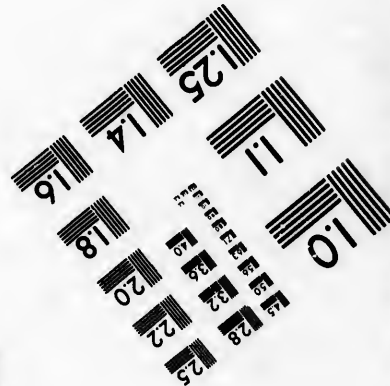
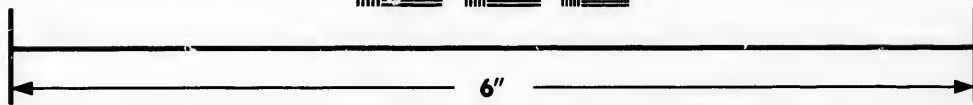
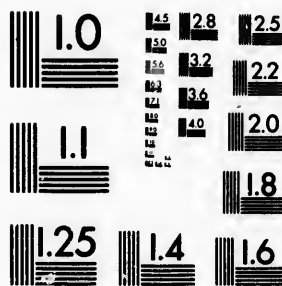


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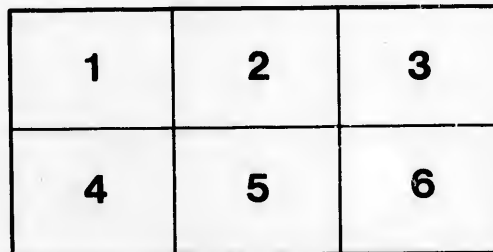
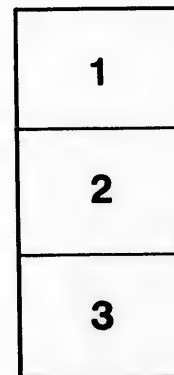
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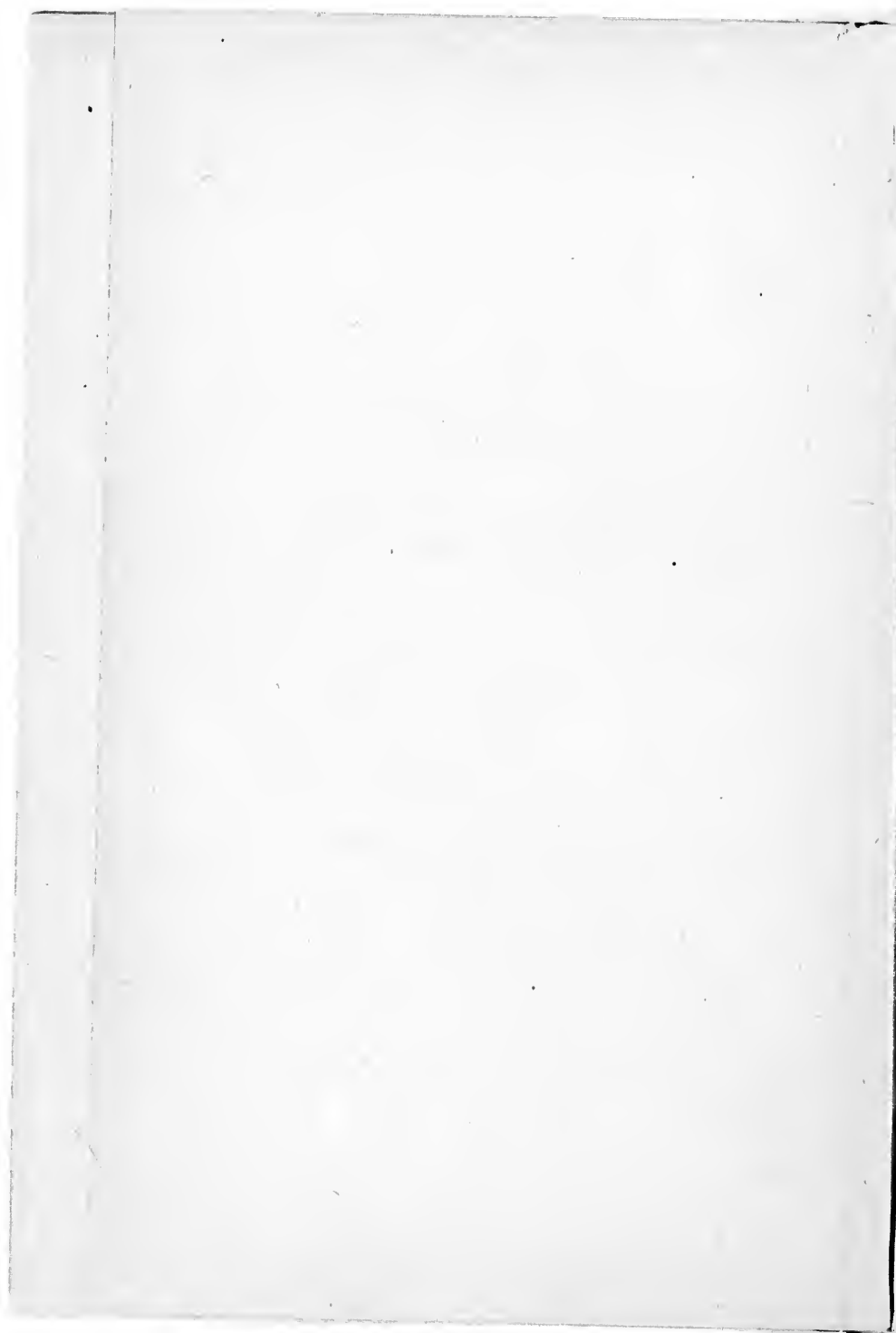
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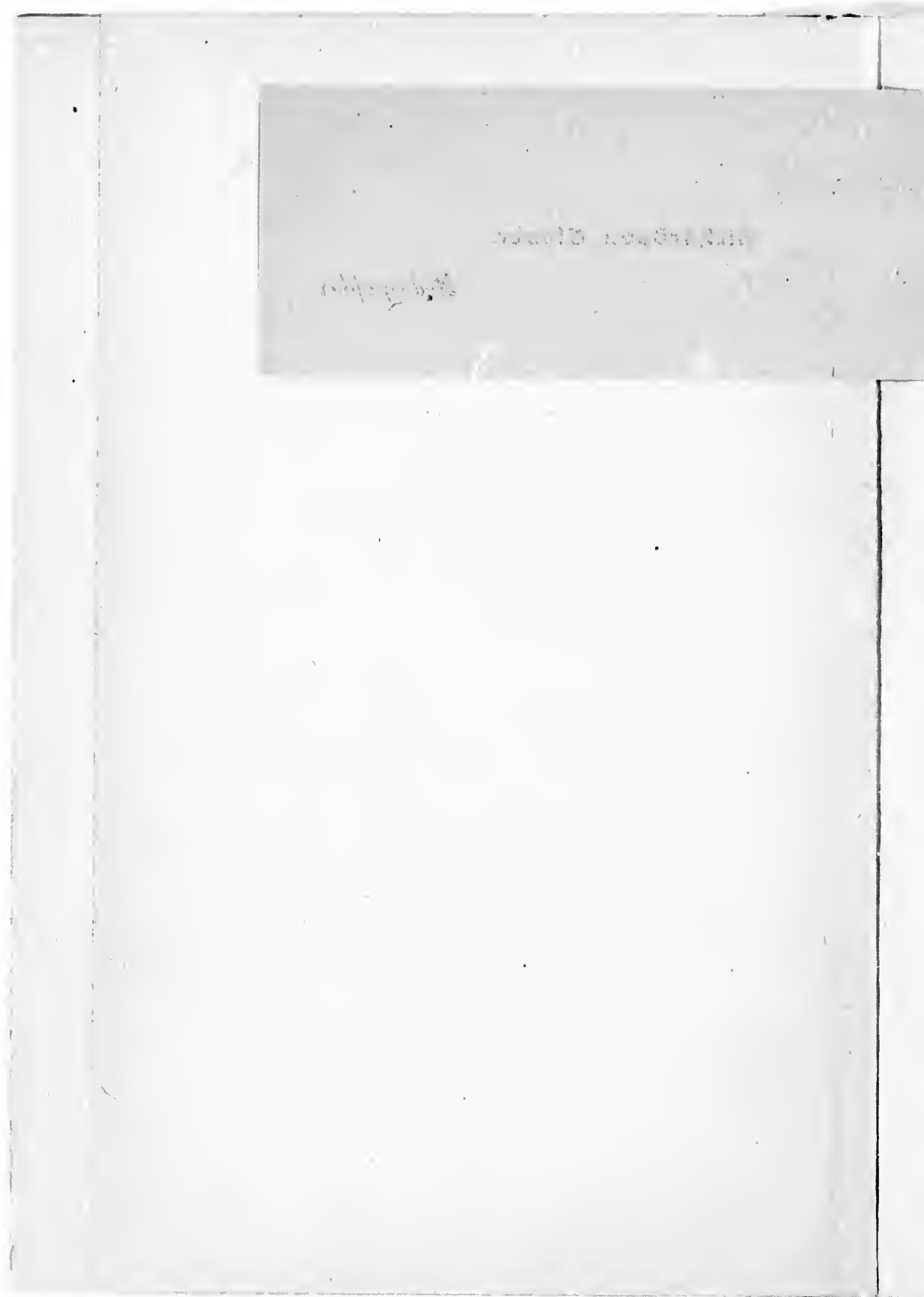
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SAILING DIRECTIONS

FOR

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CAPE BRETON ISLAND.

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Compiled by

R. H. ORR, U. S. HYDROGRAPHIC OFFICE.

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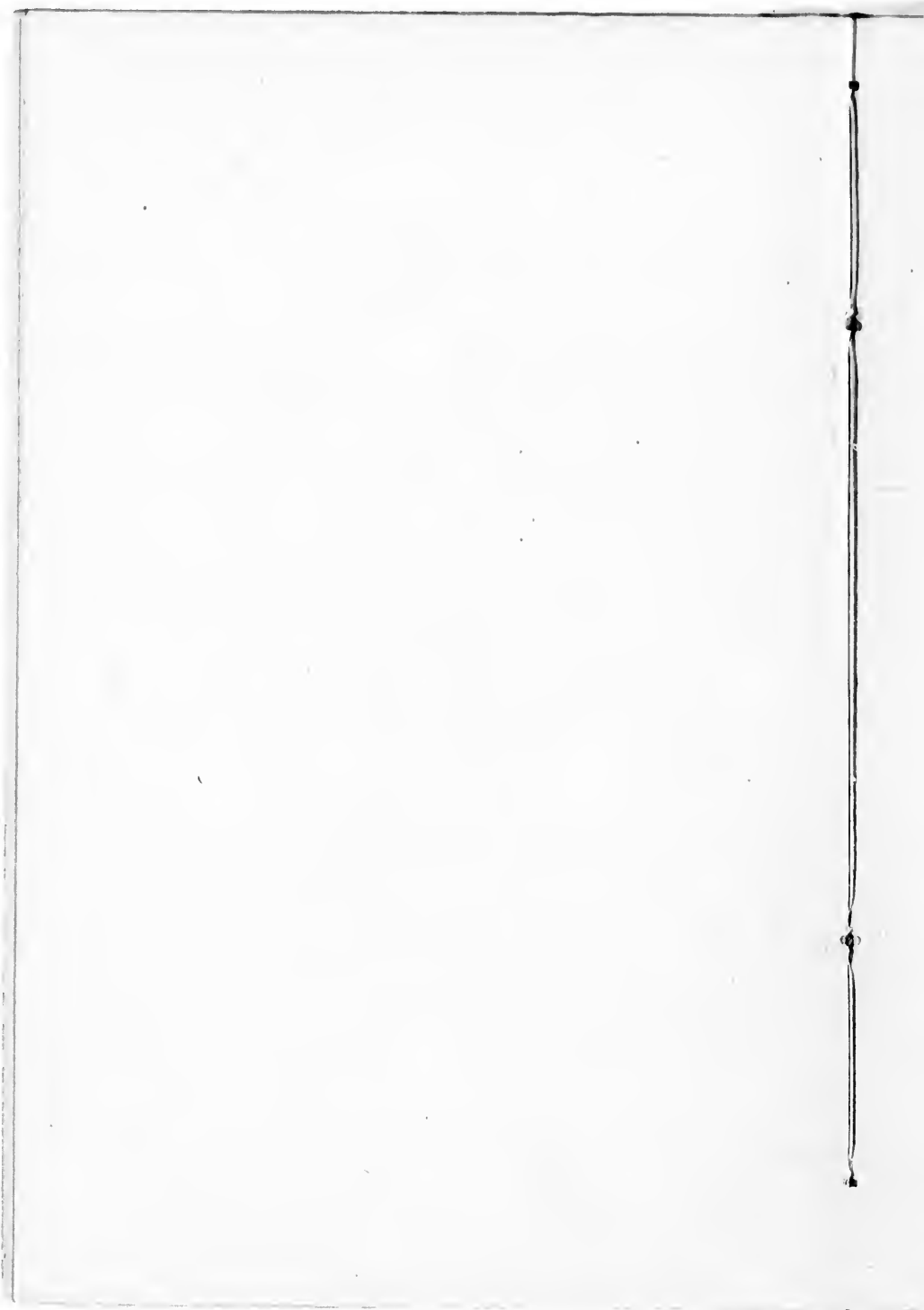
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## PREFACE.

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This edition contains sailing directions for the Gulf and River St. Lawrence, beginning at Grand Point on the north and Escuminac Point on the west shore, and running up the river as far as Montreal, also Cape Breton (except south shore), Anticosti, and smaller islands lying in the Gulf.

In the compilation of this volume the following authorities have been consulted :

St. Lawrence Pilot, vol. I (Admiralty).  
St. Lawrence Pilot, vol. II (Admiralty).  
Archives, U. S. Hydrographic Office.  
Office of Naval Intelligence, Navy Department.  
Port Charges of the World (Hunter).  
Hydrographic Office Charts.  
British Admiralty Charts.

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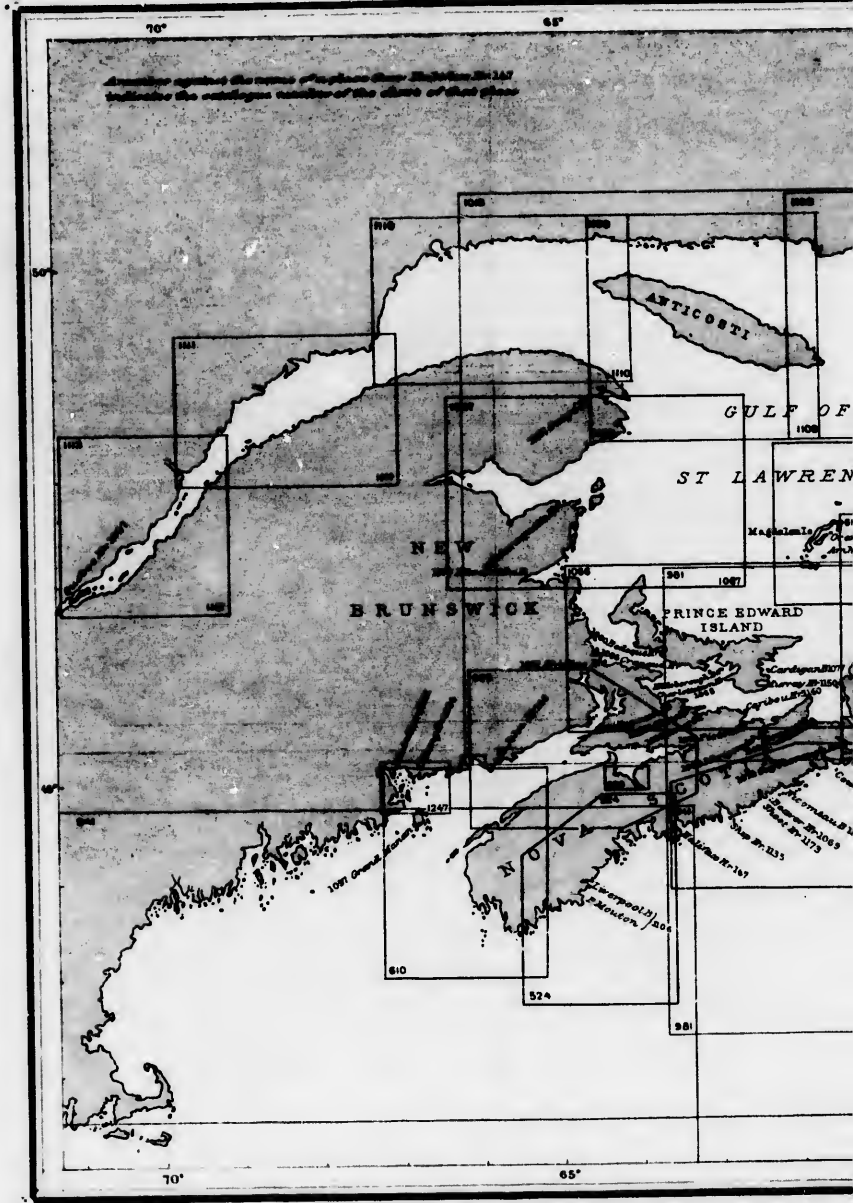
**NOTE.**

The bearings, courses, and trend of the land are true. The direction of the winds, the point from which they blow; of currents, the points toward which they set. Distances are expressed in nautical miles; soundings, unless otherwise stated, are reduced to mean low water.

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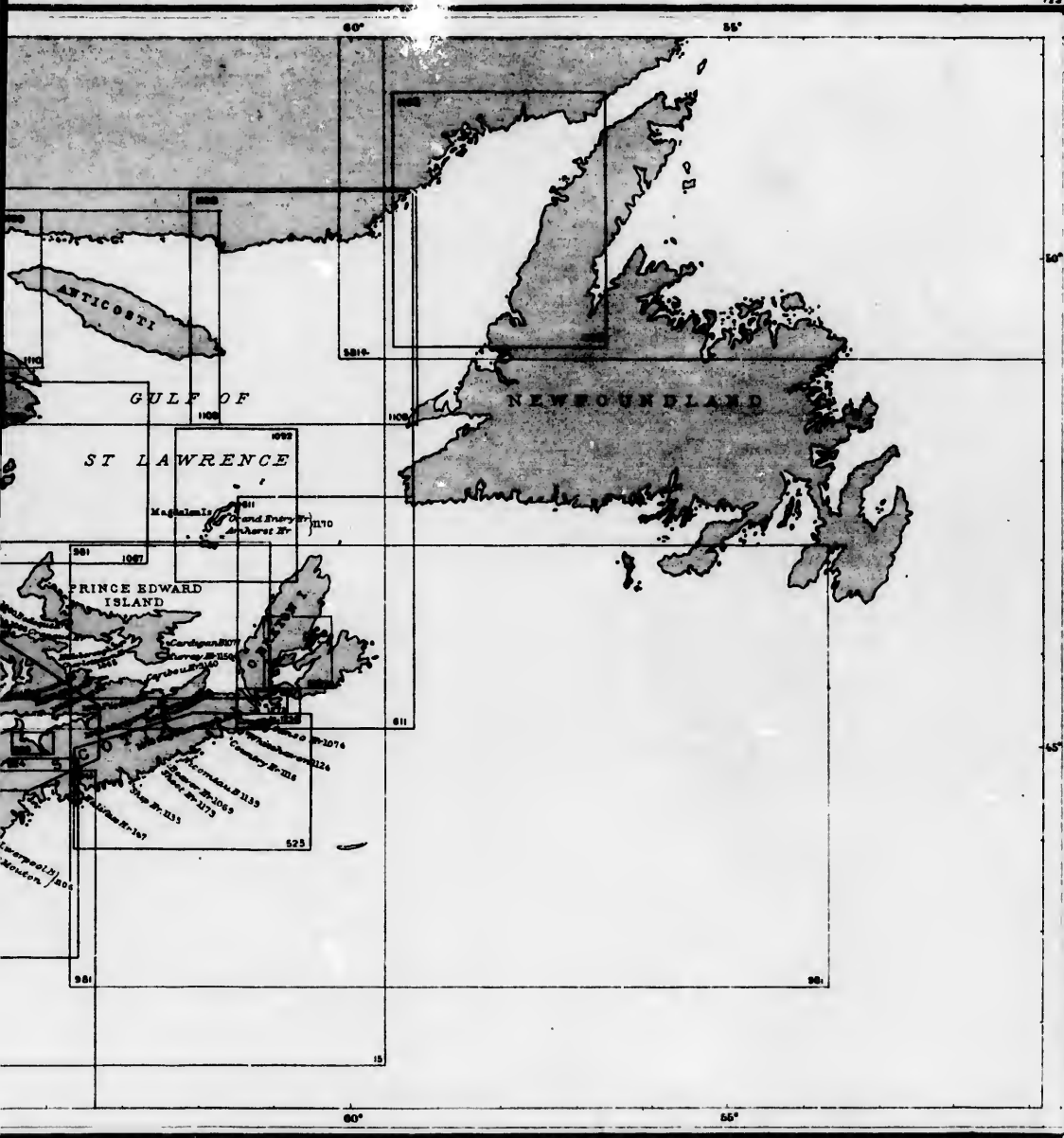


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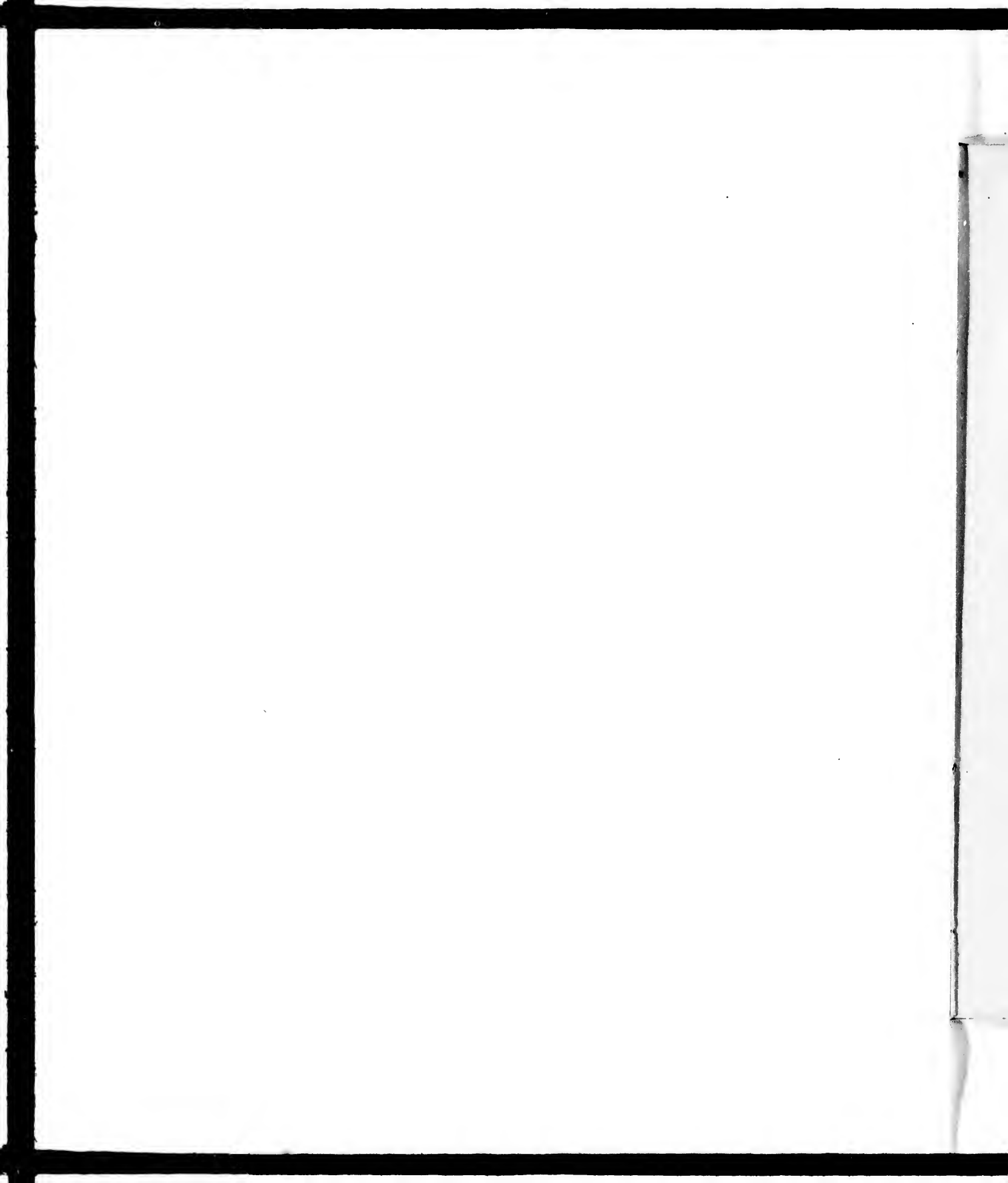
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## CHAPTER I.

### DIRECTIONS ACROSS THE GULF.

**General Remarks.**—The navigation of the gulf and river of St. Lawrence (in the present chapter spoken of as the gulf and the river) requires much careful attention; the irregularity of the tides and currents, the severity of the climate, especially towards the close of the navigable season; and, above all, the frequent fogs, are difficulties which may well cause much anxiety in the mind of the seaman, and which call for the exercise of all his vigilance, prudence, and ability.

**The Variation.**—The navigator is reminded that the variation of the compass differs nearly two points between the limits of the places described in this work, viz, at Grand Point  $36^{\circ}$ , and at Quebec  $17\frac{1}{2}^{\circ}$ .

**The Deviation** or local attraction of the compass needle is another source of error, independent of charts altogether. This subject is one of great importance in approaching and navigating the gulf, as from the increase of the magnetic dip and the decrease in the horizontal magnetic force that is found here—two elements affecting the ship's magnetism—the original deviation of the compass will, in all probability, be much increased. In many vessels it has been ascertained by direct observation that their maximum deviation have been increased by one-third.

**Magnetic Attraction of the Shores.**—An opinion is prevalent that the compasses of vessels are disturbed in the gulf and river, and such disturbance has been attributed to the magnetic ores of iron in the hills, particularly those of the north coast. The magnetic oxide of iron does exist abundantly, and attracts the needle very powerfully at some points, particularly along the coast from the bay of Seven Islands eastward. Among the Mingan Islands the variation was found to vary from this cause from  $19^{\circ}$  to  $31^{\circ}$  W. At Port Neuf and on Manicougan Point the needle was also disturbed. But these effects were only noticed when the instrument was placed on the shore.

When running from place to place, at greater distances than 2 miles from the coast, nothing of the kind was noticed; so that in nine cases out of ten where this source of erroneous reckoning has been alleged as the cause of accidents to vessels they probably originated either in errors of the chart or in the local attraction on board the vessels themselves.

**Ice.**—Among the difficulties of the navigation may be mentioned the ice. In spring, generally in the month of May, the entrance and eastern parts of the gulf are frequently covered with drift ice, and vessels are

sometimes beset by it for many days. Being unprepared for contending with this danger they often suffer from it and are occasionally lost; but serious accidents from this cause do not frequently occur, because the ice is generally more or less in a melting state from the powerful effect of the sun in spring. In the fall of the year accidents from ice seldom happen, except when the winter commences unusually early, or when vessels have lingered imprudently late from the temptation of obtaining high freights.

**Cabot Strait** is never frozen over, but vessels built in the ordinary way can not navigate it in safety between 1st January and 1st May on account of the heavy drift ice, and frequently not until later on account of the block caused by the "Bridge."

Sealing steam vessels pass through at all times, but are occasionally fast in the ice for days together.

Nearly every year the great rush of ice out of the Gulf of the St. Lawrence in the spring causes a stoppage, locally known as "the Bridge," between St. Paul Island and Cape Ray. The "Bridge" sometimes lasts for 2 or 3 weeks, and completely prevents the passage of ships; it is recorded that 300 sail have at one time been detained by this obstacle, and many wrecks have occurred in consequence on the Newfoundland coast.

The usual time of the formation of the "Bridge" is between the middle and end of April to the middle of May.

Small vessels are engaged in the seal fishery during March and April, and occasionally reach Anticosti. The difficult portion is between the Bird Rocks and Cape St. George as the stream presses the ice on to the coast. The wind between NW. and SW. closes the coast. A SW. gale occasionally brings the ice out from the channel between the Magdalen Islands and Cape Breton, which meets the main body flowing past the Bird Rocks and closes the strait between St. Paul and Cape Anguille. The wind between NW. and NE. clears the strait rapidly and the wind between NE. and south opens the Newfoundland coast. The stream of the St. Lawrence is generally setting to the southward and often with considerable speed, particularly during westerly winds.

The strait often appears to clear rapidly; in 36 hours very little ice may be seen from Cape Ray, but bodies of ice will pass many days after navigation is open, particularly if the winds are northerly. NE. of Anticosti ice may be met with in May, long after the strait is clear. The ice usually presses out of the gulf in the direction of Banquereau, the eastern edge extending half-way between Scatari and St. Pierre. Occasionally it is drifted along the south coast of Newfoundland and reaches St. Pierre. The coast between Cape North and Scatari often holds the ice during easterly winds late in May.

The early stream of slob made on the Labrador coast and the north usually passes into the gulf during the month of December and mixes with the gulf sheet when it is made early, but it is often open water.

The east winds and snow build this thin ice and produce a form of white slob. The northern slob enters the gulf about the 9th of January with variations extending over a month, but it may not be permitted to pass Blanc Sablon if the wind is NW. The ice can not at present be followed; it may arrive off Bonne Bay during January or February, or it may be driven into the Labrador coast, all depending on the wind.

The gulf sheet makes early and rapidly during the cold season and is often in sheets a mile or two in length and occasionally it will be fast for a few days from Meccatina to Cow Head in February. Generally speaking, it is loose, with lanes and lakes extending in the direction of the wind and current, and is navigated by small vessels during March and April sailing from Natashquan and Esquimeaux Point.

#### ICE IN THE GULF OF ST. LAWRENCE AND VICINITY.

During December and January the harbors and bays around the Gulf of St. Lawrence begin to freeze, and by January 20, ice will have formed over most of them. In some the ice made there will eventually become thick enough to interfere with navigation, while in others it will completely close the port and prevent the entrance of all vessels. By February 1, the open water in the gulf will be full of ice-fields formed there, while other ice will enter through the Strait of Belle Isle and from the River St. Lawrence.

Off the coast the ice is in constant motion, drifting with the winds, tides, and currents, and is slowly working down towards Cabot Strait, through which it passes and finds its way to seaward. Its path broadens when through the strait, and will be governed generally by the prevailing winds. Under the influence of currents alone it will drift to the southward and westward, and in latitude 45° N. may be from 10 to 75 miles wide. Much of this is very heavy, and will prevent the passage through it of all vessels not specially built to go through ice.

Its thickness will be anything from a few inches to several feet. It is only in the Strait of Belle Isle that bergs are encountered, but rarely farther west than Greenly Island, though a few have been known to find their way south through Cabot Strait.

Field ice will be found in the gulf until May and often lasts until June, when it is generally replaced by bergs.

Much of the ice in the gulf will be rough and rafted full of hummocks and in extensive fields. Some of the Arctic ice in finding its way into the gulf is forced ashore at times, but large quantities mix with the gulf ice and make it very heavy and close. Once the ice forms on open water sufficiently strong to interfere with navigation it begins to drift, filling some ports that may remain closed all winter, while a favorable or adverse wind may continue to open or close them the entire winter.

Leads may be found extending through the ice at any time, but they can not be depended upon for any length of time.

Heavy ice is noticed at the mouth of the River St. Lawrence in the



latter part of December, and lasts until April 10 or 15, but all during the season leads can be found when the wind drives the ice to either side of the river.

The Gut of Canso is blocked at times by drift ice from the northward, but will be opened with a southerly wind.

West of Cape Canso the ice rarely, if ever, interferes with navigation. Halifax, for example, has only been closed once in 25 years, and then only for a short time, by ice frozen in the harbor, though ice an inch or two in thickness frequently freezes there.

**Fogs** may occur at any time during the open or navigable season, and they sometimes last several days in succession, but are most frequent in the early part of summer, and seldom fail to accompany an easterly wind of any strength or duration. In the months of October and November the fogs and rain that accompany easterly gales are replaced by thick snow. During westerly winds they are rare, and never of long continuance.

The above general observation is subject, however, to restriction, according to locality or season. Thus winds between the south and west, which are usually clear weather winds above Anticosti, are frequently accompanied with fog in the eastern parts of the gulf. Winds between the south and east are almost always accompanied with rain and fog in every part. NE. winds above Point de Monts are often east or more to the southward in the gulf, changed in direction by the high lands of the south coast, and have therefore in general the same foggy character. Winds of considerable strength and duration are here meant, and which probably extend over great distances.

Moderate and partial fine weather winds may occur without fog in any season and in any locality. In the early part of the navigable season, especially in the months of April and May, clear weather NE. winds are of frequent occurrence, and they also sometimes occur at other seasons in every part of the gulf and river.

The fogs which accompany easterly gales extend high above the sea, and can not be seen over from the masthead of a vessel; occasionally they admit the land or other objects to be distinguished at the distance of  $\frac{1}{2}$  mile or more in the day time. The fogs that occur in calms, especially after strong winds, are frequently so dense as to conceal a vessel within hail; these fogs are usually not much elevated above the sea, so that when objects are hidden at 50 yards from the deck they can be plainly seen by a person 50 or 60 feet up in the rigging.

When within sight of land in foggy weather the usual effect of fog is that of causing estimations of distance to be erroneously in excess. No great reliance should be placed upon an assumption of position depending upon the distance at which the sound of surf breaking on a rocky shore can be heard, but on many portions of the coast where steep cliffs extend to the shore the proximity of a steam vessel to them may be detected by the echo of the whistle. There is no safe guide but the constant use of the lead.

**Winds.**—The prevailing winds during the navigable season are either directly up or directly down the estuary, following the course of the chains of highlands on either side of the great valley of the St. Lawrence. The westerly winds do not appear to be so much guided in direction by the highlands, excepting along the south coast, where a SW. wind at the island of Bic was observed to become a NW. wind at Cape Gaspé. These winds frequently blow strong for 3 or 4 days in succession; the westerly winds being almost always accompanied by fine, dry, clear, and sunny weather; the easterly winds as frequently the contrary—cold, wet, and foggy.

In the spring easterly winds mostly prevail, frequently blowing several weeks in succession. As the summer advances the westerly winds become more frequent, and the SW. wind may be said to be the prevailing wind in summer in all parts of the river and gulf. Light south winds blow occasionally; but north winds are not common in summer, although they sometimes occur. Steady NW. winds do not blow frequently before September, excepting for a few hours at a time, when they generally succeed easterly winds which have died away to a calm, forming the commencement of strong winds and usually veering to the SW. The NW. wind is dry, with bright clear sky, flying clouds, and showers. After the autumnal equinox, winds to the northward of west become more common, and are then often strong steady winds of considerable duration. In the months of October and November the NW. wind frequently blows with great violence in heavy squalls, with passing showers of hail and snow, and attended with sharp frost.

Thunder-storms are not uncommon in July and August. They seldom last more than an hour or two, but the wind proceeding from them is in general violent and sudden, particularly when near the mountainous part of the coast. Sail should, therefore, be fully and quickly reduced on their approach.

Strong winds seldom veer quickly from one quarter of the compass to the opposite. They generally fall calm, and are succeeded by a wind in the opposite direction. It is not meant, however, by this observation that they may not veer to the amount of several points. The NW. winds seldom or never veer round by north and NE. to east and SE., but they do frequently by degrees to the SW., after becoming moderate. SW. winds seldom veer by the NW. and north to the eastward, but sometimes by the south to SE. and east. Easterly winds generally decrease to a calm, and are succeeded by a wind from the opposite direction.

In the fine westerly winds of summer a fresh breeze will often decrease to a light breeze or calm at night, and spring up again from the same quarter on the following morning. Under these circumstances only may a land breeze off the north coast be looked for. The same has been observed off the south coast also, but not so decidedly or extending so far off shore. The north land wind may occasionally be

carried nearly over to the south coast just before daylight, but the south land wind seldom extends more than 5 or 6 miles off, and that very rarely. Under the same circumstances, that is, with a fine weather westerly wind going down with the sun, a SW. land breeze will frequently be found blowing off the north coast of Anticosti at night and during the early part of the morning. If, however, the weather be not settled fair, and the wind does not fall with the sun, it will usually prove worse than useless to run a vessel close inshore at night in the hope of a breeze off the land.

Such is the usual course of the winds in common seasons, in which a very heavy gale of wind will probably not be experienced from May to October, although close-reefed topsail breezes are usually common enough. Occasionally, however, there are years, the character of which is decidedly stormy. Gales of wind of considerable strength then follow each other in quick succession and from opposite quarters.

**Barometer.**—When, after a continuance of westerly winds and fine weather, the barometer has risen nearly to its greatest height, say some tenths above 30 inches, or begins to fall a little, an easterly wind may soon be expected. If to this notice given by the barometer be added a warm hazy atmosphere during the day, and a heavy precipitation of dew at night, with very bright twinkling stars, or a colored aurora borealis, the approach of a southerly or an easterly wind is almost certain. If land be in sight at such a time, and appears much distorted by terrestrial refraction, or if vessels in sight have the relative proportion of their hull and sails changed by the mirage, or present double or treble images, such appearances will render the before probable indications of the barometer certain. At the commencement the southerly or easterly wind will probably be light, with fine clear weather; but this will not last above a few hours if the barometer continues to fall. On the contrary, the wind will gradually increase, and as it does so the sky will become overcast by degrees until it is completely clouded. Rain and fog will follow, and continue during the continuance of the southerly or easterly wind, with little intermission until they are dissipated by a fresh breeze from the contrary quarter.

If the fall of the barometer, during the continuance of the southerly or easterly wind, be very slow, the gale will probably continue, and not be violent; if rapid, it will probably be of short duration, and of greater strength; at any rate, when the mercury falls towards 29 inches, a change is certainly at hand, and the gale will, in general, come from the NW. The strength of this succeeding gale will be in proportion to the fall of the barometer, and to the strength of the southerly or easterly gale which preceded it. In such a case there is seldom many hours interval between the one gale and the other. The southerly or easterly wind generally dies away to a calm, and in a very few hours, and sometimes in a much less time, the NW. gale springs up. A heavy cross sea remains for some time from the previous gale.

The barometer sometimes begins to rise in the interval of the calm which precedes the NW. gale, at others, at its commencement; the fog and rain cease, and the weather becomes quite clear, generally in a few hours, and sometimes almost immediately. The strength of the westerly gale is usually greatest soon after its commencement, and diminishes as the barometer rises, veering gradually to the west and SW. It is worthy of remark that the circumstances just mentioned are exactly the reverse of those attending the easterly gale. The latter usually commences with clear weather and a high barometer, light at first from the south or SE., and gradually increasing as it veers to the eastward, with a falling barometer.

To return to the westerly gale. If, after it has veered to the SW. and become moderate, the barometer remains steady at a moderate height, fine weather may be expected. If it remains at a considerable height, but still fluctuating and unsteady, within certain limits, variable, but not heavy, winds and variable weather may be expected. If, on the contrary, it rises quickly to a great height, a repetition of the southerly or easterly gale will not be improbable. Seasons have been experienced in which the barometer may be said to have been no sooner blown up by one wind than it has been blown down by another, and this stormy alternation to have continued for several months, whilst in others there has been scarcely a double-reefed topsail breeze during the whole summer.

There is in fact so great a difference in the phenomena of the weather in different seasons, that it becomes difficult to write anything respecting it that shall not be liable to many exceptions. There are, however, some strongly marked cases of connection between the indications of the barometer and changes of the winds and weather which have been subject to few, or almost no exceptions. The first of these cases is that most common one, of a southerly or an easterly gale, with a falling barometer, being always wet and foggy, and succeeded by a strong wind from the opposite quarter, with a rising barometer, and fine weather.

A second case, not of so frequent occurrence in common seasons, excepting in spring or early in summer, is the northeasterly wind with a rising barometer; which, although it may not be at first for a few hours, will almost always become fine and clear, and end in fine weather. A third case may be considered certain: If the barometer fall suddenly and greatly at any time, a northerly, and most probably a NW. gale, of great strength may be confidently expected. It does not follow that it will be immediate, for it may be preceded by a strong gale from SW. for a few hours, during which the barometer will seldom rise, and even, probably, continue to fall; but when the SW. gale dies away the northerly or NW. will soon succeed, with a rising barometer.

In conclusion it may be remarked that as, on the one hand, a considerable fall of the barometer may occur without being followed by a

strong wind, so, on the other, a breeze of considerable strength may come on without any indication from the barometer; but not anything that deserves the name of a gale. There has never, within our experience, occurred a gale so heavy as to be of serious consequence to a good vessel the approach of which has not been indicated by the barometer. But it must be remembered that a high barometer in this climate, and under the circumstances which have been mentioned, is often indicative of a southerly or an easterly gale. It is remarkable that in the gulf and estuary of the St. Lawrence a high barometer may be considered as the forerunner of wet and foggy weather, which usually accompanies its fall; whilst a low barometer renders it equally probable that dry weather will ensue, since it as often accompanies its rise. The marine barometer, therefore, is of the greatest assistance in the navigation of the gulf and river; and by attending constantly to its state and changes, with reference to the winds and weather which preceded them, combined with the indications afforded by the appearance of the sky, etc., those changes of the wind and weather which are about to take place may be anticipated with a degree of certainty sufficient, in most cases, to enable a vessel to avoid being caught on a lee-shore or in an unsafe anchorage, as well as to regulate her course in anticipation of the coming change.

**Currents.**—In the main entrance of the gulf, between Newfoundland and Cape Breton Island, a current is very often found setting to the southeastward during westerly winds, or in calm weather; but easterly winds retard it and sometimes cause it to run in the contrary direction. It is frequently deflected to the southward towards Cape Breton Island by northerly winds, and by the current from the northward which has entered the gulf through the strait of Belle Isle. But winds, both present and at a distance, act so powerfully and irregularly on the rate and direction of the currents and tides in this entrance of the gulf, as to render it difficult to say anything respecting them that is not subject to exceptions.

**Through Strait of Belle Isle.**—The reality of a current inwards through the strait of Belle Isle is confirmed by the presence of icebergs, which it transports into the gulf every summer, against the prevailing SW. winds, frequently carrying them as far as Mecattina, and sometimes to Natashquan, and the neighborhood of the east point of Anticosti. It is probable that this is a branch of the great current from Davis Strait, which is known to run along the coast of Labrador, and to transport numerous icebergs far to the southward every year. This current will be mentioned again under the head of the strait of Belle Isle. Its strength is much increased by a prevalence of NE. winds; at such times it runs at the rate of 2 knots through the strait, and for 30 to 40 miles farther to the westward, diminishing gradually in force as it spreads out in the wider parts of the gulf. Usually, however, its rate is much less. At times, when SW. winds prevail, it becomes very weak,

and it has even been reported that a current has been observed setting out of the gulf in a contrary direction to the NE. for days together, but this was never observed by us during either of the three seasons which we passed there. There is, however, no doubt that this current is extremely irregular, as might be expected at the narrow outlet of a great inland sea, where winds, both within and without, must of necessity possess great influence.

After entering the gulf the current sets westward along the north or Labrador coast, at a distance of 2 or 3 miles from the outer islands, leaving a narrow space inshore in which the streams of the tides, when uninfluenced by winds, are tolerably regular. Passing outside of Mistanoque, the islands of the Great Mecattina and South Makers Ledge, it pursues a direction given to it by the trending of the coast till it is turned gradually to the southward by the weak current, which is often found setting to the eastward between Anticosti and the north coast during westerly winds, and which is set off to the southward from Nathashquan Point. The united streams continue their southern course at a rate diminishing as they become more widely spread, and which rate seldom exceeds half a knot; and finally joining the main downward current out of the river St. Lawrence, of which an account will be given immediately, they all pursue a SE. direction towards the main entrance of the gulf, between Cape Ray and the island of St. Paul. It is this southerly current which is felt by vessels crossing from off Bird Rocks towards Anticosti, and which, together with neglecting to allow for the local attraction of the compass, has been the principal cause of vessels so often finding themselves unexpectedly on the south coast. Many shipwrecks have arisen from this cause near Cape Rosier, Gaspé, Mal Bay, etc.

Both these currents, viz, that from the northward and the main downward current of the river St. Lawrence, are modified by the tides, but in a way directly contrary; for the northern current in through the strait of Belle Isle is accelerated by the flood and checked by the ebb, whilst the other is accelerated by the ebb and checked by the flood tide. These modifying causes, namely, the tides and winds, give rise to various combinations and consequent irregularities in the direction and strength of these streams, which it is extremely difficult at all times to estimate and allow for correctly.

**Main Current of the River.**—The current along the south coast appears to be superficial, at least it was found so in the lower parts of the estuary, where observations upon the specific gravity of the water on the surface and taken up from different depths prove that the water of the St. Lawrence and its numerous tributary streams was widely diffused over the estuary. It has also been observed that the current is strongest in spring soon after the opening of the navigation, when the rivers are swelled by the recently dissolved snows of the winter; but although, generally speaking, there seems no doubt that this current is

the tribute of the St. Lawrence on its way to the ocean, yet, in the upper part of the estuary, it is not alone and at all times caused by the discharge of the St. Lawrence, but depends also upon peculiarities in the set of the tides. Thus, when our observations had confirmed the truth of the report that the current always ran down on the south side of the estuary from a few miles below Red Island towards the island of Bic, this fact could not at first be explained, for it appeared impossible that this could be the comparatively fresh water of the St. Lawrence flowing on the surface towards the sea, when it was known that the whole body a few miles above, from shore to shore, on either tide of Hare Island, and also in the Saguenay River, was running up during the flood tide. Attention and numerous observations, together with an examination of the temperature and specific gravity of the water, disclosed the fact that this was an eddy flood, which is thus explained.

The flood tide ascends in a wide channel more than 100 fathoms deep; when it arrives at the comparatively narrow pass formed by Green Island, Red Islet Reef, and the extensive shoals off the entrance of the Saguenay River it is obstructed thereby, as well as by the shoalness of the channel to the southward of Hare Island. There is not room for so great a volume of water to pass, and part of it is in consequence turned back and forms an eddy flood setting from below Red Islet Reef towards the Razade Islets, as shown by the arrows in the chart. During the ebb tide the stream of the Saguenay sets over to the southward in the same direction; hence the current on that side is always down the estuary.

There is no upward stream of the tide (excepting so close inshore as to be useless to ships) all along the south coast from Cape Gaspé to a few miles below Red Islet, in consequence of the union of this eddy flood with the main current of the river; and they have, therefore, so much influence on the navigation that it will be useful to trace their course more particularly.

Commencing from a short distance below the Red Islet Reef, the current is there very strong, about 4 knots. It increases in velocity as it proceeds to the southeastward, slanting over towards the Razade Islets off which its rate is from 2 to 3 knots. It runs strongly along the northern edge of the bank of soundings off the south coast, upon which, especially in spring tides, a weak stream of flood will be found flowing in the opposite direction and the boundary of the two streams is usually marked by a strong ripple. From Father Point to Cape Chatte, the rate of the downward current varies from  $\frac{1}{2}$  to 2 knots, according to the tide, directions of the winds, and the season of the year.

During the ebb tide the stream runs down on both sides, stronger on the south than the north coast, and weakest in the middle of the estuary. It is deflected, or turned off to the southward, by the points of Mille Vaches, Bersimis, Manicouagan, and Point de Monts, and by the ebbing streams of the large rivers between them, a circumstance which

should be carefully attended to by vessels coming up with a northerly wind; as they will infallibly be set over to the southward upon a lee shore, if they do not make the necessary allowance by keeping their wind well over to the northward.

During the flood tide this stream still continues to run down outside the bank of soundings off the south coast, although with diminished velocity, and it is felt about half way towards north shore. In the middle of the estuary there is usually slack water, whilst along the north coast the stream of flood is regular in its recurrence, increasing in force as we ascend the estuary. The strength of the stream of flood is greatest inshore, and diminishes as we proceed over to the southward, till at the distance of about 9 miles it becomes imperceptible. These differences in the strength and direction of the streams produce strong ripples in various parts of the estuary, but their position varies with the different times of tide, and perhaps from other causes, so that they can not safely be trusted for any guidance to the seamen.

Round Point de Mouts there is little or no stream of flood, excepting very close inshore; the downward current is constant, or nearly so, off that point and it requires a fast-sailing vessel to beat round it against a westerly wind. Point de Mouts turns this current over to the SE., at a rate varying from one to 2 knots, so that a vessel having a west wind, and standing over to the southward on the starboard tack, will be carried towards the south coast at a rapid rate, having the current on her weather quarter; during her board back to the northward she will be retarded, the current being then directly opposed to her course. When sailing at the rate of 4 knots it will usually require only about half the time to go from near Point de Mouts over to the south coast that it will take to return from the latter to the former. This is a most important circumstance, which it is necessary to carefully guard against when beating up the estuary in this part during dark nights, and, especially, in foggy weather.

