; this river seems to be well stored with salmon. At about 4 miles up the river is very good anchorage, and continues so till you come up as high as Woody island; but above this island there are several shoals.

One mile to the northward of the north of St. Lewis' river, lies the entrance of St. Louis' sound, which runs up W. by N. 1 league, at the head of which is very good anchorage, in taking care to avoid a shoal which stretches off from a sandy beach on the larboard side at about 2 miles within the entrance.

From the northernmost Battle island to the entrance of Deer harbour, the course is N.  $51^{\circ}$  W. distance 3 leagues. This is a very good harbour, in which you anchor from 18 to 10 fathoms water, secure from all winds. To sail into this harbour there is not the least danger, and the best anchorage is at the back of Deer island.

From the northernmost Battle island to Cape St. Lewis, the course is N. N. W.  $\frac{1}{2}$  W. 5 miles. This cape is high, ragged land;  $1\frac{1}{2}$  mile to the N. W. of the cape lies Fox harbour, which is but small, and only fit for small vessels, but seems to be very convenient for a fishery.

### *Description of the Coast of Labrador from St. Michael to Spotted Island.*

[N. B. The Bearings hereafter mentioned, are the true Bearings, and not by Compass; the variation was  $32^{\circ}$  W. in the year 1770.]

Cape St. Michael lies in the latitude of  $52^{\circ} 46'$  N. is high land and steep towards the sea, and is to be known by a large bay which forms to the northward of it, having a number of large and small islands in it; the largest of these islands, called Square island, lies in the mouth of the bay, and is 3 miles long, and very high land.

The best anchorage for large vessels in St. Michael's bay, is on the south side; that is, keep Cape St. Michael's shore on board, then keep along the south side of the first island you meet with, which is called Long island, till you come near as far as the west end of it, and there anchor from 12 to 20 fathoms; you will there lay land-locked, and may work out again to sea on either side of Long island.

From Cape St. Michael to the entrance of Square island harbour, the course is N.  $63^{\circ} 30'$  W. distance  $3\frac{1}{2}$  miles; in the entrance lies a small island, of a moderate height; the best passage is to the westward of this island, there being only two fathoms water in the eastern passage.

The N. E. point of Square island is a high round hill, and makes (in coming from the southward) like a separate island, being only joined by a low narrow neck of land, N.  $54^{\circ}$  W. distance 1 league. From this point lies the entrance into Dead island harbour, which is only fit for small vessels, and is formed by a number of islands; there is a passage out to sea between these islands and the land of Cape Bluff.

Cape Bluff lies N. by W. distance 3 miles from Cape St. Michael, and is very high land, ragged at top, and steep towards the sea. These capes form the bay of St. Michael, in which are several arms well stored with wood.

Cape Bluff harbour is a small harbour, fit only for small vessels. To sail into it, keep Cape Bluff shore on board till you come to a small island, and then pass to the westward of it and anchor.

From Cape Bluff to Barren island, the course is N.  $\frac{1}{2}$  E. distance one league. From the south point of this island to Snug harbour, the course is W. distance  $1\frac{1}{2}$  mile. This harbour is small, but in it there is very good anchorage, in 26 fathoms water, and no danger sailing into it.

One mile to the northward of Barren island lies Stony island. On the main within these islands lie Martin and Otter bays, in the northernmost of which is very good anchorage, with plenty of wood, and no danger but what shows itself.

On the west side of Stony island is a very good harbour for small vessels, called Duck harbour. Large vessels may anchor between the west point of Stony island and Double island, in 20 or 24 fathoms water, and may sail out to sea again on either side of Stony island in great safety.

Hawke island lies 1 mile to the northward of Stony island. Within Hawke island lies Hawke bay, which runs to the westward 2 leagues, and then branches into 2 arms, one running to the S. W. 2 leagues, and the other W. 5 miles; these arms are well stored with wood. After you are within Pigeon island, there is very good anchorage quite to the head of both arms.

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On the south side of Hawke island lies Eagle cove, wherein is very good anchorage for large vessels in 30 or 40 fathoms water. Small vessels may anchor at the head in 7 or 8 fathoms.

On the main, within Hawke island, about 5 miles to the N. E. of Hawke bay, lies Caplin bay. Here is very good anchorage in this bay, and plenty of wood at the head.

Partridge bay lies 5 miles to the northward of Hawke island. In it is very good anchorage, but difficult of access, unless acquainted, by reason of a number of small islands and rocks which lie before the mouth of it. The land hereabouts may be easily known. The south point of the bay is a remarkable high table hill, and barren; all the land between this hill and Cape St. Michael being high, the land to the northward of it low.

From Cape St. Michael to Seal islands, the course is N.  $\frac{1}{2}$  E. distance 9 leagues.

From Seal islands to Round hill island, the course is N.  $\frac{3}{4}$  E. distance 13 miles. This island is the easternmost land on this part of the coast, and may be known by a remarkable high round hill on the west part of it.

From Round hill island to Spotted island, the course is N. 36° W. distance 2 leagues. From Spotted island the land tends away to the N. W. and appears to be several large islands.

From Seal islands to White rock, the course is N. by W.  $\frac{1}{2}$  W. distance 2 leagues. From this rock, the course into Shallow bay is S. W. distance 2 miles.

Here is tolerable good anchorage in this bay, and no danger, except a small rock which lies off a cove on the larboard hand, and about  $\frac{1}{2}$  of the bay over; this rock showeth above water, at low water. There is very little wood in this bay.

From White rock to Porcupine island, the course is N. 52° W. distance 2 leagues. This island is high and barren. You may pass on either side of this island into Porcupine bay, where is very good anchorage, but no wood.

Sandy bay lies on the S. E. part of the island of Ponds, and N. W. by N.  $\frac{1}{2}$  W. distance 5 miles from White rock. In it is very good anchorage in 10 fathoms water, sandy bottom, and seems very handy for a fishery, except the want of wood. Between this bay and Spotted island are a great number of islands and rock, which makes this part of the coast dangerous.

## CHAP. XXI.

## ISLE of SABLE, BANKS, and COAST of NOVA SCOTIA.

The southernmost part of Sable Island lies in latitude  $44^{\circ} 0' N.$  the west end lies in longitude  $60^{\circ} 52' 50'' W.$  On the days of the new and full moon, it is high water along the south shore of the island at half an hour after 8 o'clock, and it flows till half an hour past 10 o'clock on the north side, and till near 11 o'clock in the pond. Common spring-tides rise seven feet perpendicular, and neap-tides four. The flood sets in from the S. S. W. at the rate of half a mile an hour, but it alters its course, and increases its velocity, near the ends of the island. At half-flood it streams north, and south at half-ebb with great swiftness, across the north-east and north-west bars; it is therefore dangerous to approach without a commanding breeze. The north-east bar runs out E. N. E. about four leagues from the eastern extremity of the island, all which is very shoal, having in few places more than 2, 3, or 4, fathoms water, whence it continues E. and E. by S. deepening gradually to 12, 15, and 18, fathoms water, at the distance of 8 or 10 leagues, and shapes to the S. and S. E. sloping gently to 60 and 70 fathoms water. To the northward and eastward it is very steep, and, in a run of three miles, the water will deepen to 180 fathoms. Abreast the body of the isle, the soundings are more gradual. The shoal ground of the north-west bar shapes to the westward, and deepens gradually to 70 fathoms water, at the distance of twenty or twenty-five leagues from the isle; and winds easterly and southerly, until it meets the soundings of the north-east bar. The quality of the bottom, in general, is very fine sand, with a few small transparent stones: to the northward, and close to the north-east bar, the sand is mixed with many black specks; but, near the north-west bar, the sand has a greenish colour. The north-east bar breaks in bad weather, at the distance of eight and ten leagues from the island; but, in moderate weather, a ship may cross it, at five leagues distance, with great safety, in no less than 8 or 9 fathoms water; and, if the weather be clear, the island may be seen thence very distinctly from a boat. The north-west bar breaks, in bad weather, at seven, and sometimes eight miles from the island; but, when the sea is smooth, ships may cross it within the distance of four miles, in seven fathoms water.

Along the north and south sides of the island are many spits of sand, nearly parallel with, and within a mile from the shore. Vessels may anchor on the north side of the island, between the spits, and not be liable to be driven off by southerly winds. On the south side, it is the boldest off the body of the island, having 10 or 12 fathoms water, within a mile of the shore; but towards the bar it is more shoal, and dangerous to approach; for the currents, which are uncertain, are, in a great degree, influenced by the winds which have preceded. The surf beats continually on the shore, and, in calm weather, is heard several leagues off. Landing on this island, with boats, is practicable on the north side, after a continuance of good weather only. The whole island is composed of white sand, much coarser than any of the soundings about it, and intermixed with small transparent stones. Its face is very broken, and hove up in little hills, knobs, and cliffs, wildly heaped together, within which are hollows, and ponds of fresh water: the skirts of which abound with cranberries the whole year, and with blueberries, juniper, &c. in their season; as also with ducks, snipes, and other birds. This sandy island affords great plenty of beach-grass, wild peas, and other herb-  
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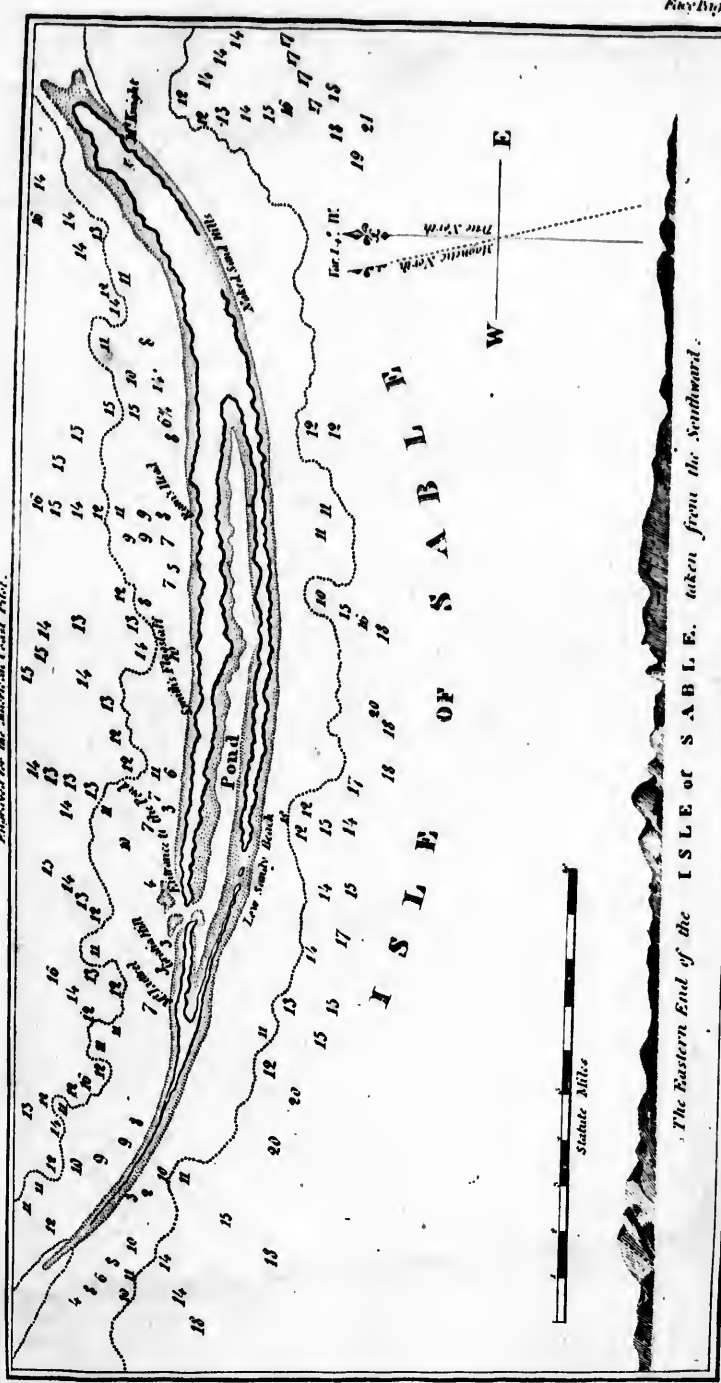


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Prepared for the American Coast Pilot.



Key Map

New York Published by Edmund & George W. Blount.  
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It grows no trees; but abundance of wreck and drift-wood may be picked up along shore for fuel. Strong northerly winds shift the spits of sand, and often even choak up the entrance of the pond, which usually opens again by the next southern blast. In this pond are prodigious numbers of seals, and some flat-fish, eels, &c. and, on the south-west side, lies a bed of remarkably large muscles and clams. The south shore is, between the cliffs, so low, that the sea breaks quite over in many places, when the wind blows on the island. The Ram's Head is the highest hill on this island; it has a steep cliff on the north-west, and falls gently to the south-east. The naked Sand-hills are 146 feet in perpendicular height, above the level of high-water mark, and always appear very white. Mount Knight is in the shape of a pyramid, situate in a hollow, between two steep cliffs. Mount Luttrell is a remarkable hummock on the top of a large swelling in the land. Gratia Hill is a knob at the top of a cliff, the height of which is 126 feet perpendicular, above high-water mark. The Vale of Misery is also remarkable, as is Smith's Flag-Staff, a large hill, with a regular ascent every way. From the offing, the south side of the island appears like a long ridge of sandy cliffs, lessening towards the west end, which is very low.

The *Nova Scotia Banks* extend nearly seventy leagues, in a westerly direction. From the Isle of Sable, they are from twenty to twenty-five leagues wide, and their inner edges are from fourteen to eighteen leagues off shore. They are intersected by narrow winding channels, (the bottom of which is mud,) running N. W. and S. E. Between these banks and the shore, are several small inner banks, with deep water and muddy bottom. The water deepens regularly from the Isle of Sable, to the distance of 22 leagues, in 50 fathoms, fine gravel; thence proceeding westward, the gravel becomes coarser: continuing westward to the western extremity of the banks, the soundings are rocky, and shoalen to 18 and 15 fathoms water. Cape Sable bearing N. by W. distant fifteen leagues.

The south-west extremity of Banquereau, or Bank Quere, lies seventeen leagues E. N. E.  $\frac{1}{2}$  E. from the east end of the Isle of Sable. This bank extends E. by N. thirty-five leagues, and is near eight leagues in width; its shoalest part is about five leagues from its eastern extremity, in 16 and 18 fathoms water, slimy sand and clams: whence it deepens regularly every way to 60 and 70 fathoms, towards the edges of the bank.

This bank is steep-to; and, from its soundings on the north side, you fall immediately into 90 and 100 fathoms water, black mud; and, on the south side, into 120 fathoms.

About the year 1800, the legislature of Nova Scotia passed a liberal vote of money for the purpose of commencing an establishment on Sable Island, in order to prevent shipwreck, and to protect all persons and property which might happen to be cast ashore. Commissioners were consequently appointed for executing this important trust, and a superintendant to reside on the island, empowered as a justice of peace, surveyor and searcher of impost and excise, and authorised by a warrant to take charge of the island, shores, and fisheries, and of all wrecks found there, in cases where persons are not saved competent to the care of such property. Instructions were given to him, that persons saved with property are to have the full care, charge, and possession, of it, and be allowed to export it in any manner they may think proper. Every aid and assistance to be afforded, and receipt given specifying the property saved, the aid received, and referring the salvage or reward to be ascertained by the commissioners at Halifax; but neither fee or reward is to be taken, or property disposed of, upon the island. There were, also, ordered four able men and proper boats, with materials completely fitted to erect a house and good store. Also cattle, sheep, goats, and poultry, with clothing, provisions, &c. A gun is placed on the island, to answer such as may be heard from vessels at sea. Signals were to be hoisted on the island, and buildings have been erected particularly on the west side. The greatest care has been taken to extend aid as much as possible, to prevent misfortune, and to relieve it; to secure property from loss, and from extortion for saving it, by referring it, in all cases, to the commissioners in Halifax, from whose respectability we are assured that equity and charity will be united in directing and deciding. The superintendant and boatmen are paid and subsisted, and all

necessaries furnished by government, that no claims or demands may be made by them upon the unfortunate. But, as extraordinary risk, enterprise, and exertion, in so good a cause, deserve recompense, such cases are to be exactly stated to the commissioners, who are to adjust the measure and mode of extra reward to be allowed and paid.

It may be observed, generally, that the soundings all along the Nova Scotia Coast, between Cape Canso on the E. N. E. and Cape Sable to the W. S. W. are very irregular, from 25 to 40 and 50 fathoms. In foggy weather do not stand nearer in shore than 35 fathoms, lest you fall upon some of the ledges. By no means make too bold with the shore in such weather unless you are sure of the part of the coast you are on; for you may, otherwise, when bound for Halifax, fall unexpectedly into Mahone or Mecklenburgh Bay, and thus be caught with a S. E. wind.

The weather on the coast is frequently foggy in the spring and some part of the summer; in particular at the distance of four and five leagues from the shore. On approaching nearer, the weather is found more clear; and, with the wind from the land, it is perfectly clear and pleasant.

M. des Barres says, "Here the tide runs at the rate of three and sometimes four knots: and when the wind blows fresh, a rippling extends from the breakers southerly, to the distance of nearly three leagues, and shifts its direction with the tide; with the flood it is more westerly, and inclines to the eastward with the ebb."

On the days of the new and full moon, it is high water along the south shore of the island at half an hour after 8 o'clock; and it flows till half an hour past 10 o'clock on the north side, and till near 11 o'clock in the pond; common spring-tides rise 7 feet perpendicular, and neap-tides 4. The flood sets in from the S. S. W. at the rate of half a mile an hour; but it alters its course, and increases its velocity near the ends of the island: at half flood it streams north, and south at half ebb, with great swiftness across the north-east and north-west bars, therefore dangerous to approach without a commanding breeze. The north-east bar runs out E. N. E. about four leagues from the eastern extremity of the island, all which is very shoal, having in few places more than 2, 3, or 4 fathoms; whence it continues east and E. by S. deepening gradually to 12, 15 and 18 fathoms at the distance of eight or ten leagues, and shapes to the south and south-east, sloping gently to 60 and 70 fathoms. To the northward and eastward it is very steep; and in a run of three miles, the water will deepen to 130 fathoms. Abreast the body of the isle the soundings are more gradual. The shoal ground of the north-west bar, shapes to the westward, and deepens gradually to 70 fathoms, at the distance of twenty or twenty-five leagues from the isle. and winds easterly and southerly until it meets the soundings of the north-east bar. The quality of the bottom in general, is very fine sand, with a few small transparent stones; to the northward, and close to the north-east bar, the sand is mixed with many black specks; but near the north-west bar, the sand has a greenish colour. The north-east bar breaks in bad weather, at the distance of eight and ten leagues from the island, but in moderate weather, a ship may cross it at five leagues distance with great safety, in no less than 8 or 9 fathoms; and if the weather is clear, the island may be seen thence very distinctly from a boat. The north-west bar breaks in bad weather at seven and sometimes eight miles from the island; but when the sea is smooth, ships may cross it, within the distance of four miles, in seven fathoms. At Cape Sable the tide, on full and change, flows at 8 o'clock, and rises 9 feet.

### HALIFAX HARBOUR and the Coast thence westward, to CAPE SABLE.

The land about the harbour of Halifax, and a little to the southward of it is in appearance, rugged and rocky, and has on it, in several places, scrubby withered wood; although it seems bold, yet it is not high, being to be seen, from

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the quarter deck of a 74 gun ship, at the distance of no more than seven leagues; excepting however the high lands of *Le Have* and *Aspotogon* westward of Halifax, which are to be seen nine leagues off. The first, which is twelve leagues W. S. W. from Cape Sambro, appears over Cape Le Have, and like little round hills of unequal height. Aspotogon, when bearing N. W. by N. appears directly over Margaret's Bay, five and a half leagues westward from Cape Sambro; it is rather a long high land, nearly level at the top, and rising above the land near it. When bearing north distant between five and six leagues, Sambro' light-house will bear E. N. E. distant seven leagues.

The light-house is on Sambro' Island, and is remarkable. It has seven lamps, and the lantern is elevated on a high tower on that island 210 feet above the level of the sea, built at a little distance to the S. W. from Chebucto Head on the S. W. side of the entrance into Halifax harbour, Chebucto Head has a remarkably rocky and barren appearance. Halifax lies 8 miles above the Head.

There are two other light-houses on the coast westward of that of Sambro; the first is on Coffin's Island, at the entrance of Liverpool Bay; the second is on Cape Roseway, at the entrance of Shelburne harbour. Of these, one may be distinguished from the other by noticing that the lantern of Sambro light-house, exhibiting a *fixed light*, is elevated 210 feet above the level of the sea; the light on Coffin's island is only 75 feet in height; the light is *revolving*, and appears full at intervals of two minutes; the light-house on Cape Roseway exhibits two lights, there being a small light at about one-third from the top of the building. The latter stands at about thirty leagues to the W. S. W. from the light-house of Sambro.

**HALIFAX HARBOUR.**—This harbour, the centre of the trade of Nova Scotia, is ten miles in length, nearly north and south. Its upper part called Bedford Basin, is a beautiful sheet of water, containing about eight square miles of good anchorage.

On the eastern side of the entrance is the cultivated island now called Mac Nab's, formerly Cornwallis Island. Above this, and nearly in the centre of the harbour, is an islet, called George's Island. The latter, which has a town on it, is fortified, and protects the city of Halifax.

On a spit of gravel, called Manger's Beach, extending towards Point Sandwich from Mac Nab's island, is a tower, called Sherbrooke Tower. Near this, a small light-house, built in 1818, is intended to direct ships into the harbour, clear of the shoals hereafter described.

Northward of Manger's Beach, in the cove now called Mac Nab's Cove, is good anchorage, in from 9 to 4 fathoms, mud. The best spot is in 7 fathoms, with the beach and point Sandwich in a line, and the tower on George's Island touching the N. W. part of Mac Nab's island. The promontory called Chebucto Head, 8 miles below Halifax, bounds the entrance of the harbour, on the west. At  $3\frac{1}{2}$  miles above this Head, on the western side, is a singular indent, called Herring Cove, occupied by about forty Irish families, who subsist by fishing and piloting. Small vessels here lie perfectly sheltered in shoal water. The coast between this and Chebucto Head is wholly of rock.

The village of Dartmouth, opposite to Halifax, is thickly settled; but the lands behind it are in a very improving state.

Within, and about 2 miles from the light-house, there are several dangers, generally known under the name of the Eastern and Western Ledges. Of these the westernmost is the Bull, a rock above water, which lies about two-thirds of a mile S. E. by E. from Pendant point, with the light-house bearing E.  $70^{\circ}$  S.

To the south-eastward of the Bull, at the distance of a mile, lies the ledge called the Horses, with the light-house bearing E. by N.  $1\frac{1}{2}$  mile distant.

The S. W. rock or ledge lies with the light-house N. E.  $1\frac{1}{2}$  mile.

The Henery Rock, with 8 feet water over it, lies with the light-house N. by W. 2 miles. To the E. N. E. at a mile from this, is another, the Lockwood, of 12 feet. Both are of course exceedingly dangerous to those approaching within a short distance. The Sisters, or Black Rocks, commonly called the Eastern Ledge, lie to the E. by S. from the light-house, Chebucto head N. by E. will clear them to the eastward.

Besides the rocks above described, the Bell, a rock of 18 feet, lies at a quarter of a mile from shore, with the extremity of Chebucto Head N. by E.  $\frac{1}{2}$  E. (north, true) three-quarters of a mile.

Within the line of Chebucto Head, and Devil's Island, are several rocks and ledges, but the situation of each is marked by a buoy.

Of these the first is Rock Head, which lies with Chebucto Head S. W. by W.  $2\frac{1}{2}$  miles, and Devil's island N. E.  $\frac{1}{4}$  E.  $2\frac{1}{2}$  miles.

The second is the Thrum Cap, a reef which extends from the south end of Mac Nab's island, and which occasioned the melancholy loss of the Tribune frigate with 250 men, on proceeding for the harbour from the eastward. The thwart-mark to clear it is the easternmost land kept in sight from the deck, a ship's length clear to the southward of Devil's island, and bearing about E. N. E. or E. by N. when steering west or W. by S. according to the distance of the ship from the island.

The Lichfield Rock which lies towards the western side, has only 16 feet water over it at low water. The marks for it are George's island open to the eastward of Point Sandwich, and the passage between the Devil's island and main open, bearing E. N. E.

Above the Lichfield Rock, on the same side, at a mile above it, is the rock called Mar's Rock. It lies with point Sandwich bearing north, half a mile, and nearly in a line with it, and the west side of George's island.

A reef called the Horse-Shoe, extends from Mauger's beach, on the west side of Mac Nab's island. It is dangerous, and must be carefully avoided.

Half-way between Mauger's beach and George's island, on the opposite side, is a shoal, extending to the S. E. from point Pleasant, nearly one-third of the channel over, but having a buoy on its extremity. The thwart-mark for the buoy is a little islet, (on the west shore at the entrance of N. W. arm) with a remarkable stone upon the hill, appearing like a coach-box, and bearing W. S. W.

Between Mauger's beach and point Pleasant shoal is a middle ground of 4 and 5 fathoms, distinguished by a buoy. This middle ground extends north and south a cable's length, and is about 30 fathoms broad; as you fall off to the eastward of it, there may be found from 7 to 13 fathoms, muddy bottom. On the west side are from 10 to 14 fathoms, coarse and rocky bottom.

Reid's Rock, having 12 feet over it, lies inshore, about half-way between point Pleasant and the south part of Halifax. The thwart-mark for it is, a farm-house in the wood over a black rock on the shore, bearing W. by S. Opposite to Reid's rock is a buoy on the spit extending from the N. W. end of Mac Nab's island.

*Directions for the Harbour.*—On approaching the Harbour of Halifax from the westward, advance to the eastward so as to pass the light-house at the distance of a league; taking care not to approach too near to the Henercy or Lockwood rocks, already described.

When the light bears N. W. by N. haul in N. by W. then bring the flag-staffs on Citadel Hill open of point Sandwich; and by keeping them thus open, you will pass clear of the Lichfield and Mar's rocks on the west, as well as of the Rock Head and Thrum Cap on the east. When nearly up to Sandwich point, which is bold-to, keep Chebucto Head well in sight, without that point; and this direction kept on, will lead in the fair way up to George's island, leaving point Pleasant shoals on the left, and the Horse-Shoe, or shoal of Mac Nab's island on the right.

George's island may be passed on either side, and you may choose your anchorage at pleasure, in from 13 to 6 fathoms, muddy bottom. From George's island to the head of Bedford basin there is no obstruction to shipping.

Ships of war usually anchor off the naval yard, which may be distinguished at a distance by the masting sheers. Merchant vessels discharge and take in their cargoes at the town wharfs.

Small vessels from the eastward, occasionally proceed to Halifax by the S. E. passage within Mac Nab's island. On the shoalest part of the bar of sand, which obstructs this passage, there is, however, but 8 feet at low water. Above the bar the depth increases to 5 and 10 fathoms, bottom of mud.

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The following are the directions for sailing into the harbour, as given by Mr. Backhouse, in his Pilot for Nova Scotia, &c. 1798.

*If sailing into Halifax Harbour from the westward, with a westerly wind by night:*—When you have made the light-house, at the distance of about two or three leagues, first steer E. N. E. or E. by N. until you are sure of being to the eastward of the extremity of the S. W. ledges, which bears from the light-house S. W. two miles distant. When past the S. W. ledges, steer E. N. E. and, as already described, to clear the other dangers. Then haul up north or N. by E. (according to the wind) for Chebucto Head, which is bold within half a mile from the shore, taking care to avoid the Bell Rock. Run in, steering north, along the west shore, and directly for Sandwich point, which is bold-to; and thus you will pass to the eastward of the Lichfield rock. When abreast of Sandwich point, and approaching the fort (York Redoubt) on the same side, calculate your distance equally, from either side, and keep in mid-way between the point and Mauger's beach, in order to avoid the Horse-Shoe that stretches from the beach. When past the Horse-Shoe, edge over towards Cornwallis (now Mac Nab's) island, keeping in mid-channel between the island and point Pleasant shoals, on which is a buoy, as above-mentioned. When past the spit that lies to the north of Mac Nab's island, steer north for George's island, of which you may go on either side, and run up to abreast of the town of Halifax, about the distance of two cable's length to the eastward of the mooring buoys, and come to anchor in 9 or 10 fathoms, muddy bottom, or so near to the wharfs that your hawser will reach the shore.

On entering the harbour from the eastward, especially with an easterly wind, particular caution must be taken to avoid the Thrum Cap and Rock Head. In proceeding this way steer west, W. N. W. or N. W. according to the wind and your distance from the shoals, until George's island up the harbour, is open a sail's breadth to the westward of Mac Nab's island; then haul up for Sandwich point and the fort, (York Redoubt) until you see the steeple of St. Paul's church in Halifax, a ship's length open to the eastward of Judge Brenton's house, a remarkable one, fronting the south. This mark, kept on, will lead clear of point Pleasant shoals, and in a fair way between Mauger's beach and Sandwich point; whence you may steer directly for George's island, and pass in on the east side, if the wind will permit.

In turning to windward give the upper or inner part of Mauger's beach a birth of one cable's length, in order to avoid the Horse-Shoe Split, that runs from the north part of the beach to the distance of one cable and a half's length. You may stand to the Sandwich point side to within two ship's length, that being bold-to; but stand no farther over to the westward, to avoid point Pleasant shoals, than keeping St. Paul's church open to the eastward of Judge Brenton's house on the south shore, as above-mentioned.

When arrived thus far, put in stays; and standing to the eastward, keep Little Thrum Cap island, (now Carrol's) a red bluff, open of Mac Nab's island; having this mark on, put in stays again, and you will thus go clear of the N. W. split of Mac Nab's island.

**CATCH HARBOUR.**—The little harbour, or cove, called Catch Harbour, which lies to the westward of Chebucto Head, has a bar across the entrance, having nine feet over it at low water, with breakers when the wind blows on the shore. Within it are 3 and 3½ fathoms.

The variation of the compass in Halifax harbour, as observed by Mr. Backhouse, was 16° 30' W. in 1798. It has lately been stated to exceed 17 degrees.

**VARIATIONS OF THE COMPASS.**—In the year 1775, the variations were given by M. des Barres, as follow: North entrance of the Gut of Canso 16° 0' W.: Crow Harbour, Chedabucto Bay, 14° 50' W.: Entrance of Liscomb Harbour, 14°: Sable Island, 13° 57': Halifax light-house, 13° 35': Entrance of Shelburne, 13° 50': Cape Sable, 11° 15'. In 1798, Mr. Backhouse of the navy, found the variation at Halifax to exceed 16 degrees; an addition of 2½ degrees to the preceding may therefore give the present variation very near the truth. Mr. Lockwood gives the variation at Halifax 17° 28' and at Cape Sable 14° 27'; but it seems that the needle is now receding. At St. John's, New-Brunswick the present variation is about 16 degrees.

*General remarks on the Coast westward.*

From Halifax westward to Margaret's Bay, the country appears from the offing, very rocky and broken; the shore is steep-to; and bounded with white rocky cliffs. The high lands of Aspotogon, on the eastern side of Mahone, or Mecklenburg Bay, are very remarkable; whence proceeding westward, the rocks which surround the shore are black, with some banks of red earth. Between Cape Le Have (which is a remarkable promontory, bald on the top, with a red bank under it, facing the south-westward,) and Port Medway, or Jackson, there are some hummocks within land, about which the country appears low and level from the sea; and on the shore, white rocks and stony beaches, with several low bald points; hence to Shelburne harbour the land is woody. About the entrance of Port Latour, and within land, are several barren spots, which from the offing, are easily discerned; thence to Cape Sable the land appears level and low, and on the shore are some cliffs of exceedingly white sand, particularly in the entrance of Port Latour, and on Cape Sable, where they are very conspicuous from sea.

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*Magnetic Bearings and distances of places between Halifax and Cape Sable, &c.*

From Sambro light-house to Cape Sable, the S. W. end of Nova Scotia, W. S. W.  $\frac{1}{4}$  W. thirty-six leagues. From Henery Rock to Cross Island, at the entrance of Lunenburg Harbour, W. by N. eight and a half leagues. From Sambro light-house, to the rock of Le Have which is dry at low water, W. S. W. and W. by S. twelve leagues. From Le Have Rock to the entrance of Liverpool Harbour, W. S. W. five and a half leagues.

From abreast of Liverpool Bay to Hope Island, a little low flat isle, full of stones, S. W.  $\frac{1}{4}$  W. four and a half leagues.

From Hope Island to the eastern ledges of Rugged Island Rocks, W. S. W. six leagues.

From the Rugged Island Rocks to abreast of Cape Roseway, or Shelburne light-house, W.  $\frac{1}{4}$  N. seven miles.

From Shelburne light-house to abreast of Cape Negro, S. W.  $\frac{1}{4}$  S. two and a half leagues.

From Cape Negro to the Brazil Rock, S. W.  $\frac{1}{4}$  S. ten miles.

From the Rugged Island Rocks to the Brazil Rock, S. W. by W. seven leagues.

From the Brazil Rock to the Blonde or Seal Island Rock, W. by N.  $\frac{1}{4}$  N. eight and a quarter leagues.

From the Brazil Rock to Cape Negro, N. E.  $\frac{1}{4}$  N. ten miles.

From the Blonde or Seal Island Rock to the Lurcher Rock, N. by W.  $\frac{1}{4}$  W. twelve and a half leagues.

**DESCRIPTION and DIRECTIONS.**

**SAMBRO HARBOUR.**—The Harbour of Sambro, which has about thirty families on its borders, lies at one mile and three quarters to the N. N. W. of the light-house island. Off its entrance is the Bull Rock, already noticed, and there are two other rocks between the latter and Sambro Island. The best channel into it, is therefore between Pendant Point and the Bull Rock; but vessels from the eastward may run up between Sambro Island and the Inner Rock. Within the entrance is an islet, called the Isle of Man, which is to be left when sailing inward, on the left or larboard hand. The anchorage is above this islet, in 3 fathoms muddy bottom. This is a place of safety for, and much resorted to, by coasters in bad weather.

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**PENDANT HARBOUR**, the next to the westward of Sambro, has good anchoring ground. The islands on the west side of it are bold-to, and the ground is likewise good. The depths are from 10 to 5 fathoms.

**BRISTOL BAY**, between Pendant and Shuldham Harbours, is about three miles in breadth; vessels proceeding hence for the anchorage in Shuldham Harbour, should bring Point Mackworth, on the western side, to bear north, and they may thus sail in between the rocks on either side. The tide flows here, on the full change days, at VII<sup>h</sup>. and rises about eight feet.

**PROSPECT HARBOUR**.—This harbour lies about three miles to the N. W. from Cape Prospect, on the west side of Bristol Bay, and its entrance is formed by a cluster of islands; hence the appearance is rugged; but the harbour is extensive and safe; and in rough weather, the dangers in the vicinity show themselves. The inhabitants are settled on the left, or western side, and subsist by the fishery. Two small islands, on that side, form a little cove, and on these are the stages. The entrance is between an islet, called Hobson's Nose, on the east, and a rock, named Dorman Rock on the west. There is a breaker, with 3 fathoms over it, at the distance of two cable's length to the east of the latter. Within the harbour there is good anchorage for the largest ships; and for smaller vessels, in 4 fathoms, where the bottom is of stiff blue clay.

In the indent, named **LEITH HARBOUR**, two and a half miles to the westward of Prospect Harbour, are the inlets called Shag Bay and Blind Bay, in both of which excellent anchorage may be found. In the entrance lies the Hog, a sunken rock, having only six feet water over it. This rock bears E. S. E. nearly one and a half mile from the isle called Inch-keith. In rough weather, with the wind on-shore, the sea breaks over it; and, in fair weather, it may be perceived by the rippling of the tide. There is a good channel on either side; that on the west side is most difficult, there being a ledge extending half a mile towards it, E. S. E. from the eastern extremity of Inch-keith.

The **PORT OF DOVER** lies on the western side of the entrance to Blind Bay. It is formed by the Island called Inch-keith, and several other islands. The best passage in is to the eastward of these, giving them a moderate birth. The anchorage is within the body of Inch-keith in 10, 9 or 7 fathoms; bottom of mud. In sailing in, give a birth to the reef, which extends E. S. E. half a mile from Inch-keith.

Between the harbour of Halifax and this place, the coasts are craggy, broken, and barren: the shore iron-bound and steep, and a tree is scarcely to be seen. Fish however, are abundant, and the harbours most conveniently situated for the fishery.

**MARGARET'S BAY**.—M. des Barres says "the southernmost point of Holderness Island, which is the south-west point of the entrance of Margaret's Bay, lies in latitude  $44^{\circ} 34' 25''$  and longitude  $63^{\circ} 55' 30''$ . In this bay are several harbours, fit to receive first-rate ships. The high lands of Aspotogon are very remarkable at a considerable distance; in the offing, the shores at the entrance are high white rocks, and steep-to: off the west side coming in, you perceive the Dog, (a ledge almost covered and surrounded with breakers) which lies S. by E.  $30^{\circ}$  E. true, (or South by compass) nearly a mile and a half distant from the south end of Holderness Island, and west  $80^{\circ}$  south true, (or W. by N. by compass) from the southernmost point of Inch-keith. You have good channels on both sides of this small island which shelters the S. W. harbour.

"In Fitzroy River, ships may lie land-locked, in 5 or 6 fathoms. When sailing into it, you must carefully avoid the danger called Black Ledge, which lies about S. W. by W. 500 fathoms from Warren Head, and appears at all times of the tide. It has deep water close to it. In Delaware River and Conway Cove, the largest ships may also ride in perfect safety. When sailing into the latter, keep nearest to the starboard side of the entrance. On the eastern side of the bay, within Hertford Basin, there are from 8 to 10 fathoms. There is commodious shelter within Mecklenburg Isle, and farther up, within the Strelitz Isles, there is likewise good anchorage."

Mr. Lockwood says, "Margaret's Bay is about twenty-five miles in circumference, in length nine, and two miles wide at the entrance. In this beautiful

sheet of water, are harbours capable of receiving ships of the line, even against the sides of the shore."

A sunken rock lies off the outer point of the bay (May Point,) on the eastern side, at the distance of three hundred yards. At two miles within the same point, in the northward, is an islet two hundred and eight feet high, called Sheet-in Island, covered with wood, and bold-to. The point next to this is Patty's Point, and there is a ledge between of nine feet water. At a mile above Patty's Point is Luke's Island, (Mecklenburg) forming a complete break to the sea, and used as a sheep-fold. There is good anchorage on the N. E. of it, smooth in all seasons; and this is, therefore, a useful place of shelter.

**HEAD HARBOUR** (or Delaware River) is an anchorage of the first class, and so perfect a place of safety, that a fleet may be moored in it, side by side, and be unaffected even by a hurricane. The lands are high and broken.

**HUBERT'S COVE**, (Fitzroy River,) in the N. W. corner of the bay, may be entered by a stranger, by keeping the western shore on board; and a ship dismasted or in distress may here find perfect shelter. If without anchors, she may safely run aground, and will be assisted by the settlers.

At the entrance of the cove, towards the eastern side, is a ridge of rocks, called Hubert's Ledge (Black Ledge;) this is about 100 fathoms in extent, covered at high water. It may be passed on either side, keeping the land on board, the shores being bold.

Between Hubert's Cove and Head Harbour are several indents, with projecting rugged points. From these places small vessels take building sand and limestone, the latter being of a superior quality.

**LONG COVE**, (Egremont Cove) two and a half miles to the southward of Hubert's Cove, on the western side of the bay, is a good anchorage with a westerly wind. An excellent stream on which is a saw-mill falls into this place. Hence southward, the coast is bold and rugged; but there is no danger, excepting one small rock of six feet water close in-shore.

The South-west Isle (Holderness Isle) is a body of rock, about fifty feet in height, bold-to on all sides. At a mile from this isle, is a little harbour, called South-west Harbour, having an islet before it that forms a convenient shelter for small vessels. Several families are settled here.

About five miles S.  $\frac{1}{2}$  W. from the point of land which separates Margaret's and Mahone Bays, lies *Green Island*. It is small, and lies seven leagues W. N. W.  $\frac{1}{4}$  W. from abreast of Sambro light-house, in latitude  $44^{\circ} 27' 35''$ ; and longitude  $65^{\circ} 58' 30''$ .

**MAHONE BAY** is divided from Margaret's Bay by the peninsula, on which stand the highlands of Aspotogan, whose appearance in three regular swellings, is very remarkable at a great distance in the offing. Between the many islands in this bay, are several good channels, leading up into fine harbours.

The outer breaker lies N. E.  $\frac{1}{4}$  E. one mile and two-thirds distant from the S. E. end of Duck Island, and W.  $\frac{1}{4}$  N. three and a quarter miles distant from the N. W. point of Green Island; from this, about two and three quarter miles N. by W. lies the *Bull* (a blind rock, visible at one-third ebb) bearing W. by S. 1200 fathoms distant, from the S. W. end of Flat Island, and S. by E. above two miles distant, from the west point of Tancook Island. Farther up, N. W. by W. 400 fathoms distant, from the west point of Tancook Island, lies Rocky Shoal; within which and Tancook Island, is deep water. The Coachman is a blind ledge, visible at low water only. The east end of Tancook and Flat Islands in one, will lead you clear on the east side of it. The west end of Iron-bound Island, open with the west point of Little Tancook Island, will clear you on the south side; and Governor's Island on with the west point, carries you safe on its north side.

At the head of the bay is the town of *Chester* which was settled in 1760, and is surrounded by a country of fine appearance, and abounding in wood. On approaching the bay from the eastward, the first land seen will be Green Island, which is round, bold and moderately high. Hence to Iron-bound and Flat Islands, the distance is about two and three quarters miles; passing these, which are bold-to, you proceed to and between the Tancook Islands, which are inhabited; the passage is good, and anchorage under the isles, in from 12 to 7 fathoms.

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On proceeding towards Chester, the only danger, is the ledge called the Coachman, before mentioned. The islands off the town render the harbour smooth and secure, the depth in which is from 5 to 2 fathoms.

Chester church open, on the west of Great Tancook, leads clear to the westward of the Bull Rock, and down to Duck Island.

**LUNENBURG HARBOUR.**—This is a place of considerable trade, and its population in 1817, amounted to 4,200 persons. Vessels are constantly plying between Lunenburg and Halifax, carrying to the latter chord-wood, lumber, hay, cattle, stock, and all kinds of vegetables. The harbour is easy of access, with anchorage to its head.

To sail in, you may pass on either side of Cross island, but the channel on the west side of the island is best. In sailing through the northern channel, be careful to avoid the shoals which extend from the north side of the island, and from Colesworth point on the opposite side. In sailing in, through the channel to the westward of the island, steer in a midway between it and point Rose; and before you approach Ovens' point, give it a birth of two or three cable's length; for, from Ovens' point to the S. E. runs off a spit, to which you must not approach nearer than 7 fathoms. From Ovens' point N. E. three-quarters of a mile distant, lies the Cat Rock, dry at low water. Your leading-mark between Ovens' point and the Cat Rock is, a waggon road-way (above the town of Lunenburg) open to the westward of Battery point, which mark will keep you clear of a rock of 4 fathoms at low water. The best anchoring ground is on the west shore, opposite the middle farm-house, in 7 fathoms, muddy bottom. Your course in, is from N. N. W. to N. W. by N. In this bay, with good ground-tackling, you may ride out a S. E. gale very safely. The harbour, which is to the northward of the Long Rock and Battery point, is fit only for small ships of war and merchant vessels. Along the wharfs are 12 and 13 feet of water; and, at a short distance, from 20 to 24 feet, soft mud.

The latitude of Cross island, according to the observations made by Mr. Backhouse, is  $44^{\circ} 20'$ . M. des Barres gives it as  $44^{\circ} 23' 25''$ , in longitude  $64^{\circ} 5' 10''$ . This island is in a state of cultivation, and on the N. E. is a small nook, in which coasters may lie securely. The west and south sides of the island are bold; and, at two miles from the south side, is an excellent fishing-bank, having over it from 14 to 17 fathoms.

**CAPE LE HAVE**, at the distance of 12 leagues W.  $\frac{3}{4}$  S. from Sambro' light-house, is an abrupt cliff, 107 feet high. At one mile S. E. by S. from this cape lies the Black Rock, 10 feet high and 100 long, with deep water around it, 10 to 14 fathoms. From this cape, westward to Cape Medway, the land which is broken and craggy, forms a deep bight. Within Cape Le Have is Palmerstone bay; at the head of this is Petit Reviere, a settlement formed by the French, and the farms of which are in fine condition.

**PORT MEDWAY.**—Admiralty Head, at the entrance of this port, lies in latitude  $44^{\circ} 10' 30''$ , and longitude  $64^{\circ} 29'$ . The entrance may be known by a hill on the head, and the low rugged islands on the eastern side. It is seven-eighths of a mile broad, and has a depth of 14 to 5 fathoms.

The land to the eastward of the harbour is remarkably broken and hilly. The outer breaker on the starboard side, without the entrance, lies S.  $\frac{1}{4}$  W. above a mile and a half from the isle called Glover's Isle, and S. E.  $\frac{1}{4}$  S. about a mile and three-quarters from Admiralty Point. The Stone-Horse, a rock dry at low water, lies E. by S. one-third of a mile from the S. W. breaker.

The course up the harbour is N. N. E. and when Collin's Isle (on the west shore) bears west, and Alicia River is just opening of Point Lucy, you may steer up N. W. by N. to anchor, keeping nearest to the eastern shore. To run up Alicia River, you must pass between Grass Isle and Point Lucy, keeping close to the southern and western shores, in order to avoid a flat which extends from the northward, leaving a deep but narrow channel. Barry Branch is full of rocky shoals.

**LIVERPOOL BAY.**—Bald Point, on the S. W. of the entrance of Liverpool Bay, lies in latitude  $44^{\circ} 4'$ , and longitude  $64^{\circ} 37'$ .

This bay has room sufficient for turning to windward. The deepest water is



on the western shore. Bald Point, at the entrance, is bold-to, and is remarkable, having no trees on it. The cove on the north-east side of the bay, affords good shelter from sea-winds, in 3 fathoms, muddy bottom. At high water vessels of two and three hundred tons may run up over the bar into the harbour; but at low water there are only 10 feet over it. The channel within, winds with the southern shore, and the settlements of Liverpool upwards.

The entrance bears W. by S. 17½ leagues from Sambro light-house, and W. S. W. ¼ W. 18 miles from Cape Le Have. Coffin's Island, which lies without it, is distinguished by the light-house, already noticed, on page 623, and which exhibits a light revolving every two minutes. The land in the vicinity of the harbour is generally rocky and barren, yet the commercial spirit of the people have raised the town to respectability and opulence, and they trade to every part of the West Indies. The population is estimated at 1200 persons.

**PORT MOUTON**, or Matoon, is formed by an island of the same name, which lies at the entrance, and, therefore, forms two channels, of the latter, that on the western side of the island is so impeded by islets and shoals, as to leave a small passage only for small vessels, and that close to the main. At a mile from the island, on the east, is a ridge called Portsmouth or Black Rocks; and from the N. W. end of the island, a shoal extends to the distance of more than a mile. Within Matoon Island, on the W. N. W. are two islands called the Spectacles, or Saddle. M. des Barres says, "On both sides of the Portsmouth Rocks, which are always above water, you have deep channels, and of a sufficient width for ships to turn into the harbour." With a leading wind you may steer up N. N. W. ¾ W. (N. W. true) until you bring the Saddle to bear S. W. ¼ W. (S. W. by S. true) and haul up S. W. by W. to the anchoring ground, where there will be found from 20 to 12 fathoms, muddy bottom, in security from all winds.

At five miles S. S. W. ¼ W. from the south end of Mouton Island lies an islet, surrounded by a shoal, named Little Hope Island. It is very low, and only 200 fathoms in length at two and a half miles from the shore. A valuable ship was lost here, in 1815; and Mr. Lockwood has recommended the erection of an obelisk, or beacon, upon the isle, which would be of great advantage to the coasters, and to all who approach the coast.

The next harbour, west of Little Hope Isle, is Fort Jolly, which extends five miles inland, but is altogether very shoal. The lands here are stony and barren, but eleven families are maintained by fishing. Between this harbour and Hope Isle are several ledges, which show themselves, and there is a shoal spot nearly midway between the isle and the main.

**PORT HEBERT**, or Great Port Jolly, may be distinguished by the steep head on the west. Its eastern point, Point Hebert, lies in latitude  $43^{\circ} 51' 10''$ , and longitude  $64^{\circ} 51' 20''$ . At half a league to the S. W. without the entrance, is an islet, called Green Island, which is remarkable, and destitute of wood. The only anchorage here for large vessels, is in the mouth of the harbour. Above are flats, with narrow winding channels through the mud. Fifteen families are settled in the port.

**SABLE RIVER** is impeded by a bar which admits no vessels larger than small fishers. The country is sterile, but eleven families are settled here.

**RUGGED ISLAND HARBOUR** takes its name from its rugged appearance, and the numerous sunken rocks and ledges about it. This place is seldom resorted to, unless by the fishermen, although within the anchorage is good, in 4½ and 4 fathoms. In a gale of wind, the uneven rocky ground at the entrance causes the sea to break from side to side. At a mile from the western head is a bed of rocks, named the *Gull*, over which the sea always breaks.

Thomas' Island, to the east of the harbour, affords a good mark for it, this island having high rocky cliffs on its eastern side. From its southern point, sunken rocks extend to the S. W. nearly a mile, and within these is the Tiger, a rock of only 4 feet, lying south, half a mile from Rug Point, the eastern point of the harbour. Having cleared these on the outside, haul up N. N. W. for the islands on the left or western side, and so as to avoid a shoal which stretches half way over from the opposite side. Pursuing this direction, you may proceed to the anchorage in the north arm of the harbour.

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*Directions for sailing into Shelburne Harbour or Port Roseway, N. S.*

Cape Roseway, the S. E. point of Roseneath or Macnutt's Island, is a high cliff of white rocks, the top of which is partly without wood. The west side of the island is low. On the cape stands the noble light-house of Shelburne, which has a white and remarkable appearance in the day, and at night exhibits *two* lights, the upper light at about 150 feet above the level of the sea, and the other a small light below, at about 38 feet below the lantern, by which it is distinguished, at night, from the light of Sambro' or Halifax.

The latitude of this light-house, according to the determinations of Mr. Backhouse, in 1792, by the several means of double and meridian altitudes, is  $45^{\circ} 42' 30''$ . The variation, at the same time, was  $13^{\circ} 30' W$ . Of preceding observations, the results were, latitude  $45^{\circ} 40'$ , and longitude  $65^{\circ} 12'$  west of Greenwich.

This harbour is altogether the best in Nova-Scotia, but its town has long been in a state of decline, and some of its streets are overgrown with grass and weeds.

When coming in from the ocean, after you have made the light-house, bring it to bear N. W. or N. W. by N. and steer directly for it. The dangers that lie on the east side, going in, are the Rugged Island Rocks, a long ledge that stretches out from the shore six or seven miles, the Bell Rock, and the Straptub Rock. On the west side is the Jig Rock. The Bell Rock is always visible and bold-to.

When you have gotten abreast of the light-house, steer up in mid-channel. Roseneath Island is pretty bold-to, all the way from the light-house to the N. W. end of the island. When you come up half way between George's Point and Sandy Point, be careful of a sunken rock that runs off from that light, on which are only 3 fathoms at low water; keep the west shore on board to avoid it; your depth of water will be from 4, 5, to 6 fathoms.

*Sandy Point* is pretty steep-to: run above this point about half a mile, and come to anchor in 6 fathoms, muddy bottom; if you choose, you may sail up to the upper part of the harbour, and come to anchor in 5 fathoms, muddy bottom, about one mile and a half from the town below the harbour flat.

In sailing in from the eastward, be careful to avoid the Rugged Island Rocks, which are under water; do not haul up for the harbour, till the light-house bears from you W. by N.  $\frac{1}{4}$  N. by that means you will avoid every danger, and may proceed as taught above.

In sailing into Shelburne from the westward, do not haul up for the light-house till it bears from you N. by E.  $\frac{1}{4}$  E. to avoid the Jig Rock, which lies within one mile and a half of the light-house, and is pretty steep-to.

Should the wind take you ahead, and constrain you to ply to the windward up the harbour, do not make too bold with the eastern shore; for half way between George's Point and Sandy Point, runs off sunken rocks. When you come abreast of them, do not stand above half-channel over, to avoid them. On the west shore, abreast of Sandy Point, it is flat, therefore do not make too bold in standing over.

The ledge of rocks that the ship *Adamant* struck upon, which lies abreast of *Dursey's House*, is to be carefully avoided; do not stand any further over to the westward than  $4\frac{1}{2}$  fathoms, lest you come upon the rock, as the *Adamant* did, and lay a whole tide before she floated, and that not without lightening the ship. The east shore has regular soundings from *Sandy Point* upwards, from 3 to 4 and 5 to 6 fathoms, to the upper part of the harbour, where you may ride safely in 5 fathoms, good holding ground. Your course up from the light-house, in a fair way, is from N. W. to N. W. by N. and when you round *Sandy Point*, the course is thence N. by W. and N. as you have the wind. The entrance of Shelburne Harbour affords a refuge to ships with the wind off shore (which the entrance of Halifax does not) and there is anchoring ground at the mouth of the harbour, when it blows too strong to ply to windward.

*In sailing from the westward for Shelburne at night*, you must not haul up for the harbour until the light bears N. by E.  $\frac{1}{4}$  E. in order to avoid the Jig Rock;

and when sailing in, from the eastward, you must not haul up for the harbour till the light bears W. by N.  $\frac{1}{2}$  N. in order to avoid the ledges that lie off the Ragged Islands, and bear from the light-house E.  $\frac{1}{2}$  S. 8 miles distant. You may stop a tide in the entrance of the harbour, in from 10 to 10 fathoms, sand, and some parts clay, bottom.

Shelburne is a safe harbour against any wind, except a violent storm from the S. S. W. At the town, the wind from S. by E. does no harm; although from S. by W. to S. W. by S. if blowing hard for any considerable time, it is apt to set the small vessels adrift at the wharves; but, in the stream, with good cables and anchors, no wind can injure.

Shelburne affords an excellent shelter to vessels in distress, of any kind, as a small supply of cordage and duck can almost at any time, be had. Carpenters can be procured for repairing; pump, block, and sail-makers also. It affords plenty of spars, and generally of provisions. Water is easily obtained, and of excellent quality. The port-charges for a vessel which puts in for supplies only, is four-pence per ton, light money, on foreign bottoms. If a vessel enters at the custom-house, the charges are high: but that is seldom requisite.

*The following bearings and distances were taken at the light-house.*

From the light-house to Berry's or Sunbridge Point, N.  $40^{\circ}$  E. two miles.

From ditto to Straptub Rock, off the above, N.  $45^{\circ}$  E. two miles.

From ditto to the Bell Rock, E.  $20^{\circ}$  N. two and a half miles.

From ditto to the south end of the westernmost Ragged Island N.  $84^{\circ}$  E. seven miles.

From ditto to the easternmost Ragged Island, N.  $86^{\circ}$   $30'$  E. ten and a half miles.

From ditto to the south-west breakers of the Ragged Islands, S.  $81^{\circ}$   $34'$  E. eight miles.

From ditto to Cape Negro, S.  $39^{\circ}$  W. nine miles.

From ditto to the Jig Rock (which almost always breaks, and lies in shore of the track into Shelburne) S.  $28^{\circ}$  W. one and a quarter mile.

NEGRO HARBOUR takes its name from Cape Negro, on the island which lies before it, in latitude  $49^{\circ}$   $32'$  N. and longitude  $65^{\circ}$   $17'$   $50''$  W. The island is very low about the middle, and appears like two islands. The cape itself is remarkably high, dark, rocky and barren, and bears S. W.  $\frac{1}{4}$  S. seven miles, from Cape Roseway, or Shelburne light-house. The best channel is on the eastern side of the island; but even this is impeded by two ledges called the Gray Rocks and Budget, the latter a blind rock, of only six feet, at a quarter of a mile from the island, on both sides of which there is deep water. The Gray Rocks lie at a quarter of a mile to the north-eastward of the Budget, and serves as a mark for the harbour.

In the passage on the eastern side of the Budget the depths are from 14 to 10 fathoms. With Shelburne light shut in, you will be within the rocks. There is excellent anchorage on the N. E. of Negro Island, in from 6 to 4 fathoms, bottom of stiff mud. The northern part of the island presents a low shingly beach, and from this a bar extends over the eastern side of the harbour, on part of which are only 15 feet of water. The river above is navigable to the distance of six miles, having from 5 to 3 fathoms, bottom of clay.

The passage on the western side of Negro Island is very intricate, having numerous rocks, &c. yet, as these may be seen, it may be attempted, under cautious decision, by a stranger, in case of distress.

PORT LATOUR is separated from Negro harbour (or Port Amherst) by a narrow peninsula. The extreme points of the entrance are Jeffrey Point on the east, and Baccarro Point on the west. Between, and within these, are several clusters of rocks; which render the harbour fit for small craft only.

BACCARRO POINT.—At the entrance of this port, on the west side, lies in latitude  $48^{\circ}$   $29'$   $55''$  N. and longitude  $65^{\circ}$   $24'$   $25''$  W. The Vulture, a dangerous breaker, lies W. S. W. nearly two miles from the point. The Bampton Rock half a league to the southward of the point, has only 4 feet water on it, at low water.

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**BARRINGTON BAY.** With the exception of the rocks off Point Baccaro, the Bay of Barrington is clear, but there are extensive flats towards the head of it, and the channel upwards narrows so much that it requires a leading wind to wind through it to the anchoring ground, where the depths are from 28 to 18 feet. The town of BARRINGTON, seated at the head of the harbour, with its environs, contained, in 1817, a population of 987 persons.

During a S. W. gale, there is good shelter on the N. E. side of Sable island, in 5 and 4 fathoms, sandy bottom.

**THE WESTERN PASSAGE,** or that on the N. W. side of Sable island, is intricate, and, therefore, used by small vessels only; it is not safe without a commanding breeze, as the tide sets immediately upon the rocks, which lie scattered within it, and the ebb is forced through to the eastward, by the bay tide on the west, at the rate of from 3 to 5 knots. This passage is, however, much used by strangers.

**BRAZIL ROCK.** This rock has been variously described, but we have no doubt that the following is correct: It is a flat rock, covering an area of about ten yards, and having 8 feet over it at low water, in calm weather. Within a hundred yards from its base, are from 6 to 8 fathoms of water; to the southward, at about a mile from the rock the depths are from 30 to 35 fathoms, but towards the shore the soundings are regular, 15 and 19 to 20 and 24 fathoms, sandy bottom. The tide, by running strongly over the shoal ground, causes a great ripple, and makes the rock appear larger than it really is. From Cape Negro, the bearing and distance to the rock are S. S. W. true, or S. W.  $\frac{3}{4}$  S. by compass, 10 miles, and from the rock, Cape Sable bears N. W. by W. by compass, or W. N. W.  $\frac{1}{4}$  W. true, 8 $\frac{1}{2}$  miles. Its position, according to M. des Barres, which appears to be subsequently confirmed, is latitude 43° 24' 15" longitude 65° 22'.