Below Point de Mouts the current is no longer felt near the north coast, nor, indeed, anywhere to the northward of a line joining Point de Mouts and Anticosti. It is confined to the neighborhood of the south coast, which it follows in its curve to the southward, running strongly past Cape Gaspé, Flat Island, and Bonaventure Island; whence curving gradually to the south and SE. it continues its course towards the entrance of the gulf, with a rate very much lessened in consequence of the great space over which it is now spread. The usual breadth of this stream from Magdalen River to Cape Gaspé is 9 or 12 miles; but this we believe is not uniform.

When SW. winds prevail it appears that this current, or a branch of it, is driven over from the vicinity of Magdalen River towards Anticosti; part of the stream running round the west point of that island sets across nearly towards Large Island (one of the Mingan Islands), whence turning gradually down outside the Mingan and Esquimaux Islands,



and along the north coast, it sweeps round the curve to the westward of Natashquan Point, and is turned off to the southward, as has been already mentioned. The other part sweeps round the large curve, or bay, between the west and SW. points of Anticosti, and is turned off to the southward by the latter point, frequently causing a great ripple off it, which has been mistaken for breakers on a much more extensive reef than exists there. The rate of this current has been noted, off different parts of the south coast between Capes Chatte and Gaspé, in the months of June, July, August, and September, and in different years, and scarcely ever found the same. It varied between one and 2 knots in westerly winds. It was weaker, often nearly insensible, in easterly winds; and in one instance, off Mont Louis River, in a calm which was followed by a strong breeze from the eastward, it could not be perceived.

Vessels beating up the St. Lawrence against westerly winds usually experience little difficulty in making good way to windward, after having weathered the west point of Anticosti and arrived on the north coast; because there is seldom any current on that side, and the tides, although weak, are tolerably regular. It is in general easy to beat from the Seven Islands to Point de Monts, for there the stream of flood is stronger than the ebb; the latter, as well as the current, being turned off to the southward by the point. There seems at times also to be an eddy current there, sweeping round the great bay or curve between the above-named points. It sets off from about Egg Islet to the southward; and is the probable cause why vessels, which shape a direct course for Point de Monts with a leading NW. wind off the land at night, so often find themselves obliged to haul up for or unable to fetch the light.

Any further remarks respecting the tides and currents will be of a more local nature, and will, therefore, be best given where the particular places or parts of the coast are described. The object here was to give a condensed view of the principal streams which mainly affect a vessel in her voyage either up or down through the gulf and estuary.

**Directions across the Gulf.—Lights.**—All the lights in the gulf and river St. Lawrence are lighted on the 1st April and extinguished on 20th December, except the lights on Bird Rock and St. Paul Island, which are exhibited until 31st December.

All the lightships in the river St. Lawrence below Quebec leave Quebec each spring for their stations as early as ice will permit.

The Manicouagan lightship leases her station for winter quarters on the 10th, and the Red Island lightship on the 15th of November annually.

All the gas buoys in the river St. Lawrence will be set out as soon as possible after the 11th of May each spring, and taken up as soon as convenient after the 10th of November, when they will be replaced by wooden can buoys.

All buoys in the river St. Lawrence below Quebec will be removed

after the 14th of November, excepting five, viz: Those replacing the gas buoys at each end of the Beaujeu Bank and at the Channel Patch, one at the west end of Middle Bank and one at St. Roch, East Point, in the Traverse, which will be left, weather permitting, until the last ocean vessel has passed out.

Vessels bound to any of the ports in the Gulf of St. Lawrence should endeavor to make St. Paul Island, which, being of considerable elevation and bold all around, may with care and a good lookout, be made at night, or even in fogs, unless the former be very dark or the latter very thick.

**Caution.**—In approaching St. Paul from the SE. with northerly winds, the current mentioned at page 8 as at times coming from the northward and setting towards the shore of Cape Breton, should be guarded against by attending to the soundings on the bank, which extend 7 or 8 leagues off Scatari Island, and off the eastern coast of Cape Breton Island as far northward as Ingonish, beyond which the depth is too great to afford any guidance. The lights, together with the soundings, afford abundant guidance to vessels passing the eastern extremity of Cape Breton Island. The south coast of Newfoundland, eastward of Cape Ray, is broken, rocky, and dangerous. The tides and currents, being influenced by the winds, are irregular, whilst all southerly and easterly winds, and often also southwesterly winds, bring a thick fog, which is most dense near the lee shore. On these accounts this coast should not be approached, excepting with a decided northerly wind and clear weather.

**St. Paul to Bird Rocks and Magdalen Islands.**—After having passed St. Paul Island vessels bound to Canada should endeavor, if the weather be clear, to make the Bird Rocks; Great Bird Rock, the largest or southeasterlymost, bears from the north point of St. Paul N. 48° W. 55 miles.

There is a deep channel between St. Paul and the bank on which Magdalen Islands are situated.

Following the eastern edge of the Magdalen Bank to the northward, inclining gradually to the NW., regular soundings extend from 28 to 35 fathoms over sand, stones, and broken shells, the latter depth being where Great Bird Rock bears west, and when the same rock bears S. 45° W., distant 13½ miles, there will be 50 fathoms over fine sand on the edge of the bank, shoaling gradually in to 24 fathoms within one mile of the rocks. In thick weather, which almost always accompanies easterly and southerly winds, this bank is an excellent guide up to Bird Rocks, but under such circumstances if the light can not be seen it will be safer to run along the northern edge of the bank, taking care not to come into less than 40 fathoms than to attempt to make the rocks. When well past them by the reckoning a course can be shaped up the gulf.

In northerly winds the weather is usually clear; and, if the vessel be far enough to windward, it will be advisable to stand to the westward and

endeavor to make Entry Island, taking care to avoid Doyle Reef and the sandy spit off the east end of Magdalen Islands by not approaching the islands in that part nearer than the depth of 20 fathoms. Under the lee of these islands a smooth sea will be found, sufficient guidance by the soundings, and good shelter and excellent anchorage in Pleasant Bay.

Another advantage of following this course arises from the circumstance that the winds generally veer to the SW.; so that, if a vessel has passed to leeward of Magdalen Islands with northerly or NW. winds on the starboard tack, the succeeding SW. wind will enable her to stand on the opposite tack towards Cape Gaspé.

**Bird Rocks to Anticosti Island.**—In making this part of the voyage up the gulf, the frequent current from the northward, mentioned in page 9, should be considered, and the lead should be frequently hove. By consulting the chart it will be seen that there are soundings to be obtained nearly all the way upon, and to southward of, a line joining Bird Rocks and Cape Gaspé, whilst a few miles to the northward of that line there is no bottom with 80 fathoms of line.

With a fair wind the object should be to make the SW. point of Anticosti marked by a *revolving* light; and, with westerly winds, any part of the coast of that island which can be attained. The *fixed* light on Heath Point, at the east end of that island, will render it easy to make the east end of the island at night, if the weather be clear; and, if the weather be thick, the bank of soundings, which extends off it 28 miles to the southeastward, may serve to determine the vessel's position by the lead. At the distance from the island above named the depth is 62 fathoms, shoaling gradually in towards the island.

**Passage North of Anticosti.**—In the event of a vessel being near the eastern extremity of Anticosti, and having succeeded in making East Cape, or the light on Heath Point, with a SW. wind, it will often be preferable to proceed to the northward of the island, where there is a good channel, rather than to tack and stand back to the southward and eastward. Under the lee of Anticosti, she will in this case have a smooth sea, and often also clear weather, whilst there is a heavy swell and frequently a thick fog to windward of it. She will, moreover, avoid the current out of the St. Lawrence, which runs constantly with westerly winds between the south coast and Anticosti; and thus be able at all times to make way to the westward in moderate weather. At night, or in foggy weather, the bank of soundings off the north coast, and farther westward the banks off Mingan Islands, will safely guide her, even although the land should not be visible.

All the way from Natashquan Point to the river St. John, westward of Mingan Islands, there are banks of sand, gravel, broken shells, and bits of coral extending off the coast many miles. Off Mingan Islands these banks extend halfway across to Anticosti. The depth of water varies upon them; to the eastward, or below Mingan Islands, it is in

general between 30 and 50 fathoms; but in some few places it exceeds the latter depth, whilst in others there is as little as 19 fathoms. Proceeding westward the depths gradually decrease to 60 fathoms off the north point, where they become irregular for a few miles, varying from 50 to 70 fathoms with occasional rocky bottom, and then deepen again, with mud bottom, farther to the westward.

In all this deep-water channel, with the single exception which has been stated, the bottom is, for the most part, of blue mud. Such a remarkable difference in the nature of the bottom, as well as in the depth of water, renders it comparatively easy to take a vessel through this channel at night or in foggy weather. But in order to effect this with safety the vessel should be furnished with Massey's patent sounding machine and lead, or other similar instrument, which must be freely used as she runs along the southern edge of the banks of sand, gravel, and shells, sheering occasionally to the southward into the deep water and muddy bottom to make sure of not getting too far to the northward.

The reefs off St. Genevieve and Hunting Islands are very dangerous, for there are some deep-water soundings, between 50 and 70 fathoms inside the outer banks, which might lead to a mistake if care were not taken to keep on the southern edge of the outer banks.

Proceeding westward, the channel contracts gradually to the narrowest part, which is between the reefs off the north point of Anticosti and off Mingan Islands, where it is  $13\frac{1}{2}$  miles wide. To pass this safely at night or in foggy weather, it is necessary that the lead should be kept constantly going as the vessel runs along the southern edge of the bank off the Mingan Islands, and she should not be allowed to go to the northward into less than 30 fathoms of water.

If the vessel should be met by a westerly wind, down the channel, it will be attended with clear weather, and the white cliffs of Anticosti, which extend from the east point westward to opposite St. Genevieve, will easily be seen. A vessel may stand in without fear to within a mile or two of this part of the coast, which, with the exception of the reefs off Fox Bay, is bold and free from danger. Farther westward the coast is low and shelving, and reefs extend further off. In the board to the northward at night, the sounding on the banks will show when to tack.

**Currents.**—It has been remarked already (page 11) that, in westerly winds, there is a weak current down this channel, but it is not constant and its rate seldom exceeds half a knot. Sometimes it is imperceptible during the flood tide and runs even the other way on the approach of easterly winds. Vessels, however, should be aware that on arriving off the north point of Anticosti with a west or SW. wind this current will almost always be found setting to the NE., being turned off into that direction by the west end of the island. Confined within a comparatively narrow channel, it is here stronger than elsewhere, running in

the ebb tide, about a knot, and in the flood tide, half a knot in the offing.

**Passage South of Anticosti.**—Vessels meeting with a westerly wind in the south channel should stand over towards the island of Anticosti and make boards, off and on, of 9 or 12 miles, to avoid the current out of the St. Lawrence. In beating between Cormorant Point and South Point, off which there is a dangerous reef, keep the light-house on Heath Point open of Cormorant Point.

**Caution.**—In moderate weather a vessel will generally gain ground to windward all along the south coast of Anticosti, but care should be taken to avoid being becalmed, near the shore between the SW. and West Points, where both the swell and current set inshore, and where, the bottom being of clean flat limestone, an anchor will not hold. It is by no means uncommon off this part of the coast for the fine weather westerly breeze of summer to die away suddenly to a calm, so that a vessel beating here should stand off shore on the first appearance of a decrease of wind to avoid being driven on shore.

Having made the SW. Point, and being 4 or 5 miles off it, with a fair wind, a course should be steered along the coast, so as to pass 8 or 10 miles to the southward and westward of Cape Henry and West Point. N. 68° W. will be a safe course at night or in thick weather, when the lead should be hove every half hour. With this precaution there is no danger of being too near the coast, even when the lights can not be seen, since there are soundings in less than 40 fathoms, at a distance varying from 5 to 3 miles off shore all the way from SW. Point to the west end of the island.

**Anticosti to Point de Monts.**—When the vessel has arrived off the West Point of Anticosti, with a fair wind still continuing, a course should be steered well to the northward, especially with northerly winds, say for about Egg Island. She will thus avoid the strength of the current and the possibility of being set over too near the south shore by its acting on her starboard-bow. When she has run about half way across she should haul more to the southward so as to insure clearing Point de Monts.

**Caution.**—If the weather be thick, as it commonly is, with a fair wind for running up, great caution is necessary. In such circumstances, after having run within about 15 miles of Point de Monts by the reckoning, sail should be reduced, so as to have the vessel under complete command, and she should be rounded to, and a good deep cast with Massey's patent lead obtained, so as to insure that she is not to the northeastward of the point, and this should be repeated every half hour, until the light be seen, the fog gun heard, or until it is certain that it is past.

If the vessel be to the northeastward of Trinity Bay, soundings will be obtained in less than 60 fathoms, from 4 to 6 miles off shore. Directly off Trinity Bay, there is the same depth 3 miles off shore; whilst

at the same distance off Point de Monts, there is no bottom at 100 fathoms. If the distance to Point de Monts has been run by the reckoning without finding bottom at 70 fathoms, it will be almost certain that the vessel is not to the northward; but still, as the effects of currents can not be exactly calculated and reckonings are liable to error, it will be prudent to shape a course well to the southward of the point, till there remains no doubt of its having been passed.

In making the light on Point de Monts, remember that it is not on the extremity of the point, but has been placed (it is thought very improperly)  $1\frac{1}{4}$  miles to the northeastward, along the coast towards Trinity Bay.

The foregoing remarks apply where the object is to make the lighthouse, or light, on Point de Monts, which should always be attempted where there is any chance of success, because it is extremely desirable to obtain a fresh departure before running up the comparatively narrow estuary. But if the weather be so thick as to leave no reasonable hope of succeeding, or if the wind be from the southward, a course should be steered more to the southward, so as to pass well clear of the point.

**Working to Windward.**—Vessels beating up against westerly winds should stand over to the northward, as soon as they can weather Anticosti, unless the barometer, or other indications, render it probable that the wind will veer to the southward. During the flood tides, make short boards off and on the north coast, to take advantage of it, for it runs strongest inshore. During the ebb, keep farther off the land, for that tide also runs strongest near the shore. The tides, in general, are weak along this coast, and a vessel will always make way to windward in moderate weather.

From the Seven Islands to Point de Monts is, in general, the easiest part of the passage, for the westerly wind, which, in this part, is the most common, is off the land, so that a vessel can frequently fetch up to Point de Monts in smooth water, particularly at night, when the wind in fine weather generally veers a point or two to the northward. She will also have the benefit of the flood tide, whilst the ebb, being turned off by Point de Monts, is scarcely felt.

If it blow fresh, and the flood be nearly done on arriving near Point de Monts, there will be no use attempting to beat round it till next tide, and then only in fine weather. In this case, Trinity Bay, where with westerly winds is a good anchorage with moderate depth of water, good ground, and plenty of room to get under way.

**Point de Monts to Bicquette Island.**—From the south extremity of Point de Monts, the lighthouse on the north side of Bicquette Island bears S.  $50^{\circ}$  W. 80 miles, and Manicouagan lightvessel S.  $64^{\circ}$  W. 38 miles; but as this great shoal extends towards English Bay, its NE. end is only 28 miles distant from Point de Monts.

**Currents.**—After taking a departure from Point de Monts, the course to be steered must vary under different circumstances of wind and tide. The downward current is not only turned off to the southward by Point de Monts, but the Manicouagan and Bersimis Points also produce the same effect, although in a less degree, during the ebb tide; to which must be added the streams out of the large rivers Manicouagan, Ontario, and Bersimis. During the flood tide, the streams out of these rivers cease, the general current is checked in the offing, whilst in-shore, within a few miles of the north coast, a stream of flood will be found.

A vessel taking her departure from Point de Monts with a whole ebb tide before her is therefore very differently circumstanced from one which does the same at the commencement of the flood, and must reckon upon being set over towards the south coast much faster in the former than in the latter case.

Directions will first be given for a fair wind, and afterwards for beating winds.

**Directions up the Estuary.**—Having made the light on Point de Monts, and being 3 or 4 miles off it to the southward, with the usual easterly winds, nearly or right up the estuary, steer S. 83° W. until nearly abreast the Manicouagan light vessel, then keep half a point more to the southward, S. 47° W. These are safe courses with either ebb or flood, and if the vessel has left Point de Monts at or near the commencement of the ebb tide, will usually bring her into soundings off Metis, where 30 fathoms over sandy bottom will be found 3 miles off shore, and 50 fathoms 5 miles off shore, and on the edge of the bank.

If, on the contrary, the vessel has left Point de Monts early on the flood, she will probably be farther to the northward; we say, probably, because the strength of the current is too uncertain to allow of saying that she positively will be so. However, the degree of uncertainty, which the irregular rate of current gives rise to, must be met by the use of the lead. If, therefore, the weather be thick, and the land not seen, round-to in time, particularly if the vessel has had the ebb tide against her, and get a cast of the lead, to make sure that she has not been set too near the south coast.

If no bottom be found at 60 fathoms, the S. 47° W. course may be continued until the vessel is up as high as Metis by the reckoning, then let soundings again be tried for, and if still without finding bottom haul in gradually to the southward, under easy sail, and with the deep-sea lead going, so as to endeavor to strike soundings on the bank off Father Point, which may be accomplished safely, since the bank in that part extends several miles off shore.

**To Pass Bicquette Island.**—The revolving light on Bicquette Island will now be distant about 15 miles to the SW., and visible in clear weather; but if it be foggy, and the light not seen, proceed as follows, attending to the fog whistle: Run along the northern edge of the bank of soundings, with the lead going, taking particular care not to go to

the southward into less than 30 fathoms. When it is judged that the vessel is approaching near Bicquette, having passed Barnaby Island, haul out a little to the northward until she is out of soundings, and then steer S. 54° W., still heaving the lead, and having the vessel under moderate sail for the purpose of getting bottom, till certain that she is well above the NW. reef of Bicquette. If soundings are struck at all, whilst running past this dangerous island, on which many vessels have been wrecked, the vessel must be hauled off immediately to the northward out of soundings, and then steer as before. Two miles north of Bicquette there are 30 fathoms, and only 1½ miles north of the NW. reef there is the same depth, with sandy bottom. Farther off no bottom will be found at 50 or 60 fathoms. Both the island and reef are bold to the northward, having 12 fathoms close to them.

When it is quite certain the vessel is past Bicquette and its reefs, haul in to the southward by degrees, till the edge of the bank is gained again, and keep it up to Green Island reef.

It would not be prudent for vessels, without a pilot, to attempt running inside of Bic Island in foggy weather, unless well acquainted. If, however, it be necessary to do so, for the purpose of anchoring, see directions for that island.

**Pilots.**—Pilots for the St. Lawrence cruise in their schooners in the entrance of the river, and during the day these vessels carry a white and red flag (upper half white, lower half red); by night two lights vertically, the upper light white, the lower red. Their cruising ground is comprised in four stations, namely, Pilot Station No. 1, between Father Point and Barnaby Island on the south, and Jeremy Islands and Cape Colombier on the north; Pilot Station No. 2, between Barnaby Island and Bic Island on the south, and Cape Colombier and Port Neuf on the north; Pilot Station No. 3, between Bic Island and the Razades on the south, and Port Neuf and the Escoumains Islands on the north; Pilot Station No. 4, between Razades and Green Island.

Many of the pilots live on Father Point.

In a foggy night a tolerably correct opinion may be formed whether the vessel be up to Father Point or not, for an inspection of the chart will show that the soundings shoal more gradually to the southward there than they do farther to the eastward. And if the vessel be hove to, in 10 or 11 fathoms, low water, with her head off shore, a gun or two will sometimes bring off a pilot.

**From Point de Monts with Southerly Winds.**—We have hitherto been speaking of the case when vessels are running up with easterly winds and thick weather; but a second case is when the wind is from the southward; then the direct course, S. 50° W., may be steered, if the vessel be, as before, close off Point de Monts, or S. 56° W. if she be nearer the south coast; allowing still for the set of the current to the southward, according to the tide, and sounding in time if the land be not in sight. Whenever the weather is foggy, and the land can not be



seen, the object should always be to strike the bank of soundings along the south coast about Metis, or Father Point at farthest, and then follow it as a guide to the westward.

**With Northerly Winds.**—A third case, of frequent occurrence in the autumn, is when there is a fresh northerly wind. The weather is then invariably clear, and, as the land can be seen, there is no danger of getting on shore with a good look out; but the strength of the current to the southward is increased by this wind, and therefore the vessel must be kept well to the northward, to prevent being set over to the lee shore, being in consequence obliged to tack (upon the wind veering a point or two to the westward) and stand all the way back again.

Supposing the vessel to be in the same position as before, 3 or 4 miles to the southward of Point de Monts, she may fearlessly steer S. 65° W. for the first 20 miles, or as long as the light is seen. Take the bearing of the light every half hour, and lay it down on the chart, in order that the effect of the current may be seen; take care not to bring the light to bear to the eastward of N. 53° E., as in that case the vessel would be set too near Manicouagan Shoals. Abreast Manicouagan, if the light-vessel should be out of position, luff up in the wind, and get a deep cast of the lead, for although these shoals are steep to on their east side, and also to the westward of Manicouagan Point, yet there are soundings off their south point. When Manicouagan Point bears N. 25° W. the depths will be from 50 to 60 fathoms, at the distance of 5½ miles off shore, and from 30 to 40 fathoms at 4 miles off shore, the bottom being of very fine sand. In the first case, she will be 3¼ miles off the south point of the shoals, and in the latter case, only 1½ miles.

When past these dangerous and extensive shoals, the south point of which extends 2½ miles off a low point of the same name, which can seldom be clearly distinguished at night in consequence of the higher land behind it, a vessel may haul up well under the north shore, coming no nearer than 3 miles, and taking care to avoid the shoal off Bersimis Point, which extends nearly 1½ miles off a low point, also difficult to be seen at night.

After passing Mille Vaches Point the north coast is bold and without anchorage all the way to within 3 miles of the Saguenay River.

In running up to Green Island, after passing the NW. reef of Bicquette, a S. 49° W. course will, in general, take a vessel along the edge of the bank as far as Razades islets; but above those islets both flood and ebb set to the SE., and render it necessary to steer more to the westward, with a scant northerly wind. But the lead and a reference to the soundings in the chart are the only sure guides. With an easterly wind the fog will seldom be so thick as to prevent either the Razades, Basque, or Apple islands from being seen in the daytime. They may be safely approached by the lead, and an attempt should be made to make the two last, especially Apple Island, which is bold to on the north side, in order that the position of the vessel may be exactly ascer-

tained before hauling out into deep water for the purpose of clearing the dangerous Green Island Reef. In the circumstances we are supposing, of an easterly wind with fog in the daytime, it is much more safe to attempt to make Apple Island than the lighthouse, since a vessel can approach within less than 400 yards of the former, but would be ashore before she saw the latter if the fog were thick, since the reef extends nearly  $1\frac{1}{2}$  miles to the northeastward of it.

Having succeeded in making Apple Island, the vessel may be sheered out to the edge of the bank of soundings, and as the distance is short, it is easy to judge when she is coming near the reef, taking, of course, the tide into account, whether it be flood or ebb, and keeping the lead constantly going. Then, if the lighthouse be not seen, sheer out to the northward into more than 30 fathoms water, and shape a course up towards the Brandy Pots, according to the tide.

If the lighthouse be seen, or the light at night, there is still less difficulty in avoiding the reef and regulating the course afterwards, provided the chart be consulted, the lead used, and the tide considered.

But Green Island Reef is extremely dangerous, and is rendered doubly so by the strong tides which set upon it, and which produce breaking ripples that try the nerves of strangers during a dark night or foggy weather. Therefore, in a strong easterly gale, dark night, fog, or snow so thick that there is little chance of seeing the light, the attempt to run through between Red and Green islands will be attended with great risk, especially during the ebb tide, which, coming from between Hare Island Reef and Red Islet, sets over towards the Green Island Reef at the rate of 5 knots. It requires an experienced pilot to take a vessel safely through this dangerous passage under these circumstances; it will therefore be prudent, in the case of a vessel approaching Bic, in such weather, towards the close of the day and without a pilot, rather to heave to, or stand on and off the south bank, than run this risk, although there may be some danger in so doing from other vessels running up.

If the soundings about Bic be well known, or that island or Biequette has been seen the safest plan would be to run under the lee and anchor to the westward of them in from 8 to 10 fathoms low water (page 119), where the holding ground is excellent and the vessel would ride in safety till daylight. Even as far as 6 or 7 miles to the westward of these islands, in from 12 to 13 fathoms at low water, the *Gulnare* rode out a heavy breeze from the eastward, the sea, although considerable, being nothing in comparison with that which was running at the same time in the deep water outside of her and off the bank.

**Working from Point de Monts to Green Island**, against westerly winds, which are almost always accompanied with clear weather, there is little difficulty, with the assistance of the charts, other than that which arises from the set of the tides and currents.

It requires a tolerably good sailing vessel and a flood tide to beat

past Point de Monts against a foul wind, but short boards round the point and along the north coast up to Cape St. Nicholas will most readily succeed. It is not, however, advisable to keep this shore close aboard much farther to the westward, lest the wind should fall to a calm, for there is a strong indraught towards the mouth of Manicouagan River during the flood tide; and if an easterly wind should chance to spring up, after the vessel had been drifted in near the mouth of English Bay, it might be difficult to beat out, or to weather the eastern side of the Manicouagan Shoals. The light on Point de Monts can not be seen on any bearing to the southward of N. 67° E., being intercepted by the high land to the westward of it; and when it disappears a vessel off Godbout River will be only one mile from the bar, or off Cape St. Nicholas little more than 2 miles off shore; so that it is a safe rule, in standing in towards the coast at night, to tack as soon as the light bears N. 60° E.

When the ebb makes, stretch over to the southward into the middle of the estuary, where that tide is less strong than near either shore, but do not go farther to the southward, and be back again at the north coast at the return of flood.

The best time to get past Point de Monts, when fine weather and westerly winds prevail, is at night, or in the first hours of the morning, for then vessels are often assisted by a northerly land wind. If it has blown fresh from the westward during the preceding day a heavy head sea may be expected off the pitch of the point; the flood from along the land in the direction of the Seven Islands meeting the downward current off the point assists in causing this.

If, after passing Point de Monts in the morning, with a northerly land wind, there are signs of its dying away, or veering to the westward as the day advances, continue the board to the southward and westward, instead of tacking to keep the north land on board, as directed when the wind is settled right down; for the land wind of the night will probably be succeeded by the fine-weather day wind, which usually becomes a steady breeze about 9 a. m., after commencing at SW., and thus affords an advantageous board towards the north coast.

In the fine weather of the summer the wind will probably veer by degrees during the day back to west, thus offering another good board to the southwestward. Pilots and others, who are experienced in reading the indications of the winds and weather, frequently gain more ground to the westward by calculating upon these probable changes of the wind than by keeping on the north shore out of the current.

With the exception of the low points of Manicouagan, Bersimis, and Mille Vaches, the land can in general be plainly seen at night during the continuance of westerly winds; and where its features are sufficiently remarkable, there will be little difficulty in making it out. Mount Camille, especially being an isolated mountain, 2,036 feet above high-water mark, can easily be distinguished, as well as the summit of

the high land of Bic, 1,234 feet high. Their bearings will often be of great service to vessels in clear nights, and will show when they are high enough up to fetch Father Point.

On arriving off Father Point, or anywhere between it and Bic, if the flood be done and the wind be light it will be better to anchor on the bank of soundings, weighing again, if there be a breeze, in sufficient time to stand over and meet the first of the flood on the north shore. By this mode of proceeding vessels will gain much more ground to the westward than by remaining on the south shore, for although there be a weak stream of flood upon the bank of soundings from Father Point to the Island of Bic, yet there is little above that island, and none after the first quarter flood, excepting so close inshore as to be useless to large vessels.

From the Bay of Mille Vaches to within 3 miles of the entrance of the Saguenay River, with the exception of a shoal extending a short distance offshore from the bay next westward of Cape Bondesir, the coast is moderately high and very bold, the flood strong, and the ebb comparatively weak. Vessels should, therefore, make short boards along this shore until up to Bergeron Coves, and then stretch over to the anchorage under Green Island Reef, to wait for the next flood; for it will require a whole tide, even with a good working breeze, and a fair sailing merchant vessel, to beat through between Green Island and Red Islet, and reach good anchorage above, before the ebb makes.

Red Islet Bank is, however, very dangerous, and the first of the flood sets strongly over it, in a direction from Bergeron Coves towards Green Island. The ebb out of the Saguenay also sets upon it, so that a stranger should not make too free with it. If a vessel can not fetch the anchorage under Green Island Reef, she may anchor anywhere, in fine weather, along the south bank between Bic and Green Island, and will have good ground in 12 fathoms at low water, and plenty of room to get under weigh.

In coming up with a NW. wind, the north shore should be kept close aboard until up to Bergeron, and if it be flood tide, the vessel may pass either northward or southward of Red Islet, as may be preferred, but the former passage should not be attempted with this wind during the ebb, nor yet the other, except by those who are well acquainted with the set of the tides.

Although the passage to the northward of Red Islet is the quickest, there being a much stronger stream of flood in that channel, yet it can not by any means be recommended; on the contrary, it should never be attempted unless the breeze appears certain to continue, for if it fell calm the vessel would run great risk of being drawn in by the stream of flood among the dangerous shoals off the mouth of the Saguenay, or being set down upon Red Islet Bank when the rapid ebb made out of that river, which is so strong and the water so deep that no anchor would hold.

To pass to the southward of Red Islet with the same wind, haul round the east end of the reef, and as close to the southward of it as is prudent, coming no nearer than a depth of 20 fathoms until past the islet. To those who are well acquainted both with the soundings and set of the tides it may be desirable to keep closer in attempting the passage with an ebb tide but it can not be recommended to strangers.

**Directions down the Estuary and Gulf.**—For the return voyage down the estuary and gulf little or no instruction seems necessary as long as the wind remains fair and the weather clear, beyond what may be gathered from the charts and the preceding remarks. But where vessels are met by easterly winds and thick weather anywhere above Point de Monts, great caution, attention to the soundings and set of the tides and currents, become necessary to insure safety, particularly during the long nights and wild weather in the fall of the year.

Vessels beating down the St. Lawrence usually stop at the Brandy Pots for a fair wind. But supposing, after they have passed Green Island, that the fair wind fails, and they are met with an easterly wind before they have arrived near the Island of Bic, they should, in that case, run up again to the Brandy Pots, especially if late, or very early in the navigable season; for all that they will gain by beating about in thick weather, probably for several days and nights in succession, will not be worth the risk. But if they have reached far enough down at the commencement of the adverse wind, the Island of Bic affords good shelter and anchorage, which should be sought in time, before the fog commences.

There is no other anchorage which can be recommended lower down nearer than the Seven Islands, and after that Gaspé. There are other places, which will be mentioned hereafter, in some of which vessels ride for taking in timber; but such places are not fit for occasional anchorages, or for a heavy laden ship to run for on an emergency.

In a vessel beating down, the south bank should be the guide in thick weather or at night. She should tack from it, after striking soundings on its edge, and should not stand to the northward more than half-channel over in any part; thus keeping in the strength of the downward current, and avoiding the possibility of accident from the shoals of the north coast, which being very steep, and affording little or no warning by the lead, have proved fatal to many vessels under these circumstances.

**Effects of Tides.**—It will be almost always seen, when the vessel comes upon the south bank of soundings, by there being so much less sea there than in the deep water, and strength of the weather current, outside; a strong ripple will be observed at the edge of the bank during the flood tide.

In the board from near Bicquette, during the flood tide, the vessel will go to the northward rather faster than to the southward back again, whilst in the ebb the contrary will be the case. But above Razade

Islets she will go much faster to the southward than to the northward in both tides. Lower down the estuary, and as far down as Cape St. Anne, she will generally go faster to the southward than to the northward during the ebb tide; whilst in the flood an indraft into the rivers will be felt on approaching near the north coast from Bersimis Point nearly down to Cape St. Nicholas. The least reflection upon what has been previously said of the set of the tides and currents will account for these effects.

**Caution.**—In a vessel beating down in a dark night or thick weather there is no safety unless the lead be kept constantly going; when she is approaching the south coast, in the board to the southward, sail should be sufficiently reduced for soundings to be easily obtained and everything in readiness to tack or veer at the shortest notice. These precautions become the more necessary as the vessel descends the estuary and the bank of soundings becomes narrower. Off Matane there are 30 fathoms, sandy bottom,  $1\frac{1}{2}$  miles offshore; and 60 fathoms at 3 miles off, whilst at the distance of 5 miles from the land no bottom will be found at 100 fathoms. The south bank becomes narrower still to the eastward of Matane, and ceases, in consequence, to be of use to vessels. Off Cape Chatte there are 30 fathoms water little more than  $\frac{1}{2}$  a mile from the shore; a short distance farther off there are no soundings at 70 fathoms; and between it and the Point de Monts, from 150 to 170 fathoms, blue mud bottom.

**Below Point de Monts** there is plenty of sea room, and although the lead will there be of little use, yet the south coast is so high and bold that it may generally be seen, if the fog be no thicker than is usual with a regular easterly wind up the St. Lawrence.

Lower down still, with a beating wind and thick weather, soundings may be struck off the west end of Anticosti, or between the west and SW. Points of that island, if it be wished to ascertain how far the vessel is over to the northward before night. Eastward of the SW. Point of Anticosti to Pavilion River the bank of soundings off the south side of the island is very narrow; but from the latter to the East Point there is plenty of warning by the deep-sea lead, as will be seen by the soundings in the chart.

The channel to the northward of Anticosti can not be recommended in the voyage down the St. Lawrence, because there is not only less room, but also less current in favor; neither the route by the Strait of Belle Isle, on account of the straggling icebergs, which are in general to be met with there through all the navigable season. Towards the fall of the year, however, vessels occasionally pass through it, in anticipation of the northerly winds which prevail at that season in the Atlantic.

**System of buoyage.**—Approaching from seaward, all buoys on the starboard side of the channel are painted red, and, if numbered, marked with even numbers, and must be left on the starboard hand.

Approaching from seaward, all buoys on the port side are painted black, with odd numbers, if any, and must be left on the port hand.

Buoys painted red and black, in horizontal bands, mark obstructions or middle grounds, and may be left on either hand.

Buoys painted white and black in vertical stripes mark mid-channel, and must be passed close to, to avoid danger.

All other distinguishing marks to buoys are in addition to the foregoing, and indicate particular spots; a detailed description of which is given when the mark is first established.

Perches with balls, cages, etc., will, when placed on buoys, be at turning points, the color and number indicating on which hand they are to be left.

Starboard hand spar buoys, entering channels or harbors, will, in some cases, be surmounted by a ball; these buoys will always be painted red.

The rule for coloring buoys is equally applicable to beacons and other day marks, so far as it may be practicable to carry it out.

**Telegraph and Signal Stations.**—The following stations of the marine telegraph systems, established in the gulf of and river St. Lawrence, in the interests of navigation and fisheries, are now in operation

Name of station.	Signals in use.	Situation.
Grosse Isle Telegraph Office.....	Flags.....	Magdalen Islands.
Etang du Nord Lighthouse.....	do.....	Do.
Amherst Island Lighthouse.....	do.....	Do.
Heath Point Lighthouse.....	do.....	Anticosti Island.
South Point Lighthouse.....	do.....	Do.
Southwest Point Lighthouse.....	do.....	Do.
West Point Lighthouse.....	do.....	Do.
Cape d'Espoir Lighthouse.....	do.....	Western shore, Gulf of St. Lawrence.
Point Macquereau Light-house.....	do.....	Do.
Point de Monta Lighthouse.....	do.....	Northern shore of river and Gulf of St. Lawrence.
Manicouagan Telegraph Station.....	do.....	Do.
Portneuf Lighthouse.....	do.....	Do.
Cape Rosler Lighthouse.....	do.....	Southern shore of river and Gulf of St. Lawrence.
Fame Point Lighthouse.....	do.....	Do.
Cape Magdalen Lighthouse.....	do.....	Do.
Martin River Lighthouse.....	do.....	Do.
Cape Chatte Lighthouse.....	do.....	Do.
Matane Lighthouse.....	do.....	Do.
Little Metis Lighthouse.....	do.....	Do.
Father Point Lighthouse.....	do.....	Do.
Brandy Pots Lighthouse.....	Semaphore and flags.	Do.
Rivière du Loup Lighthouse.....	do.....	Do.
L'Islet Telegraph Office.....	Flags.....	Do.
Escuminac Point.....	do.....	New Brunswick.
Meat Cove Telegraph Office, near Cape St. Lawrence.	do.....	Cape Breton Island.
Flat (Low) Point Lighthouse.....	do.....	Do.

1. Vessels exhibiting their distinctive numbers will have their names transmitted to the local press (for publication only), free of charge.

2. Dispatches to or from vessels within signaling distance, by the international code of all nations, either by flags or semaphores, will be duly delivered as addressed.

3. Dispatches will be charged for at the ordinary telegraph rates,

between stations; but no charge will be made for signaling between coast stations and vessels at sea.

4. Dispatches may (by special request) be delivered in cipher, otherwise they will be transmitted in ordinary language.

5. Vessels may obtain information as to winds, weather, and ice at any signal station within the Gulf of St. Lawrence *free of charge*.

6. The stations on Anticosti, Amherst, Grosse Isle, and St. Paul Islands, at Meat Cove and Cape Ray are kept specially informed respecting the state of navigation in the river and gulf of St. Lawrence during the months of April and May.



## CHAPTER II.

### ISLANDS IN THE GULF OF ST. LAWRENCE.

**St. Paul Island**, lying in the main entrance to the Gulf of St. Lawrence, between the SW. extreme of Newfoundland and the north extreme of Cape Breton Island, is composed of granitic rocks, dipping at an angle of not less than  $45^{\circ}$  to the southward. It is nearly 3 miles long, by one mile broad. Its NE. point is a small detached islet, separated by a very narrow channel from a peninsula, the whole so precipitous as to be nearly inaccessible. The remaining greater part of the island, which is also precipitous towards the sea, has two parallel ranges of hills, that on the eastern coast being the higher.

Two small lakes or ponds supply the principal stream on the island, which is of yellowish brown water, well-tasted and wholesome, and descending into the sea in the southern part of Trinity Cove. There are several other, but much smaller, runs of water, one of which is into Atlantic Cove. These coves afford the only shelter for boats, and the only good landing on the island, which is easier of ascent from them than at any other part.

**Supplies.**—The island is partially wooded with dwarf and scrubby spruce trees, useless except for fuel. The only inhabitants are two men in charge of a depot of provisions for the relief of shipwrecked persons, supported by the government of New Brunswick. These men reside on the north point of Trinity Cove, where there is a dwelling house and store. A few foxes are the only wild animals upon the island; there is no feathered game, or anything else to support life.

**A Boat** is kept on the island.

**Anchorage.**—Off Trinity and Atlantic Coves small fishing schooners anchor, with the wind off shore, in 10 or 12 fathoms, sand and gravel bottom, and at the distance of 400 yards from the rocks. In very fine weather large vessels might venture to ride in from 25 to 30 fathoms, about  $\frac{1}{2}$  mile off shore, but should be in constant readiness to weigh at the first sign of a change in the wind or weather. There is little or no warning by the lead in approaching this island in foggy weather. On this account, although so bold and high, it is extremely dangerous, and many shipwrecks, attended with sacrifice of human life, have taken place upon its shores.

The irregularity of the tidal streams and currents add much to the danger arising from the fogs, which prevail in southerly, easterly, and often also with SW. winds. During the whole of a fine calm day at the

end of June, the current set to the SE, at the rate of one knot past the north point of the island.

**Bird Rocks** of coarse red sandstone, in strata dipping very slightly to the SW., are constantly diminishing in size from the action of the sea. They present perpendicular cliffs on every side, yet it is possible to ascend them with great difficulty in one or two places, but there is no landing upon them except in the calmest sea. Every ledge and fissure of the cliffs is occupied by gannets. The white plumage of these birds gives these rocks the appearance of being capped with snow, and renders them visible through a night glass in a moonlight night from the distance of 7 or 8 miles.

The two rocks are about  $\frac{3}{4}$  mile apart. Sunken rocks leave only a boat passage between them. The southeasternmost is the larger and higher, though scarcely 400 yards long, and not more than 140 feet high above the sea. The other is divided into two precipitous mounds joined together by a low ledge. The lesser of these mounds resembles a tower. A reef extends about  $\frac{3}{4}$  mile to the eastward, from the Little or NW. Bird Rock, and there is a patch of breakers nearly midway between the two, and rather to the SW. of the line drawn from one to the other. The Great or SE. Bird Rock is quite bold, excepting in the direction of the other rock.

**Caution.**—Between the Bird Rocks and Bryon Island there is a ridge of rocky and foul ground, on some parts of which, it has been said, there is as little as 4 fathoms water, because bottom has been seen in calm weather. Nothing, however, less than 7 fathoms could be found; but it may nevertheless exist, so that a vessel of large draft had better not cross this ridge when there is much sea running. The two cliffy points on the north side of Bryon Island, in line, mark the northern limits of it.

**Bryon Island**, which is uninhabited, is about 4 miles long, with the extreme breadth of rather more than a mile. There was no opportunity of measuring the height of Bryon Island, but it nowhere exceeds 200 feet above the sea. The cliffs on the north side are much higher than those on the south, where there are several small coves in which boats may land easily with the wind off shore.

The island is formed of alternating and nearly horizontal strata of red sandstone, red ochereous clay, and shaley gray sandstone. The rocks are soft and friable, forming perpendicular or overhanging cliffs nearly all around the island, which are broken in holes and caverns, showing how fast they are giving way to the action of the waves. A great part of the island is wooded with dwarf spruce trees, and there is a large upland tract covered with good native grass.

**Water.**—Water may be had in small quantities by digging, and there is a spring on the north side of the narrow isthmus which joins the eastern peninsula to the remainder of the land.

**Reefs.**—There are three reefs off Bryon Island. One off its east end

extends nearly  $\frac{3}{4}$  of a mile to the northeastward; another off the west end extends  $1\frac{1}{2}$  miles to the westward; and the third, off the sandy SW. point,  $1\frac{1}{2}$  miles to the southward. No marks can be given for clearing these reefs, but the bearings of the land will afford sufficient guidance to the seamen. The reef off the SW. point obstructs the channel so much that it may be useful to add, that from the southern ridge of this reef Bryon Island subtends an angle of  $97^{\circ}$ , so that with the island subtending any less angle the reef may be passed. The south reef assists greatly in turning off the sea from the roadstead to the eastward of it, where vessels may safely anchor in 6 fathoms water and a sandy bottom, at the distance of a mile or more from the shore, and with all winds from the northward. Small vessels during NW. gales lie at anchor close under the reef.

**Shoal.**—There is an extensive patch of foul and rocky ground lying S.  $41^{\circ}$  W. from the west end of Bryon Island, and having a clear channel on either side of it. Not less than 5 fathoms could be found here, and although the fishermen see bottom upon it in calm weather, there is every reason to think that there is no less water. Nevertheless, vessels of large draft had better not run over it when there is a heavy sea running, for a small point of rock, with a few feet less water, might escape the most rigorous examination.

**Fishing Grounds.**—The rocky places are called fishing grounds by the inhabitants of Magdalen Islands, because codfish abound upon them. There is one having 11 fathoms water,  $2\frac{1}{2}$  miles north of Bryon Island, and which extends a considerable distance parallel to the island. There is sandy bottom, and a great depth of water within this ridge, and vessels may anchor in fine weather and southerly winds, off the bay on the north side of the island. The soundings extend so far off Bryon Island to seaward in every direction, that there is no possibility of a vessel on a voyage being endangered by it if the lead be used. Great caution is requisite in approaching the reefs, for they are very steep, especially that which extends to the southward.

**Magdalen Islands.**—This chain of islands assume an irregular curved direction, the greatest length of which, from the SW. cape of Amherst Island to East Point, is 35 miles.

The central parts of these islands rise into hills, with rounded and frequently dome-shaped summits, and which are in general of igneous or trap rocks. No rock salt has been found upon the islands, but the water of many springs and small streams is sufficiently saline to be nearly unfit for use. Gypsum forms an article of commerce, and some valuable ochereous pigments are also found upon the islands, but the principal dependence of the inhabitants is upon the codfishery. The herring and seal fisheries are also prosecuted to a limited extent. The islands are partially wooded, but the trees are small, and mostly spruce, juniper, birch, and Canadian poplar. The unwooded parts produce good grass, and afford pasturage for cattle and sheep.

The *climate* is severe; not quite so cold as at Quebec in winter, but less warm in summer. Rains, and especially fogs, are extremely frequent, and without this humid atmosphere the islands would be deprived of the little fertility which they possess, the dry and meager soil requiring continual supplies of moisture.

When first sighted from sea, Magdalen Islands appear like several hilly islands, with channels between, but, on a nearer approach, they are seen to be all connected together, with the exception of Entry Island, by a double line of sand bars and beaches, inclosing extensive lagoons, having very narrow entrances, by which the tide finds access and egress. These sand bars are in some parts only a few feet above the sea, while in others they rise into hills of blown sand of considerable elevation. They appear to be increasing, since they are generally ridges of sand with from 9 to 12 feet of water parallel to, and from 50 to 100 fathoms outside, the beach. There are 3 and 4 fathoms water between these ridges and the shore, a circumstance which has often proved fatal to the crews of vessels wrecked upon these shores. In stormy weather it is dangerous to attempt making the islands, for in approaching the lower parts the breakers would probably be the first thing seen from a vessel.

**Population.**—According to a census taken in 1871, there were upon Magdalen Islands 3,171 inhabitants; these are distributed on Amherst, Grindstone, and Alright Islands, with the exception of about 11 or 12 families divided between Entry Island, Grosse Isle, and East Island, near the NE. extremity of the chain.

**Seals.**—During the spring of the year the fishermen leave the islands for seal hunting on the ice of the gulf. Thousands of seals which are driven on the ice to the shores of the islands by winds are killed by the inhabitants. Seals are also taken by means of nets in Pleasant Bay.

**Supplies.**—Vessels may obtain limited supplies of fresh provisions, especially at Entry Island, and water most readily from Amherst Harbor, either from a spring which issues from under Demoiselle Hill, or from a small stream which falls into Anse à la Cabane, near the SW. cape of the island. Wood for fuel is becoming scarce near the settlements. Large spars are not to be had, unless when they chance to be saved from wrecks, but small ones, of spruce and juniper may be obtained. The latter, of which the inhabitants build their fishing-boats and shallops or small schooners, somewhat resembles larch wood; it is said to be extremely strong and durable.

**East Point** is of low sand, inclosing several shallow ponds, and having several sand hills, some of which are near its extremity, while others, of greater elevation and farther to the westward, extend in a chain nearly to the NE. Cape. These last-mentioned sand hills are inland, and on the margin of the northeastern part of the great lagoon. The NE. Cape is a hill at the head of Grand Entry Harbor; it can be seen over all the sand hills and sand bars, and at a distance appears to be the eastern extremity of the chain.

**Long Spit.**—A ridge of sand, with 2 to 3 fathoms water, extends S. 66° E. rather more than 1½ miles off East Point, and for 1¼ miles farther in the same direction the depth is from 4 to 6 fathoms. To clear this spit the north side of the peninsula on the south shore of Oyster Pond, in line with Old Harry Head, bearing S. 61° W., will lead over it in 4 fathoms. North Cape in line with the east side of NE. Cape leads nearly ½ mile to the southwestward, a mark which will be useful to a vessel approaching it from the westward. This shoal is extremely dangerous, as the tides set rapidly over it and cause a heavy breaking sea.

**Doyle Reef**, lying S. 76° E. from East Point, is very small, being only 600 yards long and 100 yards wide, with a depth of 6 fathoms on each side of it. The least water is 3 fathoms on one spot, nearly in the center, and there is deep water all around it. The only mark for it is North Cape, open two-thirds of its breadth to the NE. of NE. Cape. This reef seldom shows, as the sea breaks upon it only in heavy gales.

**Old Harry Head**, the SE. point of Coffin Island, is formed of red sandstone cliffs of moderate height, with a reef off it ¼ mile to the SE. Between it and East Point is Sandy Bay, in which vessels may anchor, with good shelter, in all winds from west, round by north to NE.; but it is not a place to be recommended, because a vessel would be there very much embayed by the shoals on either side, and might find it difficult to get out on the occurrence of a sudden shift of wind, either at night or during a fog.