#### CAPE SABLE TO CAPE ST. MARY.

##### *Cape Sable to the Bay of Fundy and Chignecto Bay, including St. Johns and Grand Manan.*

An inspection of the chart of the S. W. coast of Nova Scotia, and a consideration of the relative situation of that coast, as exposed to the ocean, with the consequent and variable set of the tides about it, as well as about the island Manan, &c. will naturally lead the mariner to consider, that its navigation, involving extraordinary difficulties, requires extraordinary attention. Previous events, the great number of ships lost hereabout, even *within a few years*, will justify the supposition. It is, indeed, a coast beset with peril; but the peril may be avoided, in a great degree, by the exercise of skill and prudence. To the want of both is to be attributed many of the losses which have occurred here.

In touching on this subject, Mr. LOCKWOOD says, that the necessity of frequently sounding with the deep sea lead, and the expediency of having anchors and cables ready for immediate use, cannot be too often urged, or too often repeated. Vessels *well equipped and perfect in gear*, with anchors stowed, as in the middle of the Atlantic ocean, have been wrecked in moderate weather, and so frequently, that such gross idleness cannot be too much reprobated, and, we may add, too fully exposed.\*

\* *Instances.* A valuable coppered ship, with light airs of wind, drifted on the rocks, although the fishing lines were in use at the time, the breakers heard, and the depth known. In the last extremity, a kedge anchor was let go. The ship bilged, and the passengers were landed.

On a point, from which soundings gradually deepen to nearly 40 miles, a large coppered ship ran; and, having landed her passengers, was sold as usual, for the *benefit of the underwriters*. These are but two out of many. Some appear almost incredible; but the authority places the facts beyond doubt.

*Corbett's Storm in the Bay of Fundy.* The following is not unworthy of a seaman's

As the **TIDES** are most particularly to be attended to, we shall attempt a description of them in the first instance, before we proceed to that of the coast, and the consequent sailing directions. The **TIDE** about **CAPE SABLE**, has been explained in page 620. From Cape Sable toward the Seal, Mud, and Tusket-bald isles; the flood sets to the northwestward, at the rate of from two to three miles in an hour: in the channels of these isles its rate increases to four or five miles. At the Seal and Mud islands the ebb runs E. by S. S. E. and south; varying, however, with the figure of the lands, and the direction of the wind.

On the South Seal island, the Governor of Nova Scotia has authorized two men to settle, on condition that they should do all that is practicable to render assistance to shipwrecked mariners. The south end of the island bears W. by N. from Cape Sable, distant about 7 leagues, between them there are 17 fathoms. About  $5\frac{1}{2}$  miles S.  $\frac{1}{2}$  E. from the S. W. part of the South Seal isle, and W. 7 leagues from Cape Sable, there is a rock above water, which appears to be very smooth; between this rock and the South Seal islands, there are 9 fathoms. Off the west side of the island there are two small rocky islands; between them and the Seal island there are 2 and 3 fathoms.

Between the south and the north Seal islands, there is a channel of about 2 $\frac{1}{2}$  miles wide, with 15 fathoms in it. In going through this channel, you should keep nearer to the south, than to the north island, because there is a shoal lies off about three quarters of a mile from the north island, on which there are 3 fathoms. The course through this channel is about northwest.

The Gannet rock lies 13 miles N.  $\frac{1}{2}$  W. from the S. W. part of the South Seal island, and 8 miles S. by W.  $\frac{1}{2}$  W. from Cape Fourchu. About 5 miles W.  $\frac{1}{2}$  S. from the Gannet rock, 14 miles N. N. W.  $\frac{1}{2}$  W. from the S. W. part of the South Seal island, and 11 miles S. W.  $\frac{1}{2}$  S. from Cape Fourchu, there is a ledge of rocks, which appears about half ebb. Between the South Seal island and the Gannet rock, there are from 8 to 20 fathoms; between the Gannet and Cape Fourchu there are 23, 28, 16, and 14 fathoms.

From the Tusket-bald isles the tide flows to the northward, taking the direction of the shore, past Cape St. Mary; thence N. N. W. towards Bryer's island. The flood, therefore, sets but slowly up St. Mary's bay, yet with increasing strength up the Bay of Fundy; still greater as the bay narrows upward; so that the Basin of Mines and Chignecto bay are filled with vast rapidity; and here the water sometimes rises to the extraordinary height of 75 feet. These tides are, however, regular; and although the wind, in an opposite direction, changes the direction of the rippling, and sometimes makes it dangerous, it has little or no effect on their general courses.

Between Bryer's island and the opposite northern coast, and for some distance up the bay to the eastward, the first of the flood sets strong to the northward, (nearly north,) so that it will be extremely dangerous for a vessel to run in the night or thick weather, from any part of the southern to the northern coast, without making a large allowance for the set of the tide, and keeping the lead constantly going. The ship *Jaseur* was nearly ashore, having been set by this tide in a fog  $8\frac{1}{2}$  miles in 5 hours and 10 minutes.

His B. M. ship *Argus*, capt. Arabin, sailed from Musquash harbour at high water, and made the following courses and distances, viz: S. by W.  $\frac{1}{2}$  W. 30 miles; S. W.  $\frac{1}{2}$  W. 30 miles; S. by W. 30 miles; and S. S. E. 30 miles, which took her within sight of the Seal islands, and clear of the bay.

notice: "When I was about eighteen, I was on board a little sloop in the Bay of Fundy. A terrible storm arose at nightfall; my comrades, all but four or five of us, who were to assist the sailors, were shut down below; the wind dashed the vessel about, and tossed it like a cork; the thunder was tremendous; the night was dark as pitch, except when the lightning came to show us the horrid rocks and breakers with which we were surrounded. In the midst of this scene, with his boom carried away, his mast snapped off at the top, and half his tackle torn to ribbons, the captain, whose name was **WHITMORE**, stood upon the deck, calling out, every now and then, in a loud and cheerful voice, '*Steady she goes, my boys!*' This took from us, who were ignorant young soldiers, all idea of danger to our lives, and made us able to obey his orders; but when the storm was over the next morning, and we had happily escaped, he smiled and told us, that he had expected every moment to go to the bottom. We are now not in such peril. The storm has abated in its fury; but '*steady!*' is still the word."

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The *Dangers* about GRAND MANAN have been distinguished by wrecks as much as the S. W. coasts of Nova-Scotia; and the best passage is therefore on the west of that island. Here the tides course regularly and strongly; but among the rocks and ledges on the S. E., they are devious, embarrassing, and run with great rapidity. At the Bay of Passamaquoddy, from the S. E. land to the White islands, the flood strikes across with great strength; and in light winds must be particularly guarded against.

Ships navigating the Bay of Fundy, have to encounter an atmosphere almost constantly enveloped in dense fogs; tides setting with great rapidity over the rocks and shoals with which it abounds, and a difficulty of obtaining anchorage on account of the depth, so that under these circumstances, the most unremitting attention is requisite to prevent the disastrous consequences which must necessarily attend a want of knowledge and caution.

When off Cape Sable, with a westerly wind, and destined for the bay, it is better to make the coast of the United States about the Skuttock hills and Titmanan light-house, as you can pass with greater safety to the westward of Grand Manan than to the eastward, having also, if necessary, shelter in Petit river, Mathias, Passaquoddy, Etang, Beaver harbour, &c.

M. des Barres says, "ships bound up the Bay of Fundy to St. John's, or Annapolis Royal, should take a pilot at Halifax, as the tides in this bay are very rapid, and there is no anchoring ground until you reach Harbour Delute, or L'Etang, or Moegene's bay. In the bay, the weather is frequently very foggy, and the S. E. gales blow with great violence for twelve or fourteen hours, then shift to the N. W. and as suddenly blow as violently from the opposite quarter.

"The spring tides in the Bay of Fundy rise to 30 feet perpendicular, and neap-tides rise from 20 to 22 feet; they flow on full and change, at St. John's, Moegene's bay, Annapolis, Harbour Delute, L'Etang, and Grand Manan island, at 12 o'clock. The tides set nearly along shore."

**THE COASTS, ISLANDS, &c.**—The southernmost point of SEAL ISLAND, which bears from the ledge of Cape Sable nearly W. N. W.  $\frac{1}{4}$  West,  $\frac{5}{8}$  leagues, lies in latitude  $43^{\circ} 27'$ , and longitude  $65^{\circ} 50'$ . This island is more than two miles in length, N. and S. The southern part, covered with scrubby trees, is elevated 30 feet above the sea. This, Mr. Lockwood has observed, is an excellent position for a light house. At two miles and seven tenths south from the south end lies the *Blonde*, a rock, uncovered at low water, on which the frigate of that name was lost in 1777. Close around it are from 7 to 10 fathoms. At a mile westward from the *Blonde*, are heavy and dangerous overfalls, which present an alarming aspect; 4 miles north from these is a bed of shoal ground of 16 feet, causing a violent ripple. Off the west side of the island is the rocky islet, called the *Devil's limb*, which may at all times be seen.

MUD ISLES, sometimes called the NORTH SEALS, consist of five low rugged islands. The southernmost is situated at  $\frac{1}{4}$  miles from the N. E. part of Seal island; between is a passage fit for any ship, but there are overfalls of 18 feet at the distance of a short mile from the southern Mud island. In the channel are from 10 to 15 fathoms.

The course and distance to pass from Cape Sable to between the Seal and Mud islands, are N. W. by W. 7 leagues. In this track may be found several overfalls, of from 15 to 7 fathoms, bottom of gravel, which break violently in spring-tides. The north end of Seal island is bold to one cable's length, 10 to 7 fathoms. The opposite side has a shoal bank, on which a ship of war struck in 1796.

THE TUSKET BALD ISLES, or TUSKETS, is the group or cluster lying to the northward of the Mud isles, and to the S. W. of the entrance of Tuskett river. Some of them are of considerable size, and there are many shoals and ledges among them. On the west of these isles are GREEN ISLAND and the GANNET ROCK; the latter, 36 feet above the sea at high water, is represented by M. des Barres as in latitude  $43^{\circ} 40' 40''$ , and longitude  $68^{\circ} 9'$ , and is also before described. At about two miles from it, on the S. W. is a ledge that appears at half ebb, and on which the *Opossum* brig struck, in 1816. Other vessels have been injured by this danger, which has been heretofore represented to lie at 4 miles W. by N. from the Gannet.

**PUBNICO.** This harbour, little known, is a very good one; it is easy of access, and conveniently situated for vessels bound to the Bay of Fundy, which, in distress, may here find supplies as well as shelter. From the south end of Seal island, already described, to the entrance of Pubnico, the bearing and distance are N. E.  $\frac{1}{4}$  E. 13 miles. The depths between vary from 20 to 16 fathoms, and thence to 12 and 7 fathoms, up to the beach, the proper anchorage for a stranger; on the western side, above the beach, is a ledge, partly dry at low water. The total population of Pubnico, in 1817, was 285 persons, children included.

On sailing towards Pubnico you pass on the west of John's island, which lies two miles to the southward of the harbour, and the north side of which affords good shelter during a S. E. gale. Small vessels lie along the beach, forming the eastern part of this island.

From the entrance of Pubnico, a course W. N. W.  $\frac{1}{4}$  W. 4 leagues, leads clear to the southward of the Tusket-bald isles. On this course, care must be taken to avoid the Soldier's Ledge, bare at half ebb, which lies to the N. W. of the northern Mud island.

**CAPE FOURCHU**, or the **FORKED CAPE**, which lies according to M. des Barres, in latitude  $43^{\circ} 51' 30''$ , longitude  $66^{\circ} 10' 30''$  is very remarkable, being rocky, barren, and high. Within this cape is the harbour of **YARMOUTH**, which is small but safe. Off the entrance, S. by W.  $\frac{1}{4}$  W. lies the *Bagshot*, a blind rock, which is dry at low water, and runs shoal nearly half a mile to the southward. In sailing into the harbour you may pass on either side of it. There are other rocks in the entrance, and the fair way in is on the eastern shore, till opposite the point or isthmus on that side. At the top of the latter stands the battery, and under its lee, or to the northward, is the anchorage, with good ground, in 6 or 5 fathoms.

Above the anchorage is the town of Yarmouth, which contained, with its environs, 3,257 persons in 1816.

S.  $\frac{1}{4}$  W. from Cape Fourchu is Point Jegogan; the land between is low, and forms a deep indent. Within the point is the little harbour of **JEGOGUE**, which is shoal, and frequented only by the coasters. The lands hereabout are good, of moderate height, and well settled.

With Cape Fourchu bearing S. E.  $\frac{1}{4}$  E. (E. S. E. true) 13 miles distant, lies the **LURCHER**, a sunken ledge, of 12 feet at low water, covering an area of about three acres. From the Gannet rock to this ledge, the bearing and distance are N. N. W.  $\frac{1}{4}$  W.  $19\frac{1}{2}$  miles; and, from the Lurcher to Cape St. Mary, N. E.  $\frac{1}{4}$  N. 19 miles. Between Cape Fourchu and the Lurcher are 28, 38, and 14 fathoms of water, and between the Lurcher and Bryer's island, there are from 17 to 42 fathoms.

The **TRINITY LEDGE**, another reef, lies S. W.  $\frac{1}{4}$  W.  $6\frac{1}{2}$  miles from Cape St. Mary, and N. by W.  $\frac{1}{4}$  W. 17 miles from Cape Fourchu. This danger covers a space of more than half an acre, and three small rocks upon it are seen at low tides. The stream sets rapidly over it. The depth to a mile around, is from 12 to 15 fathoms.

Between Cape Fourchu and Trinity ledge, there are from 12 to 24 fathoms; between the ledge and Cape St. Mary, there are 18 fathoms; between the former and Bryer's island there are 42 fathoms; and along the shore between Cape Fourchu and Cape St. Mary, there are 11 and 12 fathoms. Cape St. Mary bears from Cape Fourchu N. by E.  $\frac{1}{4}$  E. distant 16 miles.

**SOUNDINGS** towards the **BAY OF FUNDY**. In the offing, between Seal island and Cape St. Mary, the soundings extend to a great distance, as shown by the charts; but W. of Bryer's island, and near the Manan ledges, are 60, 80, and 100 fathoms, at the distance of three or four miles. Here, therefore, the lead should be kept constantly going.

**BRYER'S ISLAND** is of small extent. On its western side is a light-house; but it is so mean a one, and has heretofore been so badly kept, that it is by no means to be depended on. The light is about 92 feet above the level of the sea.

On this island, the ship *Trafalgar*, of Hull, was lost 25th of July, 1817, at about half past eight in the evening. The ship, bound for St. Johns, had been running up all the day; the weather being thick, could not see any thing. "At seven, P. M. hove the ship to, with her head to the westward, thinking we were well over to the westward, sounding in 40 fathoms; the tide ran with great strength; and, before we could see the land, we heard the surf against the rocks; got sail upon the ship; but being so close, the strong tide

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set us upon the rocks. It being high water when we got on, run out a kedge to heave her off, but all to no purpose. At low water the ship was dry all round, amongst the rugged rocks which went through her in different parts; the ship having as much water within as there was on the outside at high water." The passengers were safely landed, and a part of the stores saved, which were taken to St. Johns to be sold, there being no purchasers on Bryer's island.

"In *Chignecto Bay* the tide flows with great rapidity, as before mentioned, and at the equinoxes from 60 to 70 feet perpendicular. By means of these high tides, the Basin of Mines, and several fine rivers, which discharge themselves about the head of the Bay of Fundy, are rendered navigable. It is worthy of remark, that at the same time, the Gulf of St. Lawrence tide, in *Bay Verte*, on the N. E. side of the isthmus, rises only 8 feet."

At about two miles S. W. from the south point of Bryer's island, is a rock, called the *Black Rock*. Between it and the island the water is shoal. At about three miles N. W.  $\frac{1}{2}$  W. from the north entrance of Grand Passage is a reef, called the N. W. Ledge. The water is deep between it and Brier's island, but the passage should not be attempted by a stranger, unless under very favourable circumstances.

**BAY OF ST. MARY.** From Cape St. Mary upwards, into this bay, the south shore is low, and runs out in sandy flats for nearly three quarters of a mile. The north shore is surrounded by high steep cliffs with deep water close under them. Mid channel, and about two thirds up the bay, lies a rocky bank, with 4 and  $4\frac{1}{2}$  fathoms of water; and on each side of which are channels of 12 and 15 fathoms muddy bottom. The entrance of the river Sissiboo, on the south side of the bay, is shoal, and within has a narrow channel of 2 fathoms water. Opposite to Sissiboo lies the Sandy Cove, where vessels, when it blows hard, may ground safely on mud, and be sheltered from all winds. There are two passages on the north side of the bay; one at each end of Long island. The first is called the *GRAND*, and the second the *PETIT PASSAGE*. The south end of Grand Passage lies 9 miles north from the extremity of Cape St. Mary; between are from 14 to 30 and 32 fathoms. The Petit Passage is three leagues to the northeastward from Grand Passage. This is about 280 fathoms wide in its narrowest part, and has from 20 to 30 fathoms of water; its shores are bold to. On the western side, near the northern entrance, lies *Eddy Cove*, a convenient place for vessels to anchor in out of the stream of the tide, which runs so rapidly, that, without a fresh leading wind, no ship can stem it.

The coast, from the south part of Long island to the Gut of Annapolis, is nearly straight; the shore is bound with high rocky cliffs, above which is a range of hills that rise to a considerable height; their tops appear smooth and unbroken, except near the Grand Passage, Petit Passage, Sandy Cove, and Gulliver's Hole, where those hills sink in valleys.

According to M. des Barres, the *GUT OF ANNAPOLIS* lies in latitude  $44^{\circ} 45'$   $30''$  and longitude  $65^{\circ} 46' 30''$ . The shore on both sides, without the gut, is iron bound for several leagues. From Petit Passage there is a range of hills rising gradually to a considerable height, to the entrance of the gut, where it terminates by a steep fall. Here you have from 25 to 30 and 40 fathoms water, which, as you draw into the basin, shoalens quickly to 10, 8, and 6 fathoms, muddy bottom. The stream of ebb and flood sets through the gut at the rate of five knots, and causes several whirlpools and eddies. The truest tide is on the eastern shore, which is so bold-to, that a ship might rub her bowsprit against the cliffs and be in 10 fathoms water. Point Prim runs off shoal about 30 fathoms. Ships may anchor on the east side of the basin, or run up towards Goat island, observing, when within the distance of half a mile from it, to stretch two thirds of the way over to the larboard shore until past the island, which is shoal all around; and thence to keep mid-channel up to the town.

There is a new light-house on Point Prim, which is said to "stand as a monument of mistaken economy." The light is exhibited from a window at 120 feet above the sea. Caution is requisite on approaching the gut, as Gulliver's Hole, 2 $\frac{1}{2}$  leagues to the westward, presents nearly similar features, and a mistake might be dangerous. The light tower is, however, a sufficient distinction, if attended to.

Of Annapolis, Mr. Larkwood says, "The abrupt precipices of the high lands form the gut, and cause flurries of wind that course in all directions, and rush vio-

lently from the summits of the hills. The tide hurries through the gut with great force. There is not anchorage, except very close in shore, near the outer western point. In some places the depth is from 40 to 80 fathoms; and in entering Annapolis basin, the scenery is inexpressibly beautiful. The farms are becoming valuable and extensive. The herring fishery is a source of great profit; the fish are so well cured that the merchants of Halifax and St. Johns give them a decided preference for foreign markets."

**ANNAPOLIS TO BASIN OF MINES.** From the Gut of Annapolis up the bay to Cape Split, the coast continues straight, and nearly in the same direction, with a few rocky cliffs near the gut, and many banks of red earth under high lands, which appear very even. In the gut, leading into the Basin of Mines, from Cape Split to Cape Blommedon, and from Cape D'Or, on the north side, to Partridge island, the land rises almost perpendicular from the shore to a very great height. Between Cape Blommedon and Partridge island, there is a great depth of water; and the stream of the current, even at the time of neap tides, does not run less than 5 or 6 fathoms.

Cape D'Or, and Cape Chignecto, are high lands, with very steep cliffs of rocks, and red earth, and deep water close under them. You have nearly the same kind of shore to the head of Chignecto bay, where very extensive flats of mud and quicksand are left dry at low water. The tides come in a bore, and rush in with great rapidity; they are known to flow, at the equinoxes, from 30 to 75 feet perpendicular.

The Isle of Haute, or Hauto, is remarkable for the great height and steepness of the rocky cliffs which seem to overhang on the west side.

The Basin of Mines, and Chignecto bay, are now surrounded with valuable settlements, and abound in coal, plaster, limestone, and other minerals.

### North Coast of the Bay of Fundy.

The township of St. Martins, on the north shore, to the N. W. of Cape Chignecto, is thinly inhabited: the land in the neighbourhood is moderately good, but is much broken with steep declivities, &c. The weather here is commonly hurried, the wind changeable and blustering, with limited and short intervals of sunshine. From Quako, at about 5 leagues westward of St. Martins, to the harbour of St. Johns, the land, as already described, is high; the interior hills rise in easy inequalities, but the ravines of the cliffs appear deep and gloomy; the indentments have beaches; and Black river, at 12 miles west of Quako, although dry from half tide, is a safe inlet for a small vessel.

At  $2\frac{1}{2}$  leagues south from Quako is a dangerous shoal of gravel, called the **QUAKO LEDGE**. It extends E. S. E. and W. N. W. about two miles by half a mile in breadth. The widest and shoalest part is to the westward, and vessels have frequently grounded upon it. The bank shows at half tide.

**Quako ledge** has several irregular patches of rocks lying off its N. E. side; the ledge shows itself at half tide, and dries for about 100 yards, having but 12 feet on it at high water, common tides; at half a mile to the N. E. the eddies with the flood tide are strong and numerous, the ship's head going nearly round the compass in the space of half an hour; the ebb is a true tide, and sets in a W. S. W. direction towards the ledge; the soundings are from 7 to 14 fathoms at about two cables' length all around, but they shoal more gradually from the N. E.; the night tides here, and generally through the bay, are highest; at St. John's they are so during the summer, but the contrary during the winter months, or between the equinoxes.

**THE HARBOUR OF ST. JOHN.**—The entrance of this harbour lies N.  $\frac{1}{2}$  W.  $11\frac{1}{2}$  leagues from the entrance of Annapolis, and may be distinguished by a light-house, which stands on Partridge island. The entrance into the river, 2 miles above the town of St. John, is over the **FALLS**, a narrow channel of 80 yards in breadth, and about 400 long. This passage is straight, and a ridge of rocks so

extends across the river, flowing here higher than 5 to 8 feet in falls, one on the water of and this opportunity is impassable.

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**DIRECTIONS TO HOUSE.**—When distinguished from the intelligence of St. John, any other obstruction you may sail in between the N. E. water, mud and the three hills in and the house on

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### Farther Direction

"When you have until Moegene's point in between B lead you in the best ward of the low point towards Thompson a line over the beach of a ship's breadth house at the upper situate close to the wharfs, where you

extends across it as to retain the fresh water of the river. The common tides flowing here about 20 feet, at low water; the waters of the river are about 12 feet higher than the water of the sea; and at high water, the water of the sea is from 5 to 8 feet higher than the waters of the river; so that in every tide there are two falls, one outward, and one inward. The only time of passing this place is when the water of the river is level with the water of the sea, which is twice in a tide; and this opportunity of passing continues not above ten minutes; at all other times it is impassable, or extremely dangerous.

After you have passed through this place, called the *Falls*, you enter into a gullet, which is about a quarter of a mile wide, and a mile long, winding in several courses, and having about 16 fathoms in the channel. Having passed this gullet, you enter a fine large basin, about one mile and a half wide, and seven miles in length, entering into the main river of St. John.

The river of St. John has sufficient depth of water for large ships to the falls, whence it continues navigable 60 miles up to Fredericton, the seat of government, for vessels of 50 tons. At times of great freshets, which generally happen between the beginning of April and the middle of May, from the melting of the snow, the falls are absolutely impassable to vessels bound up the river, as the tide does not rise to their level.

Point Maspeck, on the east side of the entrance, lies in latitude  $45^{\circ} 18' 27''$ , and longitude  $65^{\circ} 58' 45''$ .

**DIRECTIONS for ST. JOHN'S HARBOUR and MOEGENE'S BAY, by MR. BACKHOUSE.**—When you have made Moegenes island, or Partridge isle, so as to be distinguished from the light-house on the latter; then make a signal for a pilot, and the intelligence from Partridge island will be immediately communicated to the city of St. John, whence a pilot will join you. Should the wind be contrary, or any other obstruction meet you, to prevent your obtaining the harbour that tide, you may sail in between the S. W. end of Moegenes island and the main, or between the N. E. end and the main, and come to anchor in 4 or 5 fathoms at low water, mud and sandy bottom. Mark for the best anchoring ground is, to bring the three hills in the country to the N. E. in a line, in one over Rocky Point island, and the house on Moegenes island to bear S. E. by S.

"Should the tide of ebb have taken place at the beacon, you must not (by any means) attempt to gain the harbour that tide, but wait the next half-flood, to go over the bar, as both sides of the entrance of this harbour are nothing but sharp rocks, dry at low water, and the tide of ebb is so rapid in the spring, when the ice and snow is dissolved, that all the anchors on board will not hold the ship from driving.

"On the Nova-Scotia side of the Bay of Fundy, your soundings will be from 50, 60, 70, 80, to 95 fathoms; stones like beans and coarse sand; and, as you draw to the northward, the quality of the ground will alter to a fine sand, and some small shells with black specks. Come no nearer than 50 fathoms, and as you edge off to the N. W. and W. N. W. you will fall off the bank, and have no soundings."

### Farther Directions for Sailing into St. John's Harbour; by the same.

"When you have passed Moegene's island, edge in-shore towards Rocky point, until Moegene's point is in a line over the N. W. corner of Moegene's island: sailing in between Rocky point and Partridge island, with these marks in one, will lead you in the best water over the bar, until you open Point Maspeck to the northward of the low point on Partridge island; then starboard your helm, and edge towards Thompson's point, until the red store, at the south end of St. John's, is in a line over the beacon; keep them in one until you pass the beacon at the distance of a ship's breadth; then haul up N. N. W. up the harbour, keeping the block-house at the upper part of the harbour open to the westward of the king's store, situate close to the water side, which will lead you in mid-channel, up to the wharfs, where you may lie aground dry, at half-tide, and clean your ship's bottom,



or lie afloat in the stream at single anchor, with a hawser fast to the posts of the wharves on shore N. B. The tide of flood here is weak, but the ebb runs very rapidly all the way down past Moegene's island.

*Remarks on St. John, &c. by Mr. Lockwood.*

The tides of the river, at full and change, flow till half past 11. The vertical rise is 18 feet. Equinoctial spring tides rise 24 to 28 feet.

After the first quarter flood, the tide below the surface runs into the harbour.

During summer and the depth of winter, the tide generally flows in at half flood. In autumn, the river is swolt by rains, and between the beginning of April and the middle of May, by the melting of the ice, and the quantity of snow that accumulates on the lands of this vast navigable river.

From these causes, the water streams out, or seaward, continually; therefore vessels at that time seldom enter the harbour without a fresh leading wind. The falls are then impassable, as the tide does not rise to their level.

The body of the river is  $17\frac{1}{2}$  feet above low water-mark. Consequently after the tide has risen to that height, the water descends, or literally falls into the river.

When the tide has flowed twelve feet, the falls are smooth, and passable for 20 minutes.

Above the falls, the tide rises 4 feet; and at Majorfield, 60 miles in the interior, it rises one foot and a half.

After passing the falls, you enter a gullet, which is a quarter of a mile wide, and two miles long, winding in different courses, and having 16 fathoms in the channel. Next to this gullet is a fine large basin, a mile and a half wide, and 8 miles long, entering the main river.

There is water sufficient, except in dry seasons, for vessels of fifty tons, as high as Fredericton, and in all the branches of the lakes.

In the middle of May, or earlier in favourable seasons, the snow and ice in the country melting, make a general overflow in the river, which, in some years, rises so high, as to inundate all the low lands.

"The overflowings were measured in 1765, by the marks set up at Majorfield; the water was found to have flowed 17 feet above the common height of the water in summer."

*[Remarks by Charles Morris, Esq.]*

The city of St. John stands on an irregular descent, with a southern aspect; and, on entering the river, presents a picturesque appearance. The river's mouth is narrow and intricate; many accidents have happened to those who have attempted the navigation without a pilot.

Partridge island is about 2 miles southward from the city. It protects the harbour, and, by its light-house, guides the mariner to the place of his destination. The lantern is 126 feet above the level of the sea, and the light tolerably good.

Southward of Partridge island, the bottom for several miles is muddy, and the depth gradual, from 7 to 20 fathoms, excellent for anchoring. On the bar west of the island, the least depth is 10 feet; but, eastward of it, 16 feet. The anchoring depth, opposite to the city, is in from 22 to 7 fathoms.

A break-water has been erected at the eastern side of the entrance, below the town, for the purpose of reducing the inlet of the sea into the harbour, especially during a southern gale. Within the port, every possible facility and convenience is given to ships requiring repair; they lie upon the blocks, and undergo a thorough examination, without incurring the expense, injury, and loss of time, occasioned by heaving down, so strangely persisted in at Halifax.

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**CAPE SPLIT.**—The whirlpools off Cape Split are dangerous at Spring tides, which run at about 9 knots. If at anchor between Cape Sharp and Partridge Island, and you wish to proceed to Windsor River, it will be necessary to get under weigh two hours before low water, in order to get into the stream of the Windsor tide on the southern shore, otherwise, unless with a commanding breeze a vessel is likely to be carried up with the Cobequid tide, which is the main stream, and runs very strong both flood and ebb. The Windsor tide turns off round Cape Blow-me-down to the southward, and then again is divided, one part continuing its course up to Windsor, and the other forms the Cornwallis tide, running up the river of that name.

In running up Windsor river, the house on Horton Bluff should be kept in a south bearing, and the Gap in the land formed by Parsborough river, north, this will take you through the channel between the flats, which cannot be passed at low water by a vessel drawing fifteen feet, much before half tide. Off Horton Bluff the ground is loose and slaty, and a ship will be likely to drag her anchors with a strong breeze, particularly at full and change; perhaps it would be better for large ships to moor across the stream, and full one third from the Bluff. The Banks and Flats appear to be composed of soft crumbling sand stone, which is washed down from the surrounding country in great quantities during the spring, and by accumulating on them, are constantly increasing their height.

The great volume of fresh water which constantly flows down the harbour of St. John's in April and May, causes a continual ebb tide, during that period, sometimes to the depth of nearly 5 fathoms, under which the flood and ebb flow regularly; the maximum of its velocity is about four and a half knots, and the minimum two knots, but, as the log floated very deep in the fresh water, and ultimately sunk into the salt water running underneath, it would not be much to estimate the maximum at five knots, and the minimum at two and a quarter. The part of the under tide beginning at the depth of nearly 5 fathoms, was ascertained by sinking a lead down to that depth, when it was carried the same way as the current on the surface, but when lowered below that, it was carried in a contrary direction.

Macey's Bay, between Point Lapreau and Beaver harbour, affords good anchorage if bound to the westward, having passed Point Lapreau nine miles steer W. N. W. until a large island which lies N. W. from the point, bears N. N. E. then run for the island, leaving it on the starboard hand, which will carry you into the harbour in 7 fathoms water, good anchorage. There is also a small island off Point Lapreau, but you leave both on the starboard hand (between which there is no passage) while running into the harbour. Off the point which lies opposite the two islands, and which you leave on the larboard hand in running into the harbour, lies a rock, always bare, about two cables' length from the shore. Point Lapreau is bold-to, but dangerous in dark weather, as it projects so far into the sea; from thence to St. John's the course is free from danger.

If you fall in with the Wolves, and wish to run for Macey's Bay, run N. E. by N. five leagues, which will carry you to the same anchorage as before.

In running from Wolf Islands to Macey's bay, allowance must be made for the current, which sets very strong from E. by N. to W. by S.

Should you after making Campo-bello wish to run for the harbour of Lantong, bring Campo-bello to bear S. S. W. and run N. N. E. five leagues, which will carry you into good anchorage, in 5, 6 and 7 fathoms water.

**MUSQUASH COVE**, twelve miles to the westward of Partridge Island, has a depth of 4 fathoms, and has good anchorage at its entrance. The inlets called *Dipper* and *Little Dipper*, admit small crafts and boats only.

The **GANNET**, a small rock, 40 feet high, and having many sunken rocks and ledges about it, stands at the distance of four miles S. S. W. from the Three Islands. Mr. Lockwood has observed that, this would be a fine situation for a light-house, which would be the mean of saving many ships. The ledges and sunken rocks in the vicinity always break.

The three islets, called the *Western Seal Isles*, lie eight miles to the W. by N. of the Gannet, with the S. W. head of Grand Manan bearing E. N. E. about three and a half leagues distant.

The Eastern Coasts of Manan abound in fish, and the interior is in a rapid state of improvement. The soil is, in general, good, and it produces all the species of fir, beech, birch, and maple, in size and quality adequate to all purposes for which they are generally used.

The Channel between *Grand Manan* and the coast of *Maine* is from seven to eight miles wide: both shores bold, the depths quickly increasing on each side, from 12 to 70 and 75 fathoms; the greatest depth near Manan, where you haul quickly from 10 to 75. This is the best passage up the Bay of Fundy, because the safest, and most advantageous with the prevalent winds, which are from the westward.

Bring Campo Bello Island to bear S. S. E. or S. E. and you will have 20 fathoms water, where you may anchor and lie safe from all winds.

[For Directions for sailing to the eastward of Campo Bello, &c. see Chap. I. page 21.]

#### NOTE.

Throughout this work the given longitude is the longitude from Greenwich. The bearings and courses are those by compass, unless where otherwise expressed.

#### VARIATIONS BY COMPASS.

Halifax 17° west. St. John's, New-Brunswick, about 16°. Machias Bay 12°. Bay of Penobscot, 9°. Cape Elizabeth, 8°. Portsmouth, (N. H.) 7½°. Salem, 5°. Boston and Cape Cod, 8°. New-York Harbour, 5½°. Off the Delaware, 4° West.

The westerly variation appears to cease between Cape Hatteras and Cape Fear, and, at Savannah, the variation becomes *easterly*. At the head of the Matenillo Bank it is 3¼° east. At the Day of Tortugas, or west end of the Florida Reef, it is 6° 33' E. in the Bay of Spiritu Santo, (West coast of Florida) 6°; near the entrance of the Mississippi 6¼°. At Tampico, 8½°, and at Vera Cruz, 9. East.

At Nassau (New Providence) and on the Bahama Bank, the easterly variation is 5¼°; at Watling's Island 5°. South end of the Crooked Islands, 4° 40'. East end of Cuba 5¼°. West end of Cuba, 8¼°. At Port Royal, Jamaica, 6¼°. S. W. end of Hayti, 5°. Mona-Passage, Porto Rico, and Virgin Islands, 3¼ to 3°. Anegada and Sombrero, 2° East.

WINDS IN succession, ever the air, is found same laws of growth in every part: the weightier air an equal weight. The Winds are into General and the same way: Wind. Periodic and sea-breezes, Erratic Winds, without regularity. Winds are generated of the land, according position and strengthen rarefying the atmosphere, that lands, It is observed, general blown upon obliquely prevail in the extreme PERENNIAL and in the lower latitudes prevail, which follows from the African sails from the north comes more easterly ther to the northward westward rarefying on the African Coast. The PERENNIAL to 30 degrees of latitude can side. Likewise south-east, extends of the ocean. The general cause thus presents, in becoming successive that, in the regions and a current of air. Heat increases quantity of moisture which produce a divergence of the tropics; for, specifically lighter, the Were the atmosphere rain; for it would not in a perennial wind, from accidental causes and sometimes light These circumstances from the limits of the

## CHAP. XXII.

## WINDS.

**WINDS IN GENERAL.**—As the earth, by its diurnal rotation on its axis, presents, in succession, every part of its circumference to the sun, the heat of that luminary, by rarefying the air, is found to be the chief cause of winds. For, as the air is a fluid, subjected to the same laws of gravitation as other fluids, it has a constant tendency to preserve an equilibrium in every part: so that if, by any mean, it be rendered lighter in any one place than another, the weightier air will rush in from every side, until as much be accumulated as makes it of an equal weight with the rest of the atmosphere. These currents of air are called *Winds*.

The Winds are divided into *Perennial*, *Periodical*, and *Variable*. They are also divided into General and Particular. *Perennial*, or Constant Winds, are those which always blow the same way; such is that easterly wind, between the tropics, commonly called the *Trade-Wind*. *Periodical Winds* are those which constantly return at certain times: such are land and sea-breezes, blowing alternately from land to sea, and from sea to land. *Variable*, or Erratic Winds, are such as blow now this way, now that, and are now up, now hushed, without regularity either as to time or place: such are the winds prevalent in England, &c.

Winds are generally found to vary according to the situation of land. For the temperature of the land, according to the degree to which it is heated by the sun, always affects the disposition and strength of the wind. Thus, it is found, that the heated land of Africa, by rarefying the atmosphere, produces a breeze from the sea; and from this circumstance it arises, that lands, which would otherwise be parched up or burnt, are rendered habitable. It is observed, generally, that the continental coasts, between the tropics, are almost always blown upon *obliquely*, from seaward, by winds whose course is affected by the winds which prevail in the extensive seas that surround them.

**PERENNIAL or TRADE-WIND.**—But, over extensive tracks of ocean, *remote from land*, and in the lower latitudes, or toward the equator, Perennial or Trade-Winds are found to prevail, which follow the course of the sun: thus, on the Atlantic Ocean, at about 100 leagues from the African shore, between the latitudes of 10 and 26 degrees, a constant breeze prevails from the north-eastward. Upon approaching the American side, this N. E. wind becomes more easterly, or seldom blows more than one point of the compass from the East, either to the northward or southward. This appears to be caused by the heated lands to the westward rarefying the air, and causing an indraught that way, as a contrary wind is induced on the African Coast.

The PERENNIAL or TRADE-WIND, on the American side of the Atlantic, extends, at times, to 30 degrees of latitude, which is about 4 degrees farther to the northward than on the African side. Likewise, on the south of the equator, the Perennial Wind, which is here from the south-east, extends 3 or 4 degrees farther towards the Coast of Brazil than on the opposite side of the ocean.

The general cause of this wind is the motion of the earth, in its diurnal rotation, which thus presents, in succession, every part of its circumference to the sun; and the atmosphere becoming successively heated, a constant steam is thus produced. This is sufficient to show, that, in the regions near the equinoctial line, a constant rarefaction is produced by the sun, and a current of air consequently follows that luminary in his progress from East to West.

Heat increases evaporation, and renders the atmosphere capable of supporting a greater quantity of moisture than it would do in a cooler state: this is a powerful agent in the cause which produce a diversity of winds and weather, especially to the northward and southward of the tropics; for, by this addition of moisture, the air is more fully expanded, and becomes specifically lighter, than it would be in the same degree of heat in a drier state.

Were the atmosphere of one continued warmth, and its motion uniform, there would be no rain; for it would not imbibe more moisture in exhalation than it could support; therefore, in a perennial wind, notwithstanding the great evaporation, there is seldom any rain; but, from accidental causes, these winds are alternately stronger and weaker, with frequent clouds, and sometimes light showers.

These circumstances are assumed as prevailing at a considerable distance from the land, and from the limits of the perennial wind; for, every where near the land, when the sun has great

Influence, it occasions land and sea-breezes near the shore ; and, in particular situations, heavy gusts and squalls of wind. The Trade-Winds are more steady and uniform in the Pacific Ocean, from its greater extent, and also in the Ethiopic, than in the Atlantic Ocean, where Cape Verde and the broad part of Africa, extend so much to the westward, and the northern part of Brazil, in America, to the East.

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

The clouds, in the higher regions of the air, are frequently seen to move in a direction contrary to the wind below. The reason of this variation is, that the cool dense air below forces the warm and rarefied air upwards, where it spreads so as to preserve the equilibrium ; and hence the upper course, or current, appears in a contrary direction. Thus circulating, the N. E. Trade-wind has frequently a S. W. wind about it ; and a S. E. wind often prevails beneath one whose direction is N. W. It is consequently found, that, just without the limits of the Trade-wind, the wind generally blows from the opposite quarter. The counter-current of air, above, is often seen in a fresh Trade-wind ; for the great power of the sun between the tropics so rarefies the atmosphere under his meridian, that it has not so much influence in the upper region, where the atmosphere is light : hence the motion of the upper part takes its direction contrary to the Trade-wind.†

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

Ship Masters and Pilots, on leaving the coast, outward bound, may notice that so long as these higher clouds do not gather and thicken in the W. or S. W. so long a heavy or long storm of snow or rain will keep off. Any rain or foul weather, that proceeds from winds, which rise from the eastward, and drive before the wind to the westward, is of short duration.

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

In the latitudes above the Trade-winds, the wind from the W. S. W. ward being replete with moisture, from the great exhalation between the tropics, as it approaches the cold and higher latitudes, becomes condensed into showers of hail, rain, or snow. For instance, in the 50th degree of North latitude, the wind from the S. W. generally will prevail till the atmosphere is more condensed than in the lower latitudes ; the wind from the colder regions then ensues, and blows till the equilibrium of the atmosphere is restored, when a short calm generally succeeds before the wind shifts into another quarter.

\* Oriental Navigator, or East India Directory.

† The Causes of Tornadoes, Hurricanes, and Squalls, have been thus assigned by Dr. Hare, of Philadelphia ; — The air, being a perfectly elastic fluid, its density is dependent on pressure, as well as on heat, and it does not follow that air, which may be heated in consequence of its proximity to the earth, will give place to colder air from above. The pressure of the atmosphere varying with the elevation, one stratum of air may be as much rarer by the diminution of pressure consequent to its altitude, as denser by the cold consequent to its remoteness from the earth, and another may be as much denser by the increased pressure arising from its proximity to the earth, as rarer by being warmer. Hence, when unequally heated, different strata of the atmosphere do not always disturb each other. Yet, after a time, the rarefaction in the lower stratum, by greater heat, may so far exceed that in the upper stratum, attendant on an inferior degree of pressure, that this stratum may preponderate and begin to descend. Whenever such a movement commences, it must proceed with increasing velocity ; for the pressure on the upper stratum, and, of course its density and weight, increases as it falls ; whilst, on the contrary, the density and weight of the lower must lessen as it rises, and hence the change is, at times, so much accelerated as to occasion the furious and suddenly varying currents of air which attend tornadoes, hurricanes, and squalls.—Silliman's Journal, No. 12.

There is often much to the effect. There is generally opposite direction. In the limits of always to be cold wind and the

When the sun is particularly between B half a point more. The contrary wind, South of to the North. northern tropic part of the globe

On the African coast to the East. the weather was to the southward

The Equator 18 and 26 degrees. The French, by the annexed, expected to cease in

In this Table as experienced in last column exhibited

Thus, the Table sometimes to cease mean of its limit cease sometimes the probable mean val between the a and so of the rest.

TABLE showing  
TRADE-WINDS

N. E. T.	
CEASES,	
In January at	1
February	2
March	3
April	4
May	5
June	6
July	7
August	8
September	9
October	10
November	11
December	12

In the space of 100 years, it has been found, that so much the sun has great influence enabled, at this season they do, in some degree, succeed in every month generally in the vicinity. It has frequently succeeded in as many ships have Whirlwinds have so resisting atmosphere



There is often an interval of calm between the Trade-winds and the opposite winds in high latitudes. This is not, however, always the case; for, if the Trade-wind in its borders be much to the eastward, it frequently changes gradually round without an interval of calm.—There is generally, also, a calm in a certain space between two prevailing winds blowing in opposite directions, as between the Trade-wind and the westerly wind on the African Coast. In the limits of the Trade-wind, a dead calm is generally the prelude to a storm, and it ought always to be considered as a prognostic thereof; for it is known that the conflux of the Trade-wind and the variable winds is the cause of calms and storms in the tropical regions.

When the sun is at its greatest declination, North of the equator, the S. E. wind, particularly between Brazil and Africa, varying towards the course of the sun, changes a quarter or half a point more to the southward, and the N. E. Trade-wind veers more to the eastward. The contrary happens when the sun is near the southern tropic; for then the S. E. wind, South of the line, gets more to the East, and the N. E. wind, on the Atlantic, veers more to the North. In June, July, August, and September, while the sun is returning from the northern tropic to the equator, the action of its rays upon the land and sea, in the northern part of the globe, renders the wind less constant by altering the state of the atmosphere.

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

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

In this Table the columns of *Extremes* show the uncertain termination of the Trade-winds, as experienced in different ships. The annexed columns show the *Probable Mean*: and the last column exhibits the mean breadth of the interval between the N. E. and S. E. winds.

Thus, the Table shows, that, in the month of January, the N. E. trade has been found sometimes to cease in the parallel of  $10^{\circ}$ , and sometimes in that of  $30^{\circ}$  N. That the probable mean of its limit is about  $5^{\circ}$  N.—That the S. E. trade, at the same time, has been found to cease sometimes at only half a degree North of the line, and sometimes at 4 degrees. That the probable mean of its limit is, therefore, two degrees and a quarter. And, that the interval between the assumed means of the N. E. and S. E. Trade-winds is equal to  $2\frac{1}{4}$  degrees: and so of the rest.

TABLE showing the EQUINOCTIAL LIMITS of the N. E. and S. E. TRADE-WINDS, between the MERIDIANS of 18 and 26 DEGREES WEST.

N. E. TRADE-WIND.			S. E. TRADE-WIND.			INTERVAL BETWEEN.
CEASES.	General Extremes.	Probable Mean.	General Extremes.	Probable Mean.		Mean Breadth.
In January at	$3^{\circ}$ to $10^{\circ}$ N.	$5^{\circ}$ N.	$0\frac{1}{2}^{\circ}$ to $4^{\circ}$ N.	$2\frac{3}{4}^{\circ}$ N.		$2\frac{1}{4}$ degrees.
February	. 2 to 10 —	4 —	$0\frac{1}{2}$ to 3 —	$1\frac{1}{2}$ —		$3\frac{1}{2}$
March	. 2 to 8 —	$4\frac{1}{2}$ —	$0\frac{1}{2}$ to $2\frac{1}{2}$ —	$1\frac{1}{2}$ —		$3\frac{1}{2}$
April	. $2\frac{1}{2}$ to 9 —	5 —	0 to $2\frac{1}{2}$ —	$1\frac{1}{2}$ —		$3\frac{1}{2}$
May	. 4 to 10 —	$6\frac{1}{2}$ —	0 to 4 —	$2\frac{1}{2}$ —		4
June	. $6\frac{1}{2}$ to 13 —	$8\frac{1}{2}$ —	0 to 5 —	3 —		$5\frac{1}{2}$
July	. $8\frac{1}{2}$ to 14 —	11 —	1 to 6 —	$3\frac{1}{2}$ —		$7\frac{1}{2}$
August	. 11 to 15 —	13 —	1 to 5 —	$3\frac{1}{2}$ —		9
September	9 to 14 —	$11\frac{1}{2}$ —	1 to 5 —	3 —		$8\frac{1}{2}$
October	. $7\frac{1}{2}$ to 14 —	10 —	1 to 5 —	3 —		7
November	. 6 to 11 —	8 —	1 to 5 —	3 —		$4\frac{1}{2}$
December	. 3 to 7 —	$5\frac{1}{2}$ —	1 to $4\frac{1}{2}$ —	$3\frac{1}{2}$ —		$2\frac{1}{2}$

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

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

To the southward of Newfoundland, shifts of wind are very common, and it frequently happens that, after blowing a gale upon one point of the compass, the wind suddenly shifts to the opposite point, and blows equally strong. It has been known that, while one vessel has been lying-to, in a heavy gale of wind, another, not more than 30 leagues distant, has, at the very same time been in another gale, equally heavy, and lying-to, with the wind in quite an opposite direction.

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

The winds within the Gulf are not so liable to sudden shifts as on the outside, or to the eastward, of Breton Island. The weather to the southward of *Magdalen Islands* between them and Prince Edward Island, is generally much clearer than on the north. [For Winds, &c. on the coast of South Carolina, see page 134.]

**BERMUDAS' ISLES.**—Near these islands, hurricanes and tempests are very frequent; but the prevailing winds, with fine weather, are from between the South and West. Hakluyt, in his voyages, 1593, calls the sea about the Bermudas a "hellish place for thunder, lightning, and storms;" and another writer, in 1615, describing the arrival of the English at these islands in 1609, has said, "Sir George Somers, sitting at the stern, seeing the ship desperate of relief, looking every minute when it would sink, he espied land, which, according to his and Captain Newport's opinion should be that dreadful coast of the Bermodes, which islands were, of all nations, said and supposed to be inhabited, and inhabited with witches and devils; which grew by reason of accustomed monstrous thunder, storme, and tempests, neere unto those islands; also for that the whole coast is so wondrous dangerous of rocks, that few can approach them but with unspeakable hazard of shipwreck." We now laugh at this: knowing that the mild and regular climate of these islands is preferable even to that of Madeira, and to be preferred for the purity of its air, together with the abundance and quality of fruits and vegetables.

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

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

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

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

"At the Grand by night. The getting to the coast impossible. A no land-breeze

"On the Coast experienced between North to East from East to S. South and S. W. while the sky is, ry to June, the violent.

"On the Coast regular course; but it blows from N. when it comes to vessels to lie-to. channel to within night. On this coast that country call winds never pass sea-breeze.

"Upon the Month winds or breezes these months, they winds here are from tember, October, N. ward of west, with

"On the North Piedras or Descond wind, interrupted by does commence from time about an hour. The season of the breezes upon the coast the sea-breeze is the September. The gets round to East breeze.

"On the Coast of S. E. and East prev off from South to S. the day following, tember: these winds (head-winds or rain) therefore, a vessel might get out, for reach to about 20 or E. S. E.

"From the middle VERA CRUZ, for the obstruction formed by the norths, render an attempt to take be impossible to take written by Don Bern the Port, and who su

"Although in the than the general breeze north winds interrupt sone, wet and dry, or is from March to September to March. For

"The first of the month and the following one

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

"On the COASTS of GUTANA there are no land-breezes, nor more wind, than is generally experienced between the tropics. In January, February, and March, the winds here blow from North to E. N. E., and the weather is clear. In April, May and June, the winds are from East to S. E. In July, August, and September, there are calms, with tornadoes from South and S. W.; and, in October, November, and December, there are continual rains, while the sky is, in general, obscured by clouds. In the dry season, which is from January to June, the heat is very great; and, in the wet season rains and thunder are constant and violent.

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

"Upon the MOSQUITO SHORE, HONDURAS, and EASTERN COAST of YUCATAN, the general winds or breezes prevail in February, March, April, and May; but, during the first two of these months, they are occasionally interrupted by *norths*. In June, July, and August, the winds here are from the eastward and westward of South, with tornadoes and calms. In September, October, November, December, and January, they are from the northward or southward of west, with frequent gales from W. S. W. W. N. W. and North.

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

"On the COAST of the MEXICAN SEA, from VERA CRUZ to TAMPICO, the breeze from E. S. E. and East prevails in April, May, June, and July; and, at night, the land-breeze comes off from South to S. W.: but, if the land-breeze is from the N. W. with rain, the wind, on the day following, will be from North, N. N. E. or N. E. particularly in August and September: these winds are denominated, in the country, '*Vientos de Cabeza o Vendavales*' (head-winds or rainy winds;) they are not strong, nor do they raise the sea; with them, therefore, a vessel may take an anchorage as well as with the general breeze; but they impede getting out, for which the land-breeze is required. The *Vientos de Cabeza*, or head-winds, reach to about 20 or 30 leagues from the coast, at which distance are found those at East and E. S. E.

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

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

"The first of the norths is regularly felt in the month of September; but, in this month and the following one, October, the norths do not blow with much force. Sometimes it hap-

pens that they do not appear, but, in that case, the breeze is interrupted by heavy rains and tornadoes. In November the norths are established, blow with much strength, and continue a length of time during December, January, and February. In these months, after they begin, they increase fast; and in four hours, or a little more, attain their utmost strength, with which they continue blowing for forty eight hours; but afterwards, though they do not cease for some days, they are moderate. In these months the norths are obscure and north-westerly, and they come on so frequently, that there is, in general, not more than four or six days between them. In March and April they are neither so frequent, nor last so long, and are clearer; but yet they are more fierce for the first twenty-four hours, and have less north-westing. In the interval before November, in which, as we have said, the norths are established, the weather is beautiful, and the general breeze blows with great regularity by day; the land-breeze as regular by night.

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

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

"The Norths also sometimes conclude by taking to the northward and eastward, which is more certain; for, if the wind in the evening gets to N. E., although the sky remain covered the day following, but by night the land breeze has been from the northward and westward, the regular breeze will surely ensue in the evening, good weather succeeding and continuing for four or six days; the latter period being the longest that it will last to, in the season of the norths: but, if the wind retrograde from N. E. to N. N. E. or North, the weather will be still unsettled.

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

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

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

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

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

"In the months of August and September, rarely a year passes without hurricanes near Florida and the northern Antillas; but to Vera Cruz, or any part of the coast thence to Campeache, they never arise; all that is felt being the heavy sea, which has arisen in the higher

latitudes. ways go round with thick squalls. From Tan from the mo coast is expos out intermiss In lat. 26° From Bay day's enterin S. W. In-w 3 days. The ber and Nove vass can stand frequently, esp From the M generally from W.—these S. W. are also experi blow from the to S. W. and W ther, and then From lat. 28° morning, and especially from sea. In the new cl norths, and in N. and consequ winter, that is f rise to lat. 27° have calms and ON THE EAST winds generally prevailing winds The former of therly one; altho about the equino These winds a above described, land, or rather of particular seasons is observed in the any deviation; n vancing to the n will prevail near t of it between the trade-wind will ge movement with the proaching the coas within four or five to the westward. Within a few mi generally blows dir generally, supersed About Rio de Janci and, while at Perna The proceeding D'Apres, has said are from N. E. and ly monsoon are fron ted, that they do seldom occur. Mr. Lindley, in h shore, at Bahia, &c. (southward,) the w and north-westerly



latitudes. Hurricanes begin to the northward and eastward; and, although they do not always go round the same way, yet, in general, they next go to the southward and eastward, with thick squally weather and rain."

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

In lat.  $26^{\circ} 30'$  N. there are land breezes at night, which blow from midnight, to 9 A. M.

From Bay St. Bernard to the Mississippi there are land breezes at daylight, and on the day's entering, the winds haul to S. E. and E. S. E. and in the afternoon it generally hauls S. W. In winter the southerly winds are very tempestuous, and blow for the space of 2 or 3 days. The months most to be feared to navigate this sea, are August, September, October and November, in which there are hurricanes and winds on shore so heavy that no canvas can stand them: upon the Mississippi, and all its mouths, there are very thick fogs very frequently, especially in February, March and April, and in June and July.

From the Mississippi to lat.  $28^{\circ}$  N. in the month of April to July, the reigning winds are generally from N. to E. and from E. to S. in the morning, and in the afternoon they haul S. W.—these S. W. winds are tempestuous in August, September and October, an epoch in which are also experienced heavy southers and hurricanes. From November to March the winds blow from the northward, beginning first from S. E. and S. with heavy rain, when it hauls to S. W. and W. and blows very heavy, till it hauls to N. W. and N. when it clears the weather, and then to N. E. and is mild.

From lat.  $28^{\circ}$  N. to the southernmost of the Florida keys, the trade wind reigns in the morning, and at mid-day it hauls in from the sea; this happens in summer, but in winter, especially from November to March, the winds blow from S. to W. and raise a very heavy sea.

In the new channel of Bahama, the reigning wind is the trade, interrupted in winter by norths, and in summer by calms. Although the northern limits of this channel is in  $28^{\circ} 30'$  N. and consequently within the limits of the trades, yet it is necessary to keep in mind that in winter, that is from November to April, you will meet with the variables at or before you arrive to lat.  $27^{\circ}$ , which variables are from E. to S. and from S. to W. and in summer you have calms and light airs from S. to W. and from W. to N.

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

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

These winds are simply a continuation of the S. E. trade, which changes its direction as above described, and as influenced by the land on its approach thereto. The influence of the land, or rather of its temperature, is more or less, according to the action of the sun at the particular seasons of the year. When the sun is to the northward, no particular difference is observed in the S. E. trade, but it may be carried within sight of the coast, with scarcely any deviation; nevertheless, about both equinoxes, but more especially when the sun is advancing to the northward, calms and very light winds, with apparently no settled quarter, will prevail near the coast; and this may be said to be more particularly the case on that part of it between the Abrolhos and Cape Frio. As the sun advances to the Southward, the trade-wind will generally come round to the north-eastward, and will have its retrograde movement with the return of the sun to the equinox. At this latter season, ships, on approaching the coast, will begin to observe this northerly inclination of the S. E. trade, when within four or five degrees of it, and which they will find gradually to increase as they incline to the westward.

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

The proceeding remarks are those of Lieutenant Hewett. Pimentel, and, after him, M. D'Apres, has said that the winds of the northerly monsoon, between September and March, are from N. E. and E. N. E., or less northerly than as above; and that those of the southerly monsoon are from E. S. E. to S. S. E., or more southerly. It may, therefore, be admitted, that they do sometimes prevail more from the south, and that those near the north but seldom occur.

Mr. Lindley, in his Narrative of a Voyage to Brazil, having resided a considerable time on shore, at Bahia, &c. has described the in-shore wind as follows: "From Cape St. Augustine, (southward,) the wind blows, nine months in the year, chiefly north-easterly in the morning, and north-westerly during the evening and night: this continues gradually changing along



the coast, till, at Rio Janeiro and the Rio Plata, it becomes a regular land-breeze from evening till morning, and throughout the day the reverse. During the three stormy months, that is, from the latter end of February to that of May, the wind is, generally, southerly, blowing very fresh and squally, at times, from the south-west."

Lieut. Hewett has observed that, the winds off Cape Frio are seldom found to the southward of East; and, in the northern monsoon, they are generally to the northward of N. E. Heavy and violent squalls are occasionally met with in rounding the Cape, to obviate the effects of which every precaution is required.

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

Captain Peter Heywood, in the British frigate *Nereus*, was for three years on the Brazil station, and the greater part of that time in the River Plata. This gentleman describes the winds hereabout as follows:

"At the ENTRANCE of the RIVER PLATA, the prevailing winds, during the summer months, from September to March, are north-easterly, with tolerably clear weather over head, but a dense atmosphere near the horizon. These winds haul gradually to the eastward as you advance up the river; and, about the full and change of the moon, strong breezes from the south-eastward are common at this season, accompanied with rain and foul weather. At Buenos-Ayres, during the summer months, the S. E. winds are generally fresh in the day-time, hauling round to the northward in the night.

"During the winter months, from March to September, the prevailing winds, at the entrance of the Plata, are S. W. or more westerly; but, up the river, more generally from the northward, than from the southward, of west.

"The winter season is the best, in point of weather, at Buenos-Ayres; for the winds being chiefly from N. W. to S. W., the water is smooth, and the communication can be kept up between the shore and the shipping with more facility. The weather is sometimes, but not frequently, foggy. Fogs are most common in the months of July, August, and September, and prevail more at the entrance of the river, as far up as the S. E. tail of the Ortiz, then above the banks."