**Columbine Shoals** consist of numerous small patches and pointed rocks, on some of which there is not more than 3 feet at low water. NE. Cape, well open of Old Harry Head, bearing N. 11° W., will lead clear of the outermost of the shoals. There is no good mark for clearing the west side. On the outer edge of these shoals the angle between Old Harry Head and the west extremity of Coffin Island is 77°.

**Coffin Island** has on its south side a lagoon with a very narrow outlet, named the Oyster Pond, and which boats can only enter in fine weather. Off the coast of the island there are several rocks, besides Columbine Shoals, but they are inshore, and out of the way of vessels.

**Grand Entry Harbor** has its entrance between the SW. end of Coffin Island and the sand bars to the westward of it, and has water enough within it for large vessels; but its entrance is extremely narrow, not exceeding 100 yards in breadth, between sandy shoals which are said to shift. A native pilot should be employed, or the channel buoyed or staked, and even then the entrance should not be attempted excepting in fine weather. The depth that can be carried in, at spring tides, is 13 feet. The tides run with great rapidity. There are no settlements at the harbor, but there are a few families in the vicinity of the NE. Cape who breed cattle.

Within this harbor there is a large expanse of water, extending north-eastward to the southern shores of Grosse Isle, and communicating by

a narrow channel with a large shallow pond, eastward of the NE. Cape. It also extends southwestward, between a double line of sand bars, to the eastern shores of Grindstone Island. There are three entrances from the sea; namely, Grand Entry Harbor; another  $3\frac{1}{2}$  miles to the westward, which is very shallow; and House Harbor, near its SW. extremity, between Alright and Grindstone Islands.

**Shag Island** is small and low, and lies about  $\frac{1}{2}$  mile from the sand bars, nearly midway between Coffin and Alright islands.

**Cape Alright** is the southern point of Alright Island. The cliffs, of a grayish white color, with occasional brick-red low down, are 400 feet high at the highest part, which is about a mile to the eastward of the cape, and those to the westward of the cape, towards House Harbor, are also very high and of the same color. Nearly a mile inland is the summit of Alright Island. Between this summit and the cape there is a hill named Butte Ronde. The south extremity of the cape is low, with a small rock close off it.

**Alright Reef**, the outer edge of which lies N.  $72^{\circ}$  E.,  $3\frac{1}{4}$  miles from Cape Alright, is 800 yards long by 600 yards wide, and is composed of white and pointed rocks, with 6 feet least water. When on this reef the Butte Ronde is in line with the summit of Grindstone Island; the west side of Cape Alright is in line with the west side of Cape Meule, and the whole of the woody Wolf Island is just open to the westward of Shag Island. The well-marked summit of Grindstone Island, open to the southwestward of Cape Alright, will lead to the SW., and the east side of the woods of Wolf Island (seen over the sand bars), open to the eastward of Shag Island, will lead to the SE.

**Pearl Reef** is of white pointed rocks, like most of the reefs around these islands. It is round and about 400 yards in diameter, with 9 feet least water; and even with a moderate swell the sea breaks heavily upon it. From the reef Cape Alright bears N.  $66^{\circ}$  W.,  $8\frac{1}{2}$  miles; the NE. point of Entry Island S.  $53^{\circ}$  W.,  $4\frac{1}{2}$  miles. The Demoiselle Hill, shut in behind the north side of Entry Island, S.  $60^{\circ}$  W., will lead to the southward; and the Demoiselle, kept more than half a point open to the northward of Entry Island will lead to the northward.

**House Harbor** is distant  $2\frac{3}{4}$  miles to the NW. from Cape Alright. Its entrance is a narrow and crooked channel, carrying only 6 feet at low water.

**Meule Rocks**, extending  $\frac{3}{4}$  mile seaward of Cape Meule, are marked on their outer extremity by a red buoy moored in 14 feet water 100 yards N.  $86^{\circ}$  E. from a 6-foot patch. Nearly midway between the bay and Cape Meule there is a channel having 18 feet water, but this should not be used in rough weather.

**Red Cape** is the SE. point of Grindstone Island and the north point of Pleasant Bay. The opposite point of the bay, Sandy Hook, is the east point of Amherst Island, and bears from the Red Cape S.  $40^{\circ}$

E., 6 miles. From this line to the shore of Amherst Island, at the head of the bay, the distance is  $4\frac{1}{2}$  miles.

**Grindstone Island** is the second largest of the chain, being, in this respect, intermediate between Amherst and Alright Islands. Its summit is 550 feet above the sea.

**Amherst Island**, the largest and southwesternmost of the Magdalen Islands, is connected with Grindstone Island by a double line of sand bars, inclosing an extensive lagoon from one to 3 miles wide, the southern part of which is called Busque Harbor. This lagoon is full of sands, which are dry at low water, and has three outlets into Pleasant Bay, the southernmost being the deepest, but having only 3 feet water over its bar at low water. The others, including three through the sand bars of the NW. coast, will only admit boats at high water, and when the surf is not too high.

The hills in the interior of Amherst Island rise to a height of 550 feet. About a mile to the westward of Amherst Harbor is the conical hill, named the Demoiselle, of trap rock, and 280 feet high.

**Amherst Harbor.**—The entrance is  $2\frac{1}{2}$  miles to the westward of the extremity of Sandy Hook, which is a long and narrow sandy point with sand hills. This harbor is the easiest of access and egress of any in the Magdalen Islands, and has, moreover, the advantage of an excellent roadstead outside, where vessels may wait their opportunity of running in. The entrance to Amherst Harbor, which has been deepened to 13 feet (at high water), is 75 to 80 feet wide, and rather crooked, so that without a pilot it would be necessary to buoy the channel. There are from 12 to 17 feet in the harbor, over a bottom of soft, black mud, well sheltered from every wind.

**Pleasant Bay** is the best roadstead in the Magdalen Islands, and the only one where vessels can venture to lie with all winds, during the three finest months of summer, June, July, and August. In those months a gale of wind from the eastward, so heavy as to endanger a vessel with good anchors and cables, does not occur above once in 3 or 4 years. The riding, however, is often heavy enough in NE. gales, and a vessel should be well moored and all snug aloft.

**Anchorage.**—The best and most sheltered anchorage is in 4 fathoms, with the rocky point of entrance of Amherst harbor bearing S.  $27^{\circ}$  W.,  $\frac{3}{4}$  mile, and a little more than  $\frac{1}{2}$  mile from high-water mark on the sandy beach to the southward. A vessel of large draft should anchor farther off. The bottom is everywhere excellent for holding, and of red sandy clay. Even when the wind comes right in, the sea is much lessened by passing over so much of shoal water; nevertheless, the attempt to ride out a heavy easterly gale, either before June or after August, will be attended with great danger.

**Sandy Hook Channel**, between Amherst and Entry Islands, has a navigable breadth of little more than  $\frac{1}{2}$  mile between Sandy Hook Flat and the rocky shoals off the west side of Entry Island. There are sev-

eral rocky patches of 2½ fathoms off the SW. point of Entry Island, reaching to fully ¼ mile from the shore. The ebb tide sets strongly through this channel and over Sandy Hook Flat, so that vessels of large draft should go round to the eastward of Entry Island.

**Directions.**—Four fathoms is the most that can be carried through Sandy Hook Channel by a good pilot, but 3½ fathoms is the utmost that can be safely reckoned on by a stranger. Off the NE. end of Sandy Hook Shoal, which is steep-to, a red buoy is moored in 5 fathoms.

To run through Sandy Hook Channel from the southward keep the east side of Alright Island just open to the westward of NW. spit, until abreast of the SW. point of Entry Island, then haul up for the summit of Grindstone Island.

**Entry Island** is the highest of the Magdalen Islands, its summit being 580 feet above the sea at high water; the red cliffs rising at the NE. point to a height of 350 feet, and at the south point to 400 feet. Off the NE. point there is the High Rock, about 100 yards from the cliffs, and on its north side the Tower Rock, of red sandstone, joined to the island, and which can be seen from the SW. over the low NW. point.

**Supplies.**—The inhabitants of Entry Island raise cattle and sheep, depending more upon the sale of fresh provisions than the fisheries. Vessels may, therefore, almost always obtain supplies.

**Anchorage.**—Vessels generally anchor under Entry Island in northerly and easterly winds, but it is rough riding. The best anchorage in easterly winds is in Sandy Hook Channel, under the NW. spit, in 5 fathoms, sand.

**Rocks.**—Besides the rocky patches in Sandy Hook Channel and off the SW. point of Entry Island, there are others off the south and SE. sides, extending ¼ mile off shore.

**Andromache Rocks** are several mere points of rock with deep water between them, extending ¼ mile off the NE. point of Entry Island.

**Amherst Island.**—The south coast of Amherst Island, consisting of sand hills and beaches, curves round to the westward, for 6 or 7 miles, to the entrance of the basin, which extends nearly across the island to within less than ¼ mile of Pleasant Bay. The basin is now so nearly closed with sand that boats can only enter at high water and in the finest weather. There is good anchorage off the entrance, in from 6 to 9 fathoms, sandy bottom.

A mile and a half to the westward of the entrance of the basin cliffs commence and continue, except in Cabane Bay, to the West Cape, which is the highest cliff of Amherst Island, its summit being 300 feet above the sea.

**Anse à la Cabane** is a small bight, between the South and SW. Capes of Amherst Island, where vessels may safely anchor with northerly and easterly winds, and where good water may easily be obtained.



The best berth is in 8 or 9 fathoms, sandy bottom, off the center of the bay,  $\frac{3}{4}$  mile off shore.

**Deadman Islet**, bearing N.  $76^{\circ}$  W.,  $7\frac{3}{4}$  miles from the West Cape of the Magdalen Islands, is small, being not more than 600 yards long, and less than half that in breadth. It is about 170 feet high, with steeply sloping sides, meeting at the summit like a prism, so that when seen end on it resembles a pyramid. On the west side a vessel may pass within the distance of 400 yards with safety, but a reef extends  $\frac{1}{2}$  mile off the east side. There is no danger nearer than the White Horse. At night or in foggy weather the lead will give little warning.

**Gull Island**.—From the West Cape of Amherst Island the remainder of the sea coast of Amherst Island consists of red cliffs, without beach, all the way to West Lake, a small pond at the SW. end of the sand bars, which joins Amherst and Grindstone Islands. At the NE. extremity of these sand bars is Gull Islet, which is small, rocky, and close to the western point of Grindstone Island, and has shoal water off its west point to the distance of  $\frac{1}{2}$  mile. About  $1\frac{1}{2}$  miles to the SW. of it, and with the west side of Gull Islet and Gros Cap in line, lies a rocky shoal with 3 fathoms at low water, and leaving no good passage between it and the shore. Close to the NE. of Gull Island is the Etang du Nord, a small inlet, affording good shelter to boats.

**Hospital Rock**.—The northern shore of Grindstone Island is of red sandstone cliffs, less high than those of Amherst Island. Near their NE. extreme lies Hospital Rock, close to the shore, and also some rocky 3-fathom patches, more than  $\frac{1}{2}$  mile from the shore.

**White Horse** is the name of a dangerous reef, lying N.  $36^{\circ}$  E., 7 miles from Deadman Islet, and west  $5\frac{1}{2}$  miles from Gull Islet. It is scarcely more than 200 yards in diameter, and has 9 feet least water over pointed rocks, on which the sea often breaks. On this reef the summit of Entry Island is seen over a low part of the sand bars, at the NE. outlet of Basque Harbor, but this mark can not be easily discerned by a stranger.

When on the reef the western extremity of Amherst Island and Hospital Cape subtend an angle of  $91^{\circ} 30'$ .

**Pierre de Gros Cap**, another dangerous reef of rocks, nearly of the same size as the White Horse, and having 18 feet least water, is seldom seen, as the sea breaks upon it only in very heavy weather. It lies N.  $58^{\circ}$  W.,  $3\frac{3}{4}$  miles off Cape le Trou, the nearest point of Grindstone Island.

**Wolf Island**.—From Hospital Cape to Wolf Island, the northern coast of the Magdalen Islands, consist merely of sand beaches and sand hills for a distance of 9 or 10 miles. The low sandstone cliffs of Wolf Island, which is about  $\frac{3}{4}$  mile long, interrupt the continuance of the sandy shore for only  $\frac{1}{2}$  mile; the sand beaches then recommence and continue with high sand hills to the North Cape.

**North Cape.**—The north coast of Magdalen Islands continues from the North Cape, a precipice of considerable height, in a curved line of sand beaches and sand hills as far as East Point.

**North Cape Rocks**, some of which always show, lie to the westward of North Cape, the outermost being 1,200 yards offshore.

**Water** may be had in small quantities near the houses on the east side of the North Cape.

**Anchorage.**—To the eastward of North Cape vessels may ride in 8 or 9 fathoms, over sandy bottom, with all southerly winds, with good holding ground.

**Directions.**—Entry Island, when first made from the eastward, will appear like a double-peaked hill, sloping somewhat abruptly down to perpendicular and high cliffs on either side. The SW. point of Amherst Island is also a steep cliff, but of less height, and as there is no land to the southward and westward of it, it can not be mistaken. The land rises from it in undulations to the higher parts of the island.

The general soundings around Magdalen Islands will afford an invaluable assistance to vessels at night or in foggy weather, and will be better understood from the charts than by any written directions.

**Tides.**—The tidal streams or currents around Magdalen Islands are so irregular that the most experienced and intelligent pilots for the islands, who are also fishermen, and have passed their lives in fishing craft around them, can give no certain account of their rate and direction, but all agree in stating that they vary in both respects, either from the effects of winds, or other and unknown causes. Nevertheless, the following observations will hold good as a general rule, and although subject to occasional interruption, the set of the tidal streams about to be described will be found to recur with considerable constancy in fine weather.

A few miles outside Bryon Island and Bird Rocks there appears to be usually a current setting to the southeastward, out of the gulf of St. Lawrence; but the stream of flood tide flows between them and Magdalen Islands. The stream of flood comes from the SE., and is divided by the east point of Magdalen Islands. One branch of the stream sets strongly over the Long Spit, which, with Old Harry Head and the shoals off it, turn it off to the southwestward towards Entry Island, leaving nearly slack water in the bay between Coffin Island and Cape Alright, and also in Pleasant Bay. The other branch, to the northward of the islands, follows the shore from East Point round to the SW. Cape of Amherst Island, whence the greater part of the stream continues its course to the SW.; whilst the remainder, following the shore, runs round and along the southern coast of Amherst Island, until it meets the before-mentioned other branch of the stream from the East point, setting off the east side of Entry Island. It is overcome by this other branch, and turned gradually round to join the general weak stream of flood to the westward in the offing.

On the SE. side of the islands the stream of the ebb tide sets strongly out of the lagoons and out of Pleasant Bay, between the Sandy Hook and Entry Island. It is also often found running to the westward along the southern shores of Amherst Island, and right round it in like manner, but contrary in direction, to the course of the flood already described. In the offing, at the same time, the stream of ebb is from the SW., and sets over the Long Spit off the east point, where it meets the stream from the NW., which has followed the north shore of the islands, round from Amherst Island to the east point. The meeting of these two streams of the ebb tide, together with the shoalness of the water, causes so heavy a breaking sea in strong easterly winds that the fishing shallows dare not venture at times to pass the point.

The rate of either stream seldom amounts to a knot, excepting close in shore, or round the points. The ebb, however, is generally the strongest stream, and its rate is increased by westerly winds, as is that of the flood by winds from the eastward.

**Anticosti Island** is 122 miles long and 30 miles in extreme breadth. Its shores are everywhere of rock, affording in some parts excellent building stone, of which the two lighthouses have been constructed. On and near the coasts the limestone is covered with a thick and often impenetrable forest of dwarf spruce, which, in some exposed situations, is only a few feet in height, with gnarled branches, so twisted and matted together that a man may walk for a considerable distance on their summits. Extensive banks of limestone shingle, bush-swamps, morasses, and also beds of peat are of common occurrence.

Anticosti is nowhere higher than 700 feet above the sea. Its south coast is low and shelving, with reefs of flat limestone which dry at low water. There is, however, a range of highlands in rear of the SW. point, and extending for some miles both to the north westward and southeastward of it. The north coast, for 70 or 80 miles to the westward of the East cape, is bold, precipitous, and of considerable elevation. The headlands end in magnificent cliffs of limestone, which are externally so nearly white from the effects of the weather as to resemble chalk. The remainder of the north coast is low, with reefs of flat limestone, like the southern shores.

**Harbors.**—It is unusual to find an island so large as Anticosti without a good harbor; the best are only suitable for vessels drawing 10 to 15 feet. Limestone coasts are in general characterized by deep inlets and bays and detached islets and rocks, but nothing of the kind will be found here, and there is not a single detached shoal off any part of the coasts.

**Coasts.**—The coasts of this island have been generally believed to be extremely dangerous. The reefs of flat limestone, extending in some parts to  $1\frac{1}{4}$  miles from the shore, the want of anchorage off most parts of the coast, and above all the frequent fogs, justify this belief in part, but not in so great a degree as to render reasonable the dread with

which they seem to have been occasionally regarded, and which can only have arisen from the natural tendency to magnify dangers of which we have no precise knowledge.

**Productions.**—The interior of Anticosti is probably less sterile, for white spruce spars have been seen large enough for the masts of a schooner of 60 tons, and others of juniper of excellent quality, and of sufficient size to form the keel of a vessel of the same dimensions. Black and white birch and ash, the latter of bad quality, complete the list of trees which attain to any size upon the island.

Land birds appear to be very scarce; in winter, however, the white partridge, probably ptarmigan or willow grouse, is seen in the interior. There are as few varieties of quadrupeds as of the feathered tribes. The squirrel and Canadian hare are reported not to exist here. There are only four or five species of quadrupeds upon the island, namely, the black bear, fox, otter, martin, and a few mice.

**Climate.**—The climate of Anticosti, from its proximity to an open sea, is probably not more severe in winter than that of Quebec, although farther to the north, but the summers are cold, wet, and stormy, with frequent fogs. Frosts are common in August, and in some severe seasons they occur in every month of the year. It is probable that no other grain but barley would ripen here, unless it might be oats occasionally in sheltered situations. Potatoes are frequently prevented by early frosts from coming to perfection, although planted in the most favorable situations.

**Rivers.**—Streams of excellent water descend to the sea on every part of the coasts of Anticosti. They are generally too small to admit boats, becoming rapid immediately within their entrances, and even the largest of them, Observation River, to the westward of the SW. point of the island, is barred with sand, excepting for short intervals of time after the spring freshets of heavy rains.

**Fisheries and exports.**—Many of the above streams abound with trout, and are visited periodically by great numbers of salmon, which are taken by the two or three resident families, and salted for the Quebec market.

Codfish are taken occasionally off several parts of the coast in small schooners from the Magdalen Islands and other parts of the gulf. Their crews often join the occupation of wrecker to that of fishermen. The black bears are very numerous, and may frequently be seen wandering along the shores. Their skins, together with a few of the other animals named, salted salmon, seal skins, and seal oil, are the only exports, and are taken to Quebec, together with occasional cargoes of goods and people saved from wrecks in a schooner, the only vessel belonging to the island. Wild geese, outards, and ducks of various species are abundant, and breed upon the island.

**Provision Posts.**—The people in charge of the lighthouses and provision posts, and one man at Fox Bay, are the only resident inhabitants

of Anticosti. The provision posts have been established by the Government of the Dominion of Canada for the relief of the crews of vessels wrecked upon the island. Vessels are more frequently lost here in the bad weather at the close of the navigable season than at any other times, and their crews would perish from want and the rigors of a Canadian winter if it were not for this provision. The first of these posts is at Ellis Bay, the second at the lighthouse at the SW. point, and the third at the lighthouse on Heath Point.

There are direction boards erected on the shore, or nailed to trees from which the branches have been cut off, near the beach, and on various parts of the coast. These boards are intended to point out to shipwrecked persons the way to the provision posts, and were placed on the following parts of the shore: at 30 miles westward of Shallop Creek; and at 21 miles eastward of Shallop Creek. And there were formerly others on Heath Point and the SW. point which the lighthouses have rendered unnecessary.

**East Cape** of Anticosti is a perpendicular cliff of limestone, rising 100 feet above the sea. Between East Cape and Heath Point is Wreck Bay, which is dangerous, and affords no anchorage. A reef extends rather more than  $\frac{1}{4}$  mile to the SE. from East Cape.

**Heath Point** is of limestone, about 10 feet high, with a superstratum of peat, in which there are several ponds of dark bog water. At the distance of a few miles the lighthouse appears like a sail off the island, and is extremely useful in marking the extent of the low land to vessels, either from the eastward or westward.

**Heath Point Reef** extends nearly 3 miles from Heath Point. Within that distance the reef is composed of large, square blocks of limestone with irregular soundings, so that vessels should not approach nearer, with the point bearing between N.  $63^{\circ}$  W. and S.  $72^{\circ}$  W. With the East Cape bearing N.  $40^{\circ}$  W. a vessel will pass just outside of the shallow and irregular soundings in about 20 fathoms water.

**Anchorage.**—The best berth is in 10 fathoms, over a bottom of sand and mud, with the lighthouse bearing N.  $49^{\circ}$  E., and Cormorant Point nothing to the southward of S.  $83^{\circ}$  W.

**The Coast** from the South Point of Anticosti to Cormorant Point is low and undulating, with points of low limestone cliffs, and beaches of sand and shingle in the bays, inclosing large ponds or lagoons, into many of which the tide flows, and also small streams from the interior of the island. This part of the coast may safely be approached by the lead, for the reefs nowhere extend farther off than  $\frac{3}{4}$  mile till we come to the South Point.

**South Point** is low, and dense brushwood reaches nearly to the water's edge. No trees intervene between the lighthouse and the shore, nor does the ground rise until the lighthouse is approached. Eastward of the point the ground is flat for some miles.

**Beacon.**—On South Point is a beacon 40 feet high, painted white.

A reef runs out about 2 miles to the southward from South Point, and the sea usually breaks upon it. The outer point of this shoal, stated to be 600 or 700 feet in diameter with 21 feet on it, lies with South Point bearing N.  $72^{\circ}$  E., distant about 3 miles.

**Caution.**—As the survey of this coast is very incomplete, mariners are advised to give this locality a good berth.

**Aspect of Coast.**—From South Point to the lighthouse on the SW. Point, a distance of 56 miles west, there is such a sameness in the character of the coast, that it is very difficult to make out one part from another.

In this distance the coast is very low, but it begins to rise at Pavilion River, there being a high ridge close in rear of the coast all the way to the SW. Point and beyond it for some miles.

**Beacon.**—At the entrance of Pavilion River, where there is a limestone cliff, is a white beacon 40 feet high.

**Beacon.**—A large white beacon 40 feet high is placed 4 miles SE. of Salt Lake Bay.

**Salt Lake Bay** has fine sandy beaches inclosing lagoons or ponds into which the tide flows. Off the center of this bay, and with its NW. point bearing N.  $12^{\circ}$  W., distant  $1\frac{3}{4}$  miles, there is very indifferent anchorage, in 7 fathoms, over sandy bottom. Vessels should be careful not to anchor further to the southward and eastward, since there is some foul and rocky ground about a mile in that direction from the position which has just been recommended.

**Caution.**—Between the south and SW. points of Anticosti the reefs extend a mile from the shore, and are so steep that there is little warning by the lead. This part of the south coast of the island should therefore be approached very cautiously at night or in foggy weather.

**The SW. Point** of Anticosti island is a low projecting mound of limestone, having a small cove on its north side, which forms it into a peninsula. The land rises gradually in the rear of this to the summit of the ridge already mentioned. On the south side of the point there is a beach of limestone gravel on which boats may land, as well as in the cove on the north side, when the wind is offshore and the sea smooth. On the north side of the point, and for several miles along the coast to Observation River, the cliffs are perpendicular and washed by the sea. A reef extends out from the point to the west and SW. not more than  $\frac{1}{2}$  mile. At the distance of 6 miles to the southward and westward of the point the depth is about 110 fathoms, with mud bottom, and increases to 200 fathoms nearly midway towards the south coast.

**Anchorage.**—Vessels may anchor in the bay on the north side of the point, in 12 or 13 fathoms, over a bottom of sand, gravel, and broken shells, with the extremity of the point bearing south distant  $\frac{3}{4}$  mile, when the cliffs to the eastward will be at the same distance. It is a dangerous state to be caught in by westerly winds, which are preceded by a

heavy swell. The ground is not to be trusted, and no vessel can be recommended to anchor here unless in case of necessity.

From SW. Point to Ellis Bay the reefs of flat limestone extend off in most parts fully a mile, and often have 10 or 12 fathoms of water close outside of them.

**Observation River** is the largest stream on the island, having 5 or 6 feet water in its entrance after the melting of the snows in the spring of the year, but soon becomes barred with sand by the SW. gales. Its source does not appear to be known to the people of the island. Immediately to the northward of this river there are conspicuous and high sandy cliffs.

**St. Marys Cliffs**, 21 miles from SW. Point, are also of sand, less high, and less remarkable, but yet not difficult to distinguish.

**Beacon.**—On St. Marys Cliffs is a beacon 40 feet high, painted white.

**Becsic River**, 12 miles southeastward of Ellis Bay, is a small stream at the head of a cove affording shelter to boats, and where there is a hut at which a hunter and fisherman occasionally resides.

**Ellis Bay** affords the only tolerably sheltered anchorage in Anticosti. Vessels, if their draft is not too great for a depth of 3 fathoms, may safely lie there during the three finest months of summer, namely, June, July, and August, but they should moor with an open hawse to the southward. If of larger draft, and only wishing to remain for a few hours, they may anchor farther out, in 3½ and 4 fathoms, but neither the ground nor the shelter will be found so good as farther up the bay.

**Anchorage.**—The best berth in Ellis Bay is in a line between Cape Henry and the White Cliff, Gamache House, bearing N. 15° W., and Cape Eagle, S. 51° E. The vessel will then be in 3 fathoms, over muddy bottom, distant about 600 yards from the flats on either side, and about ½ mile from those at the head of the bay. Southerly winds are of rare occurrence, and never last long. When they do occur the sea is much less at the anchorage than might be expected, although very heavy in the entrance between the reefs.

**Reefs.**—The reefs are of flat limestone and dry at low water. The entrance between them is 1,200 yards wide, from the depth of 3 fathoms to 3 fathoms. Extensive flats proceed from these reefs quite round the bay, and do not entirely dry at low water, excepting in very low spring tides, but there are immense boulder stones upon them which always show. These flats occasion the landing to be very bad excepting at high water, which is the only time that supplies of good water can be obtained from Gamache River.

**Directions.**—In approaching Ellis Bay from the westward, with westerly winds, run down the outside of the reefs off Cape Henry by the lead, and in 10 fathoms water, until the west side of White Cliff is in line with the east side of the westernmost of two hills far back in the country, and

bearing N. 7° E.; then haul up with these marks on, and they will lead into smooth water close under Cape Henry Reef, in 3½ fathoms. Continue running in with these marks on till Gamache House bears N. 15° W., then haul up for it, and anchor in the line between Cape Henry and White Cliff, as previously recommended. The lead should be kept going, and the reefs on either side should not be approached nearer than 3 fathoms in any part until the vessel arrives at the anchorage.

In running for the bay from the southeastward, with an easterly wind, come no nearer to the west point of Cape Eagle Reef than the depth of 7 fathoms, until the east side of White Cliff comes in line with the east side of the same hill as before; then haul up with this mark on until the houses bear N. 18° W. and proceed as above directed. Take notice that the west side of White Cliff is used for the left-hand mark in westerly winds, and the east side in easterly winds, the intention being to keep the vessel in either case from going too near the lee side of the channel.

**West Point** is low and wooded, with reefs which do not extend beyond a mile from the shore.

**North Coast.**—The north coast of Anticosti, between the West and North Points, is low, with reefs of flat limestone extending one mile from the shore.

**North Point** is wooded, of moderate height, and without any cliff. It can only be distinguished by the change which takes place at it in the direction of the coast.

**High Cliff Point**, distant 13 miles from North Point, is easily recognized, being the only cliff on the island that has a *talus* in front of it, or that has not its base washed by the sea at high water.

**Beacon.**—On North Point is a whitewashed beacon, 30 feet high.

**Coast.**—From High Cliff Point to West Cliff, a distance of 26 miles, the coast is low in front, with ridges of considerable elevation a few miles back in the country. This is the most dangerous part of the north coast, for the reefs extend nearly 2 miles out from high-water mark, beginning at some low cliffs 7 miles eastward of High Cliff Point, and continue to do so for 4 or 5 miles to the southeastward, after which they gradually diminish in breadth till, at West Cliff, they are not more than ½ mile from the shore.

**Beacon.**—On West Cliff is a whitewashed beacon, 30 feet high.

**West Cliff** has no other high cliff near it. It appears like a white patch on the land, and can be seen from a distance of 20 miles. Low cliffs commence 4 miles southeastward of West Cliff, and continue to Charleton Point.

**Cape Observation** has on its west side a range of grayish white cliffs several hundred feet high. At the extremity of the cape these cliffs become suddenly much lower, and then rise again to their former elevation for a short distance on the east side.



**Supplies.**--At Charleton Point and Cape Observation wood and water may be obtained.

**Bear Head** consists of grayish white cliffs, 400 feet high and resembling in some degree Cape Observation. The coast between is also of high grayish white cliffs. Cape Observation has no equally high headlands to the westward of it, while Bear Head has, which will prevent the one being mistaken for the other.

**Beacon.**--On the western extremity of Bear Head Cliff is a beacon, 30 feet high, with diamond-shaped top, and whitewashed.

**Bear Bay**, is by far the best roadstead on the north coast of Anticosti, and, indeed, the only one in which a vessel of large draft would like to anchor, unless she had some particular object in view. It is sufficiently roomy, the bottom is excellent for holding, the depth of water moderate.

**Cape Robert** consists of cliffs of the same color and elevation as those of Bear Head. There are two other points of cliffs 300 feet high, within the bay, the southeasternmost of which is named Tower Point. The best anchorage is on the line between Tower Point and Cape Robert, at a distance of one mile from the former, as well as from the western shore, and in 13 fathoms water over a bottom of brown mud.

Bear Bay is divided into 3 smaller bays by the two high points of cliff already mentioned. In each of these bays there are fine bold beaches of sand and limestone shingle, and streams where water may be easily obtained. But the principal stream is Bear River, which enters the southernmost of the three bays, close to the southeast side of Tower Point. It is too shallow and rapid to admit boats, but the water is clear and good. The cliffs in Bear Bay are of grayish white limestone. At the extremities of the points they are rounded by the action of the waves and atmosphere so as to resemble towers, which resemblance is rendered stronger by the masonry-like appearance of the rock.

**Table Head.**--From Cape Robert to Table Head the coast is broken into small bays, with shingle beach and small streams between high headlands, terminating in perpendicular cliffs, the bases of which are washed by the sea. None of these bays afford good anchorage. Table Head is rendered remarkable by the hill from whence it derives its name, and which rises immediately from the summit of the cliffs. Fox Point is 4 miles farther to the southeastward, and much lower than Table Head.

**Fox Bay**, situated a little less than 2 miles to the southward of Fox Point, is about a mile wide, and deep, with a sandy beach at its head, where there is a considerable stream issuing from a small lake. Boats may enter the outlet of this lake at high water.

**Reef Point**, of very low limestone, is the southern point of Fox Bay, from which a reef of flat limestone, covered with only a few feet water, runs out to the distance of fully  $1\frac{1}{2}$  miles. There is a depth of 10 fathoms close off the end of this reef, so that it is extremely dangerous. To be

sure of clearing it to the northeastward a vessel should not stand nearer by the lead than 18 or 17 fathoms.

From the northern point of Fox Bay, which is a cliff of moderate height, another reef runs out more than  $\frac{1}{2}$  mile to the eastward. A point of the southern reef, before mentioned, extends to the northward in such a way as to overlap the reef off the northern point, leaving an entrance into the bay from the northward between the two reefs only  $\frac{1}{2}$  mile wide and 13 feet in it at low water. Inside there is a space  $\frac{1}{2}$  mile wide, from the depth of 2 fathoms to 2 fathoms, and with 16 feet in the middle over muddy bottom. It is said that the sea does not roll in, but in heavy weather breaks on the reefs and in the entrance. This account we believe to be correct, and that small vessels would be quite safe there during the summer months.

**Coast.**—Between Fox Bay and East Cape the coast is of limestone cliffs 100 feet in height, bold, and free from danger. Between Cape Sand-Top and East Cape vessels may anchor with all westerly winds, in from 16 to 20 fathoms, over fine sand, at a distance of one mile from the shore.

**Tides and Currents.**—The stream has run along the land for a whole day at the rate of a knot an hour, in either direction, without any apparent cause, and altogether regardless of the change of tide. At other times the tides have been found regular inshore. Under these circumstances it is evident that the set of the stream, at any time or place, can not be reckoned upon with certainty. Usually, however, there is very little stream in any direction on the north coast from West Cliff southeastward to Table Head. From the latter to East Cape, on the contrary, there is frequently a stream from the northward, running at a rate varying from half to one knot. In one or two instances this stream has been seen to commence and end with the flood tide, so that there was reason to imagine a connection between them; and, if this be the case, it may arise from the circumstance of its being high water sooner on the north coast up as high as the Esquimaux Islands than at the east point of Anticosti. The waters having thus attained a higher level to the northward may in consequence flow to the southward. On the other hand, it must be mentioned that this stream was observed at times during the ebb tide.

It frequently happens that when this current from the northward is running another from the westward comes along the south coast, in which case they meet at the reef off Heath Point, and cause a great ripple or irregular breaking sea. When this has been observed there has been usually a fresh breeze along the land on either side of the island, the wind on the north side of the island being from the northward whilst that along the south side was westward. Both these winds were observed blowing a smart double-reefed topsail breeze at the same time, and for a whole day together, and yet never meet round the east end of the island, which is nowhere more than 200 feet in height. Be-

tween the two winds there was a triangular space of calm and light baffling airs. The base of this triangle extended from Heath Point to East Cape, and its apex from 5 to 8 miles to the eastward of the island. This circumstance is mentioned because it would be dangerous for a vessel to stand into the calm space between the two winds where the high cross sea and constantly changing light airs might leave her at the mercy of the current, in no small danger of being set on the Heath Point Reef.

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### CHAPTER III.

#### CAPE BRETON ISLAND.

**Cape Breton Island** is of an irregular triangular shape, and its west coast is dangerous of access and possesses no harbor but Port Hood. Its other shores, though rugged, are indented with numerous bays and inlets, the largest of which, the Bras d'Or Lake, nearly divides the island into two, and, being deep enough for vessels of large draft, affords great facilities for commerce.

**The Resources** of the island consist chiefly in its timber, its agricultural productions, and its fisheries. The coal mines are worked in the neighborhood of Sydney. There is abundant room and fair means of providing subsistence for a population ten times its present amount, which numbers about 75,000.

**West Coast.**—Crossing the northern entrance of the Gut of Canso, from the lighthouse to Cape Breton Island at Heffernan Point, a distance of  $1\frac{1}{2}$  miles, the description will be continued northward along the western shore of the island. For the first 7 miles there are no detached dangers, nor does the shallow water anywhere extend to the distance of  $\frac{1}{2}$  mile from the shore. The land is high and rather barren looking, rising at the distance of  $\frac{1}{2}$  mile from the shore to the summit of a ridge 850 feet above the sea, and which continues parallel to the coast line for 5 or 6 miles. The only remarkable object in this interval is the church at Craignish, which will be seen distant  $2\frac{3}{4}$  miles from the lighthouse. At Long Point, a low cliff of red sandstone, the coast becomes dangerous of approach, and continues so to Emersion Point, a distance of 7 or 8 miles.

**Judique Shoal**, the greatest danger in St. George Bay, is of rock, and about  $\frac{1}{2}$  mile in length, if the very shallow part is only reckoned, but there are patches with 2 or 3 fathoms and much rocky ground both to the north and south of it. The least water, 4 feet, is close to the outer point of the shoal, and when on it the western extremity of the highland of Cape Porcupine will appear in the same line as Flat and Heffernan Points, bearing S.  $20^{\circ}$  E. By keeping the whole of the highland of Cape Porcupine open to the west of Heffernan Point, it will lead to the westward of the shoal in 6 or 7 fathoms; or if the church at Port Hood be kept open to the west of Cape Susan the shoal will be cleared in not less than 4 fathoms. There are 4 fathoms water between the shoal and land, but only small craft should attempt the passage.

A red buoy is placed on Judique Shoal about the 1st of May, and taken up in November.

**Judique Bank** lies NW.  $2\frac{3}{4}$  miles from the Judique Shoal,  $4\frac{1}{2}$  fathoms least water on a small rocky patch, with much foul ground around it. When on this patch Portsmouth Point (the south end of Smith Island) and Cape Linzee will appear touching, and bearing N.  $4^{\circ}$  E.; Judique church, N.  $84^{\circ}$  E.  $3\frac{1}{4}$  miles, and the left or eastern termination of the highland of Cape Poreupine just shut in behind Heffernan Point. A vessel will pass to the westward of this bank, which is only dangerous to vessels of large draft when there is a heavy sea running, by keeping Cape Linzee shut in behind Smith Island, or the whole of the highland of Cape Poreupine open to the westward of Heffernan Point.

**Judique Pond**, close to the north of Judique church, is barred by a sandy ridge, so as only to admit boats at high water. The shallow water extends off it to the distance of  $1\frac{1}{4}$  miles. Catherine Pond and Snsan Creek, distant 3 and 5 miles respectively to the north of the church, are similar places.

**Port Hood**, the only safe anchorage on the west coast of Cape Breton Island to the north of the Gut of Canso, was formerly a much more secure harbor, Smith Island being then a peninsula, united to the mainland by a range of high sand hills, which has since been entirely swept away.

**Anchorage.**—At the anchorage in the NW. part of Port Hood, formed by the east side of Smith Island, there are depths of 3 to  $4\frac{1}{2}$  fathoms, mud, and the heavy swell is prevented from rolling in round the NE. extreme of the island by a shoal which extends about 800 yards to the southward from Smith Point, with 2 to 4 feet water, and marked by a small red buoy.

**Supplies.**—The village of Port Hood will be seen on the mainland opposite the northern part of Smith Island; it is well situated, and will be recognized by the steeple of the church and the court-house of stone. Supplies of fresh provisions may be obtained there, but there is no good watering place, the supply from the wells of Smith Island being scanty and not very good, while the brooks of the mainland are difficult of access, and sometimes nearly dry in summer.

**Spithead**, a sandy flat, nearly dry at low water, extending 1,200 yards northeastward from Portsmouth Point, the south extremity of the island, affords partial shelter from south winds, but a strong south or southwesterly gale of any duration sends in a heavy swell.

**Dean Shoal**, on the mainland side of the port, extends from the sandy beach at Mill Creek to the distance of 600 yards. It is a steep sandy flat, which, together with the shallow water as far out as opposite Portsmouth Point, but not farther to the south, will be cleared at 200 yards distance by keeping Cape Linzee and Isthmus Point in line, bearing about N.  $10^{\circ}$  W. On the same side, but outside the entrance of the harbor, a rocky shoal, with 12 feet of water, runs out 700 yards

from the shore  $\frac{1}{2}$  mile to the northward of Ragged Point. This, being steep-to, must be carefully avoided by a vessel of large draft. Cape Susan and Kate Point in one, bearing S. 13° E., just leads outside it, but may not be easily made out by strangers.

**Smith Island** is 2 miles long and 210 feet high, and it possesses much fertile land. With the exception of the sandy beach in the bay, the island is everywhere surrounded by cliffs of various heights up to 123 feet. They are formed of soft reddish sandstones, shales, and marls, containing occasionally thin seams of coal, with beds of gypsum, limestone, and trap, which last are well shown at the NW. end of the island.

**Henry Island**, or Just an Corps, lies about one mile outside of Smith Island. It is much the smaller of the two, being one mile long, and its greatest height is 195 feet above the sea at high water. It is of the same rock formation, and also nearly surrounded with cliffs, which yield rapidly to the action of the waves and of the atmosphere, and which on the outer side attain the elevation of 100 feet above the sea. It has no permanent inhabitants, but is much frequented by fishermen during the fishing seasons.

The island is bold to seaward, but shallow water runs out from Fishery Point, its SE. extremity,  $\frac{1}{4}$  mile to the depth of 3 fathoms, and  $\frac{1}{2}$  mile to 5 fathoms.

The passage between these islands is rendered so extremely intricate and dangerous by rocky shoals, that it should never be attempted unless in a very small vessel and with fine weather.

**Directions.**—Having a fair wind, pass to the southward of Henry Island at a distance not less than  $\frac{1}{4}$  mile, steering N. 77° E. until the south end of the trees is in line with the spire of the Roman Catholic church, bearing N. 21° E., which will lead east of the Portsmouth and Spithead Shoals, and when the east end of H. Smith's house is in line with the west end of the chapel, bearing N. 24° W., steer for the anchorage in the NW. part of the port.

**Tides.**—The tidal streams are weak at the anchorage, and their rate does not ordinarily amount to one knot anywhere within the harbor. The flood comes from the north and the ebb from the south. The flood stream from the north meets that which comes in through the Gut of Canso off Long Point, whence they set to the NW., curving round the bay towards Cape St. George.

**Aspect of Coast.**—From Cape Linzee to Cape St. Lawrence, a distance of 73 miles, the coast is without either harbor or safe anchorage for ships. The general character is high and bold, the dangers being few and close in shore, but it is nevertheless a dangerous coast to be near in autumn or early winter, when the prevailing NW. winds send in a heavy sea, and the set of the current is often in the same direction. The swell frequently precedes the wind by many hours, and as

there is no good holding ground, becomes dangerous to vessels caught close in shore.

The prevailing rocks of this coast are sandstones, shales, and conglomerates, with occasional beds of gypsum and thin seams of coal, together with a more ancient slate formation in nearly vertical strata, forming the higher hills and rising in one part to nearly 1,300 feet above the sea. These rocks form precipitous shores, on which boats can land only in fine weather at the mouths of ravines or small streams. The settlements continue along the coast as far northward as Chetican, after which the mountains approach close to the shore, excepting at Grandanse, where there are seven resident families.

**The Fisheries** are valuable. Salmon are taken in all the principal streams, and the Margaree is so celebrated for its salmon fishery that it has sometimes been called the Salmon River. Herring, mackerel, cod, etc., abound in their seasons, and are frequently taken in large quantities. The scal fishery is also attempted occasionally, but is a precarious pursuit.

**Currents.**—Even with a smooth sea and in fine summer weather vessels are set in towards this coast, an effect which seems to be due sometimes to the general current from the NW. coming from between the Magdalen Islands and Prince Edward Island, and at other times to the direction of the ebb stream from Northumberland Strait, inclining towards these shores. These streams, being inconstant and irregular both in strength and direction, are therefore the more dangerous, and require the more to be guarded against. In the summer months, however, the rate of the current or tides will not be found to exceed one knot even close inshore, excepting round Cape St. Lawrence and Cape North, where it sometimes runs at the rate of 2 or 3 knots, causing a heavy breaking sea. Its direction for three-fourths of the time is from the westward; this appears to be due to the combined action of the current and ebb tide predominating over the flood stream from the NE., so as to render it nearly imperceptible, excepting at or near the spring tides. There is no doubt that winds, present or at a distance, also influence these streams, as they have been observed to do in all parts of the gulf.

**Mabou River**, at 5 miles from Port Hood, admits small schooners, having 6 feet at low water over its bar of sand through a dredged channel. The bar shifts occasionally during heavy NW. gales, but is seldom disturbed during the summer months, when those gales are of rare occurrence.

From the entrance to the bridge, a distance of  $3\frac{1}{4}$  miles, this river resembles a mountain lake, being in one part  $\frac{3}{4}$  miles wide and carrying 8 fathoms water. Boats can ascend with the tide to 2 or 3 miles above the bridge, where the fresh water forms only a small stream. Besides the Mabou, which is the main branch, there are two other smaller streams, the SW. Arm and Becket River, which last enters from the eastward.

The shores of the Mabou are well settled, principally by Scotch highlanders; flourishing farms are seen on either side, and there is a church on the northern bank 3 miles within the entrance. The scenery is very beautiful, the mountains rising immediately from the northern shore to the height of 870 feet.

**Tides.**—The entrance to Mabou River, at the southern end of a low sand bar, is only 100 yards wide, and the tides frequently run there at the rate of 4 knots; it is therefore a dangerous place to enter, excepting with a flowing tide and a smooth sea. NE. winds often cause high tides; SW. winds the contrary.

**The Mabou Highland** is a very remarkable feature of the coast, seen from great distances seaward. It extends 11 miles along the coast to the NE., forming a lofty and precipitous shore, and rising to the height of 1,000 feet above the sea. After passing these highlands, the coast becomes less elevated, the beaches and landing places more frequent, and the settlements are continuous until past Chetican Island.

**Sea Wolf Island** is of an oval shape,  $1\frac{1}{2}$  miles long and 200 feet high. It is of sandstone, precipitous and quite bold all around, excepting at the NE. point, and there the shallow water extends only 200 yards. It affords some shelter to small fishing vessels and boats, which can land upon it only in fine summer weather; at other times the sea rolls completely round it, and the anchorage is never safe, the ground being everywhere rocky. Between this island and the shore the bottom is of rock, with loose sand and gravel occasionally. The neighboring sea abounds with fish.

**Margaree River** has 5 feet over its rocky bar at low water, in a very narrow and intricate channel, through which the tides run at the rate of 4 knots. It is only under favorable circumstances of wind and weather, and with a smooth sea, that schooners can safely attempt to enter it. The surf on the bar is at times heavy and dangerous to boats, especially when the strong tide is running out against the wind and sea. The shores of this river are well settled, principally by Acadians and Scotch highlanders, who, besides farming, prosecute the salmon and other fisheries (1860).

**Squirrel Pond.**—Between the Margaree and Chetican Island there are several places where boats can land in fine weather, especially at Squirrel Pond, distant 3 miles from Chetican. There are farms all along this part, the mountains running parallel to the shore, at a short distance back, and attaining, at Mount Squirrel, in rear of Squirrel Pond, the elevation of 1,220 feet above the sea.

**Chetican Island**, distant 10 miles NE. from the Margaree, is only an island when high tides overflow the low and narrow beach of sand and shingle which unites it to the mainland at its southern extremity. This beach forms the shore of the bay, within the SW. point of the island. The depth of water in this roadstead is  $4\frac{1}{2}$  fathoms, but the bottom, of sand and gravel, is so loose and bad for holding that the anchorage becomes quite unsafe after the month of August.



**Anchorage.**—At no time is this anchorage to be recommended, and therefore vessels merely wishing to communicate with the shore had better anchor outside at the distance of a mile or two, where they will have room to weigh in the event of the wind coming in from the westward.

**Coast.**—There is no landing on the outside of Chetican Island, where the cliffs of sandstone, containing coal fossils, are everywhere perpendicular or overhanging, being constantly undermined by the sea. These cliffs, which extend the whole length of the island, from Chetican Point northeastward to Euragée Point, are nearly equal in elevation to any part of the island, rising in one part to the height of 200 feet above the sea.

**Chetican Harbor**, between the island and the mainland, is entered from the NE. between the shingle spit at Cape Gros, the NE. extreme of the island, and Caveau Point. Within this entrance, but outside the bar, which is  $\frac{1}{2}$  mile farther in, small fishing vessels sometimes anchor, but the northerly winds send in so heavy a sea that this is considered even less secure than the unsafe anchorage at the SW. end of the island. There is a depth of  $3\frac{1}{2}$  fathoms within the harbor, but only 2 feet at low water over its bar of sand, which is then in great part dry.

**Supplies.**—The establishment of Messrs. Robin & Co., of Jersey, on Chetican Point, is the principal fishing station on this coast, and will be easily recognized by the buildings, fish stages, and flagstaff. There are several other houses on the inner side of the island, and a settlement of Acadians on the mainland opposite, where supplies of fresh provision to a limited extent may be obtained, and also water, which can not be had good or in any considerable quantity upon the island.

**Tides.**—It is high water, full and change, in Chetican Harbor at  $8\frac{1}{4}$  h.; ordinary springs rise  $3\frac{1}{2}$  feet, neaps 2 feet. NE. winds cause high tides, and SW. winds the contrary.

**Caveau Shoals.**—The Caveau Shoals, which are much in the way of vessels wishing to anchor off the entrance of Chetican Harbor, are two rocky patches, with 11 feet least water, lying at the distance of  $\frac{1}{2}$  mile off Caveau Point, and N.  $30^{\circ}$  E. from  $\frac{1}{4}$  to  $\frac{3}{4}$  mile from Cape Gros.