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

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

## A CURRENT

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## CHAP. XXIII.

## CURRENTS.

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

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

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

At any considerable distance from the Coast of America, the easterly current, caused by the action of violent W. or N. W. winds, is seldom felt to the southward of latitude  $36^{\circ}$ ; consequently, the sea about the Bermudas, and thence southward, is free from the influence of this current. The currents here, though slow, are produced in the direction of the wind, particularly when it is of long continuance. These currents are found stronger near the islands and rocks of Bermudas than at a distance, because the obstruction which the water meets with from the islands, causes it to run proportionably faster past their sides. In a brisk gale, the current here has been experienced from 12 to 18 miles in 24 hours, in the direction of the wind; at other times, when the wind was not settled, no current has been found.

To continued westerly winds are to be attributed, the common occurrence of a passage from Halifax to the English Channel in 16 or 18 days\* with such currents as those which carried the bowsprit of the Little Belt, sloop of war, lost near Halifax, in 19 months, to the entrance of Basque Roads. The currents of the Atlantic have sent to the shores of the Hebrides the products of Jamaica and Cuba and of the southern parts of North-America; but we know not the courses, or tracks, through which these articles may have been impelled, nor the spaces of time in which they were aloft: all this is conjectural, and furnishes matter for investigation. We still want DATA, or a more extensive knowledge of facts.

The Easterly and South-easterly currents, are blended in their southern regions, with the Florida or Gulf-Stream, described in page 1st. &c. and they do not seem to prevail to the S. W. of the Azores. On the contrary, to the W. S. W. and S. W. of those islands, the Currents appear to follow the course of the Trade-winds, towards the Caribbean Sea; and to the southward of the Tropic they blend with the *Equatorial Current*, which sets from E. S. E. to W. N. W. and West. Towards the west, they occasionally extend to the northward of the Bermudas; and, even unite with the southern edge or *reflow* of the Gulf-Stream. The existence of these currents has long been known, but a farther examination, and more precise information, are still *desiderata*. The recent examples of them which we have to adduce are not numerous, but they are satisfactory; they also accord with natural facts, and are in unison with that theory which derives its currents from the rotary movement of the earth, and the operation of the Trade-winds.

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

The *Derrotero* adds, "This idea is confirmed by what *Don Torquato Pedrola*, the captain of a frigate, has communicated to the Hydrographic Board. Although, generally," says this officer, "the currents between the Spanish Main and West-India Islands set towards the fourth quadrant, (that is, north-westerly,) yet it sometimes, though seldom, happens that they are found setting to the first quadrant," (or N. E. :) in proof of which he states that he perfectly remembers, though he cannot give the elements, in consequence of having lost his journals, that, in July, 1793 or 1796, when sailing with a fresh breeze from Santa Martha to

\* For the shortest passage yet known, see note to page 9

Jamaica, in a schooner, he steered for Morant Point; but considering that, by keeping as close-hauled as that course required, he must be unable to make it before the day was spent, he preferred keeping away, to make the land to leeward of it, and did so at 8 a. m. thus augmenting the rate of the vessel's sailing. At noon he observed the latitude, in conjunction with the pilot, *Don Miguel Patina*, and found that they were some minutes to the northward of Morant Point; and, keeping away W. by S. they saw it at two, p. m. Although they calculated the direction and velocity of the current, he remembers only that it was to the N. E. and that they were three days crossing from Santa Martha to Jamaica.

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

"Much current has also been found near the *Baro Nuevo*, lat.  $15^{\circ} 50'$  and long.  $78^{\circ} 40'$  as was remarked by the brig *Alerta*, when near its northern extremity. The same is the case on its southern side; for, in prior years, the schooner *St. Gregorio*, bound from Carthagena to Trinidad, saw the south end of the shoal at 4 p. m. At 5, she was three miles from it; but, noticing that the current set strongly towards the shoal, they set all sail and ran to the south until they considered the vessel nine miles from the southern point; and the following morning tacked to sight it, which she did not effect, having doubtless passed to leeward of it.

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

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

"In the examination of the coast between *Porto Velo* (Porto Bello) and the *Bocas del Toro*, made in 1787, by *Don Fabian Abances*, he found on that coast, in the month of April, strong currents setting to the E. N. E. at the rate of two miles an hour; so that, heaving-to at night, off Cocle Point, he found himself, in the morning, up at *Chagre*: the winds at the time were either calm or squally from the south-westward. *Don Fabian* proceeded to the northward, to the parallel of 10 degrees, and then met with winds from North and N. N. E. with which he steered West and W. N. W. until he considered himself 10 leagues to the West of the *Bocas del Toro*: but the current had carried him to the E. S. E.; so that, when he expected to make the *Bocas*, he found himself at the point of *Miguel de Borda* about 5 leagues to the westward of *Chagre*. During the whole time, from leaving *Porto Velo*, he never gained an observation, the weather being adverse. On the 11th of May he noticed that the waters of the Lagoon of Chiriqui run out through the *Bocas* with violence, and formed, at a short distance from the coast, an angle bending to the E. S. E."

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

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

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

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

Near the parallel of  $10^{\circ}$  N. the Currents produced by the N. E. and S. E. trade-winds may be imagined to unite; and this united stream, being divided by the island of Trinidad and the Southern Antillas, thence passes into the Caribbean Sea.

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

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

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

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

"In crossing from the coast, or from Cartagena, to the islands, it has been observed, that, from La Guayra, to the eastern part of St. Domingo, on a voyage made in December, a difference of 106 miles to the westward was found during the seven days the voyage lasted."—*Derrotero de las Antillas*.

Mr. Town, in his Directions for the Colombian coast, has said, "Although, between the Island of Jamaica and the Spanish Main, westerly currents are most frequent, yet they do not always prevail; for ships have been known to be driven by the current from 50 to 60 miles to the eastward, in four or five days. From the beginning of May till November, (the rainy season,) the sea breeze seldom or never blows home to the main: and ships going there should never go to the southward of the latitude of  $11^{\circ}$ ; until they are, at least, 40 or 50 miles to the westward of their intended port; after which they may make a south course, as the land-breeze, which is generally from the S. W., and the strong easterly current, will set you to the eastward of your intended port, if great care be not taken. When to the eastward, if light winds prevail, you must stand to the northward until you meet the sea-breeze, which will be between the latitudes of  $10^{\circ}$  and  $11^{\circ}$  degrees, and then run to the westward."

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

"Between Chagre and Porto-Bello, during the rainy season, there is generally a northerly current, at the rate of from one and a half to two and a half miles an hour. After the end of the rainy season the current sets to the southward and westward, and strong southerly and easterly winds prevail here. From November until May (the dry season,) the southerly and westerly are very light winds, except in squalls, which end with heavy rain. In sudden squalls, you will often have the winds from all points of the compass."

"If at Chagre, at any time during the rainy season, (May till November,) and bound to the eastward, endeavour to get four or five leagues from the land, so soon as you can; for the winds are, in general, very light, and the current very strong. The latter sets from Chagre

directly on the rocks of Porto-Bello, and thence along the land from E. by N., E. N. E., E. S. E., and according as the land lies : its general rate being from one and a half to two and a half miles in an hour. Great care should be taken when near the land, if a heavy squall and rain appear to be coming on. During this you will have the wind from all points of the compass, and often so strong that all sail must be taken in.

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

"Near Carthagea the current generally goes with the wind ; but off the Islands of Rosarito it sets to the N. W. and N. N. W. from one to two miles an hour.

"Between Carthagea and the Magdalena, in the rainy season, you cannot put any dependence on the winds or currents ; but, from November to May, the trade-wind blows home.

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

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

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

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

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

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

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

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

Captain Burnett, in his directions for sailing from the BAY of HONDURAS, says, "when the trade-wind prevails, a current, often very strong, sets down between Mauger Key and the

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Northern Triangle; there, dividing itself, it sets to the southward, between Turneff and the Main Reef, and to the northward between the Triangle Reef and Ambergris Key. It is most advisable, with the wind from the East to E. S. E. to sail to leeward of the Triangle, as you will have a strong current in your favour so soon as you bring it to the eastward of you.

"In the channel, between the island Cosumel and the shore, the current along shore runs at the rate of nearly  $2\frac{1}{2}$  miles an hour, till lost in the Mexican Sea."

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

With the former in its favour, his Majesty's ship *Resistance*, Captain Adam, off the Bank of Yucatan, made a course W. N. W.  $\frac{1}{2}$  W. nearly 80 leagues in the 24 hour, December 16 and 17, 1806; \* and we have no doubt that many instances may be found to prove the same effect; on the Cuba side only, it appears that vessels have been set to the southward; and Captain Manderson has stated that, when a strong easterly wind has been blowing between Cuba and Florida, vessels heaving-to off the South side of Cape Antonio, at about two leagues from shore, have, in the course of one night, been carried against a strong sea-breeze, nearly as high as Cape Corrientes, being a distance of 10 leagues.†

From CAPE ANTONIO the current sets, at times, to the E. S. E., past the Isle of Pines.—Captain Livingston has informed us that, in March, 1818, he found the current between the Great Cayman and Isle of Pines to set in that direction, at the rate of full two miles and a half an hour, or 60 miles in the 24 hours. In August, 1817, he found the set nearly the same, but the current not half so strong. The Spanish Directory says, 'From Cape de Cruz, on the South side of Cuba, it is noticed that there is a constant current to the westward, with some inclination to the southward or northward, and which has been known sometimes to set 20 miles in a single day.' In opposition to this, the exact words of Captain Livingston are, "I have twice experienced a strong current setting about E. S. E. between the Caymans and Isle of Pines; and, on the latter of these occasions, both my mate and myself separately calculated it to set about 60 miles per day or  $2\frac{1}{2}$  per hour. This, however, I incline to think a very particular case, such as may but seldom occur. The winds at this time were light and westerly. On the other occasion, so far as I recollect, it set about 12 or 14 miles per day only. All my papers on these subjects have been lost; but the first instance was too remarkable to be forgotten."

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

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

In an old book, (Kelly's Navigation, Vol. 1. 1733,) is an abstract from a journal, which contains the following passage:—"Between the West end of Hispaniola and the island of Jamaica, if I took my departure upon a full or change of the moon, I found that I made many leagues more than I did at the quarters of the moon. At the full and change, I was looking out for the land long before I saw it; and, at the quarters, I was down on it long before I looked for it. The reasons, as I found afterwards, were, that the full and change made a strong windward current, and the contrary on the quarters. This has been exemplified in many instances."

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

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

"On the South side of Cuba, when the wind is westerly, which it often is, you are always certain of a re-flowing current round Cape Antonio. This is easily accounted for; as, when the fresh trade-wind ceases, and the westerly winds set in, the barrier is, in some degree,

\* The northernmost part of the track extend to  $24^{\circ} 50'$  N. longitude  $90^{\circ} 39'$  W.

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

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

removed, which confined the waters in the Gulf of Mexico, and they seek to regain their level as well by the Channel of Yucatan as by the Strait of Florida."

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

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

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

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

In the Channel between Trinidad and Grenada the current has been found to set nearly West; on the South side half a point southerly, and on the north side half a point northerly. Its velocity from a mile to a mile and a half per hour.

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

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

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

The current sets nearly in the same manner between Martinique and Dominica; but, to the north-westward of the latter, it has been found nearly S. W. three-fourths of a mile hourly. Northward of Guadeloupe it sets W.  $\frac{1}{2}$  S. and between Montserrat and Antigua N. W.

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

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

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

In the Mona Passage, between Porto-Rico and Hayti, the current has been marked as frequently setting to the N. W. and we have instances of a set through to the S. W. but Captain Monteath, in February, 1816, when proceeding southward towards Porto-Rico, in from latitude  $23^{\circ}$  to  $22^{\circ}$  and longitude  $64^{\circ}$  to  $65^{\circ}$ , found the current setting N. N. E. at the rate of 20 miles in the 24 hours: and he says that, off the N. W. end of Porto-Rico, it invariably set from the Caribbean Sea to the North and N. N. E. On the western side of the Passage it set North, two miles an hour.

From Trinidad, westward, and off the North side of the Spanish Leeward Isles, the current has been found setting West and S. W. to the Gulf of Maracaybo; thence S. W., also to Cartagena: but it varies, as already described in pages 650 and 651.

From Cartagena towards the Channel of Yucatan, it has been found N. N. W., N. W., W. N. W. and N. W. by N. from 1 to nearly 2 miles, and then decreasing to  $1\frac{1}{2}$  mile per hour. It has also been found setting to the eastward, as shown in the preceding pages.

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

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

On the EAST COAST of BRAZIL the currents generally partake of the direction of the monsoons, as explained in page 647, but vary in velocity according to the advance and decline of them, as well as the part of the coast.

Lieutenant Hewett says, During the Southerly monsoon, the currents to the southward of Cape St. Augustin are not so powerful as to the northward, where they increase in strength until the months of June and July, and then gradually decline. On the contrary, in the northerly monsoon, they are generally very strong to the southward of Cape St. Augustin, when they are weak to the northward, as they have some difficulty in detaching themselves from the stream, which runs from the S. E. trade around Cape St. Roque.

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

The currents of the River Plata, and other local currents near the shores, have been noticed in the Descriptions and Sailing Directions, page 506, &c.

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

1. In June and July, 1795, the Bombay Castle, East-Indiaman, between the Isle of Palma (of the Canaries) and the Coast of Brazil, experienced a westerly current, amounting to  $6\frac{1}{2}$  degrees.

2. On May 20, 1802, the Cuffins, East-Indiaman, lost the N. E. trade in  $8\frac{1}{2}^{\circ}$  N. long.  $22^{\circ}$ . Gained the S. E. trade, June 4, in  $5^{\circ}$  N. long.  $21^{\circ}$ . From the equator the current was found to set W. and W. by N. from 30 to 52 miles daily, till the coast of Brazil was in sight on the 14th, in  $8^{\circ}$  S.

3. May 23, 1802, the Sir Edward Hughes lost the N. E. trade in  $6^{\circ}$  N. long.  $23^{\circ}$ , and the wind was from S. S. E. on the 25th in  $5^{\circ}$  N. and  $23^{\circ} 30'$  W. The trade kept far at southward, and the current set strongly to the West.

4. October 16, 1805, the Europe and fleet lost the N. E. trade in  $11^{\circ}$  N. long.  $28^{\circ}$ , and gained the S. E. trade on the 26th, in  $4^{\circ}$  N. long.  $29^{\circ}$ . On the 4th of November, the land of Brazil was seen in lat.  $6^{\circ}$  S. the wind near the land was at E. by S. and E. S. E. By proceeding too far to the westward, two ships of the fleet were wrecked in the morning of the 1st of November, on the Roccas, or low Keys, in lat.  $3^{\circ} 59'$  S. and  $53\frac{1}{2}^{\circ}$  W. and several others had nearly shared the same fate. This catastrophe had probably been avoided by a due knowledge of, and attention to, the effects of the current; which was subsequently ascertained to set  $2\frac{1}{2}$  miles per hour to the westward, near the Roccas.

5. On the 1st of June, 1793, the King George, East-Indiaman, crossed the line in  $30^{\circ}$  W. and, from the second to the fifth, experienced a westerly current of  $1^{\circ} 33'$ . On the 5th, Cape St. Roque was in sight, and the ship was kept working until the 10th, endeavouring ineffectually to weather it; she then stood to the north-eastward, closely hauled, to latitude  $1^{\circ}$  N. in order to regain the variable winds in North latitude, and then proceeded to cross the equator, which was, at length, effected.

6. In May and June, 1807, the transports, laden with ordnance-stores, for the army at Monte Video, by crossing the equator too far to the westward, were carried so far in this direction by the current, that they could not get to the southward of Cape Augustin, (latitude  $8^{\circ} 23'$  S.) and were twice obliged to stand to the northward, into variable winds, to regain Easting, after having attempted ineffectually to gain the regular South East trade-wind.

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

## CHAP. XXIV.

## TIDES.

**TIDE** is a periodical motion of the water of the sea, by which it ebbs and flows twice a day. The *flow* continues about 6 hours, during which the water gradually rises till it arrives at its greatest height; then it begins to *ebb* or decrease, and continues to do so for about 6 more, till it has fallen to nearly its former level; then the flow begins as before. When the water has attained its greatest height, it is said to be *high-water*, and when it is done falling, it is called *low-water*.

The cause of the tides is the unequal attraction of the sun and moon upon different parts of the earth. For they attract the parts of the earth's surface nearest to them, with a greater force than they do its centre: and attract the centre more than they do the opposite surface. To restore this equilibrium the waters take a spheroidal figure, whose longer axis is directed towards the attracting-luminary. If the moon only acted upon the water, the time of high water would be when the moon was upon the meridian, above or below the horizon; or rather at an hour or two after, (because the moon continues to act with considerable force for some time after passing the meridian.) But the moon passes the meridian about 49' later every day; of course, if she only acted on the tides, they would be retarded every day 49', and it would be high water at the same distance from her passing the meridian; and it is upon this principle that the time of high water is calculated in most books of navigation, although the time thus calculated will sometimes differ an hour from the truth, owing to the neglect of the disturbing force of the sun. The effect of the moon upon the tides is greater than that of the sun, notwithstanding the quantity of matter in the latter is vastly greater than in the former: but the sun, being at a much greater distance from the earth than the moon, attracts the different parts of the earth with nearly the same force; whereas the moon being at a much less distance, attracts the different parts of the earth with very different forces. According to the latest observations, the mean force of the sun for raising the tides is to the mean force of the moon as 1 to 24. By the combined effect of these two forces, the tides come on *sooner* when the moon is in her *first* and *third* quarters, and later in the *second* and *fourth* quarters, than they would do if caused only by the moon's attraction. The mean quantity of this acceleration and retardation is given in the Table B, subjoined; the use of which will be explained hereafter.

The tides are greater than common about three days after the new and full moon; these are called *spring-tides*. And the tides are lower than common about three days after the first and last quarters; these are called the *neap-tides*. In the former case the sun and moon conspire to raise the tide in the same place, but in the latter the sun raises the water where the moon depresses it. When the moon is in her *perigee*, or nearest approach to the earth, the tides rise higher than they do, under the same circumstances, at other times; and are lowest when she is in her *apogee*, or farthest distance from the earth. The spring-tides are greatest about the time of the equinoxes, in March and September, and the neap-tides are less. All these things would obtain exactly, were the whole surface of the earth covered with sea; but the interruptions caused by the continents, islands, shoals, &c. entirely alter the state of the tides in many cases. A small inland sea, such as the Mediterranean or Baltic, is little subject to tides; because the action of the sun and moon is always nearly equal at the extremities of such seas. In very high latitudes the tides are inconsiderable.

From the observations of many persons, the times of high-water on the days of new and full moon at the principal places in North and South America, have been collected. These times are put in a table against the names of the places, arranged in alphabetical order in the Table. The most common rule prescribed for finding high-water is that depending on the golden number and epact, the tide being supposed to be uniformly retarded every day. This method will sometimes differ 2 hours from the truth, for which reason I shall not insert it; but shall proceed to explain the calculation by the adjoined tables A and B, and the Nautical Almanac; by means of which the time of high-water may be obtained to a greater degree of exactness than from our common almanacs.

## RULE.

Find the time of the moon's coming to the meridian at Greenwich on the given day, in page 6th. of the Nautical Almanac. Enter the Table A, and find the longitude of the given place, in the left hand column, corresponding to which is a number of minutes to be applied

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to the time of passing the meridian at Greenwich, by *adding* when in *west* longitude, but *subtracting* when in *east* longitude; the sum or difference will be nearly the time that the moon passes the meridian of the given place. With this time enter Table B, and take out the corresponding correction, which is to be applied to the time of passing the meridian of the place of observation, by adding or subtracting, according to the direction of the table.

To this corrected time add the time of full sea on the full and change days; the sum will be the time of high-water at the given place reckoning from the noon of the given day. If this sum be greater than 12h. 24m. you must subtract 12h. 24m. from it, and the remainder will be the time of high-water nearly, reckoning from the same noon; or if it exceed 24h. 48m. you must subtract 24h. 48m. from that sum, and the remainder will be the time of high-water, reckoning from the same noon nearly.

## EXAMPLE I.

Required the time of high-water at Charleston (S. C.) March 17, 1820, in the afternoon, civil account?

By the Nautical Almanac I find that the moon passed the meridian of Greenwich at 9h. 31m. to this I add 11m. taken from Table A, corresponding to the longitude of Charleston. With the sum 2h. 42m. I enter Table B, and find (by taking proportional parts) that the correction is 45' which is to be subtracted from 2h. 42m. (because immediately over it in the table it is marked Sub.) to the remainder 1h. 57m. I add the time of high water on the full and change days 7h. 15m. (which is found in the tide table following;) the sum 9h. 12m. is the time of high water on the afternoon of March 17, 1820, civil account.

## EXAMPLE II.

Required the time of high water at Portland, Maine, May 23, 1820, in the afternoon, civil account?

By the Nautical Almanac the moon will pass the meridian of Greenwich at 8 hours 49 minutes. The correction from Table A, corresponding to 70° the longitude of Portland is 9m. which added to 8h. 49m. gives the time of the moon's southing at Portland 8h. 58m. nearly. The number in Table B corresponding to 8h. 58m. is 23m. which is to be added to 8h. 58m. (because immediately over it, in the table, is marked Add.) To the sum 9h. 21m. I add the time of high-water, on the full and change days, 10h. 45m. and the sum is 20h. 6m. consequently the high-water is at 20h. 6m. past noon of May 23, that is, at 8h. 6m. A. M. of May 24. And by subtracting 12h. 24m. from 20h. 6m. we have 7h. 42m. which will be nearly the time of high-water on the afternoon of May 23, 1820.

In this manner we may obtain the time of high-water at any place, to a considerable degree of accuracy. But the tides are so much influenced by the winds, fresher, &c. that the calculated times will sometimes differ a little from the truth.

Many pilots reckon the time of high-water by the point of the compass the moon is upon at that time, allowing 45 minutes for each point. Thus on the full and change days, if it is high water at noon, they say a north and south moon makes full sea; and if at 11h. 15m. they say a S. by E. or N. by W. moon makes full sea; and in like manner for any other time. But it is a very inaccurate way of finding the time of full sea by the bearing of the moon, except in places where it is high-water about noon on the full and change days.

When you have not a Nautical Almanac, you may find the time of high-water by means of the following tables C and D; and although the former method is the most accurate, yet the latter may be useful in many cases. To calculate the time of full sea by this method, observe the following

## RULE.

Enter Table C, and take out the number which stands opposite to the year, and under the month for which the tide is to be calculated; this number, added to the day of the month, will give the moon's age, rejecting 30 when the sum exceeds that number. Against her age found in the left hand column of Table D, is a number of hours and minutes in the adjoining column, which being added to the time of high-water at the given place on the full and change days, will give the time of high-water required, observing to reject 12h. 24m. or 24h. 48m. when the sum exceeds either of those times.

By this rule I shall work the two succeeding examples.

## EXAMPLE III.

Required the time of high-water at Charleston (S. C.) March 17, 1820, in the afternoon, civil account?



In the table C, opposite 1820, and under March, stand 16, which, added to the day of the month 17, gives 33, and by subtracting 30, leaves 3, the moon's age: opposite 3 in Table D, is 1h. 46m. which added to 7h. 15m. the time of high-water on the full and change days, gives 9h. 1p. for the time of high-water; differing eleven minutes from the former method.

## EXAMPLE IV.

Required the time of high-water at Portland, (Maine) May 23, 1820, in the afternoon civil account?

In the Table C, opposite 1820, and under May, stand 18, which added to the day of the month 23, gives (by neglecting 30) the moon's age 11; opposite to this, in Table D, is 9h. 19m. which added to 10h. 45m. the time of high-water on the full and change days, gives 20h. 4m. from which subtracting 12h. 24m. there remains 7h. 40m. for the time of full sea May 23, 1820; this differs 2 minutes from the former method.

In the third column of Table D, is given the time of the moon's coming to the meridian, for every day of her age; thus, opposite 11 days stand 5h. 57m. which is the time of her coming to the meridian on that day.—This table may be of some use when a Nautical Almanac cannot be procured; but being calculated upon the supposition that the moon moves uniformly in the equator, the table cannot be very accurate. The numbers in this Table are reckoned from noon to noon; thus, 1h. A. M. is denoted by 13h.; 2h. A. M. by 14h. &c.

The time of new moon is easily found, by subtracting the number taken from Table C from 30. Ex. Suppose it was required to find the time of new moon for May, 1820? By examining the table, we find the number corresponding to that time is 18; this subtracted from 30 leaves 12; therefore it will be new moon the 12th May, 1820.

When the time of high-water is known for any day of the moon's age, we may from thence find the time of high-water on the full and change days, by the following

## RULE.

Find the time of the moon's coming to the meridian of Greenwich, in the 6th page of the Nautical Almanac: to this time apply the corrections taken from the tables A and B, (in the same manner as directed in the preceding rule for finding the time of high-water) subtract this corrected time from the observed time of high-water, and the remainder will be the time of high-water, on the change and full days.

NOTE. If the time to be subtracted be greater than the observed time of full sea, you must increase the latter by 12h. 24m. or by 24h. 48m. nearly.

## EXAMPLE.

Suppose that on the 17th March, 1820, the time of high water at Charleston (S. C.) was found to be at 9h. 12m. P. M. required the time of high water on the full and change days?

I find, as in example 1st. preceding, that the number to be subtracted is 1h. 57m.—taking this from 9h. 12m. leaves 7h. 15m. which is the time of high water on the full and change days.

When you have not a Nautical Almanac, you may find the time of high-water on the full and change by means of the Tables C and D. For in the present example, I find by Table C, that the moon's age was 3, corresponding to which, in the second column of Table D, is 1h. 46m. this subtracted from 9h. 7m. leaves 7h. 21m. for the time of high-water on the full and change days.

Tas. A.	
Longitude of the place.	Cor. of Moon's passing the meridian.
Deg. M.	
0	
10	
20	
30	
40	
50	
60	
70	
80	11
90	12
100	14
110	15
120	16
130	18
140	19
150	20
160	22
170	23
180	24

In all the preceding arising from the different 10' or 12' in the neglected.

TAB. A. TAB. B. TAB. C. TAB. D.

A TABLE FOR FINDING THE MOON'S AGE.				Moon's Age.		High Water.		Moon passes meridian.	
Longitude of the place.	Cor. of Moon's passing the meridian.	Time of Moon's passing the meridian.	Corr.	Day.		H. M.	H. M.	H. M.	H. M.
Deg.	M. m.	Hours.	H. M.	Add the number taken from this Table to the day of the month; the sum (rejecting 30 or 60 if necessary) will be the Moon's age, nearly.					
0	0		Sub.	0	0	0	0	0	0
10	1		00 0	1	0	35	0	49	
20	3		10 17	2	1	10	1	38	
30	4		20 34	3	1	46	2	26	
40	5		30 50	4	2	22	3	15	
50	7		41 3	5	3	1	4	4	
60	8		51 9	6	3	44	4	53	
70	9		61 3	7	4	35	5	42	
80	11		70 35	8	5	39	6	30	
90	12		80 2	9	6	57	7	19	
100	14		90 23	10	8	15	8	9	
110	15		100 24	11	9	19	8	57	
120	16		110 14	12	10	10	9	46	
130	18		120 0	13	10	54	10	34	
140	19		130 17	14	11	33	11	23	
150	20		140 34	15	12	9	12	12	
160	22		150 50	16	12	44	13	1	
170	23		161 3	17	13	19	13	50	
180	24		171 9	18	13	54	14	38	
			181 3	19	14	31	15	27	
			190 35	20	15	11	16	16	
			200 2	21	15	56	17	5	
			210 23	22	16	49	17	54	
			220 24	23	17	57	18	42	
			230 14	24	19	17	19	31	
			240 0	25	20	32	20	20	
				26	21	33	21	9	
				27	22	22	21	58	
				28	23	4	22	46	
				29	23	42	23	35	
				29 1/2	24	0	24	0	

In all the preceding calculations of the time of high-water, we have neglected the correction arising from the variation of the distances of the sun and moon from the earth, and from the different declinations of those objects. These causes might produce a correction of 10' or 12' in the time of high-water, but in general will be much less, and may, therefore, be neglected.

**TABLE,**  
*Shewing the TIMES of HIGH WATER, at the full and change  
of the Moon, at the principal ports and Harbours on the Coast of  
North and South America, with the vertical rise of the Tide in feet.*

PLACES.	TIME.	RISES.	PLACES.	TIME.	RISES.
<b>A</b>	<b>H. M.</b>	<b>FEET.</b>			
Anticosta I. (W. end)	3 30		Cape May	8 45	6
Apple River (St. Laurence)	11 00	32	Cape Henlopen	8 45	
Annapolis (N. America)	11 00		Cape Charles	7 45	
Augustine, St.	7 30	5	Cape Henry	7 40	4½
Amelia Harbour	8 30		Cape Fear	8 00	
			Cape Hatteras	9 00	
<b>B</b>			Cape Lookout	9 00	
Bristed Bay (Nova Scotia)	7 45	8	Cape Roman	8 00	
Bay of Shecatia	11 00		Charleston (South Caro- lina)	7 15	6
Bays of St. Genevieve and St. Barbe	11 30		Chatham Bay to Cape Roman very irregular.		
Bay of Pistolet	6 45		Cape Antonio (Cuba) ir- regular	9 30	1½
Between Cape Chapeau- rouge and Cape Ray generally	9 00	7 & 8	Carthagena	12 00	1
Beyond Cape Ray north- ward, the tide is consi- derable.			Cayenne	3 45	6
Bensiamities Point (St. Laurence)	1 30		Corromand Point	5 00	
Beaver Harbour	8 45	7	Cape Haytian	6 00	2½
Bay of St. Mary	9 30	16	<b>D</b>		
Basin of Mines, viz. Windsor	12 00	36	Laware River (ent.)	9 00	
Seven Isles Harbour	11 00	31	Dry Tortugas	8 30	3
Cape Split	11 15	40	Demarara Bay	4 50	
Broad Bay	10 45	9	<b>E</b>		
Boston Light-House	10 00		Elizabeth Isles (Tarpaulin Cove)	9 52	9
Barnstable Bay	11 00	9	Elizabeth Town Point (New Jersey)	8 54	5
Block Island	7 37		<b>F</b>		
Barbadoes (West Indies) scarcely perceptible		1	Fort St. John (Newfound- land)	9 00	
Berbice		11 & 12	Frying Pan Shoals	6 30	
<b>C</b>			Fox Island (Penobscot)	10 45	
Coast of Labrador and Strait of Belle Isle, ge- nerally	11 00	30	Florida Keys (Sombbrero Key)	8 50	5
Crane Island (St. Lau- rence)	5 00		<b>G</b>		
Cape Chat (St. Laurence)	12 00	13	Green Island (St. Lau- rence)	3 00	16
Cocayne to Cape Tormen- tin, and thence to Pic- ton Harbour	7 00	6	Gaspé Bay (St. Lau- rence)	3 00	
Chedabucto Bay	8 30	8	Gut of Canso	8 00	8
Canso Harbour	8 45	7	Goldsborough	11 00	12
Country Harbour to White I. Bay	9 00	8	George's River	10 45	9
Campbell Port	9 00		Gay Head	7 37	7
Cape Sablé	8 00	9	Georgetown Bar	7 00	4
Cape St. Mary	9 00	14	Gut of Annapolis, (en- trance St. Laurence)	10 00	28
Cape D'Or, entrance of Mines Channel	11 00	41	Guadaloupe (irregular)	6 45	1½
Cumberland Basin Fort	12 00	60	<b>H</b>		
Casco Bay	10 45		Halifax to St. Margaret's Bay	8 00	8
Cape Ann	11 30	11	Hampton Road	8 37	
Cape Cod	11 30	6½	Harbour Delute	12 00	

\* Directions for e-  
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gradually deepening  
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Black Rocks out to se  
going out and coming  
upwards of 20 feet of  
retain this depth, it w  
the bay, in a gale of w

PLACES.	TIME.	RISES.	PLACES.	TIME.	RISES.
Hillsborough Inlet	7 30	5	Port Royal	8 15	6
I			Porto Rico (St. Juan)	8 20	1½
Isle Verte or Green Island	9 00		Q		
Isle Bic (St. Laurence)	2 00		Quebec (St. Laurence)	6 00	
K			R		
Kainouraxa Isles (St. Laurence)	4 00		Restigouchey Harbour	3 00	7
Kennebeck	10 45	9	Race Point	10 45	
Kennebunk	11 15	9	Rhode Island Harbour	6 45	5
L			Rio Janeiro (South America)	4 30	
Louisbourg (Nova Scotia)	7 15	5½	S.		
M			Sunbury	9 30	
Matane (St. Laurence)	12 15		St. John's (Newfoundland)	6 30	7
Manicouagan Bay	1 00	12	St. Pierre and Miquelon (St. Laurence)	9 00	6 & 7
Mingan Harbour (Gulf St. Laurence)	3 00	11	Seven Islands Harbour	1 30	18
Mahone Bay to Liverpool Harbour (Gulf of St. Laurence)	8 00	8	St. Nicolas Harbour, (St. Laurence)	12 00	12
Meogeney Bay	12 00		Sidney Harbour (Breton Island)	9 00	6
Moose Island	11 30	25	South Shore of Madame Island	8 00	8
Mount Desert	11 00	12	Ship Harb. in Gut of Canso	8 00	8½
Machias	11 00	12	Sable Island, North side	10 30	7
Marblehead	11 30	11	—South side	8 30	8
Monomoy Point	11 30	6	Spry Harbour, (St. Laurence)	8 30	7½
Mouths of the Mississippi		1½	Shepody Bay, (St. Laurence)	11 30	48
Martinico (irregular)	6 45	1½	St. John's (New-Brunswick)	12 00	25
N			Shelburne Harbour	8 30	8
New and Old Ferolle (Newfoundland)	11 45		Sheepscut River	10 45	9
*Newburyport	11 15	10	Salem	11 30	11
Nantucket Shoal	10 30	5	Sandy Hook	6 37	5
Nantucket Harbour	12 00	5	St. Simon's Sound	9 00	6
New-Bedford	7 37	5	St. Simon's Bar	7 30	6
New-London	8 54		St. Simon's Offing	6 45	
New-Haven	10 10	8	St. Mary's Bar	7 30	7
New-York	8 54	5	St. Bartholomew's (Irregular)		1
Nassau Bar	7 50	7	Surinam, Bram's Point	4 30	7
Nassau Harbour	8 30		T		
P			The Traverse (St. Laurence)	4 30	18
Placentia Harbour (Newfoundland)	9 15	8	The Brandy Pots, (St. Laurence)	3 30	
Piliers, or Pillars, (St. Laurence)	4 45		Torbay (Breton Island)	8 45	8
Point Deamon or Monts Pelees, (St. Lawrence)	12 00	12	Townsend Harbour	10 45	9
Point Mille Vachas, (St. Laurence)	2 00		Tobago (West India) uncertain		3½
Prince Edward Isles Charlotte town (St. Laurence)	10 30	6	Trinidad, Port Spain	4 30	6
Port Hood, (Breton Island Nova Scotia)	9 00	6	V		
Passamaquoddy	11 30	25	Vineyard Sound	11 00	
Penobscot River	10 45	10	Vera Cruz, (Only one tide in 24 hours,) irregular		2
Portland	10 45	9			
Portsmouth	11 15	11			
Plymouth	11 30	6½			

\* Directions for entering the harbour of Newburyport, may be found in page 46. Since that was published, we have noticed in the "Herald," the following, which we hope the inhabitants of that town, situated on the beautiful river Merrimack, may realize, and the merchants be induced to improve those advantages which nature has so bountifully given them, and which they should duly appreciate.

*Newburyport Harbour.*—The pilots of our Harbour state that for several months past, the water has been gradually deepening upon our bar, and that at this time there is upwards of nine feet at low tide; to account for this great change, we impute it partly to the direct manner in which the current has passed on and in, since this time last year. It then was quite circuitous at the mouth of the river, say from the Black Rocks out to sea. It has washed away the lower point of Salisbury beach, hence the course of going out and coming in has altered several points of the compass since last September. There is now upwards of 20 feet of water on the bar at high tide, at the full and change of the moon; and if we can retain this depth, it will be of incalculable benefit to the harbour, as a place to run for when vessels are in the bay, in a gale of wind blowing on shore, and more especially to the coasting along the shore.

## REMARKS.

On all the coast of Newfoundland, the tides are very irregular; being greatly influenced by the prevailing wind. At the entrance of St. John's they set in a bore.

Between Cape La Hunc and Cape Ray, the flood sets to the westward in the offing, very irregularly, but generally 2 or 3 hours after high water on shore.

From Green Island to Quebec, the tides rise irregularly, but very considerable; from Coudre to Quebec, the water falls 4 feet before the tide makes down. At the Isle of Coudre, in spring-tides, the ebb runs at the rate of 2 knots. The next strongest ebb is between Apple and Basque Isles; the ebb of the River Saguenay uniting here; it runs full 7 nots in Spring-tides; yet, although the ebb is so strong, the flood is scarcely perceptible; and below the Isle of Bic, there is no appearance of a flood tide.

On the South-side of PRINCE EDWARD ISLE, the tides are regular, but they are very irregular on the north.

The tide of the Gut of Canso, generally, sets in from the southward, but is very irregular, being influenced by the winds. After strong N. W. winds, the water in the Gulf of St. Laurence is rendered low, which causes the stream to run northward, through the Gut, at the rate of 4 or 5 miles; the contrary happens with southerly winds. [For the Tides and Currents about Sable Island, see Page 620.]

Off Cape Sable the tide runs at the rate of 3, and sometimes 4, miles an hour; and in the Bay of Fundy, the tides are very rapid.

Cape D'Or and Cape Chignecto are high lands, with very steep cliffs, and deep water close under them. The same kind of shore continues to the head of Chignecto Bay, where very extensive flats of mud and quicksands are left to dry at low water. Here the tides come in a bore, rushing in with great rapidity: they are known to flow at the equinoxes from 60 to 70 feet perpendicular; and it is remarkable that, at the same time, they rise in the Bay Verte, on the northern side of the isthmus, only 8 feet.

In the Harbour of St. John, the tide of flood is weak, but the ebb runs very rapidly.

At MOUNT DESERT ROCK, the stream of flood divides to run eastward and westward. With the Shuttack Hills about N. N. E., and within 4 or 5 leagues of those of Mount Desert, the flood-stream sets E. N. E. and the ebb W. S. W.; but, at the distance of 9 or 10 leagues from the land, the current, in general, sets to the S. W. and more westward. From the Mount Desert Rock, to the Fox Islands, at the entrance of the Bay of Penobscot, the flood-stream sets W. S. W. along shore; but it, nevertheless, runs up to the northward into Isle Haute Bay, &c. South moon makes high water at Nantucket harbour. It is high water at Nantucket Shoal one hour and thirty minutes before south moon. [For Tides on Nantucket Shoals, see Page 77.]

At SANDY HOOK the stream of tide continues to set in, at the rate of two knots, until nearly 9 hours.

The tides in the river of the CHESAPEAKE are varied by the winds. When it blows 2 or 3 days at N. or N. W. the flood does not rise more than 2 feet; but, when it blows a gale from S. E. or E. S. E. it rises 4 or 5 feet. The Times of high water in the Chesapeake have been given as follows: Lynhaven Bay, or south side, 10 h.: East shore, within Cape Charles, 12 h.: Mouth of the Rappahannock, 3 h.: off the Patomac 3½ h.: off the Patapsco, or Baltimore River, 7¼ h.

In the vicinity of Charleston and Savannah, N.E. Easterly and S. E. winds, cause higher tides than the other winds, and, also, vary their course. At about 6 leagues from the land, off Port Royal, in 12 fathoms water, the flood sets strong to the Southward, and the ebb northward. At a great distance from the shore its tide is perceptible.

Although, at the BAHAMAS, the rise and fall is considerable, the tide of flood sets an indraught on the northern part of the Little Bahama Bank, from every point of the compass, which renders an approach very dangerous.

The tide sets with some force directly on and off the western side of the Grand Bank of Bahama; particularly at the full and change of the moon. High water at 7 h. 30 m.: or thereabout. Rise 3 to 4 feet. On the Middle Ground of this Bank, the Tides set in every direction.

In Providence N. W. channel, the current runs generally to the eastward, about two miles an hour.

Near Egg Island, to the N. W. of Eleuthera, it is, however, uncertain, and great attention should be paid to the lead. In the passage within Egg Island, the tide runs at the rate of four miles, and rises above four feet; the flood setting eastward, and strongly over the reefs.

About the Berry Islands and Providence, the water rises two feet higher when the sun comes to the northward of the line, than it does when the sun is to the southward, and its strength is in a singular proportion. Here and at the Bemini Isles, the flood sets to the N. E.

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Near Cayo Heuso, or Thompson's Island, on the Florida Reef, the tides are, in some measure, regular within the reef: the flood setting to the westward, and the ebb contrary. To the westward, between the Tortugas, and Cayo Marques, the flood sets variably through to the northward, and ebbs to the E. S. E.

It is remarkable that, on the south side of these Keys, the flood comes from the south-eastward; but, on the north side of them, all the way from Cayo Heuso, the flood runs to the eastward, along the edge of the bank, and to the southward, through the little channels, in order to fill up the intermediate bays and lagoons, with the assistance of the flood from the southward.

Westward of Cayo Heuso there is a general current to the south-westward along the reef, and to some distance to the south side of it.

In Ponce or Chatham Bay, it runs tide and half-tide, viz. 3 hours flood, then 3 hours ebb; next 9 hours flood, &c. Here, in some places, it is a mere fall; but in some of the channels it is as much as four men can do to stem the current with a boat.

During a S. E. gale or storm, the water in the bays and rivers of West Florida has been known to rise 7 feet perpendicular, and vessels of burden have been driven in, among the pine-trees, at some distance from shore.

From Cape Roman, northward and westward, the tide seems to ebb and flow only once in the 24 hours; but it is irregular, and much governed by the winds. Yet the effects in a dry season are very perceptible in the rivers at a distance from the sea.

Near the shoals and reefs of Anton Lizardo, between Alvarado and Vera Cruz, the currents are often dangerous, and appear to be almost entirely influenced by the winds. The pilots say that a change of wind hereabout produces an alteration in the current within six hours.

Among the West India Islands the tides are, generally, so inconsiderable, as not to require notice; but, on the coast of Guayana, they set with some degree of force; and, off this coast, a strong current commonly sets to the N. W. at the rate of two to three miles an hour.

About the Island of St. Bartholomew, the flood, at new and full moon, runs S. E. and it is, then high water at 10h. 30m. P. M. while the sun is farthest to the north of the equator; but comes about two hours sooner in the following months, till the sun gets farthest to the south, when it is high water at 10h. 30m. A. M. and its runs afterwards in the same proportion back again. The winds, which are of a long continuance, sometimes make a trifling difference. The horizon is also lowest at the time when the sun is farthest to the north of the line; and so to the contrary. The greatest difference in the ebbing and flowing is 18 inches; but, in general, only 10 inches.

About Virgin-Gorda and the passages of the Virgin Islands, the current runs regularly, setting eastward during the moon's passage from the horizon to her zenith, and from her setting till she arrives at nadir, and to the westward while the moon passes from zenith to the horizon, and from nadir till her rising. The rate varies according to the breadth of the channels, from  $2\frac{1}{2}$  to 5 knots, and the rise is from 20 to 40 inches.

[This Table contains the LATITUDES and LONGITUDES of the most remarkable Harbours, Islands, Shoals, Capes, &c. in this work, founded on the latest and most accurate Astronomical observations, surveys, and charts.]

The Longitudes are reckoned from the meridian of Greenwich.

I. COAST OF THE UNITED STATES OF AMERICA.			Lat.		Long.		
	D.	M.	D.	M.	D.	M.	
ENTRANCE of St. Croix River.....	45	00N	67	00W			
Island of Campo-Bello (middle or West passage of Passamaquoddy.....)	44	57	66	58			
Wolves' Islands.....	44	58	66	45			
Quaddy Head.....	44	48	66	59			
Grand-Manan N. head.....	44	48	66	49			
do. S. West end.....	44	36	66	55			
Titmanan light.....	44	21	67	40			
Cross Island.....	44	35	67	19			
Gouldsboro' Harbour.....	44	23	67	55			
Mount Desert Rock.....	43	52	58	1			
Isle of Holt, S. W. Pt. ....	43	58	68	34			
Castine.....	44	22	68	45			
Martinicus Island light.....	43	50	68	51			
Wooden Bald Rock.....	43	45	68	49			
Island of Mauhe'gin.....	43	44	69	15			
Pemnaquid Point light.....	43	48	69	29			
Bantum Ledges.....	43	41	69	36			
Kennebec River entrance.....	43	43	69	46			
Seguine Island light.....	43	40	69	44			
Cape Small point.....	43	40	69	49			
Cashe's Ledge (shoal part).....	43	2	69	5			
Alden's Ledge (off Cape Elizabeth).....	43	30	70	6			
PORTLAND light-house.....	43	35½	70	10½			
Cape Elizabeth.....	43	32½	70	10			
Wood Island L. House.....	43	26½	70	19			
Agamenticus Hill.....	43	16	70	41			
Cape Porpoise.....	43	21	70	23			
Wells Harbour.....	43	19	70	33			
Bald Head.....	43	13	70	34			
Cape Neddock Nubble.....	43	10	70	35			
York River.....	43	8	70	38			
Boon Island light.....	43	8	70	29			
PORTSMOUTH light-house.....	43	4	70	43			
Portsmouth.....	43	5	70	45			
Isles of Shoals light.....	42	56	70	38			
NEWBURYPORT lights on Plumb Island.....	42	49	70	49			
Swich entrance.....	42	42	70	46			
Squam light-house.....	42	42	70	40			
Sandy Cove (or Bay)....	42	42½	70	35			
CAPE ANN light houses on Thatcher's Island.....	42	39	70	34			
East point of Cape Ann Harbour.....	42	35	70	39			
Light-houses on Baker's Island.....	42	33N	70	48W			
Beverly.....	42	34	70	54			
SALEM.....	42	32	70	54			
Marblehead.....	42	31	70	51			
Nahant Point (N. E. Point of Boston harbour).....	42	26	70	56			
Boston light-house.....	42	20½	70	55			
BOSTON.....	42	22½	71	4			
CAMBRIDGE (Mass.).....	42	23	71	3			
Scituate light-house.....	42	12	70	43			
Plymouth lights.....	42	1	70	36			
Race Point light.....	42	5	70	12			
CAPE COD light.....	42	4	70	4			
Chatham light.....	41	41	69	57			
Sandy Point or Malabar.....	41	34	70	00			
Shoal of George's.....							
Great Shoal S. E. P....	41	34	67	40			
do. do. W. P.....	41	42	67	59			
do. do. N. E. P....	41	48	67	47			
do. North Shoal.....	41	53	67	43			
do. Third Shoal.....	41	51	67	26			
do. East Shoal.....	41	47	67	19			
NANTUCKET light-house.....	41	23	70	3			
Sanctuary head on Nantucket Island.....	41	16	69	58			
Tom Nevers head.....	41	14	70	00			
Nantucket South Shoal.....	41	4	69	55			
Cape Poge, (Vineyard).....	41	25	70	27			
Squibnocket-head (south westerly part of Martha's Vineyard).....	41	17	70	48			
Gay Head light-house, (Vineyard).....	41	20	70	52			
Noman's Land Island.....	41	14	70	51			
New-Bedford.....	41	38	70	56			
New-Bedford light hou.....	41	35	70	55			
Sow and Pigs.....	41	24	70	59			
Seaconnet Pt.....	41	27	71	13			
NEWPORT.....	41	29	71	21			
Rhode Island light-house.....	41	26½	71	26			
Point Judith light-house.....	41	22½	71	31			
Watch Hill Point light.....	41	20	71	57			
Little Gull light.....	41	14	72	16			
Block Island, S. E. Pt. ....	41	9	71	36			
do. do. N. Pt.....	41	15	71	38			
New-London (or entrance of Thames river) light-house.....	41	21	72	15			
NEW-HAVEN entrance.....	41	17	72	58			
Montock Point (E. end of Long-Island) light house.....	41	3	71	58			

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	Lat. D. M.	Long. D. M.		Lat. D. M.	Long. D. M.
<b>NEW-YORK City</b> .....	40 42N	74 2W	<b>Grenville's Inlet</b> .....	26 47N	80 2W
<b>New-York light-house</b> on Sandy Hook.....	40 27½	74 2	<b>Cooper's Hill</b> .....	26 42	80 3
<b>Barnigat Inlet</b> .....	39 47½	74 7	<b>Sand Hills</b> .....	26 32	80 3
<b>Little Egg Harbour</b> .....	39 30	74 19	<b>New Inlet</b> .....	26 50	80 00
<b>Great Egg Harbour</b> .....	39 19	74 34½	<b>Middle River entrance</b> .....	26 7	80 00
<b>Cape May light</b> .....	38 57	74 58	<b>CAPE FLORIDA</b> .....	25 40	80 5
<b>PHILADELPHIA</b> .....	39 57	75 9	<b>Cayo Largo or Long</b> Key, N. E. P.....	25 16	80 22
<b>Light-house on Cape</b> Henlopen.....	38 47	75 5	— S. E. P.....	24 56	80 36
<b>Cape Charles</b> .....	37 7	76 3	<b>Sombrero or Hat Key</b> .....	24 34	81 15
<b>Cape Henry light</b> .....	36 56	76 5	<b>Loce Key</b> .....	24 30	81 31
<b>Old Pt. Comfort</b> .....	37 00	76 23½	<b>Key West, S. W. Pt</b> .....	24 29	81 55
<b>York Town (Virg.)</b> .....	37 13	76 35	<b>Sand Key or C. Arca</b> .....	24 23	81 59
<b>Annapolis (Mar.)</b> .....	38 59	76 33	<b>Tortugas Islands and</b> Banks N. W. part.....	24 36	83 2
<b>ALEXANDRIA (Vir.)</b> .....	38 48	77 6	— N. E. do.....	24 38	82 55
<b>WASHINGTON City</b> .....	38 53	77 3	— S. E. do.....	24 33	82 56
<b>BALTIMORE</b> .....	39 17	76 39	— S. W. do.....	24 31	83 2
<b>Currituck Inlet</b> .....	36 23	75 55	<b>Bush Key Light</b> .....	24 33	83 00
<b>CAPE HATTERAS</b> .....	35 14	75 30	<b>Key Vacas</b> .....	24 37	81 12
<b>Deep soundings off do</b> .....	35 6		<b>Key Axi</b> .....	24 57	81 7
<b>Ocracoke Inlet</b> .....	35 5½	75 59	<b>Cape Sable or Tancha</b> .....	25 1	81 9
<b>CAPE LOOKOUT</b> .....	34 37	76 33	<b>Cape Romano or P.</b> Largo.....	25 42	82 10
<b>Deep soundings off do</b> .....	34 28		<b>Boca Grand ent. B.</b> Carlos.....	26 41	82 43
<b>Old Topsail Inlet</b> .....	34 41	76 40	<b>Spirito Santo Bay ent.</b> .....	27 38	83 16
<b>Beaufort (N. C.)</b> .....	34 43	76 40	<b>Keys Ancote</b> .....	28 24	83 28
<b>WILMINGTON</b> .....	34 14	77 58	<b>St. Marcos de Apalache</b> .....	30 9	84 57
<b>Brunswick</b> .....	34 2	78 58	<b>S. W. Cape</b> .....	29 51	85 5
<b>Smithville</b> .....	33 54	78 1	<b>St. George's Key, S. W. P.</b> .....	29 34	85 45
<b>New Inlet</b> .....	33 67	77 55	<b>Cape St. Blas</b> .....	29 38	86 00
<b>CAPE FEAR</b> .....	33 48	77 57	<b>Bay St. Andres</b> .....	30 5	86 12
<b>Deep soundings off do</b> .....	33 35		<b>Bay St. Rosa</b> .....	30 24	86 55
<b>GEORGETOWN</b> .....	33 22	79 9	<b>PENSACOLA bar</b> .....	30 18	87 27
<b>Ditto light</b> .....	33 7½	79 1	<b>River Perdido</b> .....	30 16	87 49
<b>Cape Roman</b> .....	33 00	79 14	<b>Mobile Light</b> .....	30 13	88 17
<b>CHARLESTON</b> .....	32 46	79 48	<b>MOBILE bar</b> .....	30 10	88 17
<b>Charleston light-house</b> .....	32 40	79 43	<b>Key Baston</b> .....	29 28	89 11
<b>North Eddisto Inlet</b> .....	32 32	80 02	<b>Entrance of MISSIS-</b> SIPPI, N. E.....	29 8	89 6
<b>BEAUFORT (S. C.)</b> .....	32 25	80 32	— La Balisa.....	29 7	89 5
<b>Port Royal Bar</b> .....	32 9	80 28	— S. E.....	28 59	89 13
<b>Tybee light</b> .....	32 00	80 42	— S. W.....	28 58	89 31
<b>SAVANNAH</b> .....	32 4	80 58	<b>NEW-ORLEANS</b> .....	29 56	90 9
<b>St. Catherine's Sound</b> .....	31 41	81 3	<b>Iron Point or Point Pi-</b> erro.....	29 18	91 26
<b>Sapelle Bar</b> .....	31 32	81 7	<b>Constant Bay</b> .....	29 30	92 34
<b>Doboy do</b> .....	31 20	81 16	<b>River Mermentao</b> .....	29 30	94 93
<b>Light on St. Simon's Isl-</b> and, S. pt.....	31 8	81 29	<b>Point ent. river Sabins</b> .....	29 37	93 57
<b>St. Andrews Sound</b> .....	31 00	81 32			
<b>Light on Cumberland</b> Island.....	30 45	81 37			
<b>River Nassau entrance</b> .....	30 30	81 35			
<b>River St. John entrance</b> .....	30 21	81 33			
<b>St. Augustine Town</b> .....	29 53	81 27			
<b>Island Anastasia, N. P.</b> .....	29 31	81 23			
— S. P.....	29 37	81 17			
<b>Muskito or N. Smyrna</b> entrance.....	28 52	80 56			
<b>Cape Canaveral</b> .....	28 18	80 33			
<b>Outer breakers off do</b> .....	28 20	80 13			
<b>Las Tortolas or m-</b> mocks.....	27 35	80 30			
<b>Hillsborough Isl. N. P.</b> .....	27 39	80 20			
— S. P.....	27 13	80 13			
<b>Mount Pelado or B. d</b> Head.....	27 1	80 11			

## II. Islands in the West Indies.

	Lat. D. M.	Long. D. M.
<b>TRINIDAD</b> .....	10 39N	61 30W
— Spanish Town.....	10 4	61 55
— Icaque Point.....	10 9	60 55
— Point Galote.....	10 51	60 51
— Point Galera.....	11 29	60 17
<b>Tobago, N. E. Point</b> .....	11 5	60 48
— S. W. point.....	12 19	61 40
<b>Grenada, N. E. point</b> .....	11 58	61 52
— S. W. point.....	11 55	62 18
<b>Grenada Bank, Middle</b> .....		

	Lat.	Long.		Lat.	Long.
	D. M.	D. M.		D. M.	D. M.
Barbadoes, S. P.....	13 1N	59 36W	Muertos Island.....	17 52N	66 30W
— E. do.....	13 8	59 24	La Moon I.....	18 6	67 50
— Bridgetown.....	13 5	59 41	Monito I.....	18 9	67 53
— N. W. point.....	13 18	59 44	Zacheo or Dessecheo I.	18 24	67 26
St. Vincents, N. point	13 12	61 21			
— S. do.....	13 4	61 20	Cape Engano.....	18 35	68 20
St. Lucin, S. point.....	13 30	61 00	Saona I. E. part.....	18 13	68 31
— N. do.....	13 56	60 56	St. Catherine's I.....	18 18	68 58
Martinico, S. E. point..	14 24	60 56	St. Domingo.....	18 28	69 51
— Diamond Rock.....	14 24	61 6	La Catalina.....	18 8	70 11
— Port Royal.....	14 36	61 9	Cape Beata.....	17 42	71 20
— Macouba Point.....	14 56	61 28	Altavela rock off do....	17 28	71 21
Dominica, S. point.....	15 14	61 23	Cape Jacquemel.....	18 13	72 35
— N. do.....	15 39	61 30	Island Baca.....	18 4	73 38
The Saints Island.....	15 52	61 37	Point Gravois.....	18 00	73 55
Mariagalante, N. P.....	16 4	61 14	Cape Tiberon.....	18 20	74 29
— S. do.....	15 53	61 15	Navaza Island.....	18 24	75 3
Guadaloupe, S. W. P....	15 58	61 48	Cape Donna Maria.....	18 38	74 27
— N. W. do.....	16 20	61 56	Jeremy.....	18 38	74 7
— N. E. do.....	16 30	61 32	Caymito.....	18 39	73 43
— S. E. do.....	16 11	61 15	Petit Guave.....	18 25	72 54
Deseada.....	16 21	61 8	Leogane.....	18 29	72 38
Antigua, E. P.....	17 5	61 44	POINT-AU-PRINCE.....	18 33	72 21
— W. point.....	17 5	62 00	I. Gonave, S. E. P.....	18 42	72 47
Mousserrat, S. P.....	16 42	62 17	— N. W. P.....	18 56	73 18
— N. P.....	16 50	62 17	St. Mark.....	19 4	72 45
Redondo Island.....	16 56	62 22	St. Nichola Mole.....	19 49	73 25
Nevis.....	17 9	62 33	Tortudas W. P.....	20 6	72 54
St. Christ's or St. Kitts			— E. P.....	20 2	72 35
— S. E. point.....	17 12	62 38	CAPE FRANCOIS.....	19 45	72 13
— N. W. point.....	17 24	62 51	Port Dauphin.....	19 42	71 55
St. Eustatia Town.....	17 29	62 3	Shoal off M. Christie..	20 2	71 40
Saba.....	17 40	63 16	Monte Christie.....	19 54	71 43
Aves or Bird's I. about	15 40	63 40	Point Isabella.....	19 58	71 10
Barbuda, N. P.....	17 44	61 50	Old Cape Francois.....	19 40	69 55
St. Bartholomew, E. P..	17 54	62 40	Cape Samana.....	19 16	69 7
St. Martin's, E. P.....	18 4	63 1	Cape Raphael.....	19 3	68 53
Anguila, S. W. point...	18 12	63 8			
— N. E. do.....	18 18	62 52	Morant, E. P.....	17 58	76 9
Prickly Pear.....	18 20	63 15	KINGSTON.....	17 58	76 51
Isle of Dogs, western..	18 19	63 20	Port Royal.....	17 59	76 55
Sombrero.....	18 38	63 30	Portland Point.....	17 42	77 14
St. Croix or St. Cruz E. P.	17 45	64 34	Pedro Bluffs.....	17 50	77 55
— W. P.....	17 42	64 54	Black River.....	18 1	78 1
Ancado, S. P. of shoal	18 36	64 9	Savannah la-Mar.....	18 13	78 23
— W. P.....	18 46	64 23	Cape Negril, S. point..	18 15	78 37
Virgin Gorda, E. P.....	18 30	64 18	— N. do.....	18 23	78 35
Tortola, E. P.....	18 28	64 31	Montego Bay.....	18 31	78 9
— W. P.....	18 25	64 42	Martha Brac.....	18 31	77 49
St. John's.....	18 22	64 42	St. Ann's.....	18 31	77 22
St. Thomas.....	18 22	64 55	Galina Point.....	18 29	76 69
Bird Key.....	18 15	64 50	Arnatta Bay.....	18 21	76 51
Serpent I. E. part.....	18 19	65 17	N. E. Point.....	18 13	76 20
— Crab I. E. part.....	18 10	65 15			
			Navaza.....	18 24	75 3
Cape St. John or N. E.	18 24	65 35	Morant Keys or Las		
FORTO RICO.....	18 29	66 5	Ranas.....	17 25	76 00
Point Bruquen or N. W.	18 31	67 7	Pedro Shoals.....		
Point St. Francisco.....	18 22	67 13	— Portland R. N. E. P.	17 7	77 13
Cape Roxo or S. W. P..	17 58	67 9	— Rattlesnake, N. W.		
Los Morillos.....	18 00	67 16	— P.....	17 5	79 13
Point Coama.....	17 55	66 27	— South part.....	16 43	78 26
C. Male Pasqua or S. E. P.	17 59	66 47	Formigas Shoal, N. E. P.	18 34	75 42
Shoal.....	19 20	66 50	— S. W. P.....	18 28	75 51
			Little Cayman, S. W. P.	19 36	80 5

Windward Island.