**The Jerome Ledge**, with only 5 feet water, lies in the same direction from Cape Gros, and at the distance of  $1\frac{3}{4}$  miles. It is of considerable extent, being  $\frac{3}{4}$  mile long, and its NE. point reaches to the distance of a mile from the shore. The line of 10 fathoms water is only 600 yards outside this ledge and the Caveau Shoals; there is therefore little warning from the lead; but vessels beating along shore, and standing towards them, will avoid them by tacking when the points on the outside of Chetican Island come in line, bearing S.  $27^{\circ}$  W.

**At Presqu'île** the foot of the mountains are close to the shore, after which there are no inhabitants nor any good landing place, up to Grand Anse, 15 miles from Chetican, where there is a settlement, and a small river silted up by a shingle beach, on which boats can land, and be

hauled up in case of need. From Grand Anse to Cape St. Lawrence, a distance of 13 miles, the coast is mountainous, with precipitous shores, affording an indifferent landing for boats at one or two places, and there only with a smooth sea.

**Cape St. Lawrence**, which forms the termination of the NW. coast of Cape Breton Island, is of slate rock, affording no landing excepting on the west side, where there is a brook, and a steep stony beach, on which a boat can be hauled up with difficulty. Round this headland to the SE. is Bear Hill, a sugar loaf 750 feet high, and close to the shore. This is distant less than a mile from the cape; and at an equal distance farther is Black Rock, always above water, and about 350 yards off shore. Meat Cove, where there is a settlement, and good landing for boats, lies one mile NW. from Black Point. It is in telegraphic communication with the Magdalen Islands, Bird Rock, and the United States.

**St. Lawrence Bay**, between Black Point and Cape North, is  $4\frac{1}{2}$  miles wide and  $1\frac{3}{4}$  miles deep, with bold shores, and a depth of water not too great for anchoring; but the bottom is not to be trusted, being either of rock or loose sand. Vessels requiring supplies may anchor there in the summer months, when strong northerly winds are of rare occurrence, and will find 9 or 10 fathoms water at the distance of  $\frac{1}{2}$  mile off shore in the bottom of the bay, but they should be ready to weigh immediately on the approach of a wind from the sea. At Wreck Cove and at Deadman Pond there are settlements, and good landing, the principal fishing establishment being at the last-named place.

**Cape North**, the NE. extremity of Cape Breton Island, is a bold and rocky headland, of slate in nearly vertical strata, rising abruptly from the sea to the height of 1,100 feet. There is no shallow water off it, only some rocks above water, which at Money Point, a mile to the SE. of the cape, run off a short distance.

#### SE. COAST OF CAPE BRETON ISLAND.

**Coast.**—From Michaux Point to Cape Gabarus the land is low and has a barren and rocky appearance, and the shore is broken into numerous lakes and ponds, protected from the sea by beaches of gravel and some small rocky islands and ledges. Occasionally there are reddish clay cliffs 70 to 90 feet high, but at a distance from the land there are no remarkable features to be easily recognized by a stranger.

**The Bank of Soundings** again contracts off Santésprit Island, and at 2 miles from the shore the depth is 40 fathoms. On this account, in foggy weather, the lead should on no account be neglected, and no part of this coast approached nearer than the latter depth.

**Current.**—About 3 miles off this coast, a current is often experienced running nearly one knot per hour to the SW.; nearer the shore it is much less constant.

**Michaux Point**, the eastern limit of Chedabucto Bay, is a wooded

peninsula, not more than 40 feet high, joined to the main land by a beach of sand. The three low Basque Islets of clay resting on slate lie to the eastward, and are distant one mile from it. There is deep water north of these islets as well as between the islets and Michaux Point; and in Michaux Cove there is good holding ground and some shelter to vessels during the prevalence of westerly winds, on which account coasters deeply laden occasionally anchor there. A few fishermen frequent this cove during the summer, and their huts are found on the north side of Michaux Point and on the Basque Islets.

**Shoals.**—The water is deep to the southward of Michaux Point, but around the Basque Islets are several dangers. A shoal carrying 3 fathoms water extends SE.  $\frac{1}{2}$  mile from the south islet; a reef of rocks west 300 yards; a shoal, having a rock with 9 feet water on it, NW. 600 yards from the same islet; and a rock, dry at half tide, west 400 yards from the north islet.

**The Basque Shoal**, lying S.  $24^{\circ}$  E.,  $\frac{3}{4}$  mile from the South Basque Islet, has 4 fathoms of water on it, and breaks only in heavy weather. Red Island, just open of Michaux Point, bearing N.  $80^{\circ}$  W., will lead to the southward.

**Directions.**—When standing for the anchorage in Michaux Cove, bring the east side of Michaux Point to bear N.  $24^{\circ}$  W., and then run in for the cove N.  $13^{\circ}$  W. Having passed the point at the distance of 400 yards in 9 fathoms water, round to and anchor, with Michaux Point S.  $20^{\circ}$  W., in 4 or 5 fathoms, sand and clay.

**Anchorage.**—It would not be safe to remain at this anchorage if the wind veers to the SE. or east, with a falling barometer. In leaving it, if the wind is scant for the south passage, there is a good channel free from danger between the Basque Islets and the Shag Ledge.

**Black Breaker**, with 6 feet water, is a rock lying one mile southward of Bell Point. The north side of the Basque Islets and the north side of Michaux Point in line, S.  $77^{\circ}$  W., will lead  $\frac{1}{4}$  mile northward of the least water on the Bad Neighbor, and the same distance southward of the Black Breaker.

**Coast.**—Between Michaux Point and Santésprit Island the shore is rocky and dangerous of approach.

**Grand River** enters the sea about 4 miles east of Michaux Point, between Red Head (70 feet high) and Bell Point, which is a low point, forming the east point of entrance, and from which shoal water and a reef, with only 6 feet on it at low tide, extends  $\frac{3}{4}$  mile to the SW. Although the tide flows up this river 3 miles, the narrowness of the entrance, and the rapidity of the current, make it dangerous of access, even for boats, except at high water. The shores are settled by people of Highland descent.

**L'Archeveque Cove**, at  $3\frac{1}{2}$  miles west of Santésprit Island, affords shelter at high water to small vessels drawing less than 6 feet.

**Bad Neighbor**, a rocky shoal with 2 fathoms water on it, lies S.

29° W., 1½ miles from Santésprit Lighthouse. It only breaks in heavy weather.

**Santésprit Island** is 30 feet high and of clay banks resting on slate, and partly wooded. A reef of rocks, partly dry at low water, extends from it to the mainland, and leaves no channel. The island may be approached on its south side to ¼ mile.

**The Tilbury Rocks** rise from a shoal of sand and stones, which extends ½ mile from the shore at 1½ miles to the westward of Capelin Cove.

**The Seal Rocks**, a reef nearly dry at low water, lie 400 yards from the shore, and 1½ miles to the eastward of Capelin Cove. A few fishermen have their huts on the east side of this cove, where their boats have the protection of a point of rocks.

**Frambois Rock**, with 4 fathoms least water on it, lies off the center of Frambois Cove, at 2 miles distance from the shore. The cove affords no shelter, and has a dangerous reef named the Outer Breaker lying off its western shore, ¾ mile from Cape Red.

**Pot Rock** lies nearly ½ mile from Fourche Head, and only breaks in heavy weather. The Shag Rock, kept in line with the Green Rock, and touching Cape Gabarus, bearing N. 40° E., will lead to the SW. of this danger, and outside all the shoal water in Fourche Bay.

**Fourche Bay and Inlet.**—Between Fourche Head and Cape Gabarus are many rocks and shoals, inside of which is Fourche Bay, affording no shelter, and dangerous of approach. Fourche Head, the west extreme of the bay, is a hummock, bare of trees, and 40 feet high. A bell buoy, surmounted by a staff and cage, and painted red, is moored in 10 fathoms, about ½ mile SE. from Fourche Head.

On the north side of Fourche Head is Fourche Inlet, on the shores of which are settled a few families engaged in fisheries. The inlet has a bar at its entrance, nearly dry at low water, and only affords secure shelter to boats.

**Gabarus Bay.**—From White Point, a low rocky point, 2 miles west from Louisburg, the land trends round to the westward, forming a deep and capacious inlet, named Gabarus Bay. The fishermen, whose scattered houses are principally situated on the southern shores of the bay (1860), are an industrious and thriving people.

**Rocks.**—The center of this bay is entirely free from danger, but on the north shore, ¼ mile from Simon Point, lie some rocks nearly dry at low water, and a shoal with 18 feet on it extends 600 yards from the same point.

**Cormorant and Harbor Rocks.**—The Cormorant Rocks, of bare slate and only 15 feet high, lie off the northern shore of Gabarus Bay, 800 yards from Kennington Head. They are bold to on their south side; but east from them, rocky grounds extend 400 yards. Near the head of the bay, NE. ¼ mile from the Harbor Rock (a low dry ledge), lies a rock with 18 feet water.

**Rouse Point.**—Rouse Point is a peninsula 50 feet high, with cliffs of slate, and wooded. It is bold to, except on the SE. side, where a reef extends 200 yards from the shore. Between this peninsula and Harbor Point is the only secure boat harbor in the bay.

**Anchorage.**—Gabarus Cove affords during the summer months tolerably safe anchorage in 4 fathoms, sand and clay, to vessels of moderate burden. The only other anchorage in Gabarus Bay is the roadstead, north of Cape Gabarus, where in 8 or 9 fathoms, sand, and at the distance of 600 yards from the high red bank, a vessel during the prevalence of westerly winds may find good shelter and smooth water.

**Supplies.**—Good water can be obtained with some difficulty from Irish Brook,  $1\frac{1}{2}$  miles from Gabarus Cove, and small supplies of fresh provisions may be obtained.

**Cape Gabarus,** low and rocky at its extremity, may be recognized at the distance of some miles in clear weather by some houses and a chapel situated on the rising ground,  $\frac{1}{2}$  mile inland from the cape. A rocky reef extends eastward 600 yards from the cape; whilst several islets, ledges, and rocks lie at various distances to the southward.

**Mark.**—A vessel will pass to the southward of all these dangers by keeping the Shag Rock—of slate, and 20 feet high—open south of Guyon Island, which is low and bare of trees, and in line with the houses on the north side of Fourche Inlet, bearing S.  $66^{\circ}$  W.

**Tides.**—The tidal streams in the bay are weak, seldom exceeding half a knot.

**Louisburg Harbor.**—Louisburg contains now only a few scattered houses, and the ruins of its walls may still be traced on the west side of the harbor. Its population of 1,000 persons is principally employed in the fisheries but all cultivate small farms. The land affords good pasturage, and small supplies of fresh provisions may be generally purchased. Good water may be obtained from a brook near Gerratt Head, on the western shore of the harbor. There are two churches on the north side of the harbor, but from sea they are not easily distinguished. There is railway communication with the SE. bar and the town of Sydney.

**Pilots.**—There are no branch pilots, but any of the fishermen are well qualified to bring vessels into the harbor.

**Coal** can be obtained in large quantities, and be put on board quickly. It is shipped at wharves, alongside which vessels can lie at all times when the harbor is open; the mines are distant 21 miles by railway.

**Ice.**—The SW. Arm is sometimes accessible to vessels all the winter. The NE. Arm freezes over about 15th January, but the ice breaks up at any time with southerly winds, and that arm is only completely closed at intervals. The first vessel usually arrives about 15th March, and the last one leaves about 20th February. Steam vessels coaled at Louisburg continuously during the winters of 1882 and 1883.

The entrance to the harbor is about 400 yards wide, and being exposed to the ocean swell, should not be attempted by vessels of large draft, except with a leading wind, as the shoals on either side are of rock, and the wind often baffling and unsteady. There is no channel between the islands forming the SW. side of the entrance, and at low water Fort Island is so nearly joined by a rocky ledge to Rochford Point as to leave only a boat passage.

**Automatic Signal Buoy.**—A buoy, painted red, and fitted with an automatic whistle, is moored S. 73° E., and distant  $1\frac{3}{4}$  miles from Louisburg Lighthouse. From this buoy a N. 81° W. course will clear the Broad Shoal and lead to the fairway of Louisburg Harbor.

**Harbor Shoal**, with 19 feet water, lies off the entrance to Louisburg Harbor, N. 53° E.  $\frac{1}{2}$  mile from Green Island, and only breaks in very heavy weather. There are reefs extending 250 yards in an easterly direction from Rocky and Fort Islands. It is marked by two black spar buoys.

The *north shore* of the entrance to the harbor is bold-to, except south from the lighthouse, and 200 yards from the shore, where there is a rock with 4 fathoms on it.

**Nag Rock.**—The Nag Rock, which is marked by a red buoy, lies S. 87° W. 800 yards from the lighthouse, with 5 feet least water on it. The shoal extending about 750 yards from Rochford Point will be cleared by keeping Loran Head and Lighthouse Point in line.

**White Rock**, the shoal ground off Russel Point, has extended to the westward, and the red buoy is now moored in 4 feet at low water, with Russel Point bearing N. 70° E. distant 300 yards.

**Battery Shoal.**—The Battery Shoal, lying half way between Battery and Careening Points, has 3 fathoms least water on it; a black spar buoy marks the NE. edge of this shoal. A black spar buoy is also moored about  $\frac{1}{4}$  mile south of Battery Point.

**Directions.**—To enter the harbor with a leading wind, bring the lighthouse on any bearing from N. 48° W. to S. 87° W., and run in upon it until Fort Island bears S. 76° W. Steer with Fort Island on the latter bearing until the lighthouse bears N. 48° W., then after course to N. 87° W., taking care, as the rocky ground off the Nag Rock is approached, that Loran Head is not shut in by Lighthouse Point, until the whole of Green Island opens westward of Fort Island; then, if wishing to proceed to the best anchorage, steer N. 48° W. for about  $\frac{1}{4}$  mile, then N. 36° E. as Railway Pier Point opens west of Careening Point. Having passed Battery Shoal, which will be done by keeping the summit of Green Island open east of Fort Island, steer to the northward up the cove and anchor in 5 fathoms, over mud bottom, when Rochford Point touches Careening Point.

**Anchorage.**—In this anchorage there will be some swell and undertow after heavy gales from the eastward, but the holding ground is good, and the water generally smooth. Vessels sometimes anchor in

the western part of the harbor, but the anchorage is neither good nor well sheltered.

**Tides.**—There is but little tidal stream except at the highest tides, when at the entrance the rate of the flood is about  $\frac{1}{2}$  knot.

**Aspect of Coast.**—From Cape Gabarus to Cape Breton the land is of moderate height, and the shore broken into coves and small harbors, with some hummocks in the back ground, rising to the height of 200 feet. The north coast of Gabarus Bay is steep, the hills 200 feet high, rising abruptly from the shore; on the south coast the land is much lower.

Between Louisburg and Cape Breton there are three small harbors, Baleine, Little and Big Loran, too intricate and rocky in their entrances to admit vessels of any burden, but affording excellent fishing stations.

**Cape Breton**, the extreme eastern point of Cape Breton Island, is low, rocky, and covered with grassy moors. It is bold to the eastward, with the exception of a rocky 12-foot patch bearing S.  $53^{\circ}$  E. distant  $\frac{1}{4}$  mile.

**Lansecoin Island** is about 400 yards in diameter and 50 feet high, and is bold to seaward; but a rock, dry at low water, lies between it and the cape.

**Portnova Island** is rocky and precipitous, 300 yards in diameter, and 50 feet high. It is bold to seaward, with the exception of a rock with only 12 feet water lying 650 yards from its SW. side; but the Chameau Rock, which is awash, and on which a French frigate was lost, lies nearly midway between it and the cape, leaving no passage for ships.

**The Bar Reef**, which runs out from Bar Point to the southward of Menadou Bay, and more than half way across to the island of Scatari, was formerly a dry bar covered with sand and grass; at present the only part uncovered at high water is the Bar Stone, a single mass of rock, about 4 feet high, but at low water the reef still dries extensively, and completely shelters Menadou from the south wind and swell. The Bar Stone lies  $\frac{3}{4}$  mile off shore, and the reef continues  $\frac{1}{4}$  mile farther out towards the west point of Scatari. The eastern extremity of this dangerous reef, in 5 fathoms, bears S.  $15^{\circ}$  E.  $1\frac{1}{2}$  miles from the west point of Scatari, and north 2 miles from Cape Breton. A line from one of those points to the other passes over the east end of the reef in 6 feet at low water; and vessels will pass to the eastward of it, if Portnova Island be not entirely shut in behind Cape Breton.

**Menadou Harbor**, on the north side of Menadou Bay,  $\frac{3}{4}$  mile within Moque Head, is a semicircular cove  $\frac{1}{4}$  mile wide. Its shingle beach is occupied by fish stages, and its shores by a busy village of fishermen and small traders. It has two chapels, one of which is distinguished by a steeple.

The depth at low water in this small harbor is from 10 to 14 feet over sandy bottom. It is sufficiently sheltered by the numerous rocks in the bay, and by the island of Scatari, to afford safe anchorage to fishing

schooners and coasting vessels drawing less than 10 feet water. The approach to the harbor, however, is so difficult and dangerous that no written directions could avail.

**Tides.**—It is high water, full and change, at Menadou, at 8h. 15m.; springs rise  $5\frac{1}{2}$  feet, neaps  $3\frac{1}{2}$  feet.

**The Menadou Passage** has a clear deep-water channel of nearly  $\frac{1}{2}$  mile in the narrowest part, which is between the Great and Little Shag Rocks in the northern part of the entrance. Nevertheless, it should only be used in cases of emergency, or in such circumstances of wind and weather as would insure the not being surprised by the prevailing dense fog in a channel rendered indirect by numerous dangers, destitute of good holding ground, and in which there is no shelter from the heavy sea which accompanies all easterly and southerly winds.

**Shag and Cary Rocks.**—The Shag Rock is black, 60 yards long and 15 feet high. It will, therefore, readily be seen; but a rocky shoal extends from it 800 yards NE., and nearly 400 yards to the eastward. In this latter direction there is a patch with 12 feet least water on the extreme edge of the shoal. The Little Shag and the Cary Rocks,  $\frac{1}{2}$  mile to the eastward of it, can also be seen, being small black trap rocks, respectively 6 and 4 feet above high water. The Little Shag lies 300 yards north from the west point of Scatari, and the shoal water outside of it does not extend more than 100 yards.

**Neering, Duck, Dick, and Black Rocks.**—Neering Rock, with 9 feet least water, lies 700 yards N.  $70^{\circ}$  W. from the Shag Rock. Duck Rock is awash at high water, and lies 350 yards S.  $25^{\circ}$  E. from Moque Head; and the Mad Dick, with 3 feet least water, lies 400 yards farther to the south. To these dangers on the west side of the channel may be added the Black Rock, which can always be seen, and the other rocks in the mouth of Menadou Bay, but they are out of the way of passing vessels.

**Hatch and Ragged Rocks.**—The reefs off the SW. side of Scatari can always be seen, and do not extend more than 400 yards offshore. The Hatch Rocks and Ragged Rocks need only to be mentioned here; the former being most in the way, will be cleared, as long as the Shag Rock is not shut in behind the west point of Scatari.

**Directions.**—The Menadou Passage may be taken without danger in case of need under favorable circumstances of wind and weather. All southerly and easterly winds are unfavorable because either accompanied by or liable to the sudden arrival of dense fogs. Winds between west and north are as constantly free from fogs, and being, moreover, smooth water winds, are favorable for this passage.

A vessel approaching from the southward with a westerly wind, and wishing to avoid running to leeward outside of Scatari, should pass Portnova Island and Cape Breton at the distance of  $\frac{1}{2}$  mile or more, steering for a remarkable hill called Steering Hummock, which rises 1,200 yards to the eastward of the west point of Scatari. Take care



not to shut in Portnova Island behind Cape Breton until sure that the Bar Reef has been passed; and when the west point of Scatari bears N.  $36^{\circ}$  W. or more to the westward steer so as to round it at a distance between  $\frac{1}{4}$  and  $\frac{1}{2}$  mile, keeping gradually away to the northward and eastward, so as to pass between the Little Shag Rock and the Shag Shoal. When the Little Shag Rock comes in one with the west point of Scatari, or when the latter bears to the southward of S.  $26^{\circ}$  E. the Shag Shoal will be past, and a course may be shaped for Cape Morien.

If coming from the northward with a fair wind, bring the west point of Scatari to bear to the southward of S.  $26^{\circ}$  E., and steer for it until the eastern extremity of the Shag Shoal is past, which will be when the Shag Rock and Moque Head come in one; then alter course so as to pass the Little Shag and the west point of Scatari at the distance of 500 yards; which having done, steer out to the SE., remembering the marks for clearing the Hatch Rocks and the east end of the Bar Reef.

**Tides.**—The ordinary rate of the tidal streams in the Menadou passage is from one to 2 knots, the flood from the southward and the ebb in the opposite direction; but they are often very irregular.

**Scatari Island.**—The natural features of this island are similar to those of the adjacent mainland, the highest hill rising 190 feet above the sea. It is not permanently inhabited, but is much frequented by the fishermen in the summer season (1860). Near the center of its northern shore is the NW. Cove, affording a smooth-water anchorage in southerly winds; but the holding ground is not good, and vessels should be prepared to weigh promptly with the change of wind. The SW. and the SE. sides of the island are broken by the heavy and almost incessant Atlantic swell into rocky points and coves, which afford excellent fishing stations, but no shelter to shipping.

**East Harbor**, formed by Hay Island, on the south side of the east point of Scatari, does not deserve the name, being merely a very insecure anchorage within the reefs; but it is used occasionally in fine summer weather by small vessels employed in the fisheries and in saving things from wrecks.

**Caution.**—The principal dangers are on the SE. side, where a reef runs out  $\frac{1}{2}$  mile from Hay Island. Outside of this, and bearing S.  $25^{\circ}$  E.  $1\frac{1}{2}$  miles from the lighthouse, lies the Wattie Rock, with 4 fathoms on it at low water; and still farther out, and bearing S.  $30^{\circ}$  E.  $1\frac{1}{2}$  miles from the lighthouse, there are two rocky patches, 5 fathoms, on which the sea occasionally breaks.

**The Cormandière Rocks** lie nearly  $\frac{3}{4}$  mile to the eastward of the lighthouse. They are small black trap rocks from 6 to 16 feet high, and can therefore always be seen. They are bold to seaward, and there is no passage between them and the lighthouse for ships.

**Mira Bay** is open to winds from the eastward, and affords no safe anchorage. The Mira River, after flowing for several miles between pre-

precipitous banks, enters the head of the bay between points of sand and shingle, 80 yards apart. It discharges the waters of the Mira Lake and Salmon River, and is the outlet of an interior navigation of about 20 miles; but the ordinary depth on its bar of sand and stones is only 4 feet at low water, and seldom exceeds 8 feet, except in extraordinary spring tides.

**Catalogne Lake** has only one foot at low water in its very narrow outlet, through a sand and shingle beach, 2 miles south of the Mira River. It is broken into coves, peninsulas, and islets, forming picturesque scenery. There is a church at its head, 3 miles in from the entrance, and its shores are occupied by farmers and fishermen.

**Coast.**—Mira Bay, and probably the valley of its river and lake, define another very remarkable change in the character of the coast and nature of the country. Instead of the undulating and comparatively fertile land, and the long ranges of sandstone cliffs, abounding in coal, which form the north side of the bay, the country to the southward, including the island of Scatari, is all hummocky land, in which small round or conical hills rise from among swamps, shallow ponds, and dwarf spruce trees.

**Morien or Cow Bay** is  $2\frac{1}{2}$  miles wide at its entrance, between Capes Percy and Morien. On its north side, just within Cape Percy, lies Cow Reef, dry in part at low water, and extending to  $\frac{1}{2}$  mile from the shore. The head of the bay is occupied by flats of sand and mud, partly dry at low water, and through which a narrow and shallow channel leads to False Bay Beach, on the north side of Mira Bay. Being completely open to easterly winds, Morien Bay affords no safe anchorage.

**Cape Morien** is a bold headland, the shoal water extending only 300 yards from its sandstone cliffs, which abound in coal, and rise on its south side 150 feet above the sea. It is the NE. extremity of a peninsula, which forms the precipitous north shore of Mira Bay for a distance of 5 miles, and terminates at the shingle isthmus of False Bay Beach.

**Coal.**—About 400 tons can be shipped from the wharf in one day; the mines are distant one mile (and one, 100 yards) from the wharf. About 130,000 tons are shipped annually from Cow Bay.

**Ice.**—Cow Bay rarely freezes over; drift ice arrives about the middle of February and usually disappears about 1st May, the bay being only closed at intervals by field ice. The first vessel arrives early in March and the last one leaves about 1st February. In 1886 coal was shipped at Morien (Cow) Bay every month in the year, and an iron vessel has made fortnightly visits during the whole of one winter.

**Cape Percy** is a precipitous headland, where the cliffs of coal-bearing sandstone rise 110 feet above the sea. Off its north side lies Schooner Rock, with 5 feet least water, being the shallowest part of a reef which

extends 800 yards from the shore. The Percy Rock, with 7 feet water, lies 400 yards off the NE. shoulder of the cape.

**Flint Island**, bearing N. 75° E.  $1\frac{1}{3}$  miles from Cape Percy, is of sandstone, broken by the waves, precipitous, 60 feet high and 600 yards long. On its north point there is a fish store, where alone boats can land. Off its west end, to the distance of 800 yards, there are very irregular soundings,  $4\frac{1}{2}$  to 12 fathoms in a east of the lead, which cause, with the tide, a strong rippling, and at times a heavy breaking sea.

Between these dangers and the cape there is a clear channel a mile in breadth, through which an irregular tidal stream runs at times 2 knots.

**Glace Bay** affords no safe anchorage. At its head is Dyson Pond, extending 2 miles inland, and having a narrow outlet through sand hills and sand beach, which is usually dry at low water.

**Indian Bay** affords a safe anchorage only in offshore winds and fine weather. At its head a dry sand-bar a mile long extends across from the southern to within 150 yards of the northern shore, leaving an entrance of that breadth into Bridgeport Harbor, which is a shallow pond extending 2 miles inland. The depth of 8 feet at low water is all that can be carried into this harbor, the interior of which is occupied by flats of sand and weeds, partly dry at low tide.

**Coal Mines.**—The coals from the mines at Bridgeport, on the south side of Indian Bay, is conveyed by a railroad along the dry sand bar to a wharf at its northern extremity; but as the shallow and narrow entrance admits only small vessels, and the anchorage outside is unsafe, the export in this manner is limited. The coal is said to be of excellent quality and easy of access; and with the above exception all the output is conveyed by railroad across to the South Arm of Sydney Harbor for shipment.

**Anchorage.**—The best anchorage is near the middle of the bay, and within the depths of 5 fathoms; in greater depths the bottom is in general rocky, and not to be trusted.

**Tides.**—The ordinary rate of the stream in the entrance is 2 knots.

**Sydney Harbor** is a fine harbor, being equally easy of access and egress, and capable of containing a large number of vessels in safety. It is 3 miles wide at the outer entrance; but the navigable channel contracts rapidly to the breadth of  $\frac{1}{2}$  mile between the two bars, which are of sand and shingle, and extend from the shore on either side. The West Arm is open to NE. winds, except at the coal loading ground, where vessels anchor under shelter of the NW. Bar; and at North Sydney, where they may lie in like manner under Allen Point.

**The South Arm**, being completely sheltered from the sea by the SE. Bar, affords safe anchorage in every part. The town of Sydney,  $3\frac{1}{2}$  miles up this arm, is exceedingly well situated on the west side and summit of a peninsula 55 feet high, and has a population of about 6,000. It has deep water close to its wharves, and the arm continues navigable for vessels to Sydney Bridge, a distance of 2 miles; and for boats to

Forks Bridge, where the tide ends 6 miles above the town, and from which a road leads across to the East Bay of the Bras d'Or.

The only drawback is the lateness of the spring; the advance of summer being retarded by the cold winds from the neighboring sea, which is usually, until late in May, laden with drift ice, large masses of which are frequently driven into the harbor by the NE. winds.

**Coal** can be obtained in any quantity, and put on-board at the rate of 500 tons per day. It is shipped at the wharves, alongside which vessels can lie at any time when the harbor is open; the mines are distant from North Sydney 2½ miles by railway.

There are coal wharves, with railway to the mines, at Fishery Cove, Wintering Cove, and northward of Freshwater Creek; there is also a ballast wharf 400 yards southward of Amelia Point, at the entrance to Crawley Creek.

**Telegraph and Railway.**—Sydney is in telegraphic communication with St. Pierre, Placentia, Newfoundland, and Magdalen Islands by submarine cables, and with Canada by land lines. It is connected with Louisburg by rail.

**Telegraph Cables.**—Great care must be used when anchoring in the outer anchorage to avoid the telegraph cables, four in number. These cables are laid down in a southerly direction from Lloyd Cove across the harbor, and thence in a northeasterly direction seaward.

**Water.**—The most convenient watering place is at the creek, which discharges the waters of the Sawmill Lake, a short distance to the westward of the coal loading ground; but good water may be obtained on the east side of the South Arm, also opposite the town of Sydney, or by the steam water tank, and in several other places where brooks enter the sea. The country is well settled around the harbor, and supplies of every kind may be readily obtained.

**Charges.**—Pilotage for vessels of 400 tons to Sydney, \$12; to North Sydney, \$11; and for each additional 50 tons, \$1. Vessels not taking pilots are required to pay half pilotage. Tugboat charges as per agreement; light dues, 2 cents per ton.

The United States is represented by an agent.

**Directions.**—When approaching the harbor from the eastward pass the lighthouse no nearer than ½ mile, and to avoid the Petre Reef do not haul into the harbor until Daily Point opens out to the northward of Gillivray Point; and to clear the shoal at Petre Point and farther in, do not approach nearer than ½ mile, or than the depth of 5½ fathoms in running along the eastern shore. When the lighthouse and Petre Point come in line keep them so, which will lead clear of the NW. Bar, which is very steep, having 5½ fathoms close-to. When the wharves at the loading ground bear N. 71° W. the vessel will be well within the bar, and may haul in and choose her berth in 5 or 6 fathoms, mud bottom, and at a short distance from the wharves. If bound up the South Arm or to Sydney, run with the lighthouse and Petre Point

in line, or with the former only just shut in, until Mines Point bears N. 8° E., thence steer S. 8° W. until the SE. Bar lighthouse bears N. 64° E.; the western extreme of the SE. Bar will then be passed, and the vessel may either haul to the eastward and anchor in Fishery Cove in 6 or 7 fathoms, mud bottom, or proceed on to the town of Sydney.

**Caution.**—In beating into this harbor great care must be used, especially when between the NW. and SE. Bars, both of which are so steep that the lead will afford little or no warning.

**Anchorage.**—The anchorage is good anywhere off the wharves of the town outside a line joining the English church and Shingle Point; within that line there are shoals. The depth of this anchorage is from 5 to 8½ fathoms, over mud bottom, and there is sufficient depth for large vessels all the way to the bridge, between which and the town is the most secure part of the harbor.

**Tides.**—The ordinary rate of the streams is half a knot off the town, but much weaker farther out in the wider parts of the harbor.

**The Bird Rock**, 6 feet high, will be seen on the reef, lying 800 yards from Mope Head, and the Bonar Rocks dry at low water, at the same distance off Bonar Head. There is also a rocky shoal off Katon Pond, the least water on which, 3 feet, bears from Lawler Point N. 7° E., nearly 1,200 yards. In addition to these dangers, observe that, in the distance of 6 miles from Aconi Point to Cranberry Head, the shoal water for a vessel of large draft frequently extends to nearly a mile off-shore.

**Little Bras d'Or** can only be entered by small craft and boats under favorable circumstances, the entrance being closed with breakers when there is a heavy sea running, and especially when the strong tide is running out against the wind. There is a fishing establishment on the shingle point just within the entrance and scattered houses and farms at either side.

**Great Bras d'Or.**—Its entrance, between Carey Point and Noir Point, is only 340 yards wide, with deep water, and at a short distance outside the channel is still further contracted by shoals to 220 yards, measuring from the depth of 3 fathoms on either side.

Within the entrance, off the small light between Duffus and Mackenzie Points, lies the Eddy Rock, with one foot least water. A vessel will pass clear to the westward of it by keeping Blackrock Point open to the northward of Noir Point. On the opposite or northern side of the channel, from Carey Point to Kelley Cove, a distance of one mile, the shore is quite bold.

**Anchorage.**—Off the mouth of Kelly Cove, in 5 or 6 fathoms, over a bottom of sand, the anchorage is good, and out of the strength of the tide; but it is still more secure farther in, within 200 yards of its head, where the bottom is of mud and the depth 3 to 4 fathoms.

To this cove, which is a convenient anchorage, we shall restrict our present notice of Bras d'Or, the object of this chapter being the eastern

seaboard of Cape Breton Island, leaving the description of its inland waters for another part of the chapter.

**Carey Point**, the NW. side of the entrance of Great Bras d'Or is a shingle beach, quite bold at its southern extremity, but having a dangerous shoal running out from it so as to form the northern side of the channel outside for  $\frac{7}{8}$  mile. On many parts of this shoal the depth is only 3 feet at low water, so that it is shown by breakers when there is any sea running; and a wide bar commences immediately outside of it, and continues a mile farther out, with irregular soundings, from 3 to 6 fathoms, over gravel and sand bottom. The shallowest part, 3 fathoms, called the Middle Shoal, lies on the north side of the channel, and  $1\frac{1}{2}$  miles from Carey Point. Nearly opposite to this, and on the south side of the channel, is Blackrock Shoal, extending 400 yards north from the red cliffs of Blackrock Point, and  $\frac{1}{2}$  mile in a NE. direction.

**The Haddock Bank** has 4 fathoms least water, and lies from one to  $1\frac{1}{2}$  miles off shore midway between Table Head and Aconi Point, the last being the NE. extremity of Boulardrie Island, formed in cliffs of the coal formation, which are fast yielding to the waves, and from which a rocky shoal extends to the distance of  $\frac{3}{4}$  mile.

**Supplies.**—There are houses and farms on either side of the entrance of Great Bras d'Or, at which supplies of fresh provisions may be obtained. Water is easily procured. (1860.)

**Directions.**—Before advancing farther in than Table Island, bring Carey Point and Duncan Head to touch, bearing S.  $36^{\circ}$  W., and steer for them until Cape Smoke and the north end of Hertford Island are in one; then alter course to the southward and keep those marks in one astern, running from them for about 400 yards until Mackenzie and Duffus Points come in one, when steer S.  $36^{\circ}$  W. for them, or so as not to open out Mackenzie Point until Blackrock Point and Table Head come in one.

These last-named well-defined points kept in one astern, or as the vessel runs from them on a S.  $47^{\circ}$  W. course, will lead nearly in mid-channel through the narrow entrance between Carey and Noir Points; after which there is nothing in the way of a vessel hauling up for Kelly Cove. Should, however, the strong flood tide carry her above the cove, she will find good anchorage 2 miles farther in on the same side, in 5 fathoms, and to the westward of Jane Point.

If the weather should be so hazy that Cape Smoke can not be seen, run in upon the S.  $36^{\circ}$  W. course, with Carey Point and Duncan Head touching, until Blackrock Point is abeam; then sheer to the southward until Mackenzie and Duffus Points come in one, and proceed as before directed.

**Tides.**—The usual rate of the tidal streams in the entrance is from 4 to 5 knots; but in the spring, or after long-continued NE. gales, which have previously raised the level of the Bras d'Or Lake, they may

amount to 6 knots. They form strong ripples and eddies, especially off Carey Point.

In fine settled weather the stream runs out until half an hour before high water by the shore, and in until half an hour before low water; but strong winds cause great irregularities. It will be observed, therefore, that the stream runs out nearly all the time the water is rising and in nearly all the time it is falling.

The rise of the tide diminishes rapidly within the Bras d'Or, and beyond Barra Strait it becomes nearly or altogether insensible.

**Caution.**—The dangers of this coast are such as to render great caution necessary at night or in fogs, when 30 fathoms, or at least 20 fathoms, water is as near as a stranger should approach; the latter depth being in some parts within 2 miles of the shore.

**Hertford and Ciboux (Bird) Islands** are long and narrow islands of sandstone, precipitous on every side, nearly bare of trees, and  $\frac{1}{2}$  mile apart. There is no passage for ships between them, but boats or small craft can pass through a narrow channel which is distant from 100 to 200 yards from Hertford Island and between it and the middle rock.

Hertford Island is the highest, and 100 feet above the sea. It is distant from Cape Dauphin  $1\frac{1}{2}$  miles, but the dangerous Hertford Ledge, which has 5 feet least water, extends from it nearly halfway across to the cape, leaving a channel 1,200 yards wide and carrying 7 or 8 fathoms water. To avoid this ledge vessels should keep well over towards the cape, from which the shallow water does not extend beyond the distance of 400 yards.

**Ciboux Rock.**—From the outer point of Ciboux Island a reef runs off  $\frac{1}{2}$  mile to the NE.; and the dangerous Ciboux Shoal, with 15 feet least water, and on which the sea at times breaks heavily, lies  $\frac{3}{8}$  mile farther out in the same direction.

**St. Anne Harbor** (formerly Port Dauphin) is capable of containing any number of vessels in security, but the entrance is very narrow, with a tide of 4 knots; and there is a dangerous bar outside, over which a stranger unacquainted with the leading marks could only safely rely on finding 12 feet.

In a strong NE. wind, and especially when the tide is running out, the bar is covered with heavy breakers. The harbor is completely sheltered by Beach Point, which is formed of large rolled stones and shingle, and reaches across from the northern to within 180 yards of the southern shore; it is quite bold at its southern extremity, and the entrance channel between it and the Weed Pond Shoal carries 13 fathoms water, but is only 130 yards wide. Within the entrance, on the north side of the channel, lies the Port Shoal, of mud, extending  $\frac{1}{2}$  mile in from Beach Point, and just cleared to the southward by the line of Weed Pond Beach and Bar Point in one.

**Cape Dauphin**, the dividing point between St. Anne Bay and the Great Bras d'Or, is a high and precipitous headland and the northeastern termination of the range of mountains which separate them.

**Water.**—The best watering place (1860) is on the northern side of St. Anne Harbor,  $1\frac{3}{4}$  miles from the entrance, where a torrent descends a ravine in the mountains of St. Anne, which rise precipitously to the height of 1,070 feet above the sea.

**Directions.**—Vessels bound to St. Anne Harbor from the northward with a fair wind should pass to the NW. of Ciboux and Hertford Islands, avoiding, if it be wished, the rocky 6-fathom fishing ground, in the mouth of the bay, by keeping well over towards Cape Dauphin. Go no nearer to the shore between Bentinck and Island Points than the depth of 7 fathoms. Observe that the line of Bentinck Point and Cape Smoke in one clears the shoal off Island Point in 5 fathoms, and that in approaching the bar Cape Smoke should be kept open. Before arriving at the steep outer side of the bar, which is distant one mile from the entrance, bring the white gypsum cliff of Macleod Point in line with the summit of Old Fort, and steer for them until Fader Point is seen only just open clear of Wilhausen Point (the vessel will then be only about 100 yards distant from the shore near Bar Point); then port the helm instantly and run from the last-named leading marks, keeping Fader Point a little open, until Conway Point is seen to the westward of Lead-in Point, or until the gypsum cliff of Macleod Point is open only half a point to the southward of Beach Point, or until the latter bears S.  $29^{\circ}$  W., and is distant  $\frac{1}{4}$  mile; then again alter course, and keeping Conway Point in sight (to avoid Weed Pond Ledge), steer so as to pass Beach Point at a distance between 60 and 100 yards.

If the gypsum cliff of Macleod Point can not be made out, pass Wilhausen Point, at the distance of 250 yards, steering for the Old Fort until Fader Point is only just open; then proceed as already directed.

Having now entered the harbor, avoid Port Shoal by not opening out Bar Point to the northward of Weed Pond Beach, until the shingly Price Point bears to the northward of N.  $71^{\circ}$  W.; the vessel will then be within the shoal and may haul to the northward and anchor to the westward of it, in 8 fathoms, mud, and out of the stream of the entrance.

**Anchorage.**—The best sheltered anchorage is in the entrance of the north arm, the riding elsewhere in so large a harbor being at times rather rough for a small vessel. The NE. gales, on entering this harbor, between mountains 1,000 feet high, and only 2 miles apart, blow with concentrated force. They may be expected at any time after the middle of August, and a vessel should be well moored to withstand their fury.

**Tides.**—The rate of the tidal streams in the entrance is from 3 to 4 knots.

**The Coast** from Bentinck Point to Cape Smoke assumes a less sterile appearance, the mountains receding a short distance from the shore, so as to leave space for scattered farms. At a brook called French River, and especially at Breeding Cove, there is good landing for boats.



At the distance of  $1\frac{1}{2}$  miles south of Bentinck Point there are cliffs of white gypsum; and at Indian Brook, one mile north from Island Point, there is good landing. Island Point looks like an island, but is a small wooded peninsula joined to the main land by stony beaches inclosing McDonald Pond.

**Ingonish Island** is of rock,  $\frac{1}{2}$  mile in diameter and 200 feet high. The East Rocks, 12 feet high, lie off it to seaward and extend out to the distance of nearly 800 yards. There are several high rocks close to the outer shores of the island, and a small rock off its SW. extremity at the distance of 160 yards. The NW. side of the island forms a small bay, in which there are several buildings (1860) and where the small fishing vessels and boats are sheltered from the swell from the southward, and from all but easterly winds. From the west point of this small bay a spit and reef extend nearly halfway across to Archibald Point, leaving a channel of 18 or 20 feet in depth, but so narrow and crooked that only 14 feet can be relied on at low water.

**Ingonish Bay**, between Archibald Point and Cape Smoke, is  $3\frac{3}{4}$  miles wide and  $2\frac{3}{4}$  miles deep. It is divided into north and south bays by Middle Head, a long, narrow, rocky, and precipitous peninsula, off which lies the Fisherman Rock at the distance of 200 yards to the SE. At the head of South Bay there are two ponds, having a common outlet, which boats can enter only at high water. There are several houses near these ponds, as well as on the tongue dividing the two bays, but the principal settlement of Ingonish is on the north side of the bay.

The mountains in rear of Ingonish are the highest on this coast, attaining an elevation of 1,390 feet; and Cape Smoke, its south point, rises precipitously from the sea to the height of 950 feet. The squalls from these highlands are at times very violent.

**Anchorage.**—Vessels usually anchor on the north side of Ingonish Bay within Archibald Point, shifting their berths as the winds may render necessary. The bottom is a thin coating of sand over hard mud. The anchorage is unsafe with easterly winds, which send in a very heavy sea.

**Cape Egmont** is a comparatively low headland of granite, and nearly bare of trees. At Neal and Blackbrook Coves, which are distant  $2\frac{1}{2}$  miles and 4 miles respectively, to the southward, there is good landing for boats. Off South Point, between those coves, there is a sunken rock lying 400 yards offshore; and there is also a rocky shoal, with 2 fathoms least water,  $\frac{1}{2}$  mile from the shore at Rocky Bay, where there are several buildings, 2 miles to the northward from Ingonish.

**Aspee Bay** is 8 miles wide and  $4\frac{1}{2}$  miles deep. There are flourishing farms in the neighborhood; the principal trade is with St. Pierre, consisting of the following exports, viz., cattle, sheep, butter, oak staves, etc.

The fishermen supply the Newfoundland fisheries with a large quantity of squid for bait.

**Telegraph.**—The shore ends of the Atlantic telegraph cables from Newfoundland are landed here, and the telegraph station, a prominent building, is seen standing to the westward of a small village on the north side of the bay. A fishing village is situated on a barren part of the bay inside White Head, and a church stands far back on the hills in the center of the bay. On its north side is Wilkie Sugar Loaf, a remarkable conical hill 1,200 feet high.

**Supplies.**—To the southward of this, and occupying the head of the bay, are three ponds with narrow entrances through sandy beaches, and into which boats can only pass at high water. There are settlements at all these ponds, where fresh provisions and water may be obtained.

**Anchorage.**—The best anchorage in Aspee Bay with NW. winds is off the North Pond, in 8 or 9 fathoms, sand bottom; and with south winds off the South Pond, or in the cove under White Head, which, with a small island lying close off it, forms the SE. point of the bay. In this cove there is a settlement for prosecuting the fisheries, and good landing for boats in all but northerly winds. It is the anchorage generally preferred, especially by small vessels, as being the least embayed, and the most sheltered from the prevailing swell from the SE. Fishermen state that there is good holding ground in this cove inside the depth of 10 fathoms (blue mud). To vessels unable to beat around Cape North, or in want of supplies, this bay affords convenient anchorage; but it is only safe in fine weather and with westerly winds; a vessel should therefore be in readiness to weigh instantly on the approach of a wind from the opposite quarter.

**Coast.**—The NE. coast from St. Anne Harbor to Cape North is bold, mountainous, and free from outlying dangers, except near Ciboux or Bird Island. The mountains attain the elevation of 1,390 feet above the sea, and are composed of primary and metamorphic rocks, principally granite, with clay slate, in nearly vertical strata. These rocks form the principal headlands; while sandstone, conglomerate, shale, limestone, and occasionally beds of gypsum and red and yellow marl occur on the intervening shores. These last-named rocks, the lowest members of the coal formation, rest unconformably on the older rocks, and they are occasionally covered with beds of drift sand, red clay, and boulders. They are seen in the valleys and are displayed on the eastern slopes of the mountains, where they form cliffs which are washed by the sea. They furnish, with the beds of drift, tolerably productive soil, supporting, with the aid of the fisheries, a thinly scattered population (1860).

**Currents.**—Notwithstanding the bold nature of this coast wrecks have not been unfrequent upon it in the dense fogs which accompany the easterly winds. They have generally occurred to vessels running and steering, as they supposed, a safe course to pass St. Pauls Island into the Gulf of St. Lawrence. Unaware of, or not allowing for, the current so frequently found running out of the gulf from the northward, and which had been acting upon their starboard bows for many hours,

setting them many miles to the SW. of their reckoning, they ran on shore under full sail.

On one occasion this current was found running out of the gulf for many successive hours at the rate of 2 knots from the north; at another time its rate was one knot from the NW.; and at a third it was imperceptible. After long-continued winds from the east or NE., which raise the level of the water in the Bras d'Or Lake and neighboring harbors, it is not unusual to find a current of one knot running for several successive days along the land from off St. Anne to near Cape North, where it meets the current out of the gulf and is turned to the east with a great rippling. The fishermen affirm that it as often runs in the opposite direction; and again, that at other times there is a regular alternation of the flood and ebb streams.

These remarks are intended to show the inconstant nature of these currents, and the consequent great care required for the safety of a vessel when approaching this neighborhood in the fogs which so often hide the lights on St. Paul Island.

#### CAPE BRETON ISLAND; LITTLE AND GREAT BRAS D'OR LAKES.

**Boulardrie Island.**—The Great and Little Bras d'Or are two channels leading to the Bras d'Or Lake. Boulardrie Island, which forms these channels, is 22 miles long, with an extreme breadth of 5 miles. Sandstone, in some parts containing coal, shale, limestone, and gypsum, are found on its shores, which are thinly settled (1860); the interior being thickly wooded, and rising to the height of 400 feet above the sea.

**St. Andrew Channel,** on the SE. side of Boulardrie Island, is easily navigable, being from  $1\frac{1}{4}$  to  $2\frac{1}{2}$  miles wide, with a great depth of water, but it is only accessible to shipping from within or round the SW. extremity of Boulardrie Island, the direct entrance from sea through the Little Bras d'Or Channel, admitting only small craft and boats.

Five miles within this narrow entrance the channel begins to expand, and there is secure anchorage off the establishment of Messrs. Gammel and Moore; which, with its wharf and a chapel, will be seen on Chapel Point (1860). From the settlement here there are roads across to Sydney and its coal mines.

**Great Bras d'Or Channel.**—Having entered the Great Bras d'Or Channel, as already directed, there is nothing in the way of vessels until they approach the Seal Islands. These two islands are low and wooded, and separated from the mountainous northwestern shore by a narrow and difficult channel, which is almost closed to large ships at its NE. end, by a reef which runs out  $\frac{1}{2}$  mile from the islands in that direction.

**The Seal Reefs,** with 2 feet least water, lie to the SE. of the Seal Islands, directly in the fairway of vessels. There is no passage for vessels of large draft between them and the islands, and the ship channel between them and the shore of Boulardrie Island is only 240 yards

wide. This narrow passage has 2 small rocky shoals on the southeastern side of the channel; one, with 11 feet water on it, lying 200 yards west from Long Beach, and the other, with only 4 feet on it, 400 yards in the same direction from McLean Point.

The soundings in this narrow part of the channel are from 6 to 13 fathoms, over rocky bottom, the rate of the tidal streams from 2 to 2½ knots, and the mark which leads through is, Duffus Point kept just open of Duncan Head, bearing N. 43° E.

**Otter Harbor** is to the northward of the island, and affords secure anchorage in from 5 to 9 fathoms, mud, the best berth being off the mouth of the small bay of the main, which forms the head of the harbor, and has a small islet in its center. The western point of this bay has a reef off it to the distance of 100 yards. Its eastern point, a peninsula separating it from the shallow cove to the eastward, is named Harbor Point.

**Directions.**—When approaching the anchorage in Otter Harbor from the eastward the reef off the islets will be cleared by keeping some part of the Seal Islands to the southward of Seal Point until Harbor Point appears to the westward of the westernmost islet, then haul in, so as to pass the islet at a distance between 60 and 200 yards, and when Otter Point is seen to the northward of Otter Island the vessel will be within the reef and may choose her berth at pleasure.

**Port Bevis** is a large cove running in to the NW., and curving round the southwestern termination of the range of mountains, which has continued unbroken all the way from Cape Dauphin.

**Anchorage.**—The anchorage in the port is quite secure, in from 7 to 4 fathoms, mud; the latter depth being ½ mile in from the entrance, where the cove is divided into two shallow arms.

The entrance to this port being free from danger, the only direction necessary is to anchor about two-thirds over towards the northeastern shore; the soundings being rocky and comparatively shoal, 3 to 4 fathoms, 200 yards out from the opposite shore.

Gypsum abounds in the cliff on the SW. side of Port Bevis, and also along the shore to Red Head at the entrance of St. Patrick Channel, a distance of 5 miles.

**Coffin Island**, a small narrow bank of red clay fast wasting by the waves, lies ½ mile to the northward of Kemp Head, the SW. extreme of Bonlardrie Island. A reef extends off either end of Coffin Island to the distance of ¼ mile; and there is a channel for small craft, but not for ships, between it and the shore. A vessel will pass to the northward of the reef if McFarland Point be not shut in behind Frazer Point.

**Rocky Patches.**—In the channel, to the northward of Coffin Island, there are two small rocky patches on which no less than 4 fathoms could be found, but which nevertheless had better be avoided in a large ship. One of them lies N. 52° W. 800 yards from Coffin Point, and the other S. 30° E. 900 yards from Macrae Point, on the northwestern shore.

In the 17 miles of the Great Bras d'Or Channel just described from Carey Point to Kemp Head, the only good anchorages are those which have been noticed. In the channel the long reaches allowing of considerable swell, and in many parts the great depth of water, amounting off Otter Island to 58 fathoms, render the anchorage insecure.

**St. Patrick Channel** extends from Red Point to Whyecocomagh, a distance of 21 miles in a westerly direction, with an average breadth of one mile. It is navigable throughout for vessels of large draft, but not much frequented nor much known. Its banks, moderately high, rise into hills of considerable elevation at a short distance from the shore, and the land is generally susceptible of profitable culture. This channel during rough and blowing weather is subject to heavy squalls of wind, making navigation often dangerous to open boats under sail.

**Anchorage.**—There are excellent anchorages in Baddeck, Cow, and Indian Bays on the north side of the channel, and Washaback River on the south side; indeed, the whole affords fair anchorage and good holding ground. But for these anchorages, as well as to navigate safely St. Patrick Channel, a pilot should be employed, and on this account the directions will be brief.

**Baddeck Bay** is free from danger to its head, where it receives the waters of a small river. The best anchorage is after passing the long shingle beaches.

**Baddeck Harbor**, formed by Kidston Island on the western shore of Baddeck Bay, affords snug anchorage for small craft. The village of Baddeck derives some little importance from being the county town. One or two vessels of large burden are built here annually, and several schooners sent with agricultural produce to Newfoundland, whilst a small steamer plies between Baddeck and Sydney twice a week during the summer months. Fresh meat can be purchased at the village, and good water obtained from a brook one mile west of the harbor.

**Directions.**—With a fair wind, having passed Red Point, which is bold-to, steer N. 35° W. for the church, which, situated close to the shore, forms a prominent object about  $\frac{1}{2}$  mile east of the village. Continue on this course until the western passage opens, then steer S. 55° W., and passing the low beach point of Kidston Island, anchor in 4 $\frac{1}{2}$  fathoms, mud.

**Cow Bay** has a sandy shoal with 18 feet water stretching from its west point; and by passing round its east end good anchorage can be obtained in 7 fathoms, mud.

**Indian Bay** receives the waters of two rapid but shallow streams called Middle and Baddeck Rivers; the latter flows through a rich alluvial valley for some miles. This bay is gradually filling up and is very shoal near the mouth of the rivers, but there is good sheltered anchorage in other parts.

**Washaback River**, on the south side of St. Patrick Channel, is more properly a creek, as it only receives a small run of indifferent

water about 3 miles from its entrance. Vessels of large draft may find snug anchorage some little distance up this creek, but the entrance is narrow, and the deep-water channel runs close to Plaster Point, the east point of entrance. Oysters of a good quality abound up the creek.

**Directions.**—St. Patrick Channel, to the eastward of Maciver Point, being wide and free from danger, may be navigated without difficulty, the use of the lead giving sufficient warning in approaching either shore; but to the westward of Maciver Point, a shoal extending  $\frac{1}{2}$  mile east from a small stony islet called Bell Rock, and on the other side of the Maciver Bank, of mud, with 4 feet least water, extending SW. one mile from Maciver Point, narrows the channel to  $\frac{1}{4}$  mile.

To pass between these shoals, bring Cranberry Point to touch Cow Point, bearing N.  $43^{\circ}$  E., and steer with this mark on astern until Bell Rock comes in line with Hume Islet, when alter course to the southward, keeping this latter mark astern until the Narrows church is seen touching the bank of Curlew Point, S.  $48^{\circ}$  W. This latter mark will lead in mid-channel between Eel Shoal and the rock off Green Point; on approaching Curlew Point alter course to S.  $65^{\circ}$  W., when having cleared its low marshy point, steer for the sandy spit on the south side of the entrance.

Having passed this spit, which is bold to, steer with the Narrows church and sandy spit astern, to clear the shoal extending 200 yards to the southward from Narrows Point, which having passed, the vessel will enter a lake  $1\frac{1}{2}$  miles wide, 6 miles long, and free from danger.

The water is shoal towards the head of the lake, but the bottom is mud, and the anchorage safe. There are sheltered anchorages, with deeper water, on the SW. side of Indian Island and the south side of Maciver Island, but as these are not frequented, it is not necessary to describe them.

There are no tidal currents, nor any perceptible rise of tide, but the waters of the lake are affected by the prevalent winds, being highest during NE. winds, and lowest during SW. winds; the difference of level is seldom more than one foot.

**Little Bras d'Or Lake** is 9 miles long from Kemp Head to Bara Strait, and from 3 to 5 miles wide. The depth of water in it is very irregular, exceeding 60 fathoms in some parts, while in others there are dangerous shoals. There are settlements thinly scattered along the shores of the lake (1860).

**Double Island and Burnt Shoal.**—Double Island, lying at the entrance of St. Patrick Channel, between Red and McKay Points, should not be approached on its eastern side nearer than  $\frac{1}{2}$  mile, or the depth of 5 fathoms. Half a mile SW. from McKay Point is Burnt Point, from which a reef runs out 350 yards.

**Boulaceet Harbor** is 700 yards wide at the entrance between Parliament and Gillis Points. The latter is the western point of entrance,

and the only danger to be avoided is the reef which runs out 200 yards to the eastward.

Proceeding southward from Boulaceet Harbor, the shore is bold for the first 2 miles; it then becomes dangerous to strangers for the remaining 2 miles to Barra Strait; shoals extending off Lieutenant Pond and Macpherson Point.

**Macphee Shoal.**—Off the southeastern shore of the Little Bras d'Or Lake the easternmost danger is Macphee Shoal, with 18 feet least water and  $\frac{3}{4}$  mile off shore. It bears from Black Point N.  $14^{\circ}$  E. one mile; and with much rocky and irregular soundings to the northward of it, lies in the entrance of St. Andrew Channel.

**Big Shoal** is an extensive rocky bank with very irregular soundings. Besides several patches of 3 fathoms, there is one near the northern edge which dries at low water.

**Christmas Island.**—The shoal water extends only 300 yards off this island to the northward, and there is an excellent harbor within it for boats and small craft, the narrow entrance, carrying 6 feet water, being from the westward.

A channel has been dredged southeastward of Christmas Island; the west side of the channel is marked by 4 red spar buoys, and the east side by 4 black spar buoys.

**Anchorage.**—There is good anchorage, excepting in strong NE. winds,  $\frac{1}{2}$  mile to the westward of the island, in the bay between it and Neilban Cove, in 9 fathoms, mud; observing that the shoal water extends 400 yards from the island in that direction. A chapel, a large white wooden building, will be seen on the mainland near the island (1860).

**Barra Strait**, commonly called by the country people the Big Narrows, is  $1\frac{1}{2}$  miles long and  $\frac{1}{2}$  mile wide, excepting at its northeastern entrance, where the breadth is reduced by the sand and shingle benches of Uniacke and Kelly Points.

These points are connected by a railroad bridge, the draw of which is on the southeastern side of the strait.

The beaches are bold at their extreme points, but shallow on their northeastern sides to the distance  $\frac{1}{4}$  mile from the shore. There are settlements on the shores of the strait.

**Barra Shoal**, of rock, and  $\frac{3}{4}$  mile in length, lies across the entrance of the strait, and, together with the shoal off Kelly Point, render the passage indirect and difficult at times for a vessel of large draft. The least water, 11 feet, bearing from Uniacke Point N.  $32^{\circ}$  E. 1,300 yards, is just cleared to the southward by the line of Derby Point and Kelly Point in one, bearing S.  $11^{\circ}$  W., or by the summit of Hector Hill in line with Uniacke Point S.  $46^{\circ}$  W.; but those marks only clear the least water, not the whole of the shoal, which they lead over in 3 fathoms water. Kelly and Hector Points, touching and bearing S.  $43^{\circ}$  W., lead into the entrance of the ship channel, which is to the southward

of the shoal, between it and the shoal off Kelly Point, and which carries from 6 to 15 fathoms water over rocky bottom. Within the strait the depth is much greater, and the shoals are bold on either side.

**Tides.**—The rise of the tide in Barra Strait is nearly insensible, amounting only to a few inches; it is difficult to distinguish it from changes of level caused by the winds. The rate of the streams is also very irregular, and seldom exceeds one knot, excepting when increased by winds, present or at a distance.

**Directions.**—With the assistance of the chart, and the description of the dangers already given, little difficulty will be experienced in passing through the Great Bras d'Or Channel and into the Little Bras d'Or Lake, the northern shore of which should be preferred, in order to avoid the dangerous Big Shoal until the vessel has advanced as far as Boulceet Harbor; from thence steer east towards the western end of Christmas Island until Kelly and Hector Points are touching, when alter course to SW., or so as to keep those points touching until the west side of Neilban Cove bears S. 26° E.; then steer S. 58° W. for Uniacke Point until the leading marks for clearing the shoal off Kelly Pond, namely, Derby Point open to the northward of Kelly Point, come on; then a course may be shaped so as to pass through the strait into the Great Bras d'Or Lake.

**The Great Bras d'Or Lake** is 12 miles wide, from Barra Strait to the entrance of St. Peter Inlet, and 37 miles long, measuring from the head of the west bay to that of the east bay. The depth of water in this marine lake is extremely irregular.

**McKinnon Shoal** is an extensive rocky bank, with 18 feet least water, stretching out  $1\frac{1}{2}$  miles from McKinnon Point. A vessel will pass to the eastward of it by keeping Hector and Kelly Points touching and bearing NE.

**The River Denny** has its source in the eastern slope of the hills east of Judique. It enters the Great Bras d'Or Lake through two deep water inlets called North and South Basins, the real mouth of the river being at the west extremity of the South Basin. Eight feet water can be carried up the river for 2 miles, and boats may ascend, with some difficulty, on account of sunken driftwood, about 5 miles farther to the bridge; but above this the stream becomes rapid and shallow.

The main entrance of this river from the lake lies between the low wooded entry island and Mackeane Point, and is one mile wide. It may easily be recognized as the first opening in the low land after passing the hilly country forming the west side of Barra Strait. If the channel be kept, more than 4 fathoms water can be carried for a distance of 6 miles into the South Basin, and an excellent anchorage obtained off the settlement at Plaster Cove.

Excepting the range of hills between this river and West Bay, the land is generally low and wooded, and the absence of any remarkable



features makes it quite necessary for its safe navigation that there should be a local knowledge of the points and objects named.

**Cod Shoal.**—The Cod Shoals, extensive rocky fishing banks, with 21 feet least water, and lying  $1\frac{1}{2}$  to 3 miles to the south of the southern entrance of Barra Strait, are only dangerous to vessels of large draft. Hector and Unacke Points in one, and bearing N.  $26^{\circ}$  E. lead  $\frac{1}{2}$  mile to the westward of them, and through the channel, 2 miles wide, between them and McKinnon Shoal.

**Kelly Shoal.**—The approach to this shoal is indicated by the opening out of the marks for leading to the northward of them, namely, the south extremity of the Red Islands bearing N.  $66^{\circ}$  E., and in one with Mill Cape, a rocky and precipitous point, distant 2 miles from the islands. There is deep water all around these shoals, but the passage to the westward, between them and Macrae Point, is the most direct; and the marks for clearing them on that side are Trap Point and Indian Point in one, bearing S.  $21^{\circ}$  E., the former being the extreme western point of Chapel Island, in St. Peter Inlet, and which will be recognized by the large cross on its summit. These marks lead over the west end of the Kelly Shoals in 5 fathoms water, and also close to the eastward of the 3-fathoms shoal off Cape George, which having passed, the vessel will enter St. Peter Inlet.

**St. Peter Inlet.**—On the eastern side of the entrance to this inlet are Macnab Creek and Soldier Cove, which have depth of water sufficient for vessels of large draft, but can only be approached by passing between dangerous shoals; but by keeping over towards Cape George, and steering so as to pass to the westward of Chapel Island, there is nothing in the way until the vessel arrives off its west point, where the ship channel between it and Dock Point, a shingle beach of the mainland inclosing a small pound, is  $\frac{1}{2}$  mile wide.

**Anchorage.**—Off the western side of Chapel Island there is good anchorage in 11 fathoms water, mud, with the large cross bearing N.  $10^{\circ}$  E., the chapel near the south end of the island, S.  $64^{\circ}$  E., and at a distance of 300 yards off shore. This anchorage is between Chapel and Doctor Islands, the latter lying  $\frac{1}{2}$  mile to the westward of the former and diagonally across the inlet, leaving passages on either side about  $\frac{1}{2}$  mile wide.

Of these passages the easternmost, between the island and Indian Point, is so intricate as to be only fit for small vessels; but the ship channel, which curves round the island and between it and the mainland to the westward, is clear from detached dangers, and carries from 8 to 10 fathoms water. It is, however, reduced by shoals on either side, and is still narrower and more crooked in several other parts of the inlet. Referring, therefore, to the chart, the aid of which, or a properly qualified pilot, would be indispensable to a stranger, it will merely be added that the channel is everywhere deep enough for the largest vessels that could enter the Bras d'Or, until they arrive at the Haulover,

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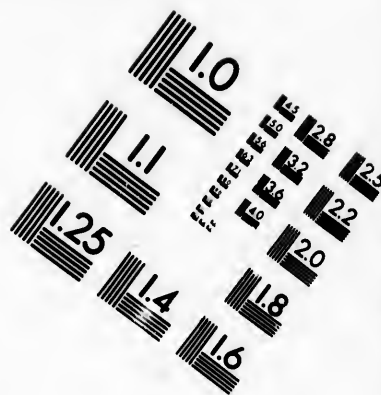
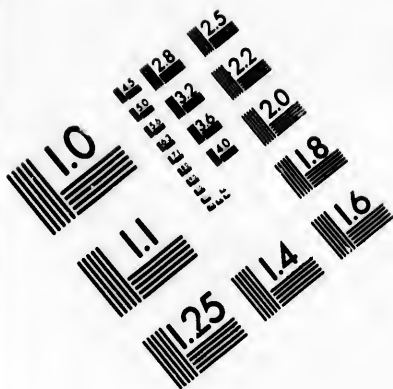
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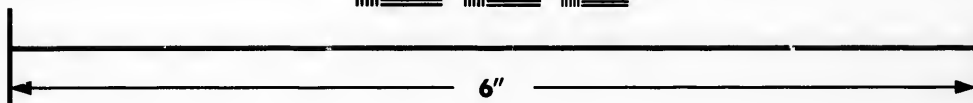
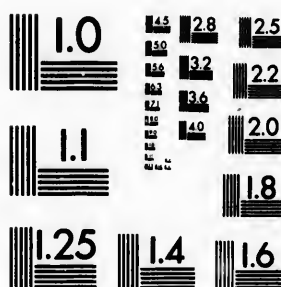
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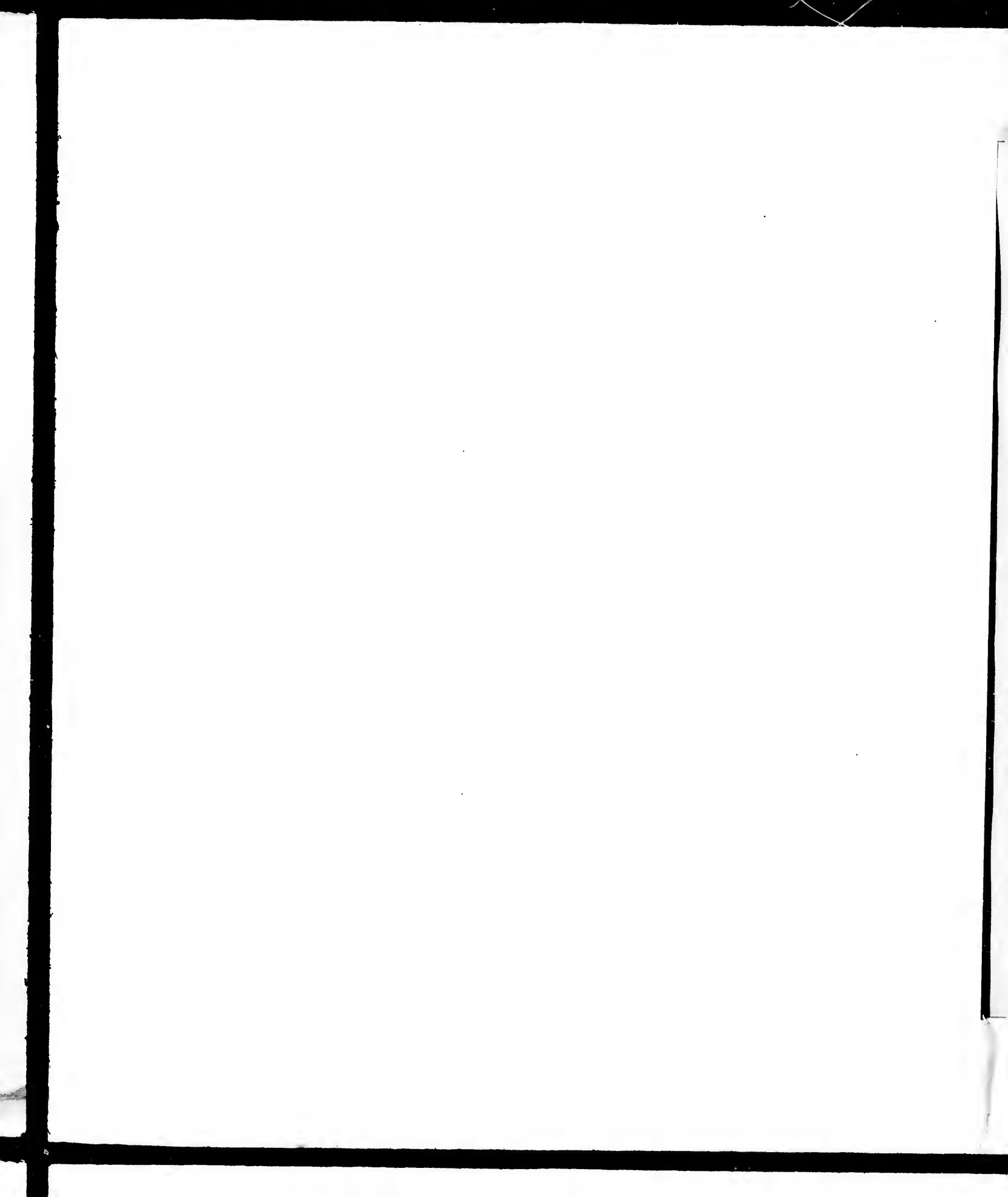
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at St. Peter. To reach the wharf they would have to pass over 15 feet, which is the depth of water between it and Campbell Islands.

**Barachois and Johnson Harbors.**—For these, together with Campbell Harbor, and other coves and ponds capable of affording shelter to small vessels and boats, and also for the dangers in the passage between those places and the Kelly Shoals and Red Islands, the mariner is referred to the chart.

**Red Islands**, so called from their cliffs of red sandstone and clay, are four in number, two of them very small, and they are so arranged as to form a secure boat harbor, open to the southward towards the mainland, in which direction they are prolonged under water, so as to leave a navigable passage only  $\frac{1}{4}$  mile wide.

**Lochmore Harbor**, a harbor for small craft, on the southern shore, distant 10 miles from the Red Islands, is formed by a long shingle beach, having its entrance from the eastward, and 8 feet water on its bar. There is a chapel here, and the country is well settled between the sea and the hills, which rise to the height of 500 feet  $\frac{1}{2}$  mile back from the shore.

**Christmas Pond.**—Directly opposite, on the northern shore of East Bay, and distant  $2\frac{1}{2}$  miles, Christmas Island will be seen, and  $\frac{1}{2}$  mile to the westward of it the sand and shingle beach of Christmas Pond, forming another boat harbor, rendered difficult of access to strangers by the shoals off either end of the island. On the mainland, nearly opposite the island, and on the banks of a considerable stream, are the Indian chapel and settlement of Eskiscogmic (1860).

**Macphee Island** is composed of three parts connected together by shingle beaches. The easternmost part of the island is joined to the mainland by a beach of sand and shingle, one mile in length in a NW. direction; and to the westward of this beach, and on the northern side of the island, there is a small but secure harbor for small vessels and boats. The reefs off the southern side of this island, and also off its east and west points, are exceedingly dangerous, being covered by only 2 or 3 feet of water, and extending  $\frac{1}{2}$  mile from the shore.

**Marble and Macdougall Points.**—Half a mile eastward of Marble Point, a shingle beach incloses a large pond, and has a long reef running out from it to the eastward, and at the distance of  $\frac{1}{4}$  mile from the shore. On the eastern side of Macdougall Point,  $1\frac{1}{2}$  miles farther to the east, there is a similar pond. The shoal water runs out 400 yards from this point towards the shoals which have been mentioned off the opposite shore, the channel between them being 1,300 yards wide.

**Cosset Point.**—On the northern shore of East Bay, and 3 miles eastward from Macphee Island, there is another small harbor open to the eastward, and formed as usual by a sand and shingle beach, from which a dangerous reef runs out 800 yards to the SE.

**McAdam Point**, one mile farther to the eastward, has also a reef off it to the distance of 350 yards; and one equally long runs out from a

point a little farther up the bay on the southern shore. The remaining distance of  $3\frac{1}{2}$  miles to the head of East Bay is free from danger.

**Head of East Bay.**—At the head of East Bay shingle beaches inclose a large pond, which boats can enter, and ascend to the bridge, a distance of  $\frac{3}{4}$  mile. The pond continues one mile farther, shallow and full of mud and weeds; and from its head the distance is 2 miles to Forks Lake, and 4 miles to the south arm of Sydney Harbor, into which the lake just named discharges its waters.

The main post road from Halifax, which crosses the Gut of Canso at Port Hastings, and passes by St. Peter, continues along the southern shore of East Bay, and from its head across to Sydney Harbor. There is a chapel on this road near the head of the bay, and there are thinly scattered houses along the whole route.

**Malagawatchkt Harbor.**—The entrance of this fine harbor, between Gillis and Pellier Points, the latter on the south side, is  $\frac{3}{4}$  mile wide, but Sheep Island, separated by a narrow channel from Pellier Point, reduces the breadth to 800 yards. At the distance of one mile in from the entrance, at the first Narrows, the channel contracts to 320 yards, and the deep water to half that width; it then expands into a fine basin, affording secure anchorage to any number of the largest ships. From the north side of this basin the second Narrows, 270 yards wide, and carrying 4 fathoms water, communicates with the inner harbor, which has deep water quite to its head.

**Gillis Shoal**, lying off Gillis Point, is the principal danger to be avoided in entering Malagawatchkt Harbor. There is deep water all around the shoal, but the widest and most direct channel into the harbor is to the southward of it, where the breadth of the deep water between it and the reefs off Pellier Point and Sheep Island, is 600 yards.

**Pellier Point Reef** is also dangerous. The marks which just lead to the southward of it are Militia Point and the south extremity of George Island in one, bearing S.  $60^{\circ}$  W., and it will be cleared to the NE. if the south side of the first Narrows be not shut in behind Sheep Island; this last-named mark leads over the northern side of the reefs off Sheep Island.

**Directions.**—To run into Malagawatchkt Harbor with a leading wind, bring Militia Point and the south extremity of George Island in one, bearing S.  $60^{\circ}$  W., and run towards them until the northern side of Sheep Island comes on with the eastern point of Johnson Cove, bearing S.  $88^{\circ}$  W.; then alter course to S.  $88^{\circ}$  W. or so as to keep those marks on, until Militia and Pellier Points are in one, bearing S.  $47^{\circ}$  W.; then steer N.  $58^{\circ}$  W. until Militia Island and Pellier Point are touching, and then N.  $75^{\circ}$  W., or so as to keep in the channel, until the vessel arrives at the first Narrows, when the course must be changed 2 points to the northward, or so as to avoid the shoal just within the Narrows, which extend 250 yards from the southern shore, causing the channel to curve to the northward. Having passed the Narrows, which will

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require great care, the deep water being there only 160 yards wide, the vessel may be anchored over towards the northern side of the basin, in 6 or 7 fathoms, mud, and sheltered from all winds.

**Pellier Harbor**, into which, with a fair wind, the depth of 21 feet can be carried without difficulty, is formed by the peninsula of Pellier Point, which has several buildings on its SW. extremity, and a long shingle beach which shelters the harbor and forms the eastern side of the entrance.

**Directions.**—Approaching Pellier Harbor from the eastward, and by the preferable channel to the northward of Militia Island, where the deep water is 250 yards wide, attend to the marks already given for clearing the reef off Pellier Point. Bring Militia Point to bear S. 66° W., and run towards it until Pellier Point and Sheep Island are touching; then steer for the harbor's mouth, observing that George Island must be shut in behind Militia Point to clear the reef off Militia Island. In entering the harbor, haul round the shingle beach at 200 yards distance and anchor within it in 4 or 4½ fathoms, mud.

**West Bay** is 3½ miles wide at entrance, between Militia Point and Poor Islet, on the southern shore. The soundings are irregular to an extraordinary degree, numerous rocky shoals, covered by only a few feet of water, having a depth of 20 fathoms or more near and between them. In this bay cliffs of red sand and clay, and of sandstone alternating with shingle beaches, inclosing ponds or uniting peninsulas to the mainland, form the predominating features of the southern shore, in rear of which, and at distances varying from a half to one mile, rises a range of wooded hills to the height of 600 feet. On the northern shore a parallel range of wooded hills runs westward from Little Harbor, separating West Bay from the River Denny, and attaining the elevation of 750 feet. These hills are more steep than those on the opposite side of the bay, leaving a smaller space for settlements, which are not extensive, excepting at Little and Malagawatchkt Harbors.

**Little Harbor**, which is distant 1¼ miles to the NW. from Militia Point has a narrow but unobstructed entrance, 80 yards wide, and with 3 fathoms water, and which leads into a land-locked basin  $\frac{3}{4}$  mile across, and carrying 3½ to 4½ fathoms water, over a bottom of mud.

Between George Island and Macleod Point on the southern shore, a distance of 3¼ miles, are numerous rocky shoals, so scattered about that a chart on a large scale resulting from this survey, and to which the following remarks refer would be indispensable to the safety of a large ship among them.

**Paddle Shoal** lies S. 58° E., one mile from George Island, and extends  $\frac{1}{2}$  mile farther in the same direction, the least water on it being 13 feet. Malagawatchkt Point kept in one with Pellier Point, bearing N. 26° E., or midway between it and Militia Island, will lead to the SE. of the shoal, and between it and the Outer Shoal, which, with 22 feet least water, lies  $\frac{1}{2}$  mile from it to the southward. The marks for the



southeastern edge of the last-named shoal are Malagawacht Point just open to the eastward of Militia Island bearing NE.

**Morrison Head** will easily be recognized, being a small peninsula, 60 feet high, with red cliffs, and united to the southern shore by a shingle beach. It has a small boat harbor on its eastern side, and shallow water off it to the distance of  $\frac{1}{4}$  mile. There is also a rocky bank, with  $4\frac{1}{2}$  fathoms water, lying  $\frac{3}{4}$  mile from it to the NE.

**Macrae Point** is distant  $2\frac{1}{4}$  miles to the SE. of Morrison Head, and midway between them lies a rocky bank, with 21 feet water, the northern end of which is distant  $\frac{3}{4}$  mile north from Scott River. A more dangerous shoal, having only 14 feet water, lies northward of Muerae Point, and 600 yards off shore; after which there are no farther dangers, except a small patch of  $4\frac{1}{2}$  fathoms up to the 3-fathoms shoal off Cape George, at the entrance of St. Peter Inlet.

**McIntosh Cove** is easily recognized by McIntosh Islet, which, with the reef uniting it to the mainland, shelters the cove from easterly winds. The anchorage here is good in  $4\frac{1}{2}$  fathoms, and, but there is little room, the cove being only  $\frac{1}{4}$  mile across, and the deep water only 200 yards wide, from 3 fathoms to 3 fathoms on either side.

**The McInnis Shoals**, of rock, lie off the mouth of this cove, the least water, 18 feet, bearing from McIntosh Islet N.  $80^{\circ}$  W. about 300 yards; and from McInnis Point, on the west side of the cove, north  $\frac{1}{4}$  mile. Vessels may pass between these shoals and the islet, but the widest and best passage is between them and the point. The outermost of these shoals, on which the depth is 22 feet, extends to the distance of  $\frac{3}{4}$  mile N.  $80^{\circ}$  W. from McInnis Point.

**Black River.**—Off the mouth of Black River, 2 miles farther westward, there is another confined anchorage sheltered by McRae Islet and its reefs, which to the eastward unite it to the peninsula of Gooseberry Pond, and to the NW. run out to the distance of 750 yards; but the place is narrow and intricate and only fit for small vessels.

**Ballam Shoal** is an extensive rocky bank, with 17 feet least water, running out  $\frac{3}{4}$  mile to the eastward from Ballam Head, from whence to Head Bay Cove, which affords shelter to boats, the distance is 2 miles.

**Clarke Cove.**—On the northern shore of West Bay a group of wooded islands, about 50 feet high, with cliffs of red sand, clay, and boulders, and connected by shingle beaches when not separated by narrow channels, will be seen extending from George Island to Ranald Islet, a distance of 4 miles to the westward. The anchorage is good between them and the northern shore of the bay, but especially in Clarke Cove, which may be approached either through the narrow channel between George and Cameron Islands, or by the wider one between Cameron and Green Islands. This last is  $\frac{1}{2}$  mile wide, but a dangerous reef, with only 5 feet water on it, extends from Cameron Island 600 yards across towards Green Island, and reduces the navigable breadth to 400 yards.

**Floda and Crammond Islands.**—Floda Island and the two Crammond Islands are of similar formation to those already described, presenting cliffs of red sand and clay to the sea, and being from 50 to 70 feet in height.

Between the two Crammond Islands there is a secure harbor for small craft and boats, having off its SE. entrance Smith Shoal, one of the principal dangers in West Bay. The least water, only 3 feet, is on the southwest side of the shoal, and bears SE. 650 yards from the south point of the eastern Crammond Island, and N. 77° E. 1,100 yards from the south point of the western island, from which a reef runs out to the distance of 600 yards towards it, leaving only a narrow channel between. The SE. extremes of Floda and Tailor Islands touching, and bearing N. 21° E., lead close outside of this shoal, which is  $\frac{1}{4}$  mile in diameter.

The anchorage is not good around these islands, because of the great depth of water, which amounts to 25 fathoms between them and Mid Shoal, which has 3 fathoms on it, and lies N. 43° W.  $\frac{1}{3}$  mile from the NE. point of the Crammond Islands.

There is a deep and clear channel on the west side of the Crammond Islands, between them and Spruce and Widow Points, the only dangers being a shoal, with 15 feet least water, in Malcolm Cove, and the reefs off either end of Dumpling Island.

**Macleod and Moss Creeks, and North Cove** to the northward of Widow Point, afford secure anchorage in from 3 to 3 $\frac{1}{2}$  fathoms, mud, but must be entered through channels only 80 yards wide, from the depth of 3 fathoms to 3 fathoms on either side.

**Head Bay Cove.**—The head of West Bay between Spruce Point and Ballam Head, is 1 $\frac{1}{4}$  miles wide, and 3 miles deep from Spruce Point to Head Bay Cove, which affords shelter to boats. The head of the bay has no secure anchorage, and on its northern shore there are dangerous reefs, especially at Magnus Islet, which lies SW. nearly one mile from Spruce Point, and  $\frac{1}{4}$  mile off shore. Off the first point, westward of Spruce Point, a reef extends eastward  $\frac{1}{2}$  mile, and off Magnus Islet, in the same direction. A reef partly dry connects this islet with a point  $\frac{1}{4}$  mile to the westward, and then runs out  $\frac{1}{2}$  mile to the southward to the depth of 3 fathoms, and an equal distance farther with 22 feet, stretching nearly across the head of the bay, and to within  $\frac{1}{2}$  mile of Ballam Head.

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## CHAPTER IV.

### WEST SHORE OF GULF OF ST. LAWRENCE AND SOUTH SHORE OF RIVER ST. LAWRENCE FROM MIRAMICHI BAY TO GREEN ISLAND.

**Escuminac Point**, the SE. point of Miramichi Bay, is of peat, upon a very low sandstone cliff, and is wooded with spruce trees, which form a dark ground for the white lighthouse on it, rendering it so conspicuous that it can be seen at times from a distance of 13 or 14 miles. It is so difficult, especially for a stranger, to distinguish one point of this low coast from another, that this lighthouse is very useful to vessels bound to Miramichi, and making the land from sea. It also points out the position of the dangerous Escuminac Reef, which extends 2 miles out to the northward from the lighthouse to the 3-fathoms mark, and 2½ miles to 5 fathoms at low water. A vessel, drawing 21½ feet, is reported to have stirred up the mud 4 miles N. 78° E. of Escuminac lighthouse without touching bottom.

**Miramichi Bay** is nearly 14 miles wide from the sand bars of Blackland Point to Escuminac Point, and 6½ miles deep from that line across its mouth to the main entrance of the Miramichi, between Portage and Fox Islands. The bay is formed by a semicircular range of low sandy islands, between which there are three small passages and one main or ship channel, leading into the Inner Bay or estuary of the Miramichi.

**Tides.**—It is high water, full and change, at Escuminac Point at 4h. 10 m.; springs rise 4 feet, neaps 2½ feet.

**Coast.**—At 6½ miles from Escuminac Point, along the low shore of the mainland, is Huckleberry Gully.

Several lobster factories have been built between Escuminac Point and Escuminac village, the most conspicuous at Herring Cove and Winter Portage, distant one and 2 miles respectively from Escuminac light-house.

The Roman Catholic church, west of Escuminac village, has a square tower, and is a conspicuous object from the eastward, when north of Escuminac Point.

There are houses, where some of the pilots reside, for 2 miles along the shore to the eastward of the South beacon.

**Huckleberry Island** has decreased considerably, being now only one mile long, and elevated 33 feet above high water. The gullies on each side of this island are almost dry at low water. Fox Gully is difficult

to distinguish, and the church at French village can not be recognized. There is, however, a conspicuous clump of pine trees on French River Point. A black spar buoy, in 2 feet water, marks the entrance to Huckleberry Gully.

**Fox Island**,  $3\frac{1}{2}$  miles long, in a SE. direction, is narrow and partially wooded; like Portage Island, it is formed of parallel ranges of sand hills, which contain embedded drift timber, and have evidently been thrown up by the sea in the course of ages. These islands are merely sand bars on a large scale, and nowhere rise higher than 50 feet above the sea. They are incapable of agricultural cultivation, but yet they abound in plants and shrubs suited to such a locality, and in wild fruits, such as the blueberry, strawberry, and raspberry. Wild fowl of various kinds are also plentiful in their season, and so also are salmon, which are taken in nets and weirs along the beaches outside the island as well as in the gullies.

**Portage Island** has extended considerably southward, and the northern part of Fox Island has been washed away. Several conspicuous houses have been built on Portage Island, the most prominent, a lobster factory with dwellings attached, on the east coast, about  $1\frac{1}{2}$  miles from the south extreme of the island; also a similar group of buildings on the west coast, at the same distance from the north extreme. Portage Island shows from a distance in three parts, composed of clumps of trees 61 feet high, with marshes between.

**Miramichi Bar** commences from the SE. end of Portage Island, and extends across the main entrance, and parallel to Fox Island, nearly 6 miles in a SE. direction. It consists of sand, and has not more than a foot or two of water over it in some parts at low spring tides. There is a part near its SE. end called the Swashway, where the depth has increased to 16 feet, whilst it has decreased in the Ship Channel to 17 feet at low water, or 22 feet at high water in ordinary spring tides.

**Horseshoe Shoal** consists of sand and gravel, and is of great extent. The least water on it is 3 feet, and it is separated from the shoal on the inner side of Portage Island by a narrow and intricate channel, which is seldom or never used.

**Inner Bar.**—To the southward, the Horseshoe is separated from the shoal which connects together Fox, Egg, and Vin Islands, by the very narrow ship channel (over the Horseshoe or Inner Bar), which is only 200 yards wide.

**Pilots.**—Pilotage is compulsory in Miramichi Bay and River. Pilots are generally to be met with in the entrance of the bay, though their district extends eastward to Magdalen Islands, southward to Kouehibouguac River, and westward to Miscou Point.

**Tugs** may be obtained from Chatham by signal to Escuminac light-house, but there is no regular charge.

**Bar Buoy**, a can buoy, painted black and white, in vertical stripes, and numbered 1, is moored in 22 feet water, at the south extreme of

the outer bar, with Esenminac lighthouse bearing S. 75° E., distant 6½ miles, and south extreme of Huckleberry Island S. 20° W. Close south of this buoy there is a depth of 32 feet, the western limit of a deep channel from seaward.

**Lump Buoy**, a can buoy, painted black and numbered 2, is moored in 16 feet water on a shoal between the SE. extreme of the bar and Fox Island, and lies N. 43° W.-westerly, distant 1,800 yards from Bar Buoy. A black spar buoy lies a short distance northward of Lump Buoy.

A can buoy, painted red and numbered 3, lies in 29 feet water, N. 34° W. nearly 1 $\frac{2}{10}$  miles from Bar Buoy, and at the SW. angle of the bar northward of the Swashway. The water shoals rapidly to 11 feet, northward of this buoy.

**Spit Buoy**, a can buoy, painted black and numbered 4, is moored in 18 feet water, at the east extreme of a shoal extending one mile from the northern end of Fox Island, and lies with Portage Island lighthouse bearing N. 40° W., distant nearly 1 $\frac{2}{10}$  miles, and NW. extreme of Fox Island S. 59° W.

A can buoy, painted red and numbered 5, is moored in 18 feet water, bearing S. 86° W. distant 1 $\frac{1}{10}$  miles from Spit Buoy, and at the eastern edge of the inner bar. Three buoys similar to No. 5, numbered respectively 6, 7, and 8, mark the channel southward of Horseshoe Shoal, Nos. 6 and 7 being eastward and No. 8 westward of the lightvessel. They are moored in 18, 21, and 20 feet water respectively.

A can buoy, painted red and numbered 9, is moored in 23 feet water, at the SW. extreme of Horseshoe Shoal.

Three spar buoys, painted black, lie southeastward of Grandoon Island, the two eastern buoys are in a depth of 16 feet, and the western one in 19 feet.

**Grandoon Buoy**, a can buoy, painted red and numbered 10, is moored in 25 feet water, 400 yards southeastward of a shoal extending from the shore eastward of Oak Point.

**Anchorage**.—There is good anchorage, in 4 or 5 fathoms, between the Horseshoe and the southern end of Portage Island, where vessels may safely anchor during the summer months.

Within the buoy, on the SW. extreme of the Horseshoe Shoal, is the usual place where vessels, bound to sea, anchor, to wait for a wind, or high tide, to enable them to cross the inner bar.

**Tides**.—It is high water, full and change, at Portage Island lighthouse at 4h. 45m.; springs rise 5 feet, neaps rise 1 $\frac{1}{2}$  feet, and neaps range  $\frac{3}{4}$  of a foot. Easterly winds cause the highest tides and north-westerly winds the lowest.

From observations made during the survey of 1885, the flood stream was found to flow strongest through ship channel towards Portage Island; whence it divided, a strong stream that runs southward along the west coast of that island meeting the flood stream there. The stream then decreases in strength, and distributes itself generally over

Miramichi Bay, the greatest velocity being observed in the channel south of Horseshoe Shoal, and between that shoal and the Portage Island.

Southward of Horseshoe Shoal, the ebb stream runs in the direction of the channel, straight to seaward, its velocity gradually diminishing as the bay is reached. It is joined by a stream running down the west side of Portage Island, which deflects it slightly to the southward. The stream down Ship Channel is not very strong, and runs in the line of that channel. There is scarcely any ebb stream eastward of the Bar Buoy.

The greatest velocity of tidal stream ascertained near Miramichi Bay was  $2\frac{1}{2}$  miles an hour.

At the anchorage south of Portage Island, the ebb stream makes about an hour after high water, and runs 7 hours, whilst the flood stream begins about  $1\frac{1}{2}$  hours after low water, and runs  $5\frac{1}{2}$  hours, with about half an hour slack water between each tide.

**Directions.**—Escuminac Point, having been made, should be rounded in 5 fathoms by day and 10 fathoms by night, or at distances of  $2\frac{1}{2}$  and 4 miles, respectively; thence steer for the Bar buoy, which should be passed close to on its south side, and immediately alter course to bring the beacons or lights at Preston Beach in line, bearing S.  $41^{\circ}$  E.

Keep the Preston Beach beacons or lights in line until the Swashway beacons or lights are also in line, bearing S.  $80^{\circ}$  W.; then steer N.  $54^{\circ}$  W. for a distance of 3 miles, which will lead to the Spit buoy. Continue that course until the light-vessel at the inner bar bears S.  $72^{\circ}$  W., when the spit off Fox Island will be cleared, and a course may be steered for No. 5 buoy, at the eastern edge of the inner bar. With a long vessel, buoys 5, 6, and 7 should be brought in line before reaching No. 5 buoy, and then to obtain the deepest water in the channel, 18 feet, vessels should pass quite close to the buoys and on the south side of them. From No. 7 buoy steer for No. 8 buoy, and thence for No. 9, at the southwestern extreme of Horse Shoe Shoal. From No. 9 buoy steer N.  $82^{\circ}$  W. to the eastern extreme of Oak Channel, passing 600 yards northward of the southeastern spar buoy. Not more than 16 feet at low water will be found over the flats southeastward of Oak Channel. There are only 15 feet for a short distance in the direct line from No. 9 buoy to the southeastern spar buoy, but the mud is so soft that with a strong fair wind vessels can force their way when drawing 2 feet more water than the apparent depth.

From the eastern end of Oak Channel the course is S.  $50^{\circ}$  W. to Grandoon buoy, passing close north of the northwestern spar buoy; or if the spar buoy be seen steer for it, and then for Grandoon buoy. Pass close southward of Grandoon buoy, and then alter course to S.  $72^{\circ}$  W. until Oak Point beacons are in line, bearing N.  $30^{\circ}$  E.; keep these beacons in line astern past Mussel-bed buoy, and up to Narrows buoy.

The mark, Black Brook mill-chimney, on St. Andrew Point, open

north of the trees on Shel Drake Island, now leads over 13 feet water only, and Shel Drake Island lights in line over 15 feet. The shoal south-westward of Shel Drake Island has apparently extended.

Black Brook mill is situated on St. Andrew Point, and has a large chimney, which shows plainly from Grandoon buoy.

**The Inner Bay of Miramichi** is of great extent, being about 13 miles long from its entrance at Fox Island to Shel Drake Island (where the river may properly be said to commence), and 7 or 8 miles wide. The depth of water across the bay is sufficient for the largest vessels that can cross the inner bar, being  $2\frac{3}{4}$  fathoms at low water in ordinary spring tides, with muddy bottom.

**Egg and Vin Islands** are on the southern side of the bay; the first small, low, and swampy, the other much larger, being  $2\frac{1}{4}$  miles long, and for the most part thickly wooded.

**Vin Harbor** is to the southward of Vin Island, and must be approached around its west end, which is distant nearly  $4\frac{1}{2}$  miles from the north point of Fox Island. It is quite sheltered from all winds, and has plenty of water for the largest ships that can enter the inner bay.

**Anchorage.**—Anchor near the center of the harbor, in 10 or 11 fathoms, mud bottom.

**Tides.**—Springs rise 5 feet, neaps 3 feet, but the rise is at all times uncertain, neap tides sometimes not ranging above a foot and spring tides not above 2 feet. It must also be remembered that the a. m. tides rose higher in general by 2 feet than the p. m. tides in the beginning of August, which was the only opportunity of observing them.

**Directions.**—A pilot can readily be procured to take a ship into Vin Harbor, or with the assistance of the chart, as follows: Steer S.  $50^{\circ}$  W. from the SW. buoy of the Horseshoe for about 3 miles, and then to the southward around the west end of Vin Island, at a distance not less than  $\frac{3}{4}$  mile, until the sandy points on the south side of the island open, bearing N.  $59^{\circ}$  E. Steer for them, keeping them just open, and on approaching the sandy SW. point of the island sheer to the southward sufficiently to give it a berth of 150 yards as the vessel rounds it into the harbor. Do not go to the southward of the line joining the sandy points of the harbor, or she will be on shore on the sandy shoal which extends off the main land opposite. The harbor is a bay of the island,  $\frac{3}{4}$  mile wide and 600 yards deep.

The long sandy Vin Spit and shoal of the main runs out to the northward, nearly to the line joining the sandy points of the harbor, but leaves a narrow channel to the eastward, which continues for about 2 miles, and may be considered as a prolongation of the harbor in that direction, or towards French River Point. French River is small and shallow, and has a village of Acadians and a church, which bears S.  $65^{\circ}$  W. from Fox Gully, from which it is distant  $1\frac{1}{4}$  miles. The space to the eastward of the line joining Egg Island and French River and in the bay to the southward of the latter, is occupied by flats of sand,

mud, and eelgrass, the home of oysters, lobsters, and other shell fish. Shallow and intricate boat channels lead through these flats to Fox and Huckleberry Gullies.

**Vin Bay** is more than 3 miles wide and nearly as deep. Point Quart, its western point, is a low cliff of sandstone with high trees,  $3\frac{1}{4}$  miles from the west end of Vin Island. There is good anchorage in the eastern part of this bay in 3 fathoms, mud bottom, and about  $\frac{3}{4}$  mile to the westward of the island. The western side of the bay is shallow. In its SW. corner is Black River, into which 9 feet can be carried at low water through a narrow and difficult channel, and the river has 3 fathoms in it for some distance within the entrance.

**Vin River** also runs into this bay  $2\frac{1}{2}$  miles to the southward from the SW. point of the island. It is a smaller river than Black River, having only 6 feet at low water in its entrance. There is a small but neat church on its eastern shore, a short distance within its entrance, and flourishing farms on either side, where supplies may best be obtained. The best watering place will also be found at this river; but it is difficult to obtain large supplies of good water in so flat a country near the sea. There is a tolerable road from Vin River to Chatham, the principal town on the Miramichi River.

**Point Cheval**, bearing S.  $87^{\circ}$  W. nearly 3 miles from Point Quart, is sandy, with a clump of high trees upon it.

Immediately to the westward of Point Cheval is the shallow Napan Bay and River, which boats can ascend for several miles, or as far as the tide reaches. Above that point the river, which is small, runs through a fertile and well-cultivated valley, extending westward in rear of the town of Chatham.

**Middle Ground** is a long sandy bank, which stretches down the center of the estuary from Point Cheval and extends from it 5 miles to the eastward. The east end of this bank will be cleared by keeping French River Point open to the eastward of Vin Island, bearing S.  $68^{\circ}$  E. The Ship Channel is between the Middle Ground and the north shore of the bay.