Virgin Islands.

Porto Rico.

St. Domingo, or Hispaniola.

Jamaica.

South side of Cuba.

North side of Cuba.

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30 W		N	D. M.	W		N	D. M.	W
7 50	81.29	Caymanbrack, E. P....	19 43N	79 52W	Key Moa.....	20 44N	74 49W	
7 53	81.6	Grand Cayman, S.W.P.	19 15	81 5	Point Guarico.....	20 40	74 41	
7 26		— N. E. ....	19 22	80 48	Baracoa.....	20 22	74 25	
		Swan Islands.....	17 21	83 38				
		New Boar (1804)....	15 56	78 40	Shoal seen in 1822.....	19 56	69 5	
					Nativity bank or E. reef	20 8	68 41	
		Cape Mayze.....	20 14	74 4	Superb Shoal.....	20 58	68 59	
		C. Bueno or Guanós...	20 6	74 12	Silver Key, S. E. end..	20 14	69 29	
		Point ent. Cumberland			— N. E. do.....	20 32	69 27	
		Har.....	19 54	75 11	— W. do.....	20 29	69 59	
		St. JAGO DE CUBA,			Square Handkerchief,			
		entrance.....	19 57	76 5	N. E. P.....	21 23	70 23	
		Tarquin's Peak.....	19 54	76 50	— S. E. P.....	20 56	70 28	
		Cape Cruz.....	19 47	77 42	— S. W. P.....	20 53	70 56	
		Boca del este.....	20 19	79 8	Turk's Island, Grand T.	21 30	71 5	
		Key Breton.....	21 6	79 55	— Salt Key.....c.	21 20	71 7	
		Trinidad river.....	21 44	80 5	— Sand Key.....	21 12	71 9	
		Bay Xagua.....	21 53	80 48	— Endymion's Rocks..	21 7	71 15	
		Stone Keys.....	21 47	81 45	Great Caycos, south			
		Los Jardines.....	21 37	81 31	E. Part of the Bank..	21 1	71 32	
		S. E. point of the Bank	21 24	81 18	— N. E. P. or shoal			
		El Jardinillo.....	21 24	81 50	St. Philip.....	21 42	71 21	
		Keys Jardines.....	21 24	82 4	North Caycos, middle..	21 56	71 58	
		I. Pines S. W. P.....	21 22	82 55	Booby Rocks off do ...	21 58	71 53	
		Indian Keys.....	21 29	82 56	Providence Caycos, N.			
		Keys St. Philip.....	21 48	83 6	W. P.....	21 50	72 20	
		Point Piedras.....	21 48	83 42	Little Caycos, S. W. P.	21 36	72 25	
		Cape Corientes.....	21 43	84 23	Key Francis.....	21 21	72 7	
		Cape St. Antonio.....	21 54	84 57	Great Inagua or Hene-			
		Sancho Pedro Shoal..	22 4	85 28	aga, N. E. P.....	21 19	73 1	
		Shoal discovered in 1797	22 6	85 2	— S. E. P.....	21 00	73 6	
		Los Colorados, S. W. P.	22 19	84 44	— S. W. P.....	20 56	73 37	
		— N. E. P.....	22 58	83 8	— N. W. P.....	21 8	73 40	
		Point Juan and Jaunito	22 22	84 21	Little Henecaga, E. P..	21 29	72 55	
		Hill Guajibon.....	22 48	83 21	— W. P.....	21 29	73 6	
		Bay Honda.....	22 54	83 5	Hogsties or Corrolaes..	21 40	73 48	
		Port Cabanas.....	23 3	82 52	Mayaguana E. Reef...'	22 17	72 39	
		PUERTO DEL MARIEL	23 5	82 39	— N. do.....	22 32	73 10	
		HAVANNAH (the			— S. W. point.....	22 23	73 11	
		Moro).....	23 9	82 16	French Keys or I. Pla-			
		Point Escondido.....	23 8	81 36	nas.....	22 42	73 30	
		Point Guanós.....	23 9	81 33	Miraporvos Keys....	22 7	74 30	
		Pan of Matanzas.....	23 2	81 34	Castle Island, South of			
		MATANZAS.....	23 2	81 30	Ackland Island.....	22 8	74 18	
		Point Ycaos.....	23 8	81 11	Long Island, S. P....	22 30	74 17	
		Stone Key off do.....	23 11	81 9	Crooked Island, N. W. P.	22 48	74 18	
		Key Cruz del Padre...	23 14	80 55	— E. P... ..	22 42	73 59	
		Las Cabezas.....	23 16	80 43	N. E. Pt. of Acklin's I.	22 42	73 50	
		Nicholas Shoal.....	23 10	80 13	Atwood's Keys, or I.			
		Key Carenero.....	22 51	79 49	Samana, E. P.....	23 8	73 35	
		Key Francis.....	22 40	79 17	— W. P.....	23 10	73 47	
		Key William (northern-			Rum Key.....	23 39	74 48	
		most).....	22 36	78 34	Watland's I. N. E. P..	24 6	74 20	
		St. Juan.....	22 14	78 58	— S. W. P.....	23 53	74 31	
		Key Coco S. side Baha-			Conception, or Little I.	23 52	75 5	
		ma channel.....	22 29	78 17	St. Salvador, or Guana-			
		Key Point Paredon do.	22 30	79 5	hari, S. P.....	23 57	75 21	
		The Barrel.....	22 25	77 56	— N. P.....	24 33	75 38	
		Cayo Conflites.....	22 11	77 40	Little St. Salvador, N.P.	24 32	75 59	
		Cayo or Key Verde....	22 5	77 37	Elcuthera or Hetera I.			
		Guajava.....	21 54	77 25	— Powell's Point, S. P.	24 38	76 9	
		Point Maternillos.....	21 40	76 59	— Point Palmeto.....	25 15	76 10	
		Point de Mangle.....	21 13	76 14	— James Point.....	25 25	76 20	
		Point de Mulas.....	21 7	75 34	Harbour Island E. P..	25 30	76 31	
		Tanamo.....	20 43	75 13	Egg Island, Reef.....	24 33	76 53	



	Lat.		Long.			Lat.		Long.	
	D.	M.	D.	M.		D.	M.	D.	M.
New Providence.....					Horse Inlet Ent. .	28	9N	97	26W
— NASSAU.....	25	5N	77	22W	Bar de St. Jago .	26	3	97	28
— E. P.....	25	2	77	13	River Bravo, entrance .	25	55	97	26
— W. P.....	25	00	77	30	River St. Fernando, ent.	25	21	97	36
Andros Islands, S. E. P.	24	4	77	45	Inlets to Laguna Madre	25	00	97	48
— N. P.....	25	24	78	3	Barra de St. Ander .	23	45	98	7
Berry Islands, S. Eastern	25	30	77	42	Barra del Tordo .	22	52	93	15
Stirrup Key.....	25	48	77	57	Barra de la Trinidad .	22	39	93	16
Blackwood's Bush.....	25	35	78	5	Barra Ciego .	22	34	98	17
Little Isaac, Eastern...	25	58	78	48	Barra Tampico .	22	16	93	25
Great Isaac.....	26	3	79	3	Point de Xeres .	21	46	97	50
Hen and Chickens.....	26	00	79	6	Cape Rojo .	21	33	97	17
Bemini Island, northern					River Tuspan, entrance	20	53	97	15
fresh water key.....	25	43	79	12	Point Piedras .	20	47	97	10
Dogs Key, N. Pt.....	25	31	79	13	Boca de Lima .	20	30	97	00
Wolf's Key.....	25	28	79	11	Mount Gordo .	20	19	96	50
Cat Key.....	25	26	79	9	River Nauta, ent.	20	13	96	45
Riding Rocks.....	25	15	79	4	River Palina, ent.	20	10	96	41
Orange Keys, North....	24	57	79	6	Point Piedras .	20	00	96	30
— South.....	24	53	79	6	Point Delgada .	19	52	96	24
Key Guinchos.....	22	46	77	57	Point M. Andrea .	19	43	96	20
Key Lobos.....	22	25	77	30	Xalapa .	19	32	96	50
Las Mucaras.....	22	10	77	12	Pic de Orizaba .	19	2	97	9
Key St. Domingo.....	21	45	75	45	Point Gorda .	19	14	96	5
St. Vincent's Shoal....	21	56	75	19	VERA CRUZ .	19	12	96	43
Key Verde Island.....	22	1	75	5	St. John de Ulloa .	19	12	96	4
Key Sal.....	22	12	75	41	River Medellin, ent.	19	5	96	2
Yuma or Long I. S. P.	22	49	74	46	Point Auton Lisardo	19	2	95	54
— N. P.....	23	30	75	19	Bar de Alvarado .	18	46	95	40
Exuma, N. W. P.....	23	36	75	51	Tlacotalpan .	18	35	95	29
THE HOLE IN THE					Vigia .	18	38	95	18
WALL. .	25	51	77	9	Point Roca-Partida	18	40	94	59
N. E. point of Abaco .	26	17	76	57	Point Morillos .	18	41	94	51
Linyard's Key N. Pt. .	26	23	76	55	Tuxtla .	18	18	95	5
Man of War Channel..	26	38	76	56	Point Zapolitan .	18	34	94	41
Great Guano Key, N. Pt.	26	42	77	4	Point Xicacal .	18	27	94	37
Pensacola Keys .	27	00	77	42	Point St. John .	18	19	94	29
Lit. Bahama Bank, N. P.	27	50	79	11	Barrilla .	18	7	94	27
Memory Rock .	26	56	79	2	Bar Guazacoalios	18	8	94	12
Sand Key .	26	48	79	1	River Tonelado .	18	8	93	55
Wood Key, or C. Leno	26	45	79	2	River St. Ann .	18	8	93	41
Great Bahama I. W. P.	26	42	78	55	River Cupileo .	18	13	93	8
— S. P. .	26	28	78	41	Dos Bocas .	18	13	92	45
— E. P. .	26	40	77	48	River Chittepeque	18	14	92	39
Dog Keys, N. P. .	24	4	79	50	River Tabasco .	18	22	92	7
Double-headed Shot					River St. Peter & Paul	18	27	91	54
Key, Western .	23	57	80	22	Point Jicalango .	18	44	91	29
Elbow Key .	23	55	80	26	Island Carmen .	18	46	91	14
Salt Key .	23	41	80	20	Point Escondido .	18	50	90	51
Anguila, E. P. .	23	30	79	26	River Chen .	19	20	90	36
Bermuda .					Point Morros .	19	40	90	39
— GEORGETOWN, .	32	22	64	33	CAMPECHE .	19	50	90	30
— Wreck Hill, western-					Point Descondida .	20	55	90	29
most-land .	32	15	64	50	Point Gorda .	21	6	90	19
Best Latitude to run for					Point Piedras .	21	9	90	13
Bermuda .	32	8			Igil .	21	20	89	19
III. East Coast of America, from the Gulf					St. Clara .	21	22	88	45
of Mexico to Cape Horn.					Bocas de Silan .	21	26	88	23
					El Cuyo .	21	30	87	43
					Island Jolvas, N. P.	21	30	87	11
					Island Contoy, N. P.	21	26	86	52
Point Culebrao E. part					Las Arcas Islands	20	16	91	51
I. St. Louis .	29	10N	96	2W	Bank Obispo .	20	32	92	5
Point St. Francisco, en-					Triangles Islands	20	59	92	7
trance of Bay St. Bern-					New Shoal .	20	33	91	50
nard .	28	58	96	52	Bajo Neuva I. .	21	50	91	48

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Chief C  
Wallis's  
El Chino  
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Santanil  
South K  
— Hat K  
Longgriff  
Reef, S  
Sapotillas  
Rattan, I  
— W. P.  
Guanaja  
Point Ma  
Omoa  
Point Sal  
Triunfo d  
Utilia I. N  
Truxillo  
Cape Dele  
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Cape Cam  
Cape False  
Cape Grac  
Caxones,  
— S. E. P.  
Cayman or  
Key John  
Alagarte A  
— S. E. P.  
Serranilla  
Serrana or  
— S. P.  
Guana Rea  
— S. P.  
Roncador  
Musketeers  
Providence  
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	Lat.		Long.			Lat.		Long.	
	D.	M.	D.	M.		D.	M.	D.	M.
Island Aronas	22	7N	91	26W	Bracman's Bluff	13	51N	82	50W
I. Bermeja, or N. W.					Man of War Keys	13	4	82	39
Shoal	22	36	91	21	Little Corn Island	12	19	82	6
Bajo Sisal	21	27	90	2	Great Corn Island	12	10	82	11
Alacran	22	29	89	26	Bluefields, ent.	11	53	82	54
N. part of Bank off this coast	23	43	88	43	I. St. Andrew, mid.	12	33	81	00
N. E. do.	23	27	86	37	E. S. E. Keys	12	22	80	41
I. de Mugres, or Women's I.	21	18	86	42	S. S. W. Key, or Alburquerque	12	6	81	8
I. Cankun, S. P.	20	42	86	53	Paxoro Bovo	11	20	82	48
New River	20	26	87	15	St. John's Point	11	00	82	54
River Bacales	20	5	87	34	Port Boco Toro	9	29	82	5
Bay Ascension, ent.	19	26	88	3	I. Escudo, N. P.	9	14	80	57
Island Cosumel, N. P.	20	11	86	34	River Chagre, ent.	9	19	80	3
— S. E. P.	19	52	86	32	PORTO BELLO	9	33	79	35
Rio Hondo, ent.	19	4	88	17	Farallon I. N. P.	9	40	79	33
I. Uvero, N. P.	19	20	88	3	Point Manzanillo	9	38	79	20
— S. P.	18	22	87	53	Point St. Blas	9	34	78	40
I. St. Cruz	18	20	87	52	Point Concepcion	9	19	77	53
Key Jaicos	18	14	87	52	Isle of Pines	8	55	77	39
North Reef	18	2	87	50	Cape Tiburon	8	40	77	29
Chief Channel	17	54	87	55	River Suniquilla, ent.	7	57	76	54
Wallis's River, ent.	17	52	88	19	Point Carabana	8	37	76	57
El Chinchorro, I. N. P.	18	53	87	11	Point Arboletes	8	49	76	32
— S. P. of shoal	18	19	87	6	Island Fuerte	9	20	76	13
Mistricosa I.	18	38	85	25	I. St. Bernard, N. W. P.	9	48	75	50
Viciosi I.	18	00	84	44	CARTHAGENA	10	25	75	29
Santanilla or Swan I.	17	21	84	4	Galera de Samba	10	48	75	20
South Keys, N. P.	17	30	87	12	West ent. River Magdalena	11	3	74	56
— Hat Key, S. P.	17	00	87	8	St. Martha	11	15	74	11
Longeriffe, or Glover's Reef, S. P.	16	21	87	41	Cape Aguja	11	21	74	12
Sapotillas Keys, S. E. P.	16	00	88	12	Bank Navio Quebrado	11	36	73	11
Rattan, I. E. P.	16	24	86	20	Hacha	11	31	72	56
— W. P.	16	13	86	57	Cape la Vela	12	11	72	14
Guanaja or Bonacca I.	16	32	86	7	Point Galinas	12	27	71	41
Point Manabique	15	39	88	29	Monges Islands, N. P.	12	31	70	59
Omoa	15	37	87	57	Cape Chichibacoo	12	17	71	17
Point Sal	15	47	87	29	Point Espada	12	5	71	8
Triunfo de la Cruz	15	41	87	17	St. Carlos	11	3	71	12
Utilia I. N. P.	16	00	87	2	MARACAYBO	10	43	71	17
Truxillo	15	53	86	6	Coro	11	24	69	46
Cape Delegado, or Honduras	16	00	86	11	Point Cardon	11	35	70	20
Cape Cameron	16	2	85	10	Point Macolla	12	6	70	19
Cape False	15	14	83	3	Cape St. Roman	12	12	70	7
Cape Gracios a Dios	14	57	82	46	Island Oruba, N. W. P.	12	38	70	9
Caxones, W. P.	16	2	83	11	— S. E. P.	12	25	69	58
— S. E. P.	15	41	82	27	Point Aricula	11	57	69	53
Cayman or Vivorilla	15	46	83	26	Point Savannos	11	33	69	10
Key John Thomas	15	23	81	49	Point Soldado	11	14	68	35
Alagarte Alla, N. W. P.	15	21	82	5	Key Borrocho	10	57	68	19
— S. E. P.	15	5	81	54	Tucacas	10	51	68	17
Serranilla	16	5	80	9	PORTO CABELLO	10	29	68	4
Serrana or Pearl I. N. P.	14	46	79	47	Valencia	10	19	68	7
— S. P.	14	23	79	51	Point St. John Andres	10	30	67	48
Guana Reefs, N. P.	14	49	80	44	Point Oricaró	10	34	67	17
— S. P.	13	59	80	41	Point Trinchera	10	38	67	4
Roncador	13	39	79	46	LA GUAYRA	10	37	66	59
Musketeers	13	27	79	46	CARRACCAS	10	30	66	57
Providence I. N. P.	13	27	80	39	Centinela I. or White Rock	10	50	66	6
Musquito Keys, N. P.	14	49	82	19	Cape Codera	10	36	66	3
Ned Thomas' Keys, S. P.	14	12	82	21	Curacao I. N. P.	12	24	69	13
					— S. E. P.	12	2	68	46
					Little Curaco	11	59	68	41

Honduras.

Mosquitos.

Panama.

Darien.

Carthagen.

Maracaybo.

Carraccas.

	Lat.		Long.			Lat.		Long.	
	D.	M.	D.	M.		D.	M.	D.	M.
Buenayre, N. P. . .	12	21N	68	26W	Fin dos Lancoes Grandes	2	23S.	43	9W
— S. P. . .	13	2	68	18	I. St. Anna . . .	2	14	43	39
Bird's or Aves I. western	12	00	67	42	Bay of Rio Perguicas .	2	41	42	27
— Eastern . . .	11	58	67	29	Iquarasu ent. Farnhaiba	2	44	41	20
Roca, W. P. . .	11	51	66	58	Jericoacoara . . .	2	47	40	28
— E. P. . .	11	51	66	32	Coras de Caracu . .	2	48	39	44
Orchilla I. . .	11	49	66	5	Mount Melancias Point	3	12	39	20
Blancha I. . .	11	52	64	40	Ciara . . .	3	43	38	34
Tortuga I. . .	10	57	65	19	Roccas (dangerous) .	3	56	33	45
Seven Brothers mid.	11	46	64	27	St. Lorenzo . . .	3	57	37	52
Margarita, W. P. .	11	2	64	28	Point Daniel . . .	4	42	37	24
— E. P. . .	11	00	63	50	Baxos de Salino . .	4	40	37	00
I. Cuagua or Pearl I.	10	49	64	14	Point Pedras . . .	4	52	36	38
Friar's I. . .	11	14	63	48	Cape St. Roque . .	5	28	35	17
I. Sola . . .	11	20	63	38	River Parahiba, ent.	6	48	35	10
Testigos I. . .	11	24	63	9	Pernambuco . . .	8	5	34	53
River Orquilla ent.	10	8	65	32	Cape St. Augustin	8	21	34	57
New Barcelona .	10	8	64	46	Francisco Rio St.	10	29	36	24
I. Borracho . . .	10	20	64	48	ST. SALVADOR (Cape				
Sante Fe . . .	10	16	64	31	St. Antonio) . . .	13	1	38	32
Cumana . . .	10	27	64	15	Porto Seguro . . .	16	40	39	00
Araya . . .	10	35	64	20	Abroblos Islands	17	58	38	43
Morro Chocoputa	10	42	63	54	Espiritu Santo . .	20	18	40	20
Escondido or Hidden					Cape St. Thomas . .	21	59	40	40
Port . . .	10	41	63	27	St. Ann's Islands	22	25	41	46
Cape Malapasqua	10	42	63	4	John's Is. St. Ann's Bay	22	35	42	5
Cape Three Points	10	46	62	44	Anchor Island . .	22	44	41	50
Point Galera . . .	10	45	62	33	CAPE FRIO . . .	23	1	42	4
Point Pena or Salina	10	44	61	53	Mopk Islands . . .	22	59	42	29
Dragon's Mouth . .	10	41	61	43	Point Negra . . .	22	57	42	44
River Gaurapiche, ent.	10	13	62	43	Maurice Islands . .	23	2	43	00
Point Morro . . .	9	54	61	58	Razor I. off R. Janeiro	23	3	43	16
Oronoco River . .	8	25	60	26	Point St. Cruz . .	22	57	43	16
Cape Barma . . .	8	22	60	4	RIO JANEIRO harb.	22	54	43	16
Esequebo River . .	7	00	58	20	Sugar Loaf . . .	22	56	43	15
DEMERARA river, ent.					River Guaratiba . .	23	4	43	42
Corrobano Point	6	48	57	58	Point Maranbaya . .	23	5	44	10
River Berbice, ent.	6	20	57	11	I. Grande S. P. . .	23	15	44	29
SURINAM River, ent.	5	58	55	15	Point Joantinga . .	23	20	44	40
Paramaribo . . .	5	49	55	15	I. S. Sebastian, N. P.	23	44	45	25
R. Marouri, entrance	5	50	53	52	— S. P. . .	23	58	45	2
CAYENNE . . .	4	56	52	15	Mount Trigo . . .	23	51	46	52
Oyapock River, St. Louis	3	51	51	40	St. Catharine's Isl. N. Pt.	27	22	48	29
Cape Orange . . .	4	12	51	20	Porto St. Pedro . .	32	9	52	2
R. Cassipour, entrance	3	54	51	10	Cape St. Mary . . .	34	39	53	56
Cape North . . .	1	48	50	10	I. Lobos . . .	35	2	54	37
Mouth of River Amazon	0	18	50	00	Maldonado harbour	34	58	54	41
Cape Magoany . .	0	17S.	48	33	MONTE VIDEO . .	34	55	56	5
Point Tagioca . .	0	33	47	28	BUENOS AYRES . .	34	36	58	16
Para . . .	1	28	48	35	Cape St. Antonio	36	19	56	37
Bay Maracuno . .	0	37	47	10	Cape Lobos . . .	36	55	56	47
Caite Harb. . . .	0	47	46	33	Cape Corientes . .	37	59	57	40
Cape Gurapi . . .	0	42	45	22	Point de Neuva . .	42	55	64	9
Shoal . . .	0	52	43	40	St. Helena . . .	44	30	65	27
Island of St. Joao	1	17	44	13	St. George's Bay, C.				
Bay of Mt. Luis . .	1	5	43	18	Cordova . . .	45	45	67	25
Bay de Cabalo de Velha	1	30	43	54	Cape Blanco . . .	47	15	65	57
Point of B. Atius .	2	3	43	44	Point Desire . . .	47	45	66	2
Itaculum . . .	2	9	44	25	Port St. Julian, ent.	49	7	67	42
S. Marcos . . .	2	28	44	16	St. Cruz harbour .	50	19	68	29
Va. de Alacantha	2	24	44	23	Cape Fairweather .	51	34	68	59
St. Luis de Maranham	2	31	44	17	Cape Virgins, northern				
Coroa Grande, or Great					point of entrance to				
Crown Banks, N. E.					Magellan's Straits .	52	24	68	25
Point . . .	2	13	44	14					

Cunana.

Surinam.

Brazil.

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Rio Plate.

Terra del Fuego.

Coast of Chili.

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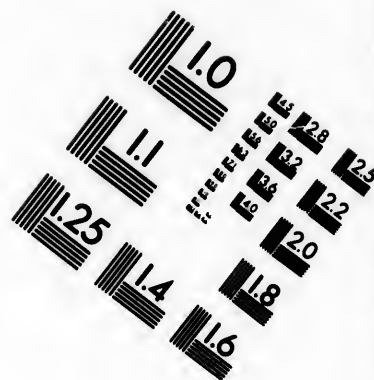
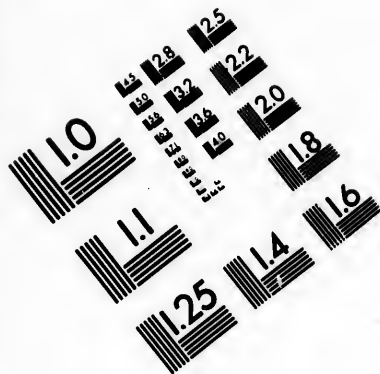
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Santiago  
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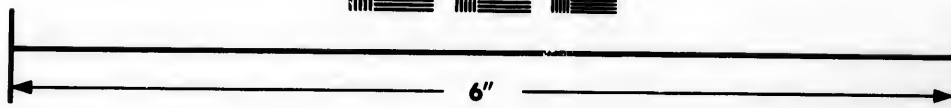
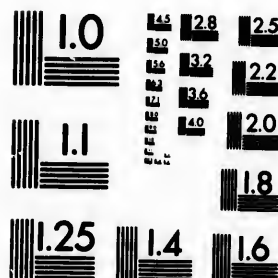
		Lat.	Long.		Lat.	Long.
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Rio Plate.	Cape Espirito Santo (south point of entrance to do.)	52 40 S.	68 26 W	Point Tames	22 33 S.	70 10 W
	Terra del Fuego C. Penas	53 45	67 29	Jaguey de Raquisa	21 50	70 9
	— Cape St. Diego	54 37	65 5	Pavillon de Pica	20 58	70 16
	Staten Land			Point Piedras	20 5	70 13
	— C. St. John, eastern			Point Pisagua	19 26	70 19
	most land near C. Horn	54 48	63 42	Arica	18 27	70 19
	— C. St. Bartholomew	54 57	64 39	Point de Coles	17 42	71 14
	— C. del Medio entr.			Ilo	17 38	71 13
	to Le Maire's Straits	54 49	64 48	Point Cornejo	16 41	72 46
	New Island E. part	55 17	66 25	Cumana	16 17	73 21
Terra del Fuego.	Evout's Island, middle	55 32	66 47	Atico	16 8	73 47
	Bernabelas Islands, E.P.	55 44	66 46	R. St. Juan	15 15	75 14
	CAPE HORN, South			Los Amigos Point	14 27	76 2
	part of Hermit's Isl.	55 58	67 21	Pisco	13 46	76 12
				Caneta	13 1	76 27
				P. Chilca	12 33	76 43
				I. St. Lorenzo, W. P.	12 5	77 8
	IV. West Coast of America from Cape Horn to Tres Marias.			LIMA	12 3	76 55
				CALLAO, sea port of		
				Lima	12 2	77 4
Coast of Chili.	CAPE HORN	55 58 S.	67 21 W	I. Pescador, W. part	11 46	77 10
	I. Diego Ramirez, S. part	56 32	69 36	Los Hornigas Islands	11 56	77 48
	— N. Part	56 25	68 45	I. Pelada	11 27	77 41
	I. St. Ildefonso S. P.	55 56	69 17	Island St. Martin	11 3	77 30
	Terra del Fuego			Point Santander	10 39	77 41
	— False Cape Horn	55 42	68 8	Rock seen in 1792	10 48	78 48
	— Yorkminster	55 27	70 4	Ferrol (entrance)	9 7	78 30
	— C. Gloucester	54 7	73 35	Truxillo	8 8	78 53
	— Cape Pillars S. W.			I. Malabrigo (dort)	7 48	79 21
	entrance to Magellan's Straits	52 45	74 57	Isl. Lobos de Mer	6 58	80 44
Panama.	Evangelist I. W. ent.			Isl. Lobos de Tierra	6 24	80 46
	Magellan's Straits	52 34	75 5	Eten	6 56	79 49
	Cape Victory	52 25	74 57	Point de Adjuga	5 59	81 4
	Cape St. Jago	50 54	75 30	Point Payta	5 3	81 2
	Cape Three Points	49 46	75 45	Cape Blanco	4 19	81 6
	Cape Corso	49 26	75 45	P. Malpelo	3 32	80 17
	I. Campana N. W. point	48 00	75 19	GUAYAQUIL City	2 12	79 42
	Cape Tres Montes	46 59	75 27	I. Puna, S. W. P.	3 4	80 8
	Cape Taitaohaohuon	45 51	75 28	Point St. Helena	2 10	80 48
	I. Huafo W. part	44 00	74 42	I. Pelado	1 56	80 36
Quilo.	P. Quilan	43 41	74 21	Point del Callo	1 23	80 34
	P. St. Carlos	41 49	73 53	I. de la Plata, W. P.	1 18	80 57
	P. Quedal	41 5	74 9	Cape St. Lorenzo	1 4	80 43
	P. de la Galera	39 54	73 46	Manta	0 57	80 32
	VALDIVIA, entrance	39 51	73 33	Cape Pasado	0 27	80 20
	P. Tirua	38 29	73 46	Quito	0 18	78 18
	I. de la Mocha W. part	38 20	74 5	Arbol	0 15 N	79 48
	St. Maria Islands N. P.	36 59	73 41	Cape St. Francisco	0 39	79 52
	— S. P.	37 5	73 42	P. de la Galera	0 48	79 51
	CONCEPTION, city	36 49	73 9	R. Esmeraldas entrance	0 58	79 23
Panama.	Talcahuano, port of do.	36 41	73 12	P. Mangles	1 37	78 52
	Santiago	33 27	70 43	I. Tumaco	1 47	78 38
	VALPARAISO, port	33 1	71 37	P. Guascama	2 29	78 23
	Point Ballena	31 50	71 44	I. Gorgona middle	2 53	78 7
	Coquimbo	29 56	71 19	River Cajambrie, ent.	3 19	77 3
	Huasco	28 26	71 15	I. de Malpelo	3 55	80 4
	Copiapo	27 10	71 8	I. de Palmas	3 57	77 7
	P. Negra	26 24	70 56	P. Chirambira	4 13	77 15
	Isl. St. Felix, Eastern	26 20	79 47	Cape Corientes	5 34	77 15
	— Western	26 16	80 3	Limonas	6 3	77 11
Panama.	I. Blanca	24 56	70 36	P. St. Francisco Solano	6 49	77 47
	Morro Moreno	23 19	70 32	P. Garachine	8 8	78 12
	Morro de Mexilones	23 4	70 28	PANAMA	8 57	79 22
				P. Mala	7 24	79 53
				Purcos Point	7 13	80 18