**Sheldrake Island** is low, swampy, partly wooded, and has two buildings on its eastern side, which were formerly used as a cholera hospital. The island is  $\frac{1}{4}$  mile long by  $\frac{1}{4}$  mile wide, and is separated from the north shore by a channel  $\frac{1}{2}$  mile wide, but with only one or 2 feet in it at low water. Shallow water extends far off this island in every direction westward to Bartiboque Island and eastward to Oak Point.

**Murdoch Spit and Murdoch Point** are two sandy points on the south shore,  $\frac{1}{4}$  mile apart, with a cove between them, and about a mile SW. of Sheldrake Island. The entrance of Mirimichi River is  $\frac{3}{4}$  mile wide between these points and Moody Point, which has a small Indian church upon it, and is the east point of entrance of Bartiboque River.

**St. Andrews Point**,  $1\frac{1}{2}$  miles above Murdoch Point, and on the same



or south, side of the river, is St. Andrews Point showing as the extreme of the land from Sheldrake Island. Both these points were wooded at the time of the survey, in 1837, and used as leading marks.

**Bartiboque River** is  $\frac{3}{4}$  mile wide at the entrance, between Malcolm and Moody Points, but contracts to 300 yards a short distance within, where a wooden bridge is thrown across. Bartiboque Island lies in the entrance of the river, and has steep banks or clay cliffs on every side, and is nearly joined to the shore to the northward by a sandy spit. The narrow channel into the river passes close to the east end of the island, and has not more than 4 feet in it at low water.

**Oak Point.**—Returning back to the eastward, along the north shore, the first point requiring notice is Oak Point, nearly opposite Cheval Point. The eastern part of this point has dark-colored sandstone cliffs, about 12 feet high and forming an extreme point, with a beacon on it; it is used as a leading mark with a white beacon which stands N. 34° E., at the distance of  $\frac{3}{8}$  mile from it on the shore of the bay. The latter beacon is lofty and large, and shows so conspicuously on the dark background of the woods that it can be easily seen on a fine day from Fox Island.

**Grandoon Island**, low and marshy, and difficult to distinguish from the main land till very near, is distant  $2\frac{1}{2}$  miles from Oak Point; and  $3\frac{1}{2}$  miles northward of Quart Point. Farther eastward, along the northern shore of the Inner Bay, are Burnt Church and the Indian village and small river of the same name; also Hay Island, and the Acadian villages of Upper and Lower Neguac, inhabited by fishermen and farmers, lie out of the line of ship navigation.

They will require no further notice here than to remark that there is a clear channel, with  $3\frac{3}{4}$  to  $2\frac{1}{4}$  fathoms water in it, to the northward of the Horseshoe and the shoals of Portage Island as far northeastward as Hay Island, where a narrow channel leads out to sea through the Neguac Gully.

**Miramichi River** may be said to commence at Sheldrake Island; for below that point the Inner Bay, with its low and widely receding shores, bears no resemblance to a river. At its entrance, the country begins to rise into gentle undulations, terminating in steep banks and cliffs of sandstone, which in some places attain a height of 50 feet above the river. The settlements, too, increase in number and extent, and soon become continuous on either side, dotted here and there with steam saw-mills. Written directions, however, will not much avail above Sheldrake Island, not only on account of the contracted nature of the navigation, but also because there are few leading marks of a permanent nature which could be certainly recognized by a stranger. Directions, too, are not so requisite for this inland navigation, for which there are abundance of well-qualified pilots.

**Leggat Shoals** at the time they were surveyed had 12 feet upon them at low water; but this depth is said to vary, and also upon the banks

of St. Andrew, in consequence of old trees, logs, and other lumber lodging upon them. The same cause is said to render the depth uncertain to the southward of these shoals, where there is a wider channel (1860). The river is clear of detached shoals to Middle Island, which, together with its shoal, confines the ship channel to the north side of the river, where the shore is so bold that there are 7 or 8 fathoms close to the sandstone cliffs until the vessel is off the Gilmour Mills and Cove, nearly opposite the west end of Middle Island.

**Middle Island** is rather smaller than Shelldrake Island, and there is no channel to the southward of it at low water. There is nothing in the way of vessels from Gilmour Mill to the wharves at Chatham.

**Chatham**, the principal town on the Miramichi, and containing, in 1883, about 6,000 inhabitants, commences  $\frac{1}{2}$  a mile above Middle Island, and extends along the south shore for  $1\frac{1}{4}$  miles to the westward. It is conveniently situated for shipping, having 6 to 8 fathoms water close to its wharves. It is a straggling, but rapidly increasing town, having some good houses, 3 churches, and 2 other chapels or places of worship.

**Water and Supplies.**—The surface water is quite fresh, on the ebb tide, at Chatham. Supplies of any kind can be procured at Chatham or Newcastle.

**Coal.**—About 1,000 tons of coal are usually kept in store at Chatham, and about 200 tons at Newcastle, but any quantity can easily be obtained at short notice by Intercolonial Railway from Springhill or Pictou.

**Trade.**—The chief exports from Chatham and Newcastle are timber, deals, palings, salmon, lobster, and extract of hemlock bark for tanning.

**Repairs.**—There is neither dock nor slip in Miramichi River, but at Chatham there is a wharf for heaving down vessels in need of repairs.

**Telegraph and Railways.**—Chatham is in telegraphic communication with all towns of the Dominion of Canada and the United States, and is directly connected by the Intercolonial Railway with Halifax, St. John in New Brunswick, and Quebec, also by a direct railway with Fredericton, New Brunswick.

**Ice.**—From observations taken each year from 1830 to 1885, the average date of the opening of navigation at Chatham is April 20, and of the close December 5, the river being completely closed between those dates. At Portage Island, navigation opens about a week earlier, and closes about a week later than at Chatham.

**Douglastown**, on the opposite or northern shore, about  $1\frac{1}{2}$  miles above Chatham, is a much smaller place, containing about 1,100 inhabitants. It is prettily situated on a rising ground, and has sufficient water at its wharves for large vessels. The most remarkable building is the Marine Hospital, built of stone. Mr. Abram's shipbuilding establishment is  $1\frac{1}{4}$  miles above Douglastown, on the same side of the river; and opposite to it on the south side shore is the church of St. Paul.

**Newcastle**, 12 miles farther up the river, and on the north shore, is

the county town, containing the court-house and jail, a church, a chapel, and some few other good buildings. The number of inhabitants in 1883 was about 4,000. Standing on an acclivity which rises to the height of 100 feet at  $\frac{1}{4}$  of a mile from the river, and commanding a view over the lower ground westward and southward to Beaubère Island and Nelsontown, and down the river to Chatham, a distance of nearly 5 miles, its situation is as beautiful as could have been selected, while at the same time it is not unfavorable for mercantile purposes, the channel of the river opposite it being  $\frac{1}{4}$  mile wide, clear of shoals, and 6 or 7 fathoms water close to the wharves of the town.

**Nelsontown**, the last village within the navigable waters of the Miramichi, is a straggling place with 200 or 300 inhabitants, principally of Irish origin and possessing a large wooden church, which stands on the south shore, opposite the east end of Beaubère Island, and  $1\frac{1}{2}$  miles above Newcastle.

**Beaubère Island**,  $1\frac{1}{4}$  miles long and  $\frac{1}{4}$  mile wide, has steep clay banks, based on sandstone, and rising to about 20 feet above the river.

The Miramichi is easily navigable to this point by any vessels that can cross the Horseshoe or Inner Bar. There are some parts of the channel above Chatham where there are only  $2\frac{1}{2}$  fathoms, and which would have to be avoided by a large vessel at low water, but there is only one detached shoal, which has 9 feet least water, and lies less than half way across from the south shore, S.  $28^{\circ}$  W. from the hospital at Douglastown.

**Tides.**—The usual average rate of the ebb tide is 2 knots, and the flood one knot, in this part of the river. The ebb in some places runs  $2\frac{1}{2}$  knots, and in the spring of the year is said to be still stronger. In July and August, when the observations were made, excepting for 2 or 3 days at neap tides, the morning tides rose 2 or 3 feet higher than the evening tides, and were of longer duration by one or even two hours at a time. But this is much influenced by winds, and consequently by no means regular. The mean length of the flood tide is 6 hours, and of the ebb  $6\frac{1}{2}$  hours. The duration and length of the tidal streams are also influenced by the winds, but in general they continue in the channel about half an hour after it is high or low water by the shore.

**NW. and SW. Arms.**—At Beaubère Island the two great arms of the Miramichi meet. The NW. Arm is much the largest, as respects the tidal water, although the SW. Arm is considered the main branch, being of greater length, and discharging more water. The NW. Arm would be navigable for large vessels to Shilelah Cove, 7 miles above Beaubère Island, as there is sufficient depth of water, if the channel were buoyed or staked in the narrow parts, which are not more than 100 yards wide. Above Shilelah Cove there are from one to  $1\frac{1}{2}$  fathoms water, in intricate and narrow channels between shoals of mud and low marshy islands, all the way to the rapids, which flow in narrow chan-

nels between meadow islands. There the tide ends, and the water becomes quite fresh 13 miles from Beaubère Island, and 39 miles from the entrance of the inner bay at Fox Island.

The SW. Arm is not navigable for large vessels, as not more than 6 or 7 feet, at low water, spring tides, can be carried through between Beaubère Island and the mainland; and even above that shallow part, although there is often more than 2 fathoms water, yet the channel is too narrow and intricate for any but very small vessels. The arm is about  $\frac{1}{4}$  mile wide for the first 5 miles, or up to Barnaby Island; after which it varies from 200 to 400 yards up to the rapids, 12 miles from Beaubère Island. Both shores of this arm are settled, and many of the farms appear to be in a flourishing condition.

**Tides.**—The tide, which ends at the rapids, was observed to rise 2 feet there, and it was high water on the day of the full moon at about 8 hours; as it was also at the foot of the rapids in the NW. Arm.

**The Neguac Gully**, between the sand bar of the same name and a small one to the SW., is nearly 600 yards wide and carries 3 fathoms water; but a sand bar, of the usual mutable character, lies off it nearly a mile. Within the gully a narrow channel, only fit for boats or very small craft, leads westward up the Inner Bay. The shoal water extends  $1\frac{1}{2}$  miles off this gully, but there is excellent warning by the lead here, and everywhere in this bay. Shoals, nearly dry at low water, extend from the Neguac Gully to Portage Island, a distance of  $1\frac{1}{4}$  miles. A can buoy, painted red, is moored in four fathoms at the entrance to Neguac gully. A similar buoy is moored northwestward of the first buoy, to show the direction of the channel. A church with a spire has been built at Neguac Village, about  $2\frac{3}{4}$  miles northwestward of Neguac Lighthouse.

**Blackland Point**, the north point of Miramichi Bay, is low and swampy, with steep and black peaty banks, and there is a communication round it for boats within the sand bars, from Tabusintac lagoon into the Inner Bay of Miramichi.

**Tabusintac River.**—Tabusintac Gully is about 300 yards wide at high water, and has a shifting bar of sand, over which 6 or 7 feet could be carried at low water when it was surveyed, and 11 or 12 feet at high water in spring tides. The entrance of the Tabusintac River from the lagoon inland is 3 miles to the northward of the gully and can be seen over the sand bars. There is plenty of water in this river when once over the bar; 2 and 3 fathoms is the depth in the channel through the lagoon, and there is as much as 4 and 5 fathoms in some parts of the river; but the channel is too narrow and intricate for anything larger than boats or very small vessels. The tide flows 10 miles up the river, through an undulating country, and occasionally between steep banks of sandstone, which rise to about 100 feet above the sea. There are settlements on either shore, consisting principally of Scotch families, and there is a church on the south bank  $1\frac{1}{2}$  miles up from the lagoon.

Salmon are taken in considerable quantities in the Tabusintac. There are lobsters, oysters, and other shell fish in the lagoon; and codfish come in upon the coast early in the season and are fished for upon a small scale.

**Raft Gully.**—There is an entrance into the lagoon through Raft Gully, 6 miles to the northward of Tabusintac Gully, but it is nearly blocked up with sand. Barreau Point lies about midway between Raft and South Tracadie gullies.

**Tracadie River** is somewhat larger, but in other respects similar to the Pokemouche. It has a church and village on the south side of its entrance from the lagoon inland, which can be seen over the sand bars; but the church bears SW.  $3\frac{1}{2}$  miles from the north and principal gully, instead of west, as at Pokemouche, which will help to distinguish the one from the other. The inhabitants of Tracadie are principally Acadians. Both rivers supply a considerable quantity of pine timber and deals.

The North Gully of Tracadie is at present the principal entrance to the very extensive lagoon, through which the river flows in a narrow channel between flats of sand, mud, and weeds. There are several huts and stores at the entrance of this gully, which is 300 yards wide at high water; but, like all the rest of this coast, has a shifting bar of sand off it, causing the depth, breadth, and directions of the channel to vary so frequently in heavy gales as to render all instructions for entering it useless. In the entrance of the gully, and sheltered by the bar outside, small vessels may lie moored in from  $1\frac{1}{2}$  to 3 fathoms water. There are 2 and 3 fathoms in the channel of the river opposite the village, but that can only be reached by passing through the lagoon, where the channel in one part is so shallow that boats can only pass when the tide is in.

At 2 miles to the southward of the North Gully is the Old Gully, now nearly blocked up with sand, but which was formerly the principal entrance. The South Tracadie River, which discharges its waters, after traversing a lagoon, by the Little Tracadie Gully into the sea, is separated from the North Tracadie by a point of the mainland which approaches near the sand bars, but still leaves a communication within them from one lagoon to the other. There are huts and fish stores at the entrance of this gully, and Acadian settlements at the entrance of the river. Within the sand bars which inclose the lagoons of Tracadie there is a well-sheltered boat or canoe navigation for 8 or 9 miles.

**Green Point**, which separates the lagoons of Pokemouche and Great Tracadie, has a rocky shoal extending off it  $\frac{3}{4}$  mile to the depth of 3 fathoms and  $1\frac{1}{4}$  miles to 5 fathoms at low water.

**Pokemouche River**,  $5\frac{1}{2}$  miles SW. of Shippegan Gully, after traversing a shallow and extensive lagoon, enters the gulf by a gully through the sand bars about 200 yards wide. A shifting bar of sand outside generally leaves a narrow channel with 4 or 5 feet in it at low water

into the gully, and there are from 9 to 12 feet for some distance within. The spring tides rise 5 feet, so that large schooners can be taken in by a native pilot, and in fine weather. On the south side of the entrance of the river from the lagoon inland and  $1\frac{3}{4}$  miles from the gully, there is a church, village, and sawmill. The inhabitants, 300 or 400 in number, and principally of Acadian French and of Irish origin, live by fishing, a very limited agriculture, and lumbering.

**Shippegan Gully**, with its bar of sand, its rapid tide, and dangerously heavy surf occasioned by easterly gales, is distant 22 miles from the north point of Miscou. The bar of sand, which dries in part at low water, shifts in heavy gales; but there is generally a channel with 4 or 5 feet in it at low water, and the tide rises from 3 to 5 feet, according as it may be neap or spring tide. The 3-fathoms edge of the shoal water outside the bar is  $\frac{3}{4}$  mile off shore, after which the depth increases rapidly.

**Birch Point**.—About  $1\frac{1}{2}$  miles to the southeastward from the north point of Miscou is Birch Point, a steep cliff of sandstone about 10 feet high, and which will be easily recognized by the white birch trees, which are higher there than in any other parts near the shore. A reef of stones and sand extends there  $\frac{1}{2}$  mile out from the shore. The soundings in the chart will enable the mariner easily to avoid the shoal off the North Point, either by night or by day. There is good anchorage on either side of it; under the North Point in from 5 to 10 fathoms, in southerly winds, and off the light-house on Birch Point, in from  $3\frac{1}{2}$  to 6 fathoms, in westerly winds, the bottom being of sand, which holds sufficiently well for offshore winds.

**Miscou Island**.—The Miscou Flats, which are of sandstone, continue 4 or 5 miles to the NE. of the harbor; and near their northern termination there is an opening in the trees which extends across the island, and which has been mistaken by vessels, at night or in foggy weather, either for the harbor or the gully, according as they were west or east of the island. There is moderately good anchorage during the summer season with this opening S.  $52^{\circ}$  E. in 10 to 11 fathoms; it is easily distinguished, very useful in pointing out a vessel's position, and especially to clear Miscou Flats when working out with a light breeze and flood tide. The remainder of the shore is tolerably bold, with steep, sandy beaches which surround the north end of the island, where several stores and huts of the fishermen will be seen along the shore. The north point is distinguished by a green mound, or grassy sand hill, and the shallow water does not there extend to more than  $\frac{1}{4}$  mile off shore; but a sandy shoal commences immediately to the eastward of the point, and fronting the outlet of a small lagoon, where there are several fishing stores and huts, stretches off a mile to the NE.

**Miscou Banks** extend about 22 miles to the eastward of Miscou, and the soundings upon them will afford full and sufficient guidance for a vessel approaching this part of the coast.

Their northern edge, in 30 fathoms, is 7 or 8 miles to the northward of the light-house on Birch Point, and passes the north point of Miscou, at the distance of 4 miles, into Chaleurs Bay, thus affording excellent guidance to vessels. These banks continue to extend off the coast to the southward, but with more regular soundings and a greater general depth than in the part to which the name of Miscou Banks has been applied.

**Bay of Chaleurs** is the largest bay in the gulf, being 25 miles wide from Cape d'Espoir to Miscou Island; but the entrance is more generally considered to be at Macquereau Point, from which the north point of Miscou Island is distant  $14\frac{1}{2}$  miles. The depth of the bay from Miscou to the entrance of the Restigouche River is about 75 miles.

The northern shore of the bay is of moderate height, but an irregular range of hills of considerable elevation is every where visible a few miles back from the coast, the predominating features of which are red cliffs of sandstone and shale, with intervening shingle and sand beaches. Trap rocks and limestone are occasionally met with also, but more sparingly. The southern or New Brunswick shore is, generally speaking, much lower, and for the most part composed of similar rocks; but between Bathurst and Caraquette the cliffs of red sandstone rise to a height of 200 feet above the sea. The sandstone either belongs to or is very nearly connected with the coal formation, fossil vegetable remains of which, as well as thin veins of bituminous coal, being not unfrequently met with. There are numerous settlements all around the bay, and the several harbors, roadsteads, and rivers are frequented by numbers of vessels engaged in the lumber trade and the fisheries.

The climate is warmer and the weather in general much finer within this bay than it is outside in the adjacent parts of the gulf. The fogs, which prevail so much with southerly winds on the Miscou Banks, seldom enter the bay, although rain and mist accompany easterly gales here as elsewhere.

The navigation is by no means difficult; for although there are some dangerous shoals, yet there is everywhere good warning by the lead.

**Tides.**—The tidal streams are regular within the bay, and seldom amount to the rate of one knot per hour; but outside, off its mouth, and especially on the Miscou Banks, the currents and tidal streams are so irregular, both in strength and direction, that nothing definite can be said of them; and their dangerous effects upon the course of vessels can only be guarded against by the constant use of the deep-sea lead and attention to the soundings.

**Directions at Night and in Fogs.**—Vessels bound for Chaleurs Bay and approaching its entrance in a dark night or foggy weather should not attempt to make Macquereau Point, which is so bold that there is little or no warning by the lead; but should strike soundings on the Miscou Banks, which extend nearly 22 miles to the eastward of Miscou Island. A cautious lookout should be kept for the numerous fishing

schooners, which are generally riding on the banks; and the northern edge of the latter, being followed in 30 fathoms of water, will safely conduct vessels past the north point of Miscou, at the distance of 4 miles, and form a sure guide up the bay.

The bank of soundings off the north shore is also sufficiently wide to guide vessels everywhere within Macquereau Point; nevertheless, in a dark night and bad weather, vessels had better not approach the shore much nearer than the depth of 30 fathoms in any part of the bay to the eastward of Carlisle Point. The soundings are generally of sand and shells on the banks, while in the central parts of the bay black and brown mud prevail, with depths between 30 and 50 fathoms. Within, or to the westward of Carlisle Point, and the opposite bay of Nipisighit, the depth decreases to less than 30 fathoms, but there is still sufficient warning everywhere by the lead quite up to the head of the bay.

**Miscou Harbor**, frequently called Little Shippegan by the fishermen, lies between Miscou and Shippegan Islands, and just within the sandy spit at the SW. extreme of Miscou, where the space of deep water, from 4 to 6 fathoms, forming the harbor for large vessels, is 400 yards wide and upwards of a mile in length. The harbor for small craft is more extensive, with 2 and  $2\frac{1}{2}$  fathoms water, and also a narrow channel extending eastward through the flats of mud and weeds to within a mile of Miscou Gully, which boats can only enter at high water. The bottom within the harbor is soft mud; in the channel, just outside the entrance, sand, and between the shoals, farther out, sandstone.

**Directions.**—The Miscou Channel, leading to the harbor, between the Shippegan and the Miscou Flats, is in one part only 350 yards wide, between shoals so steep that there is not the slightest warning by the lead. In short, none other than small vessels should attempt this harbor without having first buoyed the channel or secured the assistance of a competent pilot. A vessel of 12 feet draft may, however, run in with the assistance of the chart and the following brief directions:

If to the eastward of the harbor, cross the Miscou Flats to the SW., at the distance of 3 miles offshore, in no less than 4 fathoms water; if to the westward, follow the northern edge of the Shippegan Flat, in 4 or 5 fathoms. In either case, open out the NE. extreme of the trees of Shippegan Island, just clear of the SW. extreme of the trees of Miscou Island, or keep the former in one with the extreme of the sandy spit at the SW. end of Miscou Island, the latter being preferable if it can be made out. These marks will bear a little to the eastward of S.  $69^{\circ}$  E.; steer for them until the water shoals to less than 4 fathoms, which will be on a point of the Miscou Flats. Sheer to the SW. for about  $\frac{1}{2}$  mile, or so as to deepen the water to 4 and 5 fathoms; then steer S.  $64^{\circ}$  E. or for Pandora Point, a wooded extreme of Shippegan,  $\frac{1}{2}$  mile within Pecten Point, which is the sandy south point of entrance of the harbor.

In running this course the vessel will cross a bay in the Miscou Flats



in 4 and 5 fathoms; if the soundings deepen to more than the latter depth at low water, sheer to the eastward, for the object is to keep on the Miscou and least dangerous side of the channel; and that will be effected without difficulty by the lead, since there are 8 and 9 fathoms in the channel. After running a short mile towards Pandora Point, the points on the north side of Shippegan will be observed to come in one, bearing S. 49° W.; and about the same time a high sand hill, on the sand bars at the head of the harbor, will come on with the high-water extreme of the sandy spit of Miscou, bearing S. 83° E. The vessel will now be at the narrow part of the channel, and must follow the edge of the Miscou Flats by the lead, in from 4 to 6 fathoms, sheering to the eastward the instant the depth is more than the latter, and to the westward when less than the former. The general direction of the course will be still towards Pandora Point, until the points on the SE. shore of Miscou within the harbor open out, when the vessel will be in safe anchorage, although outside the entrance. If wishing to proceed farther, haul up for the high sand hill on the sand bars already mentioned, and when within the sandy point, steer for the gully, for a short distance, choosing a convenient berth.

**Tides**—The tides appear to set fairly in and out of the harbor, at a rate seldom amounting to a knot.

**Shippegan Flat** is an extensive shoal of sandstone, thinly and partly covered with sand. It is the most northern of the Shippegan Shoals, and extends 2½ miles off the north side of the island, separating the channel leading to the harbors of Caraquette and Shippegan from that which leads into Miscou Harbor. There is good warning by the lead all along its northern side, which may be safely approached to 6 fathoms in a large and to 3 fathoms in a small vessel.

**Poquesuedie Shoal** is an extensive flat of sand extending 2 miles to the northward and eastward from Poquesuedie Island, and having only 6 or 7 feet water over the greater part of it. Caraquette Steeple and the sandy SE. extreme of Caraquette Island in line, bearing S. 63° W. lead over its north point in 2 fathoms at low water; and if the steeple be kept half way between the extreme of the sandy point and the extreme of the trees on the same island, the north point of the shoal will be cleared in 4½ fathoms; but as both the sandy point and the trees may change in the course of years, those marks should not be relied on without previous examination.

**Shippegan Sound.**—On the western side, within Poquesuedie Island, is Simon Inlet, the best harbor in the sound. Within its entrance, between Marcelle and Brule Points, the anchorage is quite landlocked, with water sufficient and space enough for vessels of large draft. On the opposite or Shippegan side are the bays of Alemek and Little Alemek. The latter is a shallow place, but has good anchorage off its mouth. The former, which is most to the southward, and by far the larger bay of the two, is an excellent harbor with 3 and 4

fathoms water, and secure in all winds. There is a church and village of Acadians at the head of this bay; and on Alexander Point, its north point, stands the establishment of Mr. Alexander. There is a bar of sand and mud extending across the sound from Alexander Point to Brule Point, which limits the depth that can be carried into Alemek Bay to  $2\frac{3}{4}$  fathoms; and into Shippegan Harbor to  $2\frac{1}{2}$  fathoms at low water.

**Shippegan Harbor.**—On the mainland, nearly opposite the south point of Alemek Bay, there is a windmill on Bernache Point, the sandy north point of Basse Bay. On the south point of this bay stands the church and village of Shippegan, and off them is Shippegan Harbor, which is a narrow channel with  $2\frac{1}{2}$  to 4 fathoms water, and between shoals of mud and eelgrass nearly dry at low tide. This narrow channel continues  $2\frac{1}{2}$  miles beyond the church, terminating at Shippegan Gully, the southern entrance of the sound. The gully is used by shallops and fishing boats. The tide is generally extremely rapid in it, and there is often a heavy surf on its bar of sand, which dries in part at low tide, leaving a channel with only 4 or 5 feet water. Shippegan Harbor is quite secure in all winds. The watering place is at a small stream in Basse Bay, a short distance to the westward of the church.

Shippegan Channel, leading into the sound, is deep, but the passage is narrow and without leading marks. For 3 miles the breadth of the channel between the shoals is only  $\frac{1}{4}$  to  $\frac{1}{2}$  mile. Four buoys mark the edges of the shoals and render the navigation comparatively easy.

**Tides.**—It would require a much longer experience than was afforded by the few weeks employed in the Admiralty survey to be fully acquainted with the set of the tides in the entrance of the Caraquette and Shippegan Channels, where they doubtless change with the time of tide and other circumstances. The rate of the tides, however, seldom exceeded a knot even in the channels, where of course they are stronger than elsewhere. In Shippegan Harbor the stream was very regular in fine weather, running in at the gully and to the northward, through the sound, into Chaleurs Bay from about half ebb to half flood by the shore, and in the reverse direction, or to the southward, from about half flood to half ebb. It is high water, full and change, in Shippegan Harbor at 3h. 42m., which is about an hour later than at Caraquette and Paspebiac; springs rise  $5\frac{1}{2}$  or 6 feet, neaps 3 feet.

**Shippegan Sound.—Ice.**—The sound is usually frozen over about 1st December and clear of ice about 10th May, being completely closed between those dates. The first vessel arrives from sea about 21st May and the last one leaves about 13th November. In 1876 field ice drifted into Shippegan Sound on 14th May and did not disappear until 4th June.

**Caraquette Island** is of sandstone, low and wooded, and  $1\frac{3}{4}$  miles long in a direction nearly parallel to the coast. Sandy points extend from both ends of the island towards the mainland, or to the southward,

sons to form a bay, in which there is landlocked anchorage for vessels not drawing more than 15 feet water. The island rises from an extensive bank of flat sandstone, partially covered with sand, and which, commencing at Mizzenette Point, extends to the eastward parallel to the coast all the way to the entrance of Shippegan Sound, a distance of 8 or 9 miles.

**Caraquette Shoal** extends  $4\frac{1}{2}$  miles to the eastward of the island, from which it dries out occasionally in very low tides to the distance of 2 miles, and is shallow in every part. From its east end Caraquette steeple and the SE. extreme of the trees of Caraquette Island are in line, bearing S.  $63^{\circ}$  W., and Shippegan steeple and Poquesnedie Point bearing S.  $20^{\circ}$  E. The last-named marks in line lead to the eastward of this shoal in 3 fathoms at low water, but a large ship requiring a great depth of water would have to pass farther to the eastward by keeping Marcelle and Poquesnedie Points in line, bearing S.  $2^{\circ}$  E.

**Fisherman Ledge** is a detached bed of rocks, with 10 feet least water, lying to the northward of the Caraquette Bank and separated from it by Fisherman Channel, which is one mile wide and carries from 4 to 7 fathoms water. This dangerous ledge, which lies more in the way of vessels than any other in Chaleurs Bay, is  $1\frac{3}{4}$  miles long and  $\frac{1}{4}$  mile wide from the depth of 3 fathoms to 3 fathoms. There are no marks for it. Its northern edge is distant 3 miles from Caraquette Island, and its east and west ends bear north from the corresponding points of the island. The points of cliffs at Great Anse and Dona Point in one, bearing S.  $77^{\circ}$  W., lead through Fisherman Channel, which, however, has not been examined very closely, and can not in any case be recommended to vessels of large draft.

**Caraquette Channel**, between the Poquesnedie and Caraquette Shoals, forms the entrance to the harbor of Caraquette for a distance of  $2\frac{1}{2}$  miles, and has water enough for vessels of the largest draft; but it is crooked and only 450 yards wide between very steep shoals, and without sufficient leading marks, hence it becomes a very difficult channel.

**Caraquette Harbor** may be said to commence immediately within or to the westward of Poquesnedie island, extending westward between the mainland and the Caraquette Shoal and Island. The church at Caraquette will be seen standing conspicuously on the ridge nearly opposite to Mizzenette Point, and the houses and fish stores of Lower Caraquette nearly opposite to the island. In the eastern part of the harbor, immediately within Poquesnedie, the depth is 5 and 6 fathoms, and there is not less than  $3\frac{1}{2}$  fathoms till within  $\frac{1}{2}$  mile of the SE. point of the island. Between the island and the main channel is only 250 yards wide and carries only  $2\frac{1}{2}$  fathoms water; but farther westward it increases to  $\frac{1}{4}$  mile and  $4\frac{1}{2}$  fathoms water, and is there sheltered by the Mizzenette sands, which dry at low water nearly across to the island. The bottom is of mud within the harbor and of sand in the entrance, or Caraquette Channel.

**Caraquette Bay** extends 4 or 5 miles to the westward of Mizzenette Point, being all shoal water except the narrow channel of the harbor and terminating in the two shallow rivers, the South and the North, in the mouths of which there are oyster beds. The best watering place is at a small stream which descends the steep banks at Upper Caraquette, near Brideau Point.

**Ice.**—The harbor is usually frozen over about 11th December, and clear of ice about 8th May, being completely closed between those dates. The first vessel arrives from sea about 12th May, and the last one leaves about 25th November.

**Directions.**—If bound from the eastward, having brought the entrance of Miscou Harbor to bear to the eastward of S. 24° E., stand in towards it to 8 fathoms water; then run to the westward in that depth until the NE. extreme of the trees of Shippegan Island opens to the southward of the SW. extreme of Miscou Island, bearing S. 65° E., when, if the weather be clear, Caraquette steeple will be seen in line with the north extreme of Caraquette Island, bearing S. 51° W. From thence steer for Blanchard Point, the wooded north extreme of Poquesuedie Island, which may or may not be made out, as it will be on with the mainland and distant 7 or 8 miles. Do not approach the Shippegan Flat nearer than the depth of 7 fathoms, and having run about 3½ miles, Marcelle Point, the wooded SE. extreme of Poquesuedie Island, will be in line with Poquesuedie Point, which is the sandy east extreme of the same island.

These points in line bearing south will lead westward of the NW. extreme of the Shippegan Flat. Steer for these points in line until Caraquette steeple comes in line with the SE. extreme of the trees of Caraquette Island, bearing S. 63° W., immediately after which, or when the north extreme of Shippegan is in line with the south extreme of Miscou, bearing N. 74° E., steer towards Blanchard Point, bearing S. 37° W. Having run not quite 1½ miles towards Blanchard Point Shippegan steeple will come in line with Poquesuedie Point, bearing S. 24° E., and at the same time, or immediately afterwards, Caraquette steeple will be in line with the sandy SE. extremity of Caraquette Island, bearing S. 63° W.

The vessel will now be within the entrance of the Caraquette Channel, between the Caraquette and Poquesuedie Shoals, and must haul to the westward immediately for Caraquette Steeple, keeping it carefully in line with the sandy SE. extreme of Caraquette Island, until the windmill on Alexander Point (Shippegan Island) is in line with Poquesuedie Point, bearing S. 47° E., when the course must instantly be changed to S. 40° W. The vessel will now be about to pass through the narrowest and most difficult part of the channel, and the course must be strictly attended to, and the lead kept going on both sides. If the water shoals to less than 4 fathoms, after the vessel has run upon this course from ¼ to ½ mile, it will be on the Poquesuedie side, and she must therefore

steer to the northward a little, or into 5 fathoms, and then resume the S. 40° W. course again until Caraquette Steeple comes in line with the cliff of Bridean Point, bearing S. 71° W. Alter the course again immediately the last-named marks come in line, and steer for them for  $\frac{3}{4}$  mile, then sheer to the southward a little, so that the steeple may be seen a little within and over the extremity of the point, or in line with the store upon it; keep it so until the cliffy points on the NE. side of Caraquette Island are all shut in behind the east point of the island, and it will have led clear of the south extremity of the Caraquette Shoal. The vessel will now be in safe anchorage, and a berth may be chosen at pleasure with the assistance of the chart, and in from 4 to 24 fathoms at low water.

**Mizzenette Ledge** of rocks, with 5 feet least water, bears N. 45° W.  $1\frac{1}{4}$  miles from the west end of Caraquette Island, and a vessel will pass to the northward of it, in 3 $\frac{1}{2}$  fathoms, by keeping Dona Point just open to the northward of Mizzenette Point, bearing S. 83° W. These marks will also lead to the eastward along the northern edge of the Caraquette Shoal until they strike Scallop Patch, which has 16 feet least water over a rocky bottom; and on which the NW. extreme of Caraquette Island and Caraquette Steeple are in line, the SE. extreme of the island bearing S. 4° W., distant nearly 2 miles. The marks for clearing the northern edge of the Caraquette Shoal, to the eastward of Scallop patch, and in 3 fathoms water, are the south extreme of Miscon Island kept plainly open to the northward of the north point of Shippegan Island, bearing N. 74° E. But those marks are low and distant, and often not well defined, therefore they should not be trusted alone, neither will they be required if the northern edge of the shoal be not approached nearer than the depth of 4 fathoms at low water.

**Norton Shoal**, carrying 3 fathoms water, and lying  $\frac{3}{4}$  of a mile off shore, one mile to the westward of Norton Point, and 9 miles eastward of the Nipisighit, is the only danger in the way of vessels along the coast from Mizzenette Point to Bathurst Harbor, a distance of 23 miles.

**The Coast**, which for the most part is of high sandstone cliffs, is very low near Mizzenette Point; and about 3 miles to the westward of that point, where the sandy cliffs end, the shoal water extends to  $\frac{1}{2}$  mile from the shore; but in general it does not extend to more than half that distance, and the coast may everywhere be approached by the lead to 10 or 12 fathoms with care, the greater depth being quite near enough at night time. There are settlements all along the coast, and villages and fishing establishments at Great Anse and Pokeshaw. Great Anse, where there is a church, is 8 miles, and Pokeshaw 11 miles westward of Mizzenette Point. There are small bays at both places where boats find shelter, and a small river at Pokeshaw.

**Bathurst Harbor**, at the mouth of the Nipisighit River, is 400 yards wide at the entrance between Alston and Carron Points, which are of sand, with several stores and other buildings upon them (1860).

The lighthouses kept in line will lead in through the narrow channel over the bar in 7 feet at low water, or in 14 feet at high water in the best spring tides. The distance from the outside of the bar in 3 fathoms to the entrance of the river is  $1\frac{1}{2}$  miles; and for the whole of that distance the very narrow channel is between sandy shoals, nearly dry at low water, and extending from either side of the river's mouth.

Within the entrance there is an extensive and well-sheltered basin, nearly 3 miles long and 2 miles wide, but nearly all dry at low water, excepting the channels of the four rivers, which, after uniting their streams below Bathurst, flow through it to the entrance, forming by their junction what is called the Main Channel. On the eastern side of the basin there is an islet called the Indian or Bathurst Island. The town of Bathurst is well situated at the head of the basin,  $2\frac{1}{2}$  miles within the entrance, and on the point of land which divides the River Nipisight from the Middle and North Rivers.

**Anchorage.**—In the entrance between the sandy points, or rather just outside it, there are 3 and 4 fathoms water; and here vessels usually moor to take in timber, sheltered by the bar and the sandy shoals on either side. Some of the larger ones complete their loading outside the bar, where the anchorage, in 6 or 7 fathoms, muddy bottom, is considered safe in the summer months, although the N.E. gales send in a heavy sea.

**Pilots.**—There are good pilots for the River Nipisight, and no one should attempt the bar without one, excepting in case of necessity.

**Tides.**—It is high water, full and change, at Bathurst at 3 h. 15 m.; springs rise 7 feet, neaps 4 feet. The rate of the tides in the main channel is about 2 knots, and over the bar about  $1\frac{1}{2}$  knots. The stream sets fair in and out and over the bar.

**Belledune Point** is 13 miles from Heron Island, and the extreme seen from it is low and sandy, and has shoal water off it to the eastward  $\frac{3}{4}$  mile. At 8 miles to the southward of this point, on the western shore of Nipisight Bay, is the church and village of Rochette; and  $8\frac{3}{4}$  miles farther in the same direction is the entrance of the Nipisight River at the head of the bay. The whole of this coast is low, and composed of sandstone, limestone, and trap rocks. The shoal water generally extends to  $\frac{1}{2}$  mile from the shore; and vessels of large draft had better not stand nearer than the depth of 10 fathoms, especially at night, unless it be in the head of the bay, where they may safely approach the sandy beach to 7 or 6 fathoms.

**Heron Island.**—Heron Island, at  $5\frac{1}{4}$  miles to the southward of Tradigash Point, is of moderate height, wooded, and with red sandstone cliffs at both its NW. and SE. points. Shoal water extends off both those points at the distance of  $\frac{3}{4}$  mile; as it does also all along the northern side of the island, where the 3-fathoms line of soundings is  $\frac{1}{2}$  mile out from the shore. The island is 4 miles long, parallel to the coast, and there is good anchorage in the channel between it and the

mainland; but the channel is rendered narrow and difficult by shoals, which extend a great distance out on either side.

**Heron Channel.**—At the western end the channel is only 400 yards wide, with 3 fathoms water in it. It becomes wider to the eastward, and the depths are 4 and 5 fathoms; but there the dangerous Heron Rock lies, nearly in mid-channel, and consequently right in the way of vessels. When on this small rock, which has 6 feet least water, and 4 or 5 fathoms all around it, the SE. extreme of Heron Island bears N. 44° E., about one mile; the nearest sandy south point of Heron Island N. 23° W., 1,200 yards; Beaver Point S. 18° W.,  $\frac{1}{2}$  mile; and a rock lying 600 yards north of Beaver Point and almost always above water, S. 67° W., 700 yards. This latter rock, which lies on the edge of the shoal off the mainland, is quite bold; and a vessel, by sailing within the distance of 300 yards of it, will pass to the southward of the Heron Rock; as she will also to the northward, by running along the southern edge of the shoal off the island, in 3 fathoms at low water. But this is an intricate and dangerous channel for a vessel of any size, and requires the aid of a good pilot.

**Anchorage.**—Vessels occasionally anchor, for the purpose of loading with timber, in the bay of Nash River, in 4 fathoms, mud bottom, where they are much exposed to easterly winds, but the ground is so good that they ride safely during the summer months. At this anchorage the east point of Heron Island bears N. 37° W.,  $2\frac{1}{2}$  miles; and Black Point N. 68° W., one mile.

The shoal water extends off Fowler Point a mile out to the 3-fathom line of soundings. There is also good anchorage in 4 fathoms, mud bottom, to the westward of Heron Island, and nearly midway between it and the River Charlo. This river will only admit boats.

**Carleton Road.**—This name has been given to an excellent and capacious anchorage safe in all winds. It is situated on the west side of Tracadigash Point, which consists of sand, inclosing a shallow lagoon, capable of admitting boats, or very small craft, at high water. On the northern shore of this lagoon stands the church and village of Carleton, the latter extending to the westward to the shore of the bay, where the sand beach of the lagoon joins the mainland. A small stream, with a bridge across it, there enters the NW. corner of the lagoon; and one mile farther to the westward, near the commencement of the Clay Cliffs, another small stream will be seen, which is the watering place. Immediately in rear of the village, the Carleton Mountain rises abruptly to the height of 1,830 feet above the level of the sea—the hills of the range trending from it both to the northward and westward for many miles.

**Anchorage.**—Vessels may anchor anywhere in from 5 to 6 fathoms, remembering that although the sandy beach of Tracadigash Point is quite bold on the west side within the spit, yet shoal water extends off the mainland to the distance of nearly  $\frac{1}{2}$  mile. The best berth, espe-

chally with easterly winds, is in  $5\frac{1}{2}$  fathoms, mud, with Tracadigash Point bearing S.  $38^{\circ}$  E.; Carleton steeple N.  $78^{\circ}$  E.; and the watering place N.  $37^{\circ}$  W.

**Tides.**—The tides are weak in Carleton Road, seldom exceeding one knot.

**Maguacha Point**, of red sandstone cliffs, is the NE. point of entrance of the River Restigouche, and bears from Tracadigash Point S.  $81^{\circ}$  W.,  $6\frac{1}{2}$  miles. In the NW. corner of the bay between them is new basin and river, nearly dry at low water.

**Directions.**—Tracadigash Spit, of sand, and running out  $\frac{1}{2}$  mile to the SW. from the sandy point of the same name, is the only danger in the way when approaching the anchorage in Carleton Road from the eastward. Observe that Maguacha Point and the summit of Dalhousie Mountain in line, bearing S.  $83^{\circ}$  W., pass the extremity of the spit in 3 fathoms. Therefore, to clear it keep the mountain well open, or at night go no nearer than 10 or 9 fathoms water. As soon as Carleton steeple comes in line with the southwest extreme of Tracadigash Point, bearing N.  $33^{\circ}$  E., the spit will have been passed, and the vessel may haul in to the northward, going no nearer than 7 fathoms till the point bears to the southward of east.

**Bonami Rocks.**—The entrance of the Restigouche River, between Maguacha Point and the Bonami Rocks, is nearly two miles wide. The rocks are steep and high, and so rough and broken that a stranger would be led to expect danger on their side instead of on the opposite, where the steep red cliffs of Maguacha Point give the usual, although in this case deceptive, indications of a clear channel.

The extreme point of the Bonami Rocks may be safely passed within the distance of 400 yards, but shallow water extends from the rocks to Bonami Point, from which a reef runs  $\frac{1}{4}$  mile, and the shoal continues from it to Dalhousie Island.

**Maguacha Spit**, of sand and stones with only 6 feet at low water runs out nearly a mile to the west from Maguacha Point, or towards the Bonami Rocks, thus occupying fully half the channel. To clear the SW. extreme of this steep and dangerous spit, keep the highest summit of the Scaumenac Mountains open to the SW. of Dalhousie Island; for the summit of the mountain and the south side of the island in one, bearing N.  $68^{\circ}$  W., lead over the extreme end of the spit in  $3\frac{1}{2}$  fathoms. The eastern side of the spit will be avoided by not entirely shutting in the south extreme of the Carleton Mountains behind the east side of Maguacha Point.

**Dalhousie Harbor.**—**Dalhousie (Douglas) Island**, 400 yards long, is high and rocky, round-backed and wooded, and joined by a shoal, which dries, to the low point of Dalhousie. On that point there are large storehouses belonging to the town of Dalhousie, which with its church will be seen situated on the side of a hill to the SW. of the island. Westward of Dalhousie Island there is a small rocky islet at



the extremity of a narrow sandy spit forming the western side of the small and shallow bay of Dalhousie. The shallow water extends from the islet to the island, and the timber ships lie moored along its edge in 6 or 7 fathoms, muddy bottom, directly off the town; by keeping just outside these deep water is obtained. This is Dalhousie Harbor, which is quite secure in all winds.

**Dalhousie Harbor** may be approached in two ways, either through the direct but narrow channel between the Middle Ground and Dalhousie Island, or round to the northward and westward of the Middle Ground; which last, although it involves the necessity of passing over a flat of 3 fathoms at low water, is the route usually taken, because of there being plenty of room there, whereas the channel first mentioned is only 300 yards wide. The narrow channel has, however, the advantage of good leading marks, and carries 6 fathoms water.

**The Middle Ground**, separated from Dalhousie Island by the narrow channel just mentioned, is 1,100 yards long, and 800 yards wide. It consists of sand and stones with 6 feet least water, and is very steep on its eastern side, where a buoy is placed near its north point. There are no sufficient leading marks, but beacons might be easily so placed on the shore as to clear it on every side. The main channel between this shoal and the shore to the northward and eastward is more than  $\frac{3}{4}$  mile wide, and in some places there are 15 fathoms water. The rate of the tide, which is stronger there than elsewhere, does not exceed 2 knots.

**Supplies.**—Fresh provisions can be obtained at Dalhousie.

**Anchorage.**—The best anchorage in Dalhousie Harbor is in  $6\frac{1}{2}$  or 7 fathoms, with Dalhousie Island and Bonami Point in line.

**Directions.**—When within a mile or two of Maguacha Point, bring the marks on for clearing the Maguacha Spit; namely, the highest summit of the Seaumenae Mountains open to the SW. of Dalhousie Island. Stand in upon this mark until the depths are 9 or 8 fathoms on the New Brunswick shore, which will be when the Bonami Rocks bear about SW., and are distant about  $\frac{1}{2}$  mile. Then haul to the northward, so as to keep in that depth until Lalime Point (the extreme point to the westward on the New Brunswick shore) comes just open to the northward of Dalhousie Island and of the islet and rocks to the westward of it bearing S.  $80^{\circ}$  W. Then, if wishing to enter the harbor by the narrow channel to the southward of the Middle Ground, steer S.  $80^{\circ}$  W. upon those leading marks until near Dalhousie Island, which leave to the southward at a distance of 200 yards, and the vessel will pass safely into the harbor.

If wishing to take the more roomy route to the northward of the Middle Ground, instead of steering S.  $80^{\circ}$  W. for Lalime Point, as soon as it opens to the northward of the island, sheer over to the NE. until the soundings are 8 fathoms, and follow that depth round to the northward and westward until Dalhousie Church opens out to the westward

of the island bearing S. 10° W. Then steer up the estuary, until Dalhousie Church appears midway between Dalhousie Island and the islet to the westward of it, bearing S. 12° E. Steer now for the church, taking care not to bring it to bear to the southward of S. 12° E., or with the two churches in line. the vessel will pass over the extensive 3-fathoms flat, to the westward of the Middle Ground, into the harbor.

**Tides.**—The rate of the tidal streams in the entrance does not exceed 2 knots.

**Restigouche River**, from its entrance at Magnacha Point, varies in breadth, for the first 17 miles, from 1½ to 3 miles. At that distance Campbelltown is situated on the southern or New Brunswick shore, and at the foot of a remarkable conical mountain called the Sugar Loaf. Between Campbelltown and Indian Point, on the northern shore, the breadth of the estuary is only ½ mile; but it expands again to 1½ miles at its head, just below the islands. At Indian Point, a mile above Campbelltown, the navigation for shipping ends, there being only 12 feet in a narrow channel at low water; but small craft may ascend through very narrow passages, on either side, carrying from 6 to 9 feet water, to within ¾ mile of the head of the estuary; where the Restigouche River, properly so called, enters it through narrow channels between the islands, 21 miles from the head of Chaleurs Bay.

Off Loup River, which enters a bay from the northern shore 2 miles below Campbelltown, there is a shallow part of the channel called the bar, over which there is not more than 13 or 14 feet at low water; but the tide, which rises from 6 to 9 feet, enables vessels of moderate draft to ascend to Campbelltown, off which they may moor in from 3 to 3½ fathoms at low water. Vessels of about 18 feet draft may ascend at all times of the tide nearly to Oak Point, which is about 14 miles up, and within a mile of the bar; and larger vessels might proceed 10 miles up, or nearly to Guard Point, with assistance of buoys and a good pilot.

The charts and directions will enable the seaman to take his vessel in as far as Dalhousie Harbor, or the anchorage off Fleurant Point; but to proceed farther up, the services of a pilot should be engaged, for there are no good leading marks beyond the above places, where the shoals become too steep for the lead to give sufficient warning, and the channels too narrow for a large ship.

**Anchorage.**—The most convenient anchorage for men-of-war, or other vessels visiting the Restigouche for supplies of wood or water, is off Fleurant Point on the northern shore, and about 2 miles to the northward of the Harbor. There a vessel can weigh in all winds, and at all times of tide; and no other directions are necessary than to anchor anywhere off the point in 6 or 7 fathoms of low water. There is a tolerably good watering place at a brook ½ mile to the westward of the point, and a little farther westward the Mussel Bank, a dangerous reef, extends out from the high cliffs, nearly halfway across the estuary.

**Cascapedia Bay** is of considerable extent, being 13 miles wide and 5 or 6 miles deep. At its head is the Cascapedia River, a considerable stream, but which can only be entered by boats, in consequence of the extensive shoals of sand and mud, which dry out 2 miles from its entrance, and occupy all the head of the bay. Black Point, bold and rocky, and rising 400 feet above the sea, is the eastern point of the bay. The shoals commence about  $1\frac{1}{2}$  miles to the northward of Black Point, and at Indian Point, on the east side of Little River, they extend out to the westward nearly  $1\frac{3}{4}$  miles, sheltering the anchorage from SE. winds.

**Duthie Point**, the east point of entrance of the Cascapedia River, bears N.  $51^{\circ}$  W., 5 miles from Black Point. One mile to the eastward of Duthie Point, and in the bay between it and Little River, stands the church and village of Richmond.

**The Settlements** on the western side of the bay are mostly of French Canadians and Acadians, and they extend alongshore all the way from the river to Tracadigash Point, which is the west point of the bay. In rear of the settlements the Carleton mountain range will be seen 2 or 3 miles back from the shore.

**Anchorage.**—The anchorage in Cascapedia Bay, where the timber ships moor in 3 fathoms, is off Richmond village, with Duthie Point bearing N.  $23^{\circ}$  W.  $\frac{3}{4}$  mile, the church N.  $33^{\circ}$  E., and Black Point S.  $57^{\circ}$  E. Vessels may anchor farther out in 4, 5, or 6 fathoms, but they will not be then so well sheltered from easterly winds.

**Directions.**—In running for this anchorage from the eastward, observe that the marks for the southwestern or outer edge of the shoal off Indian Point (already mentioned as sheltering the anchorage from SE. winds) are Red Point a little open to the southward of Black Point, bearing S.  $72^{\circ}$  E. Keep these marks therefore well open as the vessel runs to the westward with the lead going, and go no nearer the shoal than the depth of 5 or 4 fathoms, until the church bears N.  $33^{\circ}$  E. Then haul boldly in, steering directly for the church until the vessel is at the anchorage already pointed out.

**Bonaventure Point** is formed by a low red sandstone cliff, with a thin superstratum of sand and clay containing tertiary shells. The Bonaventure River, with only 2 feet over its bar at low water, together with the village and church with tall spire and red roof of the same name, will be seen in the bay 2 or 3 miles to the northward of the point. A rocky shoal extends off this point to the westward fully a mile, and continues round the bay to the northward and westward nearly to Red Point, a distance of 7 or 8 miles.

In the bay between Red and Black Points, and 5 miles to the NW. of the former, is the small river Caplin, remarkable only for a reef which lies off its mouth  $\frac{1}{2}$  mile from the shore.

**Anchorage.**—There is good anchorage under Bonaventure Point, with easterly winds, in 6 fathoms, mud bottom, with the point bearing

S. 74° E., the church N. 27° E., and the entrance of the river N. 61° E., 1½ miles.

**Paspebiac Bay.**—Paspebiac has an excellent roadstead, and is the principal fishing establishment in Chaleurs Bay. A triangular point of sand and shingle beach, inclosing a lagoon, extends out from the mainland to the distance of a mile, and has on its west side several buildings together with numerous huts belonging to the fishermen. On the west side of the sandy point, and close to the cliffs, the lagoon has an outlet, which has a rough bridge across it, and will admit boats at high water. In rear of this the mainland rises from the edge of dark red sandstone cliffs.

**Carlisle**, the county town, with its jail and court-house, standing on the ridge in rear of Carlisle Point, are seen from the anchorage. Carlisle Point, which is wooded, and consists of sand, is distant 3½ miles from the sandy point of Paspebiac, and the roadstead is between them, but much nearer the latter. In this excellent and convenient anchorage vessels are sheltered from the west, round north and east, to SE.; and, although it is completely open to the SW. winds, which send in a very considerable swell, yet the ground is so good that the Jersey vessels ride here moored all through the season without accident.

**Anchorage.**—The best anchorage is in 6 fathoms, clay bottom, with Robin's flagstaff, the most eastern one adjacent to the store with a green verandah, and Single Tree Point (the extreme to the eastward seen over the sandy point) in line, bearing N. 67° E. and the extremity of the sandy point, S. 67° E. A sandy spit extends under water rather more than ½ mile to the westward from the sandy point and nearly as far to the southward likewise; it is marked by a red buoy at its western extreme.

**Supplies.**—At Paspebiac there is an excellent watering place at a stream which will be seen falling from the cliffs just to the westward of the outlet of the lagoon. Supplies of all kinds may be obtained here, but to a limited extent.

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**Directions.**—When the vessel has passed Nouvelle River and is approaching within 2 or 3 miles of the point, keep the summit of Daniel Hill open to the southward of Nouvelle Point, bearing N. 49° E., until the easternmost church is seen well open to the westward of the south extremity of the sandy point, north. Then steer for Carlisle Point, keeping the lead going till Le Boutellier's store is on with the above-mentioned church.

Steer in now for the anchorage, taking care not to open out the same church to the westward of the store until Single Tree Point (the extreme to the westward) is well shut in behind the sandy point, when the vessel will be within the spit, and a berth may be chosen by the lead, or by a bearing of the lighthouse, at or near the position already pointed out.

**Nouvelle River**, 5 miles eastward of Paspébiac Point, has only 2 feet over its bar at low water, and will be known by the fish stores and stages on the sandy beach on the east side of its entrance. The western side is formed by Nouvelle Point, which is a high cliff of red sandstone.

**Port Daniel** is a fine bay, open to the eastward, and about  $1\frac{1}{2}$  miles wide and deep. In the northern corner of the bay,  $\frac{1}{2}$  mile within White Point, which is high and of white limestone, a small river enters the bay through a sandy beach after descending a valley between wooded hills. There are many houses and stores near the entrance of the river, which will only admit boats at high water, being nearly dry when the tide is out.

A shoal extends  $\frac{1}{2}$  mile from the shore all around the port southward from White Point to West Point. West Point is of craggy gray limestone, with a high and remarkable semi-isolated rock at its SE. extremity; on its north side there is a small cove and a good landing for boats. Daniel Hill, about one mile to the westward of West Point, and rising 400 feet above the sea, is remarkable as the highest land close to the shore on this part of the coast. It serves to point out the situation of Port Daniel, as does also Reddish Point, which often appears like an island close to the shore.

The points in order westward from Macquereau Point, and between it and the river, are Reddish Point, Pillar Point, and White Point, which will all be easily recognized, the first and last by their color and the other by a remarkable rock close off its extremity. The ground is not good outside the line joining Pillar and West Points.

**Supplies** of wood and water may be obtained at Port Daniel, but fresh provisions are not plentiful.

**Anchorage.**—The best anchorage in Port Daniel is in 6 or 7 fathoms, mud or clay bottom, in the line between White and West Points, with the entrance of the river N.  $28^{\circ}$  W., and Reddish Point and Macquereau Point in one bearing N.  $74^{\circ}$  E. Strong SE. winds roll in a heavy swell, but there is no difficulty in getting out on their approach, for the points are all bold, and in standing out or in vessels may safely pass West Point at the distance of 400 yards.

**Macquereau Point** is of bold and dark-colored craggy rocks. It is also wooded, and rises to about 200 feet above the sea.

**Newport**, situated SW.  $3\frac{1}{2}$  miles from Great Pabos, and 6 miles NE. of Macquereau Point, is another fishing place, where a small vessel or two may be moored (under shelter of a shoal and at some risk) to take in fish during the summer months.

**Grand and Little Pabos** are fishing places fit only for boats or very small craft. There is but a foot of water over the bar of the latter at low tide, and ordinary springs do not rise over 5 feet. Great Pabos, which is a similar but much larger place, had 5 feet over its bar at low water when it was surveyed, but the depth and situation of the very narrow channel change with easterly gales.

**Grand River**, 7 miles westward of Cape d'Espoir, is a considerable stream, but has only 2 feet at low water over its bar. There is a village and a considerable fishing establishment there, and immediately to the westward of the river a shoal extends fully  $\frac{1}{2}$  mile out from the shore.

**Cape d'Espoir**, the NE. point of Chaleurs Bay, consists of red sandstone cliffs, without beach, and of a moderate height above the sea.

**Leander Shoal**, lying SE. distant rather more than  $1\frac{1}{2}$  miles from Cape d'Espoir, is about  $\frac{1}{4}$  mile in diameter, and has 16 feet least water on one spot, which, however, it is very difficult to find. It is a rocky shoal, and there is a clear passage between it and the cape. White Head, in line with the inner or NW. end of Percé Rock, leads just outside of the shoal. From a half to the whole of the Percé Rock, shut in behind the White Head, will lead clear between the shoal and Cape d'Espoir.

**Bonaventure Island** has bold and perpendicular cliffs of red sandstone and conglomerate on all sides excepting the west. In the ledges and fissures of these cliffs are innumerable gannets. From the west side shoal water extends to the distance of  $\frac{1}{4}$  mile, and there is anchorage in 15 fathoms between it and White Head, but the riding is insecure and heavy in bad weather. The channel between Bonaventure Island and Percé Rock is free from danger.

**Percé Bay**.—Percé Rock is precipitous all round and bold to seaward, and has two large holes which have been perforated through it by the waves and through one of which a boat can pass at high water. Between this rock and White Head is the Bay of Percé, having a reef at the distance of  $\frac{1}{2}$  mile to the SW. of Percé Rock and extending out nearly  $\frac{1}{2}$  mile from the shore. Small vessels engaged in the fisheries anchor on either side of this reef, with winds off the land, but it is a dangerous place and not to be recommended for large vessels.

**Percé**, principally inhabited by persons engaged in the fisheries, occupies the shores of the bay, and Mont Percé, or, as it is sometimes called, the Table Roulante, rises immediately from it. A reef connects the Percé Rock with Percé Point, and off the NE. side of the latter small vessels anchor with westerly winds.

**Tides**.—There is generally a regular tide of flood and ebb of about a knot between Bonaventure Island and the mainland; the flood tide running to the SW. round Cape d'Espoir and up the Bay of Chaleurs; and the ebb in the contrary direction. Two or 3 miles outside, or to the eastward of Bonaventure Island, the current will often be found running to the southward out of the St. Lawrence.

**Mal Bay** is between 5 and 6 miles wide by 4 miles deep and entirely open to the SE. On its SW. side, and under the Percé Mountains, there are magnificent cliffs 666 feet in perpendicular height above the sea. Its NE. side has low cliffs of sandstone, with occasional beaches. A fine broad sandy beach extends across the head of the bay and

incloses a shallow lagoon. A considerable river and several small streams discharge their waters into the lagoon, which has an outlet in the NW. corner of the bay, called the Tickle, admitting boats at high water and in fine weather. There is anchorage all round the shores of Mal Bay, but as a heavy sea and thick fog often precede a SE. gale and render it difficult for a vessel to beat out it can not be recommended. An open cove or small bay is formed on the NE. side, in which a vessel can be occasionally moored close to the shore and in 3 fathoms water, but this is of no use for the general purposes of navigation.

**Gaspé Bay.**—St. Peter Point, the south point of Gaspé Bay, is of low sandstone and thickly covered with the white houses of the fishermen. Flat Rock, lying about 800 yards off the point, is small, low, and of sandstone. There is a clear channel between the island and the point, but no good anchorage; for although vessels occasionally anchor to the northward of the island, yet the ground is so foul that there is great danger of losing an anchor from its hooking the rocks.

**Gaspé Bay** contains an excellent outer roadstead off Douglstown, a harbor at its head, capable of holding a numerous fleet in perfect safety, and a basin where large ships might be hove down and refitted.

**American Bank** is reported by the local fishermen to have a least depth of 5 fathoms; this bank is situated with Cape Gaspé lighthouse, bearing N. 52° W., distant 11 miles.

**Cape Gaspé** is a remarkable headland of limestone, having on its NE. side a range of cliffs, which rise from the sea to the height of 692 feet. The Flower pot Rock lies close off the SE. extremity of the cape; it is still visible, the sea washing over it only at high water. It is sometimes called the "Ships Head," at others the "Old Woman," by the fishermen, and is so bold that vessels may haul round it into Gaspé Bay within the distance of  $\frac{1}{4}$  mile. Boats may pass between it and the cape when there is no surf. The cliffs within the bay are very much lower than those on the outside of the cape.

**At Grande Grève**, 3 $\frac{1}{2}$  miles within Cape Gaspé, the ridge of land dips and narrows, so that there is a portage across it, leading to the settlements at Cape Rosier. On the NW. side of the portage a range of mountains commences, and they continue along the NE. side of Gaspé Bay and the NW. Arm.

**Anchorage.**—The NE. side of Gaspé Bay is thickly covered with the houses of the fishermen, for a distance of 5 miles within Cape Gaspé; the principal fishing establishments belonging, as at Percé, to Jersey merchants. There is an anchorage with good holding ground, but in not less than 17 fathoms, except within  $\frac{1}{4}$  mile of the shore abreast of St. George Cove, Grande Grève, and Little Gaspé. The word cove is, however, inappropriately applied to any part of the shore between Grande Grève and the cape, for though there are fishing establishments there are no coves whatever.

**Seal Rock** is the only detached danger on this side the bay. The length of this reef, from the depth of 3 fathoms to 3 fathoms, and in a direction parallel to the shore, is  $\frac{1}{2}$  mile; and its breadth  $\frac{1}{4}$  mile. The least water is 4 feet, and there are  $3\frac{1}{2}$  fathoms between it and the shore. When on the outer edge of the rocks, Cape Brulé is in line with the next cliffy point up the bay, bearing N.  $60^{\circ}$  W.

**Coast.**—The SW. shore of Gaspé Bay from St. Peter Point to Douglstown, a distance of 12 miles, presents a succession of precipitous headlands, rising to the height of 200 feet above the sea. The shoals extending out into the bay are too steep for the lead to give warning.

**Douglstown** is a village of fishermen and farmers, standing on the rising ground at the south side of the entrance of the river St. John.

Cape Haldimand, 2 miles northward of Douglas, is a bluff point of cliff, and the southeastern termination of the range of hills which separates the harbor, basin, and SW. Arm, from the valley of the river St. John.

**Water** may be obtained by ascending the river St. John to the islands, a distance of 2 miles. In the spring of the year there is often a depth of 9 feet in the entrance of this river, which is between two points of sand; and there are 12 feet in the narrow channel for some distance within. At the islands the river becomes shallow and rapid.

**Anchorage.**—The roadstead off the town of Douglas is extensive; vessels may anchor in any part of it, and in any depth from 6 to 11 fathoms, over sand and clay bottom; but the best berth is in 7 fathoms, off the entrance of the river St. John. The riding is much less heavy in southeasterly winds than might be expected; and, as the ground is excellent for holding, a vessel may safely anchor here during the summer months.

**Gaspé Harbor.**—Sandy Beach Point makes out to the northward. It is a low and narrow point of sand, convex to seaward, on which side the water deepens gradually for a distance of nearly  $\frac{1}{2}$  mile; on the inside it is as bold as a wall. The water deepens immediately outside of 3 fathoms, all along the outside of Sandy Beach Point, and also off its north extremity; so that it is both dangerous and difficult to beat in or out of the harbor at night.

**Peninsula.**—To the northward of Sandy Beach Point, at the distance of nearly a mile, is the Peninsula, which is a low sand, covered with spruce trees. The narrowest part of the entrance to the harbor is 850 yards wide from the depth of 3 fathoms to 3 fathoms, and has a depth of upwards of 11 fathoms in the center.

**Gaspé Basin.**—The harbor is divided into the NW. and SW. Arms. The NW. Arm has deep water for nearly 3 miles above the Peninsula, and continues navigable for keeled boats about 3 miles farther, where the Dartmouth River enters the arm between Marsh and Meadow Islands.

**SW. Arm.**—The entrance of the SW. Arm is about 360 yards wide,



and between two sandy points, but the navigable channel, which is buoyed, is contracted by shoals on either side to about 120 yards; and 27 feet of water can be carried in mid-channel. The deep-water part of the SW. Arm, which continues for  $\frac{3}{4}$  mile within the entrance, is named Gaspé Basin; it has a depth of from 5 to 9 fathoms, over a mud bottom, and is sufficiently capacious to hold a great number of vessels. Boats can ascend SW. Arm by a narrow channel, between shoals, about 3 miles, as in the NW. Arm, and the navigation, for all but canoes or flat-bottom boats, is terminated by shallow channels. Above this part of the river it becomes contracted and rapid, and the water fresh.

**Supplies.**—A small rivulet in the bay, on the inside of the south point of the entrance of Gaspé Basin, is the most convenient watering place in the harbor. Most of the families, as well as those of the NW. Arm and the harbor generally, are farmers, but several of them are also engaged in the whale fishery, which they prosecute in small schooners. The cod fishery is carried on by the people of the bay outside, for the most part in connection with the Jersey merchants.

The **United States** is represented by a consul.

**Tides.**—There are regular but weak streams of flood and ebb in the entrances of the harbor and basin. In the bay the streams of the tides are so irregular that nothing certain can be said respecting them. They are, however, usually almost imperceptible, excepting near the shores, and even there they are so weak as to be of little or no consequence to a vessel.

**Caution.**—The current down the St. Lawrence runs strongly past Cape Gaspé over towards Flat Rock, especially during the ebb tide, which often increases its rate to 2 knots, and this should be remembered by vessels making Gaspé Bay with a northerly wind. This current, when it meets the swell which so often prevails from the south and SE., causes a high, short, and breaking sea, all along the coast from above Cape Rosier to Cape Gaspé, and extending across the entrance of Gaspé Bay. When the wind is light a vessel becomes quite unmanageable in this sea, and it is extremely dangerous to be caught in it, close to the shore, by a light breeze on the land.

**Winds.**—In fine summer weather there is often a sea breeze blowing right up Gaspé Bay from about 9 a. m. until sunset. At such times there is generally a light land breeze at night down the arms, which often extends for several miles out into the bay. In the outer part of the bay, however, it will generally be found to be calm, even at times when a fresh breeze is blowing outside Cape Gaspé and Point St. Peter. The wind at sea on such occasions is generally from the SW.

**Aspect of Coast.**—The bold and high coast between Cape Gaspé and Cape Chatte, a distance of 117 miles, will require only a brief notice, as it is free from danger—with the exception of Serpent Reef—and destitute of harbors. The mountains everywhere approach the shore, which is steep and rocky, displaying cliffs, often of great height,

and without beach. After heavy rains, waterfalls, which are not to be seen at other times, descend from great heights, and small bays, with sandy beach and rapid streams at their head, occur occasionally; yet these features are not generally so strongly marked as to enable a stranger to make out one part of this coast from another with facility.

**Caution.**—Along the coast between Cape Gaspé and Cape Chatte the water is everywhere too deep to afford sufficient warning by the lead for the safety of vessels. The shore along its whole extent, excepting in some of the bays, is of highly inclined slate and graywacke rocks, which would cut through a vessel's bottom in a very short time; and such is the nature of the country that those who might escape to shore would run a great risk of perishing from want before they could reach a settlement.

**Cape Rosier** is low, and of graywacke and slate rocks. The shoal water does not extend off it above  $\frac{1}{2}$  mile, but in the bay to the southward of it, at the distance of  $1\frac{3}{4}$  miles, there is a reef which runs out  $\frac{1}{2}$  mile from the shore. Vessels may find shelter under Cape Rosier from NW. winds, but the ground is not very good, and the easterly swell that frequently rolls in renders it a dangerous anchorage. There are fishing establishments on the cape and in its vicinity.

**Griffin Cove and River.**—A small bay here affords shelter to the boats of the fishermen, whose houses will be seen around it. There are from 2 to 3 fathoms water in this bay, over sandy bottom.

**Supplies.**—This bay is of no use to shipping, except to obtain supplies of water, wood, and occasionally fresh provisions.

**Fox River** is a mere brook, which enters a small bay about  $\frac{3}{4}$  mile wide and  $\frac{1}{2}$  mile deep. Off each point of the bay there are reefs, which diminish the breadth of the entrance to less than  $\frac{1}{4}$  mile and afford shelter to boats and to small schooners in from 2 to  $2\frac{1}{2}$  fathoms, over a bottom of fine dark sand. Round the head of the bay there is a fine sandy beach.

**Supplies.**—In fine summer weather a vessel might anchor off Fox River and obtain water, wood, and supplies of fresh provisions, but it is otherwise of no use to shipping.

**Serpent Reef**, the only danger on this coast, extends from Fox Point to Cape Serpent, its outer edge being nowhere more than  $\frac{1}{2}$  mile from the shore.

**Great Pond** is a small creek which affords shelter only to boats, and will be known by the houses and stages of the fishermen. The creek is 16 miles from Fox River, and here, as well as in every other cove along this coast to the westward, are seen the neat houses of the Canadian fishermen, by which the bays are so distinctly marked that a ship's position in clear weather may easily be determined by bearings of them, and of the beacons on the coast.

**Frigate Point** is marked by a white beacon 38 feet high. It may also be recognized by a conspicuous waterfall west of the point.

**Magdalen River.**—The mouth of this river is on the NW. side of a sandy bay, and close under Cape Magdalen, which is rocky, with cliffs of moderate height, and juts out a very short distance from a range of hills which forms the coast line. A reef of rocks, which is dry in part at low water, extends from Cape Magdalen, about 400 yards to the SE., parallel to the coast, and shelters the entrance of the river from northerly winds. The river is 30 yards wide at the entrance, with a depth of 7 feet at low water. Within, for a short distance, there are 10 feet over a clean bottom of fine sand. Farther up the river becomes shallow and rapid.

At spring tides 13 feet water can be carried into this river, which is occasionally visited by schooners of 30 to 80 tons. They warp in when the sea is smooth and the weather fine. The bay is not deep, being merely a gentle curve with a sandy beach for about a mile to the SE. of the river. Vessels may anchor herein 7 fathoms, over a bottom of sand, fine gravel, and broken shells, at the distance of  $\frac{3}{4}$  mile from the sandy beach. It is only a fine-weather anchorage, which may be of use to vessels wanting wood and water.

During two occasions a regular alternation of the stream of flood and ebb was observed. The flood extended about  $1\frac{1}{2}$  miles from the shore, running one knot, and at the line of juncture with the almost constant downward current there was a strong ripple.

**Pleureuse Point** is marked by a white beacon, 38 feet high.

**Mont Louis River** is 20 yards wide at the entrance, and capable only of admitting a small boat at low water. There are 7 feet in the entrance at high water, and for a short distance within.

The small bay, with sandy beach at its head, into which this river falls, is a mile wide and nearly  $\frac{3}{4}$  mile deep. Vessels may anchor in it during fine weather, in from 8 to 10 fathoms, mud bottom, nearer the west than the east side. The holding ground is excellent but since a vessel ought not to be distant more than 600 yards from the west side of the bay, there is not much room to work out, and therefore it would be dangerous for a large vessel to be caught there by a wind on the land. Small vessels, or ships having occasion to stop for a few hours for wood or water, may safely anchor there in fine weather, and will find shelter in southerly winds.

Mont Louis River may be thus recognized: In a vessel off this part of the coast, four well-marked openings will be seen in the high land in a space of 10 miles. The eastern opening is Grande Matte or Pleureuse River, the next westward is Mont Louis River, and the two others Claude and Pierre Rivers. None of them afford good anchorage excepting Mont Louis.

**St. Anne Mountains.**—Westward of Cape St. Anne the mountains begin to recede a little from the shore and to diminish in height. There is, however, another range of mountains in the rear of the coast, named the St. Anne or Shickshoc Mountains, which can be seen from a dis-

tance of 80 to 90 miles, under favorable circumstances; and their highest peak, which is about 14 miles behind Cape Chatte, rises 3,970 feet above sea.

**St. Anne River**, which is 6 miles to the westward of the high cape of the same name, and 10 miles to the eastward of Cape Chatte, can be entered by small schooners at high water. The entrance is difficult to a stranger. A large rock above water divides it into two very narrow channels, through which a rapid current almost always runs. It flows into the sea through the sandy beach of a bay which affords very indifferent anchorage, the depth of water being too great, excepting at a less distance from the shore than would be considered prudent for any but small vessels.

**Supplies** of provisions can in general be obtained, and also at Chatte River.

**Beacon.**—A beacon, painted white, and 38 feet high, is placed a little westward of Anne Point.

**Chatte River**, 2½ miles eastward of Cape Chatte, enters between large boulders a small sandy bay, affording no anchorage for ships; and admits small schooners with difficulty at high water. The east point of this bay, 2 miles eastward of the river, is a low spit with a reef off it ½ mile. Small coasting schooners occasionally anchor under it in westerly winds.

**Cape Chatte**, when seen from the eastward or westward, so that it appears as the extreme point, can easily be distinguished, being a round hill separated from but of less height than the land behind it.

**Aspect of coast.**—The coast from Cape Chatte to Matane is straight, bold, and of the same rocks as that which has been just described. Although not a high coast, it is still of considerable elevation above the sea, and St. Anne Mountains continue in the rear of it, at a distance of about 15 miles to their southwestern termination, which is 15 miles south of Cape Balance, the last being 25 miles westward of Cape Chatte. Several detached hills will be seen farther to the westward, which are also at a considerable distance from the coast. Two of these have been named the Paps of Matane, though they can with difficulty be made out when bearing S. 20° W.; on any other bearing it is still less easy to distinguish them, but they are of no use except to enable a vessel, obtaining a sight of land, to judge how far she is up the estuary.

**Capuchin Cove**, and another cove on the west side of Cape Michaux, afford shelter to boats. There are settlements at Little Matane, a small stream 3 miles eastward of the River Matane.

**River Matane.**—The depth over the bar is usually 4 feet at low water, and 15 at high-water springs. The depth of water seems to depend so much upon the winds which prevail in the estuary that it is impossible to calculate it at any time exactly. Easterly winds were observed to cause high tides, and westerly winds the contrary. The channel is very narrow, and there are several large boulder stones in it.

lying on the sand, which diminish the depth 2 feet, and are extremely dangerous when there is any swell. The bar is continually shifting from the effects of gales of wind, so that no directions can be given for sailing in. A can buoy, painted black, is moored in 7 fathoms, about  $\frac{3}{4}$  of a mile off shore, northward of the entrance to Matane River.

**Pilots** reside here and no vessel should attempt the entrance without one.

**Supplies** of provisions can usually be obtained at Matane River, and it will be easily made out from a vessel, since the entrance shows plainly. The cliffy mound on the west side of the entrance and the buildings and large stone church will also serve to point it out.

**Matane** is the name of the seignory containing about 500 inhabitants, most of whom live by the combined means of fishing, farming, and piloting. The soil is good and gives good crops of wheat and other grain, excepting in bad seasons.

**Anchorage.**—Outside the bar there is anchorage in 5 fathoms  $\frac{1}{2}$  mile off shore, and in 10 fathoms a little further out, the bottom being of sand and clay.

**Little Metis Bay** is small and divided into two rocky coves which are open to the eastward, and dry at low water. The coast from Matane to Metis is low, rocky, wooded, unbroken, and may be approached with care by the lead, the bank of soundings becoming gradually wider as we proceed to the westward.

**Little Metis River**, a small stream, is at the head of the southern cove. There are several buildings and a fishing establishment on Metis Point, the outer extreme of the bay. A reef, which is bold on the north side, and has some of its rocks always above water, extends from this point nearly  $\frac{3}{4}$  mile to the eastward, and enables small vessels to remain at anchor in 3 fathoms, over mud bottom, with the wind as far to the northward as NW. In this berth vessels lie midway between the eastern end of the reef and a large round rock near the shore on the SE. side of the bay. Larger vessels may anchor further out in 5 or 6 fathoms water, but not in the stream of the reef, where the ground is foul and rocky.

**Grand Metis Bay** is separated from Little Metis by Metis Point. Grand Metis River, a small stream is near the west end of the bay, and is nearly dry outside of the very narrow entrance at low water. The bay is rather more than 3 miles wide, and  $\frac{3}{4}$  mile deep; but it is all shoal. Small vessels may anchor in  $3\frac{1}{2}$  or 4 fathoms, under its east point, close to the edge of the shoal water, and in tolerable shelter from winds along the coast, but there is no shelter for shipping. Nevertheless, vessels lie here all the summer months for the purpose of taking in timber. They are usually moored in 6 fathoms, at low water, over mud bottom, and with the river bearing about south, distant  $1\frac{1}{2}$  miles.

**Cock Cove** affords good anchorage for schooners, in 3 fathoms at low water, well sheltered from the winds along the coast. The summit

of Mount Camille bears from the west point of Cock Cove S. 43° E. 8 miles. A can bnoy, painted black, is moored in 5 fathoms, northward of Cock Point, to indicate the edge of the shoal ground off that point.

**Anchorage.**—It may be remarked here that vessels of large draft may anchor in fine weather all along the coast from Metis to Green Island.

**Father Point** is low, and covered with houses; many of the St. Lawrence pilots reside here.

**Rimouski Road.**—Between the eastern point of Barnaby Island and Father Point is the anchorage or road of Rimouski, where vessels ride throughout the summer to take in cargoes of lumber. The best sheltered berth is with Rimouski Church S. 50 W. in 4 fathoms over mud bottom. Small vessels can anchor further to the westward in 3 fathoms at low water, with the east end of the rocks off the eastern point of Barnaby Island bearing N. 80 W., and distant  $\frac{1}{4}$  mile. The reef does not extend above  $\frac{1}{4}$  mile off the eastern point of Barnaby Island, and may be passed by the lead in 4 fathoms. A landing pier has been built at Rimouski 2,150 feet long, and having at its end a depth of 3 $\frac{1}{2}$  feet at low-water springs.

**Rimouski.**—The European mails are landed and shipped at Rimouski, special trains running with them to and from Quebec and Halifax by the Intercolonial Railway. Both mails and passengers are transhipped by a steam tender, the mail steam vessels stopping about 2 miles from the pier. The anchorage off Rimouski is not good.

**Coal.**—Only sufficient coal for the supply of the tender to the mail steam vessels is kept at Rimouski.

**Barnaby Island** is low, wooded, and uninhabited, and is composed of slate and greywacke rocks, like all the coast and islands on this side of the estuary. In the interior of the island there is a long pond of fresh, but not good, water, which last must be obtained from the Rimouski River.

The *channel* between the island and Rimouski is dry at low water. From 7 to 12 feet can be carried through it at high water, according as it is neap or spring tide, but at no time should a vessel drawing more than 8 feet attempt this passage, since there are rocks and large stones here and there, and also fish stakes.

**Shoal.**—Off the outside of Barnaby Island there is a 3-fathom shoal, extending out fully  $\frac{3}{4}$  mile, and the reef off its western end runs out in the direction of the island more than  $\frac{3}{4}$  mile.

**Barnaby Road.**—Midway between the western points of Barnaby Island and Bare Rock there are 2 fathoms at low water, over muddy bottom, in Barnaby Road, which affords good anchorage to small vessels. Rimouski Church in line with the eastern end of the rock will lead over the tail of the reef off the west end of Barnaby, and into this anchorage.

**Old Bic Harbor** dries at low water, and has many rocks in it. Two

round and high rocky islets, called the Bicoques, will be seen extending to the westward of its east point. Midway between these rocky islets and the west point of the harbor small vessels may anchor in Old Bic Road in 3 fathoms at low water, with a muddy bottom, and with the point bearing S. 70° W. distant  $\frac{1}{2}$  mile. To run into this anchorage from the NW., keep the westernmost of the two rocky islets its own breadth open to the eastward of the west point of the harbor, and this will clear the eastern rock of the Arignole Reef, which is the only danger in the way.

**Water** may be obtained in a river in the SE. corner of Old Bic Harbor.

**Arignole Reef** is composed of two rocks lying across the mouth of the shallow Arignole Bay. The western rock is  $\frac{1}{2}$  mile long and very narrow; its west end is always above water, and it is distant only  $\frac{1}{2}$  mile from the rocks on the eastern side of the cape. The eastern rock is small, covered in high tides, and distant  $\frac{1}{2}$  mile from the other.

**Ha-Ha Bay**, on the western side of Cape Arignole, affords excellent anchorage, in easterly winds, off its entrance in 4 fathoms at low water, and farther in for small vessels in 3 fathoms; but it is seldom used, because the equally safe and more roomy anchorage under Bic is justly preferred.

**Bic Island** lies directly off Cape Arignole, at the distance of nearly  $2\frac{1}{2}$  miles, and is about 3 miles long, without including the reefs, in a direction parallel to the coast and a mile broad. Its shores are of slate rocks; it is thickly wooded and uninhabited.

**Beacons.**—On the west end of Bic Island are three wooden beacons, two white and one red; the red beacon in the form of a sugar loaf, and the western white beacon in the form of a cross reverse, in line lead westward of NW. Reef.

**Water.**—Supplies of water can only be obtained from the bay between the east and SE. points of Bic Island, and not always there in dry seasons, and from a stream on the west side of a small bay of the mainland,  $\frac{1}{2}$  miles westward of Cape Arignole.

**Bicquette Island**, lying  $\frac{3}{4}$  mile to the northward of Bic, is  $\frac{1}{2}$  mile long,  $\frac{1}{2}$  mile broad, and about 100 feet high above the sea.

**Reefs.**—Several large rocks above water extend  $\frac{1}{2}$  mile to the east and SE. of Bicquette Island, and diminish the breadth of the channel between it and Bic to little more than  $\frac{1}{2}$  mile. Off the west end of Bicquette in a S. 40° W. direction, there are two large rocks always above water, and a third which covers at high water, and extend off a mile from the island.

The **NW. Reef** is composed of two rocks about 300 yards long, and which just cover at high water; both it and Bicquette are bold to the northward. There is deep water all along the line from the north side of Bicquette to this reef, and also between the latter and the rocks to the SE. of it, the west end of Bic in one with the NW. point of Ha-

Ha Bay, bearing S. 50° E., leads on the reef. In approaching the reef from the westward, the north extremity of Cape Arignole should not be shut in behind the west point of Bic. The beacons on Bic in line also lead clear.

**Bicquette Channel.**—There are no leading marks for running through, but it may easily be done with the assistance of the charts in case of necessity. The southwestern reef of Bicquette, and two small round rocks on the Bic side, 400 yards offshore, bearing S. 20° E. from the west end of Bicquette are the only dangers.

To avoid the first of these dangers, do not bring the south extremity of the rocks off the SE. side of Bicquette to bear to the eastward of N. 51° E.; and if the north side of Bic, near its east end, is not brought to bear to the northward of N. 63° E., the second will be cleared. The best time to run through is at low water, when all the dangers show, and a vessel, keeping in mid-channel between them, will have from 9½ to 5 fathoms, with irregular soundings and foul ground occasionally.

**SE. Reef** extends from the SE. point of Bic Island to the distance of nearly 1¾ miles, in about an easterly direction. The outer part of this reef is formed of three rocks lying in a straight line, and always above water. Small schooners can pass on either side of the western rock, keeping close to it, if they pass to the westward. The inner part of the reef, extending under water from the SE. point of Bic, reaches farther to the southward than the direction of the rocks, and must be avoided by not bringing the south side of Bic to bear to the southward of S. 60° W.

**NE. Reef.**—The NE. Reef is a small patch of black rocks, which shows at low water, lying N. 34° E. 800 yards from the NE. point of Bic. To pass to the eastward of this reef, keep both the rocky islets on the east side of Old Bic Harbor open to the eastward of the SE. Reef.

**West Grounds of Bic** are an extensive flat of slate, which partly dries at low water. The outer point of these grounds is distant nearly ¾ mile from the west point of the island.

**Alcide Rock**, is small and has 4 feet on it at low water. It rises from a small rocky shoal which is so bold all round that there is no warning whatever by the lead. From the NW. extremity of Cape Arignole the rock bears S. 65° W., distant 5 miles; and it is rather more than 1¾ miles distant from the shore to the southward. The two white beacons on Bic—one in the form of a cross reversed and the other in a diamond form—in line, lead directly on Alcide Rock; and the two white beacons on the south shore of the river, about 5 miles westward of Cape Arignole—one of which is of a diamond shape and the other of a sugar loaf—in line, also lead on the rock. Vessels will be in no danger from it if Mount Camille be not entirely shut in behind Cape Arignole. A black and white can buoy is moored in 9 fathoms northward of the rocks on the alignment of the two white beacons on the south shore.

**Anchorage.**—There is excellent anchorage under either end of Bic,



and also between it and the mainland, according to the wind; and vessels which may be met by an easterly wind had better anchor than attempt to beat down the estuary in the long and foggy nights of the fall of the year.

**Tides.**—To the westward of Bic the first of the flood comes from the NE., but there is but little stream of flood in neap tides between Bic and the mainland, excepting close to the latter. In spring tides it runs through the channel at the average rate of  $1\frac{1}{2}$  knots, being strongest near the mainland. It also runs between Bic and Bicquette, but the stream extends only a very short distance outside the latter island.

The stream of flood continues its course close along the mainland, passing inside and also very close outside of the Razade, Basque, and Apple Islands, but nowhere extending a sufficient distance offshore to be of use to ships beating to the westward much below Green Island. That part of the stream of flood which passes farther out towards Bic, and also that which passes between Bic and Bicquette, runs at its full rate only until at half flood, after which it becomes gradually weaker, turning to the NW., around the west end of the island, and finally to the north and NE., towards the end of the tide.

The stream of flood becomes weaker and of less duration as we proceed to the westward of the islands. Half way between Bic and the Razade Islets there is slack water for about an hour at the end of the ebb, after which a weak flood makes during the first quarter of that tide at the rate of one-fourth knot; and this is succeeded by the eddy flood at the rate of  $1\frac{1}{2}$  knots, or  $2\frac{1}{2}$  at the edge of the bank of soundings, which comes from the westward, running in the same direction as the ebb during the remainder of the flood tide.

From these remarks it will be seen that vessels will make little way to the windward against a westerly wind on the bank of soundings between Bic and the Razade Islets; and indeed all the way to Green Island.

The set of the latter part of the flood to the northward past the west end of Bic should be remembered by vessels weighing from the western anchorage, or approaching the island with light winds, especially in the night or thick weather.

The first of the ebb sets offshore, or from the southward, and this is more particularly remarkable at the eastern anchorage, but it only lasts for a very short time, after which the stream runs fairly between the islands and along the coast to the eastward for the remainder of the tide. Its rate, in westerly winds, varies from 2 to  $2\frac{1}{2}$  knots, according as it is neap or spring tide, but it does not run so strongly in easterly winds.

**Anchorage.**—There is anchorage on the bank in 10 or 12 fathoms, with good holding ground, all along the south coast from Bic to Green Island.

**Coast.**—The coast of the mainland between Bic Island and Razade Islets is high and rocky. With the exception of Alcide Rock it is free

from danger to small vessels, which may stand close in; but vessels of large draft should not stand in farther than 7 fathoms at low and 9 fathoms at high water, because of a long ridge of rocky ground, extending 5 miles N. 45° E. from the NE. Razade Islet, with 17 feet least water near its eastern end. To clear every part of this ridge keep Basque Island its own breadth open to the northward of the NE. Razade.

**Razade Islets** are two large rocks about  $\frac{1}{2}$  mile long; they are low, bare of trees, and  $1\frac{1}{2}$  miles apart. There is no passage for vessels between them and the shore.

**Basque Island**, is rocky, wooded, and uninhabited, and there is no passage for ships between it and the shore.

**Shoals.**—The shoal water extends  $\frac{1}{2}$  mile to the northward of Basque Island, and there is a reef of rocks to the westward of its western point. On the western extremity of this reef, and about 1,200 yards distant from the island, is a round rock, which shows at half tide.

**Apple Island** is formed by one principal and several smaller rocks; the whole about one mile long by 300 yards wide. It is 30 or 40 feet above the sea at high water, without any trees, and distant  $2\frac{1}{2}$  miles from the nearest point of the mainland. There is no passage for ships between it and the shore, but its north side is bold-to.

**Green Island** has a long and narrow point of rocks, always above water, and running out more than  $\frac{1}{2}$  mile from the trees towards Apple Island. Half this distance towards Apple Island is occupied by reefs of slate, which dry at low water. The line of shoal water is continuous from each of these islands to the other, and may be safely approached with care to 7 fathoms at low or 10 fathoms at high water; as may also the islands.

**Green Island Reef**, which is extremely dangerous, extends from the lighthouse northward  $1\frac{1}{2}$  miles to the 3-fathom line of soundings. Its shape is irregularly triangular, and the rocks on it dry at low water nearly  $\frac{3}{4}$  mile out from the high-water mark. On the eastern side this reef may be safely approached to the depth of 7 or even 6 fathoms at low water, but on the north and west sides there is no bottom with the hand lead until close to it. To avoid Green Island Reef in the daytime and clear weather keep the summit of the high land to the southward of Cape Arignole (or the high land of Bic) open to the northward of Basque Island.

**Anchorage.**—There is excellent anchorage in westerly winds under Green Island Reef, and it is the general rendezvous of vessels waiting for the flood to beat through between Green and Red Islands. Vessels should not anchor with the light bearing to the westward of S. 29° W. or in less than 7 fathoms at low water. If they wish still more room, they may choose their berth in 9, 10, or 11 fathoms, and will find a bottom of stiff mud in either depth.

**Tides.**—It is high water, full and change, at Green Island at 2h.

45m.; and ordinary springs rise 16 feet, and neaps  $9\frac{1}{2}$  feet. At the anchorage northward of Green Island the first of the flood was observed to come from the northward; then tending gradually round to the SE. at the end of the tide. The vessel continued to go around with the first of the ebb which came from the southward off the shoals to the NW., which latter point she reached at about 4 hours' ebb; and she continued with her head in that direction, from which the tide came, until near the end of the tide. The vessel then began to tend again, with her head to the north and NE., as before, going completely around the compass in 12 hours. It was never entirely slack water, the stream continuing to run more or less during the whole time. The rate of the ebb was 3 knots, and that of the flood 2 knots. This occurred in quite a calm day.

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## CHAPTER V.

### GULF OF ST. LAWRENCE, NORTH COAST, GRAND POINT TO CAPE WHITTLE.

**General Observations.**—Greenly Island lies southward  $1\frac{1}{2}$  miles from Grand Point, which is on the northern or Labrador side of the entrance of the Gulf of St. Lawrence, through the Strait of Belle Isle. The coast, which will form the subject of this chapter, lies between that island and South Makers Ledge, near Cape Whittle, a distance of 128 miles.

The mariner is reminded that in shaping a course along the coast the variation of the compass alters half a point within the limits of this chapter, for which alteration due allowance should be made; attention should also be given to the soundings. A vessel steering a direct course for the east point of Anticosti would carry soundings out to 60 fathoms, at the distance of 15 miles from Greenly Island. She would then find a greater depth, or no soundings, until she had increased her distance to 57 miles from the island, when she would again strike ground in from 30 to 50 fathoms, and continue to find soundings from time to time in various depths, and over mud, sand, and gravel bottom until she had passed South makers Ledge. These soundings are on detached banks lying parallel to the coast at the distance of several leagues. They are very irregular, and there is in general much deeper water between them and the shore and also to the southward for a great distance, or until we approach the opposite coast of Newfoundland.

**Currents and Icebergs.**—In navigating along this coast the current in through the Strait of Belle Isle (page 8) must be taken into consideration, and it should also be remembered that, in addition to the permanent dangers of the coast, drifting icebergs are frequently to be met with. There is a weak stream of flood from the eastward inshore and among the islands, and an equally weak ebb stream in the contrary direction; but both are much influenced by the winds.

**Aspect of Coast.**—The coast between Greenly Island and Cape Whittle is exceedingly dangerous at night or in fogs; and even in day-time and fine weather it requires the intimate knowledge of the position of every ledge possessed by the fishermen, or a good chart on a large scale, to navigate along it with safety. The mainland and islands are of granitic rocks, bare of trees excepting in the heads of bays, where small spruce and birch trees are met with occasionally. When not en-

tirely bare, the mainland and islands are covered with moss or scrubby spruce bushes, and there are many ponds of dark bog water frequented by water fowl and flocks of the Labrador curlew. The mainland is broken into inlets and bays and fringed with islands, rocks, and ledges which frequently rise abruptly to within a few feet of the surface, from depths so great as to afford no warning by the lead. In some parts the islands and rocks are so numerous as to form a complete labyrinth, in which nothing but small egging schooners or shallops can find their way.

In general the mainland does not exceed the height of 500 feet above the level of the sea and is often very much lower, as are all the islands excepting Great and Little Mecattina. These two high islands, the High Land of Mecattina, 685 feet above the sea, and the Bradore Hills, are all very remarkable, and serve to point out to a vessel her position from great distances at sea. The Bradore Hills are three contiguous round-backed mountains situated inland 4 or 5 miles northeastward from the head of Bradore Bay. The NW. summit is the highest, being 1,264 feet above the sea, and the highest land on this coast.

**Climate.**—The climate is very severe, and the dangers are increased tenfold by the fogs which accompany the prevalent southerly winds. It is probable that the mean temperature of the year does not exceed the freezing point. The ice does not usually leave the coast before June, and young ice begins to form again in the pools and sheltered small bays in September, when frosts are very frequent at night. At midsummer we found only a very few of the earliest plants in flower, the grass had not sprung up, and the moss still retained the brown color of winter. Large masses of snow still occupied the ravines and hollows and the shaded northern sides of steep hills.

In the sheltered bays the temperature is much higher and the fogs less frequent than among the outer islands, whilst, at the distance of 5 or 6 leagues inland, the water is said to be quite warm in summer and the country thickly wooded with spruce, juniper, birch, and poplar trees, which grow in valleys where the soil is of sandy clay, only the summits of the hills being of bare granite like the coast.

**Inhabitants and Productions.**—There are a few Indians of the Montanes tribe, and a family or two of half-civilized Esquimaux occasionally visit the coast from the northward. There are deer (caribou), bears, wolves, foxes, martens, otters, beavers, and Canadian porcupines in the interior, most of which are hunted for their skins by the few inhabitants of the coast. The Canadian partridge and the ptarmigan, or willow grouse, are also plentiful.

The only permanent inhabitants are a few widely scattered families, residing at seal and salmon-fishing and fur-trading establishments, which are visited periodically by small schooners from Quebec. Seals and salmon are very plentiful. The establishments alluded to are at Bradore, Esquimaux Bay, St. Augustin Harbor, Little Fish Harbor, and Eta-

mamu. These are the only places which could be relied on for much assistance by the crews of vessels which might be wrecked upon the coast. There is a family residing on the island between Bonne Esperance and Salmon Bay in summer, and in Old Fort Bay in winter, which might be added to the list. The remaining two or three families are very poor people, who seem just able to make out an indifferent livelihood by hunting and fishing.

**Codfishery.**—Codfish are abundant on the coast, especially to the eastward of Mistanoque. The fishery for them is not carried on only by resident inhabitants, but by schooners which visit the coast every summer.

**Bradore Bay.**—In the NE. part of the bay is Ledges Island, of granite, surrounded by small islets, rocks, and ledges, as its name implies, and forming the harbor of Bradore. On the NW. side of the bay, just within Belles Amours Point, is Belles Amours Harbor. Between these harbors there are straggling rocks and no anchorage, which, together with the heavy sea sent in by the southerly winds, makes this bay a very dangerous place. Grand Point, the SE. point of the bay, has a reef of rocks off it 700 yards to the south and west. The end of the point is low, but immediately in rear of it there rises a precipice having a round knoll upon it, and behind that a still higher precipice, being the SW. extremity of the extensive table lands of sandstone extending eastward along the northern side of the strait of Belle Isle, and northward to near the head of Bradore Bay.

**Peroquet Island,** which is high, of sandstone, and the abode of myriads of puffins, is on the eastern side of Bradore Bay,  $1\frac{1}{2}$  miles to the northward of Grand Point.

**Bradore Bay.**—There is no channel between the Peroquet and the mainland, the entrance of the channel leading to the harbor being between the Peroquet and the rocks off the Island of Ledges.