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	Lat. D. M.	Long. D. M.		Lat. D. M.	Long. D. M.
St. John's Bay	50 52N	57 23W	Bay of Rocks	48 03N	59 42W
Point Riche	50 46	57 28	Point Mille Vache	48 45	58 38
Ingonnechoix Bay	50 39	57 22	Manicougan Point	49 11	57 42
Bon Bay	49 36	58 5	Cape Nicholas	49 23	57 10
Cape St. Gregory	49 22	58 22	Cape Montpelles	49 25	56 51
South Head	49 10	58 33	Trinity Cove	49 30	56 48
Cape St. George	48 30	59 12	The Seven Islands Bay	50 10	56 00
Cape Anguille	48 00	59 18	St John's River	50 20	53 55
Cape Ray	47 35	59 15	Mingan Island	50 16	53 35
Connor Bay	47 38	58 00	Eskimaux Islands	50 13	52 55
Burges Island	47 33	57 37	Mount Joli	50 5	51 28
Rainea Islands	47 32	57 25	Boat Islands	50 00	50 24
Penguin's Islands	47 24	57 00	St. Mary's Islands	50 8	50 50
Fortune Head	47 9	55 51	Little Mecatina ditto	50 28	59 27
Burnt Island	47 16	56 00	Great Mecatina Point	50 45	59 8
Great Miquelon	47 5	56 24	St. Augustine Bay	51 15	58 50
Langley Island	46 50	56 24	Eskimaux Bay	51 28	57 30
St. Peter's Island	46 45	56 15	Grand Point	51 24	57 18
Point May	46 56	56 2	Forteau Bay	51 32	57 00
Cheapeau Rouge	46 52	55 25	Red Cliffs	51 36	56 52
Mortier Rocks	47 3	54 57	Black Bay	51 43	56 47
Mortier Harbour	47 10	55 3	Red Bay	51 46	56 30
Red Island, S. P.	47 24	54 8	York Point	51 59	55 58
Virgin Rocks	47 11	54 3	Cape Charles	52 13	55 30
Point Breuin	47 2	54 12	Great Bay of Eskimaux	54 20	57 36
Cape St. Mary	46 52	54 00	Cape Harrison	54 54	56 50
St. Mary's Bay	46 50	53 40	St. Peter's Harbour	56 28	60 50
Cape Pine	46 44	53 25	Enchanted Cape	56 40	60 58
CAPE RACE	46 40	52 54	Saddle Islands	57 13	60 50
Cape Race Rocks	46 30	51 30	East Island	57 45	61 20
Cape Ballard	46 49	52 42	Steel Point	58 7	61 50
Cape Broyle	47 8	52 35	Cardinal's Island	58 50	63 00
Bay of Bull	47 21	52 28	False Black Head	59 20	63 19
Cape Spear	47 30	52 20	Black Head	59 50	63 37
St. John's Harbour	47 33	52 25	Cape Chidley	60 14	65 20
Cape St. Francis	47 57	52 30	Button's Islands	60 47	65 5
P. of Grates	48 22	52 32	IX. Hudson's Bay and Straits, and Davis' Straits.		
Trinity Bay	48 30	52 50		Lat.	Long.
Cape Bonavista	48 56	52 35		D. M.	D. M.
Barrow Harbour	48 52	53 00	Cape Resolution	51 29N	55 16W
Punk Island	50 1	52 12	Saddle Back Island	52 7	58 13
Cape Freels	49 34	52 55	Upper Savage Island	52 12	0 48
Woodham Islands	49 54	53 30	North Bluff	52 11	70 56
Gander Bay	49 44	53 55	Capes Charles	52 16	71 15
Fago Island	50 00	53 54	Cape Dorset	53 50	77 12
Twillingate Islands	50 3	54 35	Cape Pembroke	53 09	82 36
Bay of Notre Dame	50 00	55 30	Cape Walsingham	53 39	77 48
Cape St. John	50 10	55 30	Cape Digges	53 41	8 50
Horse Islands	50 24	55 48	Salisbury Islands	53 29	6 47
White Bay	50 19	56 15	Mansfield Isl. N. part	52 38	0 53
Hooping Harbour	50 46	56 13	— S. part	51 25	11 00
Green Island	50 47	55 35	Cape Southampton	52 10	56 3
Groais ditto	50 56	55 39	North Sleepers	51 38	79 45
Hare Bay entrance	51 17	55 50	West Sleepers	50 8	81 56
St. Anthony's Cape	51 20	55 36	Portland Point	50 00	78 30
St. Lunaire Bay	51 29	55 30	Baker's Dozen	50 5	79 30
Cape Degrat	51 43	55 30	Belcher's N. Point	50 20	80 15
Belle Isle	51 58	55 30	James' Bay		
VIII. From Quebec to Hudson's Bay.			— Cape Henrietta	55 10	82 30
	Lat.	Long.	— Cape Jones	54 50	73 54
	D. M.	D. M.	— Bear Isle	54 34	81 24
QUEBEC	46 49N	71 5W	— North Cubb	54 20	80 48
Coudras Island	47 15	70 19	— The Twins	53 12	80 35
St. Paul's Bay	47 16	70 24			

Newfoundland.

Canada.

Labrador.

Hudson's Bay and Davis' Bay and Straits.

Canada.

Long.  
D. M.

N. 49 45W  
52 00  
45 00  
56 00  
56 50  
57 11

LATITUDES AND LONGITUDES.

	Lat.	Long.		Lat.	Long.
	D. M.	D. M.		D. M.	D. M.
Hudson's Bay, &c.			Hudson's Bay, &c.		
Albany Fort	52 14N.	82 0 W	Cape Bedford	66 55N.	68 30W
Moose Fort	51 16	80 5	Waygate Island	70 40	44 13
Charlton Island	52 3	79 55	Bear Sound	63 20	49 10
York Fort	57 2	92 32	Maab	62 5	48 27
Cape Churchill	58 48	93 12	Cape Farewell	59 38	42 42
P. of Wales' Fort	58 48	94 14	Whale's Island	62 30	43 15
Marble Island	62 33	91 6	Herjeisness	65 3	29 50
Cape Dobbes	65 00	86 42	Bontokoe Island	73 15	7 6
Cape Walsingham	64 5	66 10	Gael Hamkes Bay	75 00	6 51
Dyer's Cape	65 20	66 15	John Mayen's Island	71 10	9 49
Sanderson's Hope	66 18	68 10			

Note to page 7  
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To S. Point of  
To Turnip Island  
To Cape Small

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## APPENDIX.



*Note to page 28.*—A light-house is erected on Mantinicus (or Matinicus) Island, off Penobscot Bay, coast of Maine. There are two lanterns, one at each end of the keeper's house, which show *two distinct fixed lights*, sailing coastwise, north-easterly and south-westerly; and *one light*, sailing N. N. W. and S. S. E.

*Note to page 31.*—A light-house is erected on Pennequid Point. The tower is 30 feet high from the surface of the ground on which it stands; the lantern is about 75 feet above the level of the sea, and exhibits a *fixed light*.

*Note to page 36.*—There has lately been erected, by order of the U. S. government, a stone column on little Mark Island, as a land mark for vessels running into, or passing either Harpswell or Broad Sound. It is also a conspicuous mark for the mariner, standing in from sea, in any direction between Cape Elizabeth and Cape Small Point. This island, at the entrance of Harpswell Sound, (half way between Portland and the entrance of the River Kennebec) is one-fourth of a mile in length, without trees, its elevation forty feet above the level of the sea; the column is placed near the centre of the island, fifty feet high, painted perpendicularly in black and white stripes, except near the top, which is black on each side.

From the column to Cape Elizabeth S. W. $\frac{1}{4}$ W. . . . .	13 miles.	To Whale Rock (out of water) S. W. by W. . . . .	$\frac{1}{2}$ miles.
To the outer Green Island S. W. by W. . . . .	6	To Haddock Rock or Island, N. Pt. N. W. $\frac{1}{4}$ W. . . . .	$\frac{1}{2}$
To Half-way Rock S. by W. $\frac{1}{4}$ W. . . . .	4	To S. W. Point of Haskel's Island N. N. W. . . . .	$\frac{1}{2}$
To Drunkard's Ledge S. $\frac{1}{4}$ W. $\frac{1}{2}$ S. $\frac{1}{4}$ W. . . . .	$1\frac{1}{2}$	To Middle of Eagle Island W. N. W. $\frac{1}{4}$ W. . . . .	$1\frac{1}{2}$
To Mark Island Ledge S. E. $\frac{1}{4}$ S. . . . .	$\frac{3}{4}$	To Mackerel Cove E. N. E. . . . .	2
To S. Point of Jaquish E. $\frac{1}{4}$ S. . . . .	$1\frac{1}{2}$		
To Turnip Island E. $\frac{1}{4}$ N. . . . .	$1\frac{1}{2}$		
To Cape Small Point E. by S. . . . .	10		

Course up Harpswell Sound N. E.  $\frac{1}{4}$  N.

The courses are by compass, and distance in statute miles.

*Note to page 39.*—A law passed the Congress of the United States which ended in March, 1827, for building *two light-houses* on Cape Elizabeth, at the entrance of Portland Harbour, State of Maine, but at the present time (July 16, 1827) the sites are not fixed on, and it is not probable they will be built the present year. We have authority for saying, when completed, they will both exhibit *fixed lights*.

*Note to page 44.*—An Act passed the Congress of the United States, March 1827, for building a light-house on the *Whale's Back*, lying S. S. W. from Wood Island, which forms the eastern entrance to Portsmouth (N. H.) harbour, and is to be left, in entering, on the starboard hand. It is probable, from some mistake in the appropriation, that it will not be erected until the year 1828; but we sincerely wish, for the benefit of all concerned in navigation, it may be effected, as we do not think an appropriation could be made to more advantage, being to point out a dangerous ledge, covered at half-tide, near which the mariner must approach when entering the harbour, leaving it on the starboard hand.

*Note to page 46.*—There being some improvements in the depth of water over Newburyport Bar, we refer our readers to page 663, (Tide Table) but as all entrances to harbours obstructed by shoals are subject to change, recommend caution, as the depth here mentioned cannot continue.

*Note to page 61.*—Line 7, from the top, after coming to W. by S. omitting all to the end of the paragraph, read, two miles, until the light on Long Island Head (described in page 62) bears N. W. by N. then steer N. W. about one mile, or until the Old Light (described in note to p. 61, with this  $\dagger$  reference) is hid by George's Island, where you may anchor in from 7 to 5 fathoms, in safety, in Nantasket Road.

*Note to page 75.*—Appropriations have been made by Congress for placing a *light-ship* on the S. W. part of Tuckernuck Shoal, in the Vineyard Sound.

*Note to page 92.*—The buoy on Long Point (East Greenwich) lies at the entrance of Greenwich Harbour, about a mile and a half distant from Warwick Point light. It is a spar-buoy, and must be left on the larboard hand going into East Greenwich.

*Note to page 93.*—After running W. S. W. about twelve leagues from Falkland Island light (described in note to page 93) you may make Eaton's Neck light (also described in note to page 93) on the larboard hand, which is on Long Island, and another on the starboard hand, bearing above N.  $\frac{1}{4}$  W. from it, which is on the south-west of Norwalk (or Sheffield's Island) off the harbour of Norwalk, showing a light on the *revolving principle*, one side of each revolution producing a blood red light, and the other a common white light, distinguishing it from any other light in Long Island Sound.

There have likewise recently been placed three Spar-Buoys, in the harbour of Bridgeport, viz. One on Marchand Flats, which lies a mile S.  $\frac{1}{4}$  W. from the outer beacon. One on Stony Bar, bearing S. E. from the beacon, 150 yards distant. One on Allen's Flat, being inside the harbour.

Vessels bound into Bridgeport must leave the outer buoy on the larboard hand, and steer direct for the beacon, leaving the buoy on Stony Bar on the starboard hand, and that on Allen's Flats on the larboard. One buoy near Smith's Ledge, off Darien, four miles west of Norwalk, placed in 15 feet at low water, and bears S. by E. from the centre of the ledge, which is mostly in sight at low water. The buoy is about 60 yards from the ledge. There is a ledge S. W. by W. from the light, one mile distant, with a black spar-buoy on it, between which and the light you should not pass.

The beacon on Well's Point bears about N. E. from the outer beacon, which is on the west flat, distant about 350 yards.

*Note to page 95.*—Between Hart Island and Sand's Point light, nearly one mile distant from the latter, lies Channel Rock, on which is a black spar-buoy that must be left to the southward in passing. About one-quarter of a mile distant from Channel Rock, lies S. W. Rock, sometimes dry at low water, which must also be left to the southward when passing: it has a white spar-buoy on it.

*Note to page 100.*—A light-house is erected on the west end of Plumb Island, which exhibits a *revolving light*, elevated 63 feet above the level of the sea, and is intended to show the passage between Oyster Pond Point and Plumb Island. This light will also be greatly to the advantage of vessels bound to the eastward, or round Montague point, when, through storms or foggy weather, it is not prudent to go through the Race. In this rout (called Plumb Gut,) you leave the light on your larboard hand, running boldly for the cliff on which it stands, then steering S. E. by E. till the Gull light bears N. E. by E. when you may shape your course for Point Judith or wherever you may wish. When passing the light, you will open Gardiner's bay, which is the passage to Sag Harbour, and also leave Oyster Pond Point on your starboard hand, off the eastern part of which a shoal extends one third over toward the south end of Plumb Island.

The bearings of the light-house have been taken from the following places;—From Oyster Pond Point and the reef, N. E. by E. distant from the outer part of the reef one and three quarters miles. From Saybrook Light S. E.  $\frac{1}{4}$  S. distant 15 miles. From Pine Point (the S. W. part of Plumb Island) N. W. by N. distant three quarters of a mile. From Cherry Harbour Point (the S. W. part of Gardner's Island) N. N. W. distant nine miles. From Gardiner's Point N. W.  $\frac{3}{4}$  W. distant six miles. From New-London Light S. W.  $\frac{1}{4}$  S. distant thirteen and a half miles. From Cedar Island (at the entrance of Sag Harbour) N. N. E.  $\frac{1}{4}$  E. distant twelve miles.

*Note to page 102.*—East from Stanford, one mile from land, lies Shiphand's Reef, on which a buoy is placed, from which the light-house on Eaton's Neck bears S. E. You must not go between the buoy and main, unless compelled.

*Note to page 107.* As two Light-Houses are now building on the \*Highlands of Neversink, we annex the following Directions for sailing in by Sandy-Hook, corresponding with a Chart published by EDMUND and GEORGE W. BLUNT, from actual survey, No. 154 Water-street, corner of Maiden Lane, New-York, where all the Nautical Works of EDMUND M. BLUNT are published.

\* There are two Light-Houses building on the Highlands bearing N. 23° W. and S. 23° E. from each other, and the distance between each about 100 yards. The southern light-house will show a *revolving light*, elevated 45 feet above its base. The northern light-house is elevated the same, and will exhibit a *fixed light*. They will be completed in the Spring of 1828, and will be of great advantage to Mariners; while approaching the coast.

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When up with the Bar, and mid-way between the two buoys, steer W. by N. till the light-house on Sandy-Hook ranges with the easternmost of five trees on the Highlands; you may then steer W. till you get the west beacon on the point and the light-house in range, and so keep them till you make the black buoy of the S.W. Spit; when you are up with the Spit, the two light-houses on the Highlands will range, when you may steer N. by E.  $\frac{1}{4}$  E. until you make the buoy of the Upper Middle, when the east beacon and Sandy Hook light will range in one. After passing the Upper Middle, you will deepen your water to 6 fathoms, when you may steer N. up through the Narrows, and you will deepen your water to 7, 8, 10, 12, and 16 fathoms.

*Bearings from the Telegraph at Neversink Hills:—*

Sandy-Hook Light-House N.  $7^{\circ}$  W. with the west side of Fort Lafayette in range.

Telegraph on Staten Island N.  $10^{\circ}$  W. Level of the Hill at the Telegraph, where the Light-Houses are erecting 205 feet, making the two lanterns 250 feet above the level of the sea.

*Bearings from Prince's Bay Light-House:—*

Point of the Neversink Hills S.  $54^{\circ}$  E.

Sandy-Hook Light-House S.  $71^{\circ}$  E.

Spar-Buoy on the north side of the Round or Middle Shoal, at the entrance of Prince's Bay S.  $86^{\circ}$  E.

At Prince's Bay, where the light-house is erected, the level of the Hill is 77 feet above tide-water. The elevation is 30 feet from its base.

*Note to page 108.*—Absecum, six miles south of Little Egg Harbour, affords a good harbour for vessels of easy draught. To enter the harbour, bring the house on the point which lies on the larboard hand, to bear N. W. and steer directly for it, until within one quarter of a mile of the house, when you must steer north till you get to the marsh, where you may anchor in from 3 to 6 fathoms. Depth of water on the bar at low water, 9 feet; common rise of tide 5 feet. In approaching the harbour, you must carefully avoid the shoal which lies E. & S. E. from the entrance, two and a quarter miles distant, already mentioned (page 108.)

*Note to page 110.*—Appropriations have been made for placing five Buoys at Little Egg Harbour, but at the present time (Sept. 20, 1827,) it has not been done.

*Note to page 111.*—A light-house is built on the Brandywine Shoal. It is situated about one mile above the lower spit of the shoal, and bears N. by W. from Cape Henlopen light-house. The light vessel which has been moored at Brandywine Shoal, is now at her winter quarter station (Reedy Island) where she will exhibit her light during the winter. [No light is yet exhibited on the Brandywine Shoal, Jan. 1828.]

*Note to page 113.*—On *Smith's Island*, which lies north-easterly from Cape Charles, a light-house is erected, exhibiting a revolving light, distinguishing it from that on Cape Henlopen, which is a fixed light, as described in note to page 111, and the one on Cape Henry, described in note to page 114, which also exhibits a fixed light.

*Note to page 117.*—A light vessel is anchored at or near Hooper's Straits, in Chesapeake Bay, and a light-house is built on Concord Point, near Havre-degras, and is now lighted. REMARK. The light-house mentioned in note to page 118, on Fog's Point (Smith's Island) opposite Point Lookout, is completed, and shows a FIXED LIGHT, as there described.

*Note to page 121.*—Navigators, who frequent the Swash Channel leading into the Patapsco river, will be pleased to notice that a hard knoll or oyster bank lies about two miles above the mouth of Magothy river, having less than 7 feet water on it, with 4 fathoms soft around it, from which the Bodkin light-house bears N.  $41^{\circ}$  W. bluff off Sandy Point S.  $9^{\circ}$  W. and two very light green trees, appearing as one to the naked eye, standing over the Red bank to the northward of Magothy, S.  $84^{\circ}$  W. to the Red bank two miles. A small mast buoy, painted black and white alternately, with an O upon it, both in the black and white, is placed on the northern edge of it.

*Note to page 121.*—The Light-Ship, which has been moored off Hatteras, showing two lights, was driven from her moorings in the gale of August 26, 1827, and we fear, from her disabled state, she will not be soon replaced. It

is our duty to mention it.—A law also passed Congress at the Session of 1826-7, for continuing the Ocracock vessel on nine feet shoal.

*Note to page 123.*—A light-house is to be built on the *Point of Marsh*, which forms the western entrance to Neuse river; and a *light vessel* is to be moored on the S. W. point of *Royal Shoal*, in Pamlico Sound, Ocracock Inlet.

*Note to page 130.* A light-house is built on the N. E. Racoon Key, near Cape Roman, which exhibits a red *fixed light*, lat.  $33^{\circ} 1' N.$  long.  $79^{\circ} 14' W.$  The pitch or southern point of Cape Roman bears E. S. E. from the light-house; the Old Mill N.  $\frac{1}{4}$  W. and the large Racoon Key W. by S. [This light-house has been erected since the note to page 130 was published.]

*Note to page 139.* Three Buoys are placed on the Bar at the entrance of St. Augustine harbour.

*Note to page 142.*—A law passed the Session of Congress, which ended in March 1827, for building a light-house on Cat Island, in the Gulf of Mexico. Cat Island lies on the north side of the channel into Blind Lake and Lake Ponchartrain.

*Note to page 146.*—Since our remarks respecting the S. W. passage into the river Mississippi, we are strengthened in the belief it has advantages over the other by the fact, that the ships Cumberland and Goleonda, drawing 16 feet, were both taken out without touching, whereas ships drawing  $14\frac{1}{2}$  feet often lie on the S. E. bar for days.

*Note to page 150.*—There is a passage through Key West from Florida Stream into the Bay of Mexico, for vessels drawing 12 feet, at low water. This passage is about 6 miles in extent, and vessels, by passing through it, save the danger and delay of going round the Dry Tortugas. Good Pilots can be obtained at Key West, to carry vessels through. The following are the

*Directions for the N. W. passage between Key West and the Mule Keys, into the Bay of Mexico.*

Bring the Light-House on Key West, to bear S. E. run N. W. which will carry you between the Banks in the Channel: as you approach the Bar, there is a small middle ground with nine feet water. Go either side of it, and cross the bar in 12 feet water. While on the bar, the Light-House on Key West, will bear by compass S. E. by S.—About 8 miles from the northern Mule Key, the N. E. side of the bar is broken ground, having only 9 feet water on the knolls, the S. E. side is clear, and the soundings regular. When you bring the west end of the northern Mule Key open with a Key bearing S. W. from it, you have passed the bar—and the latter direction will enable vessels coming from the westward into Key West harbour, to enter the Channel by running with the above named two Islands open until you have 24 fathoms, and the Light upon Key West bearing S. E. then run for the Key West Light, keeping near the bank which can be distinctly seen.

*Note to page 158.*—Five Buoys are to be placed at the entrance of Mobile Bay, viz.—a spar Buoy on the S. E. extremity of the Shoal projecting from Mobile point, which you leave on the starboard hand entering the harbour. One on the west side of the channel *from the bar*. One on the west side of the channel *on the bar*, both which you leave on the larboard hand. One on the S. E. side of the Spit projecting from Sand Island, and one on Dog Point Bar.

*Note to page 159.*—The high water on the eastern entrance of the Bay of Mobile. Ships in entrance may safely pass the main channel of the Bay, as the Bello, as the tide rises, the islands and shoals towards the Bay and Casco Bay. After passing the tide becomes shoal.

*Note to page 160.*—The Ros.

*Note to page 161.*—at the mouth of the Bay.

*Note to page 162.*—The high water is 68 feet high, low the other lamps and reefs, cable's length, fathoms of water.

*Note to page 163.*—is not used.

*Note to page 164.*—of eastern point of the monument, River, in the water at high water. Misquam River.

*Note to page 165.*—Dennis and Yarr.

*Note to page 166.*—on the northwestern and southern

*Note to page 167.*—Point.

*Note to page 168.*—

*Note to page 169.*—Carysfort Reef,

*Note to page 170.*—S. S. W. from Mobile

work, and may be

A light-house

Bayou La Fourche

less no particular

## ADDITIONAL APPENDIX.

December, 1830.

*Note to page 21.*—A light-house has lately been erected on the northeast point of Campo Bello; it is a fixed light, and the lantern is 60 feet above high water mark; it is placed between the main ship channel and the northern entrance into Head Harbour, and within 250 feet of the extreme point. Ships in entering into the main channel, or vessels bound to Head Harbour, may safely pass within a cable's length of the light-house. In sailing up the main channel, care should be taken not to keep far from the shores of Campo Bello, as the flood tide sets directly over from the point at the light-house to the islands and ledges on the north side of the channel, which is here upwards of a mile in width; and at two hours flood the tide sets directly towards the Black Rock, which is a very dangerous ledge, between Spruce and Casco Bay Islands, upon which several vessels have been wrecked. After passing up and leaving the light-house about a mile to the eastward, the tide becomes more regular and sets along the direction of Campo Bello shore.

*Note to page 27.*—A light-house has been lately placed on Mount Desert Rock.

*Note to page 36.*—A light-house has been erected on Hendrick's Head, at the mouth of Sheepscot River.

*Note to page 44.*—A light-house has been erected on Whale's Back; it is 68 feet high, from low water mark, has two fixed lights, one ten feet below the other; the upper light with ten, and the lower with five patent lamps and reflectors. A vessel going into the harbour can run within a cable's length of the light, keeping it on the starboard hand, and have four fathoms of water.

*Note to page 45.*—The bell, as noticed in the light-house on White Island, is not used.

*Note to page 51.*—A stone monument has been erected on the S. W. head of eastern point of Cape Ann, 15 feet at the base and 40 feet high. And a stone monument has lately been erected on Lobster Rocks, in Annisquam River, in the west end, is 12 feet at the base, 17 feet high, and 7 feet out at high water. Three buoys have been placed near the entrance of Annisquam River.

*Note to page 70.*—A beacon has been erected in Bass River between Dennis and Yarmouth.

*Note to page 96.*—Two light-houses have been placed on Block Island, on the northwest point, distant from each other about 30 feet, and bearing north and south of each other.

*Note to page 115.*—A revolving light has been erected on Back River Point.

*Note to page 142.*—A light-house is building on Cat Island.

*Note to page 151.*—A light-ship has proceeded to take her station on Carysfort Reef, opposite Sound Point, Key Largo. December 1st, 1830.

*Note to page 159.*—A beacon has been erected on Sand Island, 3 miles S. S. W. from Mobile Point; it is 30 feet above water, on a frame of iron work, and may be seen, in good weather, from five to six miles.

A light-house has been erected on the Timbeliers, at the entrance of Bayou La Fourche, to the westward of Mississippi River, of which we possess no particular information.



*Note to page 161.*—A light-house has been erected at the entrance of St. Mark's River, on the starboard hand going in.

**DIRECTIONS** for the Brazo de Santiago and the Rio del Norte, by Thomas M. Thompson, Branch Pilot.

In running down for the Brassos, between the months of March and September, be careful to keep to the south of  $26^{\circ}$  N. ; for should you fall in to the southward of the bar you will find it very easy to make your northing, as a continued current is running northerly of from two to three knots per hour. Should you fall in with the land, not having had an observation previous, so as to know if you are north or south of the bar, by going to the mast-head you will see, if you are to the northward, a large lagoon of water, and scarcely be able to see the main land.

N. B.—This lagoon extends to the north of  $28^{\circ} 30'$  latitude, and is a certain sign of your being to the north. If you are to the south of the river you will find your water of a muddy green colour, and no lake to be seen on the inside, from the mast head. If your vessel is in the vicinity of the river, the water will be the same as approaching the Mississippi. If you fall in between the river and the bar of Santiago, you will be able to discern a large house, that stands on an eminence at the entrance of Boca Chiea, a little narrow inlet situated five miles south of the Brassos. Vessels bound here, between September and March, will do well to keep as near the  $26^{\text{th}}$  degree of north latitude as possible, as the current is then altogether governed by the winds. With the exception of an east wind, the current is northerly.

A White flag will signify that a vessel cannot enter, and will never be shown except there is danger in entering, and will be hauled down when the danger ceases.

A Red flag will be hoisted to know your draught of water, which you can answer by hoisting your flag as many times as your vessel draws feet of water ;

When a Blue flag will tell you the pilot is coming out to take you in ; or if you draw too much water, and will have to lighten,

A White and Red flag will be hoisted for you to anchor, with two flags in a range and in four or five fathom water, and a lighter will be sent out to you immediately.

A White and Blue flag signifies that you may haul off for the night, as it is too late to enter, but you will be attended to in the morning.

Any vessel appearing off the harbour in distress, will be promptly attended to, on making the usual signal, viz. the ensign, union down. I would recommend a white square flag with a large black ball in the centre, as a signal much quicker discerned.

*While the above was in press, we received the annexed notice.*

The Light Ship\* is again moored on Five Fathom Bank ; bearing of Cape May light-house from the ship is west,  $14^{\circ}$  N., distant 15 miles. She is moored within the southern part of the shoal.

*Note by the Editors.*—We would advise shipmasters not to depend too much on finding this ship in the above station, as she has been adrift three times, within fifteen months.

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\* The one formerly off Sandy Hook.

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