On the eastern side are Gull Rock and Ledge, which bear S.  $21^{\circ}$  W., and are distant 500 and 1,000 yards respectively from Jones Point on which the houses stand. The rock just covers at high water, and therefore can always be seen, but the ledge has 2 fathoms least water on it, and is, therefore, extremely dangerous. On the western side of this ledge, the western extremes of Peroquet and Greenly Islands appear in one. The only other dangers on this side are several rocks above water, near the shore, just within the houses, and the shoal water, which extends 400 yards off shore, and continues to the head of the bay.

The islets which lie in a straight line close along the eastern side of the Island of Ledges, and form the western side of the channel, are quite bold. They are distinguished by letters, and the southernmost or outermost of them (*a*), which has a small rock off it 200 yards to the southward, although small and low, can always be seen.

**Blubber Cove.**—Between the third and fourth islets (*c* and *d*) is the very narrow channel, carrying 2 fathoms, that leads into Blubber Cove

GRAND POINT TO CAPE WHITTLE.

on the east side of the Island of Ledges, and which is fit only for small vessels.

**Bradore Harbor.**—Between the islets (*d* and *e*) is the entrance to Bradore Harbor, 160 yards wide, and carrying a depth of 7 fathoms. There are two more islets close together (*f*) at  $\frac{1}{4}$  of a mile N.  $24^{\circ}$  W. of islet (*e*). The harbor, which is between the north point of Ledges Island and the islets (*d*) and (*e*), is quite land-locked, and has a depth of from 4 to 17 fathoms water over muddy bottom; but it is capable of holding only a small number of vessels, the space in which they can anchor being about  $\frac{1}{4}$  mile long by 300 yards wide. There is, however, plenty of room and good anchorage for large vessels farther up the bay to the northward of islets (*e*) and (*f*), in from 16 to 20 fathoms over muddy bottom; some sea rolls in there with SW. winds, but not enough to endanger a vessel with good anchors.

There is no channel for vessels into Bradore Harbor to the northward and westward of Ledges Island, on account of the innumerable rocks, although it is possible for small craft to pass through a narrow and very deep channel close along the NW. side of the island. The only navigable channel therefore is that which we have described, and which is nearly  $\frac{1}{4}$  mile wide in the narrowest part, and 15 fathoms deep.

**Water** may be obtained at a small stream near the houses, and also from small rivers in the head of the bay at high water.

**Directions.**—In coming from the eastward give Grand Point a berth of  $\frac{1}{2}$  mile, or in hauling around it to the northward take care that the west extreme of the Peroquet does not bear to the westward of N.  $35^{\circ}$  W., for the reef is very dangerous, and there is no warning by the lead. The west side of the Peroquet may be passed as near as  $\frac{1}{4}$  mile. Having passed it, haul to the eastward till the mark for clearing the Gull Rock and ledge, namely, the western point of Greenly Island, open half a point to the westward of Peroquet Island, bearing S.  $21^{\circ}$  E., comes on. Then steer with that mark on, or N.  $21^{\circ}$  W. until Gull Rock is seen, or until Jones's house bears N.  $32^{\circ}$  E. and the islet (*e*), which will appear as the NE. extreme of Ledges Island, N.  $2^{\circ}$  W. Steer now for the latter, leaving Gull Rock to the eastward, and looking out for the other small rock on the opposite side, which has been mentioned as lying off islet (*a*). As soon as this rock is passed, the channel will be clear ahead by keeping nearer the islets than the mainland. When opposite Jones's house, a run of about 1,400 yards farther along islets (*c*) and (*d*), which are quite bold, will lead to the entrance; and she must haul sharp round to the westward between (*d*) and (*e*), into the harbor, unless the more roomy and deep water anchorage is preferred farther up the bay, in which case there is nothing in the way, excepting the shoal extending off the main shore already mentioned.

In approaching Bradore from the westward, beware of the reefs which extend  $\frac{3}{4}$  mile to the SW. from Ledges Island. In order to give these a wide berth, do not bring the Peroquet to bear to the southward of east

until Jones's house bears N. 21° E., then steer for the latter until the marks come on for clearing Gull Rock and Ledge, when the vessel must proceed as before directed.

**Tides.**—A weak stream of flood sets into Bradore Bay from the southward. The ebb sets out in a contrary direction, and is at times accelerated by SW. winds, but its rate never amounted to one knot.

**Aspect of Coast.**—The country separating Belles Amours, Middle Bay, and Five Leagues Harbor is of low granite, on which are ridges of bowlders, with coarse grass and moss, extending out to seaward several miles from the range of steep granite hills, 400 or 500 feet high, which trend westward from the head of Bradore Bay.

Belles Amours Point will be easily recognized, being a mound of bare granite, 60 or 70 feet high, at the SE. extremity of the low peninsula separating the harbor of the same name from Middle Bay.

**Belles Amours Harbor.**—Stony Point, which is low and green, and Flat Rocks, which lie off it 1½ miles southeastward, form the east side of the channel between them and Belles Amours Point, leading northward to Belles Amours Harbor.

**Shoal.**—Nearly midway between Belles Amours Point and Flat Rocks lies a rocky patch with 13 feet least water. Between this patch and the point there are other patches with 3½ fathoms, which is as much water as can be counted on through the western passage.

**Niobe Shoal.**—A dangerous shoal lies about 400 yards to the westward of Flat Rocks, on the eastern side of the east passage, into Belles Amours Harbor. On the edges of the shoal the rock inside Harbor Point was touching the point.

The soundings are extremely irregular and the ground foul in the East Passage.

**Harbor Point** is about 1½ miles within Belles Amours Point, and on the west side is a bare granite hill, about 150 feet high, with several beacons of stones upon it, which are erected upon almost every hill, and are said to be for the guidance of travelers in winter. The shore between these points incloses a large and shallow pond, the center of which is within Pond Point. The shoal water extends off on this side 300 yards from the high-water mark. The NW. side of Harbor Point is of sand, extending (together with a flat which dries at low water) partly across the inner entrance of the harbor. Northward of Harbor Point, and at a distance of about 160 yards, there is a small rock always above water; 200 yards farther out in the same direction lies another small rock, which dries only at low water. There is no passage for vessels of any size between these rocks and Harbor Point. On the east side of the entrance the shoal water and large stones extend from Stony Point northward to the point of the North Cove, which is only fit for boats.

**Water** may be obtained in the NW. corner of Belles Amours Harbor and also from a considerable stream at the head of the North Cove,



where there are a few trees; but wood for fuel is very scarce on this coast.

**Directions.**—To enter Belles Amours Harbor by the eastern passage, steer N. 50° W., so as to pass  $\frac{1}{2}$  mile to the westward of the Flat Rocks. Continue this course until the east side of Harbor Point is approached within 200 yards; then steer N. 35° W. till the sandy part of the point is opened out, or the vessel is abreast of the rock above water off it, when she must haul a little to the westward, so as to bring the east side of Harbor Point and Pond Point in one. Keep them in line, in order to round the north extreme of the flat, until Mark Point (the extreme on the north side within the harbor) comes on with Peak Point (a rocky point in Middle Bay), seen over the low land at the head of the harbor, and bearing S. 64° W. As soon as this mark comes on, haul sharp round to the westward, keeping at a less distance than 200 yards from the high north shore until the vessel is well within the sandy spit, when she may haul to the southward and anchor anywhere, the bottom being of mud and the depth from 5 to 7 fathoms.

To enter by the western passage, which is preferable with a westerly wind, approach Belles Amours Point on a bearing nothing to the eastward of N. 32° E., and take care not to shut in Stony Point behind it, for fear of the middle ledges. Pass Belles Amours Point at a distance of 400 yards, and go no nearer the shore on that side until past Pond Point; then proceed as before directed. As soon as the marks come on for hauling into the harbor to the westward, put the helm down and shoot the vessel in as far as she will go; then let go the anchor, and warp in the remainder of the way. It is only with easterly and southerly winds that a vessel can sail in. The bottom is good for anchoring outside Harbor Point, but not outside Stony Point.

**Middle Point**, which has several rocks off it 200 yards to the west and south, lies rather more than  $1\frac{1}{2}$  miles from Belles Amours Point.

**Middle Ledges** lie to the southward of Middle Point. Several of these ledges dry at low water, but the outermost, which is 1,200 yards off shore, has 15 feet least water. There is no safe passage between these and the shore.

**Five Leagues Point** is the SW. extreme of another low but smaller peninsula, separating Five Leagues Harbor from Middle Bay. On this peninsula,  $\frac{3}{4}$  mile to the northward of the extremity of the point, there is a precipitous hill nearly 200 feet high, which marks the position of Five Leagues Harbor from the westward.

**Leagues and Barrier Reefs.**—Leagues Reef, off Five Leagues Point, is partly above water, and extends  $\frac{1}{2}$  mile to the southward, and the two Barrier Reefs extend to the distance of  $1\frac{3}{4}$  miles to the southwestward of the same point, but are not joined to it. The south extremes of Middle and Belles Amours Points in line, lead  $\frac{1}{2}$  mile to the southward of the Barrier Reefs.

**Middle Bay** is a fine open roadstead, free from all danger, more than a mile wide, and extending inland 2 miles to the northward. In the

outer part of the bay, for the first mile in, the shore, on either side, should not be approached nearer than 300 yards, but farther in it is quite bold, excepting in the heads of the coves. The depth of water in this bay is from 4 to 13 fathoms over sandy bottom.

**West Cove** is a mile within the entrance on the west side of Middle Bay. Its head is separated by a low and swampy isthmus from Five Leagues Harbor. In the mouth of this cove, in 4 fathoms, is the anchorage with westerly winds.

**Shallop Cove**, on the east side of Middle Bay, is only fit for boats.

**Peak Point** is forked; its south extremity is a ragged isolated mound or peak; and off its west side, at the distance of 100 yards, there is a large rock above water.

**Isthmus Cove** is a small place, in which two or three fishing vessels are occasionally moored, under a reef which extends from the south side of the cove northward towards Peak Point. The reef affords indifferent shelter with SW. winds, which blow right in with a heavy sea. The entrance between the reef and Peak Point is only 140 yards wide; neither is there much more room between the reef and the shore to the eastward.

To enter Isthmus Cove, Peak Point must be kept close aboard; and when the vessel is 100 yards past it to the eastward, haul her sharp round to the southward between the reef and the shore. The part of the cove which runs in to the northward of Peak Point is quite shoal.

**Water** may be obtained in Isthmus Cove, as well as in the head of Middle Bay, where there are a few small trees.

**Five Leagues Harbor** is altogether unfit for anything larger than a schooner of 100 tons. A SW. wind rolls in a considerable swell, and there would be no lying there if it were not for the indifferent shelter afforded by the Barrier Reefs off its mouth. The channels leading in are about 600 yards wide, and on either side of the Barrier Reefs.

There is also a channel  $\frac{1}{2}$  mile wide between the two Barrier Reefs, but they overlap in such a way as to make it difficult for a stranger. There are parts of each of them that dry at low water, and the sea almost always breaks on them.

**Salmon Bay.**—Salmon Islet lies close to the SE. extreme of Caribou Island, off which the shoal water extends nearly  $\frac{1}{2}$  mile to the eastward. Caribou Island can not be distinguished from the mainland from a vessel off the coast. The eastern entrance to Salmon Bay has a depth of only 6 feet in it at low water. The other entrance to this deep bay is from Bonne Esperance round to the northward of Caribou Island.

**Esquimaux Islands** are bare of trees, excepting some of those which are far in near the mainland. Off these islands lie many small rocks and ledges, the outermost of which are fully 4 miles from the mainland. To attempt to describe all these islands, or all the channels between them, would be an endless task; and a good chart, upon a large scale, will in most cases be far more useful than any written description.

**Whale Island** is about  $\frac{3}{4}$  mile long, and about  $\frac{1}{4}$  mile broad. It does not exceed 100 feet in height, in the highest part, which is a round hill near the center of the island, on which there is a beacon, or pile of stones, supporting a pole of driftwood 30 feet high.

All vessels bound to Bonne Esperance endeavor to make this island. There are rocks, both above and under water, extending 600 yards off the south point of Whale Island; but off its NE. point the shoal water reaches only to the distance of 150 yards. There is also a ledge, with 9 feet water, lying SW. 700 yards from its SW. point; and there are several rocks, dry at low water, lying 200 yards off shore, on the east side of the same point.

**Bonne Esperance Harbor.**—The islands which form the harbor of Bonne Esperance are steep, and of bare granite; the largest of them look much higher than they really are, an effect which is also owing to the contrast of the much lower islands to the westward of them. There are none of them higher than 200 feet above the sea, and there are beacons or piles of stones upon almost every summit.

**The Main Channel** leading to this harbor is between Goddard and Beacon Islets, Goddard Islet being the westernmost of two low islets joined by a reef to the SW. extreme of Caribou Island.

Bold Rock, at the end of a reef extending 270 yards off the south point of Goddard Islet, is small, always above water, and quite bold. Goddard Rock, which is also small, and dries only at low water, bears S. 35° E., and is distant 700 yards from the same point. These are the only dangers on the eastern side of the channel. On the western side Beacon Islet, which is low, about 250 yards long, and with a pile of stones on its summit, will be seen bearing S. 38° W., nearly a mile from Goddard Islet. Tail Islet lies 600 yards to the south, and Lark and another low islet to the northward of Beacon Islet, but they are out of the way. To the southwestward of Beacon Islet, and distant  $\frac{3}{4}$  mile, is Red Head Island, from which Whale Island bears S. 32° W., and is distant nearly a mile. Fish Islet, a large low rock, lies between the two last-named islands.

Within Red Head Island, and lying in a line to the northward, are Chain and Bonne Esperance Islands, the former being two peninsulas, joined together by a narrow stony isthmus, and the latter being 150 feet high and  $\frac{3}{4}$  mile long. Lion Island is distant  $\frac{1}{4}$  mile to the eastward from Bonne Esperance Island, and there is a low islet and a narrow and difficult 3-fathoms channel between them. Off the east side of Lion Island, and at the distance of 100 yards, lies Whelp Rock, always above water. Between this rock on the west and Goddard and Caribou Islands on the east, may be termed the inner entrance from the Main Channel; it is 900 yards wide, and has from 10 to 13 fathoms water, over rock, sand, and mud bottom.

**Western Side.**—**Watch Rock**, small, and always shows, lies  $\frac{1}{4}$  mile to the northeastward of Beacon Islet, and at the same distance

to the northward of it, and to the eastward of Liuk Islet lies Breaking Ledge, which just covers at high water. The only other dangers, and they are only dangerous to a vessel of large draft, are two 4-fathom patches, the easternmost of which (Middle Patch) bears S. 30° E.,  $\frac{3}{4}$  mile from Beacon Island; and the other (Whale Patch), N. 75° E.,  $\frac{3}{4}$  mile from the beacon on Whale Island. There is foul and rocky ground, with from 5 to 10 fathoms between these patches, which may be avoided by a vessel approaching the harbor from the westward, by not coming into a less depth than 10 fathoms until the leading marks for hauling into the harbor come on.

**Wood and Water** may be had in abundance from the mainland, but not from the islands.

**Tides.**—It is high water, full and change, at Bonne Esperance Harbor at 9h. 15m.; springs rise 5 feet, neaps 2 $\frac{1}{2}$  feet.

**Directions through Main Channel.**—Being off the coast to the eastward, and with an easterly wind, stand in towards Caribou Island, the position of which with respect to Whale Island has been pointed out. When at the distance of  $\frac{1}{2}$  mile from the south side of Caribou, the vessel will be in 10 fathoms water, and the south sides of Beacon and Red Head Isles, and the north side of Fish Islet, will be seen to come in line, bearing S. 60° W. Bear up upon this leading mark, or if not sure of the island, steer S. 55° W. with the lead going and a good lookout for Goddard Rock Island. The depth will be about 9 fathoms at low water, until the vessel is past that rock, when it will deepen suddenly into 15 or 19 fathoms, and she will then be in the channel.

The vessel must now haul in immediately N. 20° W., and Whelp Rock will be seen right ahead, and in line with the west side of House Island, which is low, has a house upon it, difficult to be seen, and lies close under the mainland at the distance of about a mile from Lion Island. Run in upon this mark or bearing, and when past Bold Rock, off the SW. point of Goddard Island, haul a little to the eastward, so as to give the Whelp a berth of 200 yards. As soon as the vessel is within this rock, bear up S. 77° W., and run along the inner sides of Lion and Bonne Esperance Islands, passing between the latter and Anchor Island into the harbor, between Bonne Esperance and Grand Islands, and where the depth is from 12 to 16 fathoms over muddy bottom.

Being to the westward with a westerly wind, pass the south point of Whale Island at the distance of  $\frac{1}{2}$  mile, steering none to the northward of N. 43° E. to avoid the 4-fathom patches, until Whelp Rock and the west side of House Island is brought in line bearing N. 20° W.; then haul in upon that bearing, and proceed as before, excepting in case of the wind not being free enough to allow of passing between Bonne Esperance and Anchor Islands. In this case a vessel must go round to the northward of Anchor Island, and must not haul up higher than N. 61° W., nor close in the Whelp Rock with the SW. extreme of Goddard

Island, until she is past Anchor Reef, which covers at high water, and lies 400 yards to the northeastward of Anchor Island, and is the only detached danger within the bay.

**Esquimaux Channel** leads direct to the eastern entrance of Esquimaux Bay; it should be approached through Whale Channel, between Whale and Tent Islands, the latter island being the next westward of the former. Whale Channel is  $\frac{3}{4}$  mile wide, and has a depth of from 10 to 18 fathoms water.

The course through the center of Whale Channel to the entrance of Esquimaux Channel is N. 4° E. Esquimaux Channel is between Grand and Fair Islands on the east, and Spit and Stone Islands on the west; between the inner islands (Fair and Stone) is the narrowest part, only 150 yards wide, and with 5 fathoms water. In passing through this, the equally narrow entrance to Esquimaux Bay will be seen and the vessel must stand close over to it, before she hauls to the eastward through the NW. channel into Bonne Esperance Bay. Then keeping within 200 yards of the main shore, to avoid the shoal which extends from Fair Island fully half way across the channel, she should steer for the south side of the small and high Star Island, and passing close to it continue her course towards Anchor Island till past the shoal, which extends 400 yards off Grand Island, when she may haul to the southward into the harbor. Esquimaux Channel is the only other besides Main Channel which has water enough for large ships, but it is too narrow for vessels of ordinary size excepting in cases of emergency.

**West Channel**, lying between Spit and Stone Island on the east, and Esquimaux Island proper on the west, has a bar with only 2 fathoms water across from Stone Island to a point on the western side of the east entrance to Esquimaux Bay.

**Esquimaux Bay.**—The eastern entrance to Esquimaux Bay is by a very narrow channel between the island and mainland to the eastward, which opens into a wide space with two islets in it. But if the mainland to the eastward be followed, it will lead to the entrance of the Esquimaux River, where Mr. Chevalier's house and trading post will be seen on a sandy point, backed with spruce trees. The river is navigated by canoes for many miles inland, and abounds with salmon.

Only small schooners can pass through the narrow channel between Esquimaux Island and the main to the eastward, but there is water enough for larger vessels to the westward of the island. We must, however, refer to the chart for this route, for it would be quite impossible to convey any intelligible idea of such an intricate navigation through such a multitude of islands.

**Old Fort Bay.**—Fort Rocks are a number of low rocks extending  $\frac{3}{4}$  mile to the SW. from the SW. point of Old Fort Island, which is of a very moderate height, and about  $1\frac{1}{2}$  miles in diameter. From this island a number of smaller islands extend northward into the mouth of Esquimaux Bay. There are also a number of steep and high islands ex-

tending northwestward from Old Fort Island across the bay of the same name. There are deep-water channels leading to Old Fort Bay between the islands last mentioned, but too intricate for a written description to be useful.

**Old Fort Channel** leads in from sea between the Fort Rocks and Mermot Islet, and farther in between Old Fort Island and Channel Island; which last, together with Crumb Island to the northward, must be kept close aboard until a vessel is in the wide and open space within the islands and off the mouth of Old Fort Bay. This wide opening through the outer islands is the only navigable one besides Whale Channel. Through it vessels may run in between the islands in the way just mentioned, or westward between the Dog Islands and the main; but this we must leave the chart to explain. In some places between the islands there is more than 50 fathoms water, and the nearer the main the fewer the ledges.

**Dog Islands.**—To the northward of Mermot Islet is the Eider Group, and westward of them the Dog Islands, surrounded by rocks and innumerable ledges. The outermost of these rocks lies 4 miles S. 73° W. from the outermost Fort Rock. The southwesternmost of the Dog Islands are very low, but the highest islands next the main, although small, are of considerable elevation. There is good anchorage between them and the main, but it can only be got at easily by running down with a westerly wind from Shecatica, close along the mainland, and in the channel between the latter and the scattered rocks and ledges which lie off it, where there is very deep water the whole way.

**Porpoise Rocks** are two or three small black rocks above water, lying S. 77° W., 3½ miles from the outer Dog Rocks.

**The Boulet**, about 250 yards in diameter, is a smooth, round-backed islet, green at the top, and about 70 feet in height. Together with the opening to Lobster Bay, which bears from it N. 32° E. 1¼ miles, it serves to point out the position of a vessel off the coast. Crab Island is ½ mile NW. from it, and the Four Rocks (within which is Inner Islet) 3 miles to the westward. These are the only islets between it and Shecatica; but there are many rocks and ledges between them, and also off the Boulet, to seaward.

**Peril Rock**, which is very small, dries at half tide, and lies 1½ miles S. 13° E. from the Boulet, is the outermost and greatest danger off this part of the coast; the sea, however, almost always breaks upon it, and also upon the others which lie between it and the Four Rocks. There is no warning by the hand lead in approaching any of these rocks.

**Lobster and Rocky Bays** are two narrow inlets extending to the northward between steep, rocky shores. There is deep water at the entrance to both of them, diminishing gradually towards the head. One mile within the entrance of Rocky Bay, on the east side, there is a house and a fish stage, off which there is anchorage in 5 fathoms, muddy bottom, well sheltered from all winds.

**Napetepee Bay** is a straight and narrow inlet, very similar to Lobster Bay. Its entrance is about  $1\frac{1}{2}$  miles northward of the Four Rocks, which, together with the Inner Islet just within them, must be left to the eastward in approaching this bay. In entering Napetepee Bay a vessel must pass 200 yards to the westward of some rocks above water, lying just within the mouth of the bay. At the distance of  $1\frac{1}{2}$  miles, within the entrance, there is a small islet; pass to the westward of it, when the east shore must be kept close aboard until through the Narrows. Several small streams run into this bay; but the principal stream is on the east side,  $\frac{3}{4}$  mile from its head, and is the outlet of a considerable lake, which can not easily be entered by boat excepting at high water. A river abounding with salmon enters this lake.

**Directions.**—The three bays just described have no dangers in them, but they are, nevertheless, by no means desirable places for vessels to go into, being so narrow, and having such deep water. Besides, a sailing vessel can not get out of them without a northerly wind, which in the summer months seldom occurs. Lobster and Rocky Bays are preferable to Napetepee; and the safe and proper way of approaching them is from the westward, with a westerly wind, passing inshore between Shecatia and the Four Rocks, and then eastward close along the mainland.

**The Inner Channel**, between the islets and the mainland, is not less than 600 yards wide, and the depth of water is from 33 to 48 fathoms, over muddy bottom. This deep-water channel, close along the mainland, free from all dangers, continues eastward all the way to the Dog Islands. Vessels might pass between the latter and the Porpoise Rocks in clear weather, when shoal water could be readily seen, and when there is a sea running heavy enough to break upon the ledges, but the other is the safer plan of proceeding.

**Shecatia and Mistanoque** lie close to the mainland, and would be difficult to distinguish from it if it were not for the Boulet and the opening of Napetepee to the eastward and the Shag Islet to the westward. Shecatia is the eastern, the smaller, and the higher island of the two, being  $\frac{1}{2}$  mile long and 150 feet high.

**Mistanoque Island**, separated from Shecatia by an unnavigable channel 300 yards wide, is nearly  $1\frac{1}{4}$  miles long, parallel to the coast; broken into coves on the outside, and in the highest part 120 feet above the sea. Mistanoque Bay, the mouth of which is about 300 yards wide with a depth of 23 fathoms in the entrance, expands to the breadth of 550 yards within and runs inland rather more than 3 miles northward. It is not until a vessel arrives within less than  $\frac{1}{2}$  mile of its head that the depth decreases so as to be convenient for anchoring. The bottom is everywhere of mud; there are no dangers, and wood and water are plentiful.

**Mistanoque Harbor**, though small and with inconveniently deep water, is a valuable harbor. It is situated directly opposite the mouth

of the bay, and has a depth of from 15 to 20 fathoms; farther to the eastward the depth is 12 fathoms, but the channel is narrow; vessels must moor in any case.

**Enter and Diver Islets** are both low. To the west of them, at the distance of 800 yards, lies a group of small islands.

**Directions.**—No other directions seem necessary than to run through the center of either passage which may be preferred. The south passage between Enter Island and the west shore of Mistanoque is, however, the best channel, being 800 yards wide and bold to the rocks on either side. On arriving at the west passage of Mistanoque Harbor, give the NW. point of Mistanoque a berth of about 100 yards, or keep well over to the mainland side of the entrance; but as soon as the vessel has entered this narrow channel, keep Mistanoque aboard, because there is shoal water off the west side of the entrance of the bay to the distance of 60 yards.

**The East Passage**, off the northwest point of Shecatia, is only 60 yards wide and has only 3 fathoms water in it.

**Shag Islet**, bearing S. 44° W. 7½ miles from Mistanoque, is the best guide for making the latter from the westward, as the Boulet is from the eastward. Shag Islet is small and high, with a round peaked hill looking green in the middle. There are many rocks off to the eastward of this islet, the outermost of which, distant from the islet 2 miles, is Shag Rock.

**Aspect of Coast.**—The coast between Mistanoque and Cape Mecatina is broken into large bays and inlets, between large islands of moderate height above the sea, and partially covered with moss. Many smaller islands, islets, and rocks are interspersed, and outside all the coast is lined with small islets, rocks, or ledges, in groups, or scattered here and there. The greatest difficulty is to pass safely through between the last; for within the islands, in most of the channels and wide spaces between them, as well as in the bays of the mainland, there is a great depth of water, amounting in one or two places to 50 or 60, and often exceeding 30 fathoms. In these deep-water channels and bays, which are so intricate as to defy any attempt at a written description, small rocks are not nearly so numerous as they are outside, and are for the most part above water.

From Shecatia Bay to Ha-Ha Bay the mainland does not appear, as the islands, great and small, and of different heights above the sea, are so numerous and so near together, that the coast can not be distinguished till a vessel is among them.

**Cumberland Harbor**, the entrance to which is between Dukes Island on the west and the Cumberland Island on the east, is known by a high hill on the mainland about 10½ miles north from the entrance. That hill is the highest in the neighborhood, and resembles a castle at the top, having steep cliffs like walls. The islands forming the harbor are of moderate height, the easternmost making in two round hills.



This is an excellent harbor, the best and easiest of access on the coast. Good water can be had in plenty on the east side of the harbor, but for wood you must go up Shecatia Bay, which lies 3 or 4 miles to the northeastward of the harbor, and runs inland to the northward many miles.

**Directions.**—Cumberland Harbor should be approached from between Shag Rock and Three Rocks. There is no danger in the way but what appears above water, excepting a small rock lying S. 23° E., rather more than  $\frac{1}{2}$  mile from the west point of entrance, which is about 400 yards wide. As soon as the vessel is within its outer points, haul over to the west side, and run along it to the inner point on that side, bearing N. 52° W., about  $\frac{3}{4}$  mile from the outer east point of entrance. As soon as she arrives there she may haul to the eastward and anchor anywhere in from 7 to 20 fathoms of water over good ground.

**Sandy Harbor**, on the southern shore of Sandy Island, is a safe harbor with good ground.

**Water.**—There is no wood to be had in Sandy Harbor, but plenty of water.

**Directions.**—On approaching Sandy Harbor there are two ledges under water to be avoided. The first of these bears S. 55° W. from Shag Rock, and S. 35° E. from Shag Island, being distant from the latter one mile. The second bears S. 43° E. nearly a mile from the east side of Egg Rocks, and S. 66° W. from the summit of Shag Island. A small reef with showl water extends  $\frac{1}{2}$  mile from Shag Island towards this ledge, leaving a deep channel between more than  $\frac{3}{4}$  mile wide. The course through the center of this channel, direct for the west extreme of Duke Island, is N. 40° W.

To enter this harbor pass to the eastward of Egg Rocks, and keep the west extreme of Duke Island, which bears N. 10° E. more than  $\frac{1}{2}$  mile from Egg Rocks, aboard on going in. A small rock will then be seen above water to the northwestward, lying over towards the east side of the entrance of the harbor. Pass on either side of that rock and then steer in for the harbor, there being nothing in the way but what appears.

**Port Augustine** has a very narrow and intricate entrance, and is fit for small craft only. The Augustine Chain, the outermost of which is a round smooth rock, has a high black rock  $\frac{1}{2}$  mile to the westward of it. Between these last-named rocks there is a ledge, which shows at one-third ebb. The passage is on either side of this ledge, and then northward along the west side of Augustine Chain.

**Square Channel**, the largest in between the islands, towards the mainland, is too intricate for description; but 14 or 15 miles up it in a westerly direction is the entrance of St. Augustine River.

**St. Augustine River** is a stream of considerable length and empties into a bay full of rocky islands. Its mouth is full of shifting sand banks. Schooners anchor in St. Augustine Harbor outside the river 3

miles below the Hudson Bay Company's post. The river is formed of two branches, the NW. branch and the NE., or main river, which receives the tributary river, Aus Mouches. At the latter end of June salmon ascend the main river to a distance of 80 miles above the first rapids. The Aus Mouches is also visited every fall by a large number of fish resorting thereto for the purpose of spawning. Both branches are easily ascended in flats or canoes, but the river sometimes falls very low in summer. There is plenty of wood at this river.

**Eagle Harbor**, in Long Island, has room and depth enough for the largest ships within, but the entrances are too narrow for anything but small vessels. The east passage, between the islets which form the harbor and Long Island, bears about N. 12° W. 2½ miles from the Fox Islands, and is the best and deepest, but has only 3 fathoms water. This part of the coast is dangerous, being lined with small low islets and rocks, both above and under water, and nothing but a chart upon a large scale would enable any one to find Eagle Harbor. The approach to it, however, is on either side of Fox Islands, which bear N. 8° E. 8 miles from Treble Hill Islet, and S. 65° W. about 14 miles from Augustine Chain.

**Fish Harbor**, bearing N. 39° W. 4½ miles from Boule Islet, at the north extreme of Great Mecattina Island, is a small cove of the mainland running in to the westward, with an islet covered with wood, and hence called Wood Island, lying off its entrance. There is a passage on either side of Wood Island, but that to the northward is the best, there being a ledge in the bay to the southward of the island, part of which, however, always shows, and a rock with 2 feet least water, S. 62° E. nearly ¼ mile from the east point of Wood Island. In the cove there are 7 or 8 fathoms, with good ground and room to moor. It is, however, only fit for small vessels. Both wood and water may be obtained. There is no danger but what appears in approaching this harbor from either side of Great Mecattina Island excepting the ledges which have been mentioned.

**Ha-Ha Bay**.—Seal Point, about a mile to the northward of Wood Island, is the west point of entrance into Ha-Ha Bay. The islands to the eastward contract the channel into this bay to the breadth of about ¼ mile, but there is plenty of water, and no danger but what appears above water. The best channel is close along the mainland, between Seal Point and Round Islet, leaving all the islets and rocks to the eastward. The bay runs in about 8 miles, and has many good anchoring places.

**Great Mecattina Island** is distant rather more than 2 miles from Red Point, the nearest part of the mainland to the westward. The central part of the island is the highest, and rises about 500 feet above the sea. The granitic hills of this island are fissured in a remarkable manner, by empty basaltic dikes traversing the island, in a north and south direction, from one side to the other. These features, together with the position of the island, in relation to the high land inside of

Cape Mecattina, 4 or 5 miles from it to the westward, distinguish this island from any other land in the Gulf.

**The Boule** is a high and round islet, nearly joined to the north point of Great Mecattina Island. There is a small rock above water close off it to the westward, and at the distance of about  $\frac{1}{2}$  mile in the same direction, a patch of rocks with about 4 fathoms least water. Round Head, on the SW. side, is a high peninsula, connected to the island by a low isthmus. An islet and small rock, at a distance of  $\frac{1}{2}$  and one mile respectively, lie off the south point of the island. About 3 miles N.  $67^{\circ}$  E. from the center of the island, lies Treble Hill Island. S.  $62^{\circ}$  E. 3 miles from the south point lies Flat Island, and S.  $11^{\circ}$  W. about 4 miles from the same point of the island, lie the two Murr Islets, about  $\frac{1}{2}$  mile apart, of considerable height, flat at the top, and precipitous all round. Treble Hill and Flat Islands are quite bold all round, and so also are the Murr Islets, which swarm with sea fowl. A beacon, constructed of wood, pyramidal in shape, surmounted by a cone, with a vane, the whole 34 feet high, and painted white, has been erected on Flat Island, southeastward of the south point of Great Mecattina Island. Murr Rocks are two small and low rocks above water, lying about  $\frac{1}{2}$  mile to the SE. of the southernmost Murr Islet. To the northward of, and more than  $\frac{1}{2}$  mile from the easternmost Murr Rock, there lies a ledge on which the sea generally breaks.

**Island Harbor** is a cove one mile deep, and about 400 yards wide between Bluff Head, the high NE. point of Great Mecattina Island, and the Boule. This harbor is sheltered from easterly winds by a cluster of small islets and rocks, lying off its mouth, and leaving a safe passage on either side of them. If the south passage is used, keep Bluff Head aboard, and if the north passage, pass between the cluster just mentioned, and a small rock by itself, lying  $\frac{1}{2}$  mile to the west of it, and 200 yards from the shore of the Great Mecattina. The anchorage is near the head of the cove in from 14 to 20 fathoms water over good ground, and both wood and water may be had.

**Mecattina Harbor** is a small but safe harbor between Mecattina Island and the mainland, being only about 56 yards wide in the western entrance, and about 130 yards wide within. In a vessel of any size it is therefore necessary to moor head and stern and with hawsers to the shore. The depth within is 6 and 7 fathoms over good ground, but only 3 fathoms at low water can be carried in through either entrance.

**Western Entrance.**—In the small bay between Mutton and Mecattina Islands, wherein is the western entrance, there is no anchorage in consequence of the great depth of water; but there is no danger in the way, and it is only necessary to keep in the middle to pass safely through the narrow western entrance. The eastern entrance is rendered difficult by a reef of rocks under water running across it to the northward from the north part of the island, and should only be attempted in fine weather, unless by those who are well acquainted with the place.

Strangers in fine weather may anchor outside, between the east end of the island and the main, and send a boat in to examine the channel.

**Wood and Water** may be obtained in Mecattina Harbor, and there is a Canadian residing there who carries on the seal fishery.

**Directions.**—When sailing into Mecattina Harbor from the east point of the island, steer N. 45° W. over to the mainland, and keep it close aboard until the NW. point of the island, at the western entrance, is brought in one with the point of the mainland at the eastern entrance; the latter point being the south point of Dead Cove, which is small, open to the eastward, and immediately to the northward of the eastern entrance of the harbor. Sail in with this mark on till the north extreme of the island and the north extreme of Gull Islet come in one. The vessel will then be within the reef, and must haul to the southward, towards the island, to avoid a ledge which stretches off the south point of Dead Cove. Being close over to the island, she must haul to the westward into the harbor.

**Gull Islet** lies N. 67° E. nearly a mile from the east end of Mecattina Island, and there is no danger between them; but if a vessel approaching Mecattina Harbor from the eastward wishes to pass between Gull Islet and the main, she must keep either the one or the other aboard, in order to avoid the ledge, with 3 feet least water, which lies nearly halfway between them.

**Portage Bay**, on the east side of Cape Mecattina, runs in about 1½ miles to the northward, between steep and high hills, fissured like Great Mecattina Island, and there is a rapid river at its head. The deep water, with space for a vessel to anchor, extends only about 400 yards within the entrance, and there is a snug cove on the east side for small vessels.

**Portage Harbor** is formed by a small and moderately high islet in the mouth of Portage Bay, lying over towards the east side. In this harbor vessels of considerable size might find shelter in time of need, although it is inconveniently small for general use, like most of the harbors on this coast.

**Directions.**—The passage into Portage Harbor, to the eastward of the islet, is fit only for very small vessels. The western entrance is about 200 yards wide, and has from 6 to 8 fathoms in it. There is still more water within, over muddy bottom. But approaching this harbor in a vessel of large draft, there are two ledges with 15 feet least water to be avoided. They lie in the line from the south extreme of Cape Mecattina to the western entrance of Mecattina Harbor. The northeasternmost of these ledges bears S. 28° E. about 800 yards from the west end of Mutton Island, and the other N. 22° E. ½ mile from the southernmost Seal Rock, which lies near the shore on the east side of Cape Mecattina, and about ¾ mile north from its south extremity. Shoal water extends about 200 yards off the Seal Rocks to the eastward, but Mutton Island is quite bold.

**Cape Mecattina** is of moderate height for some distance to the northward of its extremity; but about 3 miles to the northward it rises to the height of 685 feet above the sea. The highest part of what is called the High Land of Mecattina, which rises directly in rear of Mecattina Harbor, can not be less than 700 feet above the sea, and is the highest land upon this coast from Bradore westward to the vicinity of Mingau. The granite of this promontory is traversed from SW. to NE. by those enormous basaltic dikes which have been mentioned as occurring in Great Mecattina Island. In Dike Island several of them are empty as low down as the surface of the sea, dividing the island by immense open fissures in such a way as to distinguish it from all others in the neighborhood. There is a small islet less than 200 yards from the end of the point with no channel between. At the distance of nearly 400 yards farther out is Entrance Island, about 400 yards in diameter. Dike Island is composed of two islands at high water, but there is no passage even for a boat between. It is about 150 feet high. At the distance of a mile from the south point of Dike Island lie the two Outer Rocks. They are above water, and there are several rocks and ledges, and no safe passages between them and the island.

The Northern Murr Islet, which is the nearest of the two, is  $2\frac{1}{2}$  miles from the Outer Rocks, and there is a clear and exceedingly deep channel between. For vessels bound to Mecattina Harbor the channel between Entrance and Dike Islands is the best, and has 13 fathoms of water in it. The shoal water extends about 100 yards off the east side of the former of these islands, but the latter is quite bold.

**The Coast** from Cape Mecattina to Cape Whittle is as dangerous as can well be imagined to a stranger falling in with it at night or in thick weather; and even to those who are quite acquainted with it the navigation is not without much difficulty. Formerly it was not often visited except by fishermen, eggers, and a few Quebec trading schooners. The depth of water immediately off, and even within, the outer islands and rocks is in general very great, often exceeding 70 or 80 fathoms, so that there is no warning by the lead; but in the offing, at a distance of 4 or 5 leagues, there are occasional banks of sand and gravel with from 30 to 50 fathoms water. The outer islands are entirely bare of wood, but there are more trees on the mainland than in parts farther to NE., indicating a slight improvement in the climate as we proceed to the SW.

**Little Mecattina Island** is nearly  $7\frac{1}{2}$  miles long and about 3 miles wide. Salaberry Bay, on its west side, cuts it nearly in two parts. All outside the narrow isthmus is high land, which can be seen from a great distance out at sea long after the other islands have disappeared below the horizon. The highest hill on the island is about 560 feet above the sea. The part of the island within the isthmus is a low and mossy swamp, resting on sand, with isolated ridges and mounds of granite piercing through it here and there. Within the island, to the north and west, are extensive flats of sand, with boulder stones and small rocky inlets.

**Little Mecattina River** discharges its waters through these flats by several shallow channels, the largest of which flows into Aylmer Sound to the westward, and the shallowest into the Bay of Rocks to the eastward of the island. The latter channel has only 3 feet in it at low water, so that it is possible to wade across it and from the island to the main when the tide is out. Little Mecattina Island, having thus no channel between it and the main for vessels, and scarcely even for boats at low water, may be considered as forming the west side of a large bay. The promontory of Mecattina forms the east side of this bay, which is filled with islands and rocks innumerable, among which no vessel could find her way and where it is possible to lose oneself for a time in a boat.

**Fin Rocks** lie nearly 250 yards off Whale Head, the south extreme of Gore Islands, and bearing N. 54° E., 5½ miles from Antrobus Point, a small peninsula at the SE. extreme of Little Mecattina Island. To the westward of Fin Rocks, at the distance of 2 and 3 miles respectively, lie Herriot Isles and Single Rock, with two or three sunken rocks close to it. Between these and Little Mecattina Island there is a large open bay, the head of which is called the Bay of Rocks. Antrobus Point is the SW. point of this bay, and has a ledge off it, 200 yards to the southward, which is the only danger off the south side of Little Mecattina Island.

**Little Mecattina Cove**, on the east side of Little Mecattina Island, about ¾ mile to the northward of Antrobus Point, is ¾ mile long, and from 140 to 230 yards wide, between high, bold, and precipitous rocks. It has 10 fathoms water in the entrance, and there are 17 fathoms over mud bottom within. It is open to the NE., but as the islands are only distant 3 miles in that direction, there is no doubt but that a vessel well moored would be quite safe in it. The SE. point of entrance is called Cove Point, and is quite bold.

**Water** may be obtained at the head of the cove.

**Hare Harbor**, also on the east side of Little Mecattina Island, has depth and room enough for the largest vessels, but has several rocks and ledges in it, which render it difficult for strangers. As it opens to the southward, the prevailing westerly or easterly winds are favorable for sailing in, and are generally accompanied with a smooth sea in the entrance. It is only when the wind is well to the southward that there is any swell, and even then it never rolls into the harbor so as to affect a vessel.

**Directions.**—To enter Hare Harbor steer N. 3° E. so as to pass Antrobus Point and Cove Point at the distance of ¼ mile. When the vessel has run ¾ mile past Cove Point, she will be close to the easternmost of the two Cat Rocks, which are above water, about 400 yards apart. At the distance of 300 yards to the northward of the easternmost rock lies Staff Islet, about 150 yards in diameter, off which there is a rocky patch dry at low water, about 200 yards to the eastward;

this can always be seen from the rigging, but there is also a ledge with 2 fathoms least water, 320 yards N. 34° E. from the N.E. extreme of the islet. On this ledge the S.E. extreme of Eden Islands and the small and high Nob Islet are in line; the latter bearing from the former N. 22° E., 1½ miles. These are the only dangers on the port hand, or on the side of Little Mecattina Island; and to the eastward, the nearest dangers will be more than a mile from the course.

When one mile past Cove Point, Staff Islet will be abeam on the port-hand, and ought not to be nearer than ¼ mile. From this position the entrance of the harbor will be seen bearing N. 30° W., one mile. It can not be mistaken, because there is no other channel through which a person can see clear into the harbor from that position. The entrance, about 340 yards wide, and 20 fathoms water in it, is between Daly and Price Islands, and the only other channel is between the latter and the Eden Islands, which have been already mentioned.

When the entrance bears N. 50° W., haul directly in for the entrance, leaving the Eden Islands, and also Price Island, to the eastward, and giving the S.W. extreme of the latter a berth of not less than 60 yards. Daly Island, on the port hand, or to the westward, is quite bold.

Nearly midway between Safe Rock and Bold Islet lies Rag Ledge, which just dries at low water. There is a clear channel on either side of it, but the western is the best; and the course from the center of the entrance to it, so as to pass within 100 yards of the Safe Rock, is N. 36° W., ¼ mile.

**The Anchorage** must be chosen by the lead, for there are several patches of rock with from 4 to 6 fathoms, although the bottom is in general of mud, with from 9 to 14 fathoms water. Foul Rock, a 2-fathom patch, bears N. 33° W., 1,200 yards from the S.W. point of Price Island; and N. 40° E., nearly 800 yards from the south side of the watering cove, which will be seen on the west side of the harbor. Until within this rock, therefore, a vessel should keep more than halfway over from the islands forming the east side of the harbor, towards its western shore. She may if requisite run in nearly ½ mile farther than this patch, and anchor to eastward of Cluster Point, which consists of some low small islets and rocks extending off the Little Mecattina shore; this position being the most secure in the harbor.

**Rocks.**—All the bay within or northeastward of Eden Islands, as well as to the eastward of the line from them to Single Rock, is dangerous, being full of sunken rocks, and shoal rocky patches, springing up through great depths of water.

**Supplies.**—There is a good watering place in the small cove on the west side of Hare Harbor, and wood may also be obtained in various places. There is usually a couple of men either in the entrance of Little Mecattina River or near Little Mecattina Cove, but they do not remain during the winter. There are plenty of blue and cloud berries, etc., on the hills of Little Mecattina Island.

**Aylmer Sound.**—The south shore of Little Mecattina Island is high and bold, with remarkable beaches of white bowlder stones occasionally. There is a long cove close to the eastward of Cape Mackinnon, but it is of no use to vessels. Aylmer Sound is formed by Little Mecattina Island on the east and Harrington Islands, together with the mainland, on the west, and is navigable about 4 miles to the northward from Cape Mackinnon.

**Paynter Point** is formed of small islets close to the mainland, and the course and distance to it, along the east side of the Harrington Islands, is N. 17° E., 4 miles.

**Aid and Close Islets.**—There is no danger on the west side of Aylmer Sound but what appears and is close to the shore; but on the east side there are two small islets, the outermost of which, Aid Islet, bears N. 73° W., and is distant a little less than a mile from Cape Mackinnon, and is 800 yards off shore. The other, Close Islet, lies about halfway between the cape and Aid Islet, and about 200 yards off shore.

**Spray Reef**, small, awash at low water, and bold all round, lies S. 68° W., 1½ miles from Cape Mackinnon; and S. 40° W., one mile from Aid Islet. This is the only danger in the entrance of the sound that can not always be seen; and vessels had better pass to the westward of it, because the passage between it and Aid Islet has not been sounded.

**Doyle Islands** are four in number, but they appear from sea as two only. The two western islands are very low, and close together, being joined at low water; the two eastern are of moderate height, and also close together. Their east point bears N. 10° W., 2 miles from Craig Point, which is the west extreme of Little Mecattina, distant one mile from Cape Mackinnon.

**Lou Road.**—North of the Doyle Islands, between them and Louisa Harbor, there is a fine roomy roadstead called Lou Road, in which vessels may anchor in from 12 to 4 fathoms, over muddy bottom, the soundings decreasing gradually to the westward from the line joining the eastern Doyle Island and Boot Point, over to Crescent Point, a distance of about a mile.

**Louisa Harbor** is about 400 yards wide at the entrance. The points of entrance are quite bold, and the best anchorage is 300 yards within them, in 4 fathoms, and in the southern part of the harbor.

**Directions.**—The only directions for sailing into Louisa Harbor, or into Lou Road between it and the Doyle Islands, are to keep the eastern side of the latter aboard, to avoid the ledges lying across the entrance of Salaberry Bay, as already mentioned. When once inside of the island there is nothing in the way, so that a vessel may either anchor in the road or run into the harbor as convenient. In the sound outside of the Doyle Islands the only thing to be guarded against is Spray Reef. There are irregular soundings with as little as 11 fathoms over rocky bottom here and there, but in general the depth is from 19 to 23 fathoms, with rock, sand, and mud bottom. The ground can not be trusted until within the Doyle Islands.



**Harrington Islands** extend northward 4 miles, from Cape Airy to the mainland, there being no channel within them. They are high islands, the highest being estimated at 350 feet above the sea. Between the outer and largest islands there is indifferent anchorage and deep water, but the channels leading to it are narrow, and too intricate for any directions to avail. It is a very dangerous place, and useless, excepting to small vessels intimately acquainted with the coast.

**Black Reef**, bearing from Cape Airy S. 16° E., 2 miles, is composed of low black rocks above water, about 300 yards in diameter, bold, but with very irregular soundings around it, varying from 6 to 70 fathoms over rocky bottom.

**Major Reef**, awash at low water and very small, bears S. 68° W., 1½ miles from Cape Airy.

**Netagamu Islands**, bearing S. 68° W., 4½ miles from Cape Airy, are small, with a remarkable mound on the largest of them. Between them and the Harrington Islands there is a bay of the mainland with clay cliffs and sandy beach at its head and innumerable small rocks across its mouth.

**Netagamu River.**—The entrance to this river may be known by the sandy beach, backed with a thick growth of spruce trees on either side of its entrance. It is a large stream with deep water in the narrow entrance, and also close up to the falls, which are 1½ miles from the entrance, and can be partly seen from the sea, when they bear N. 23° E. A semicircular bar of sand, dry at low water, with the exception of a narrow channel with 3 feet water in it, extends a mile out from the entrance, and is extremely dangerous to boats because of the heavy surf. On the eastern side, a mile within the entrance, there are two huts, the temporary residence of salmon fishermen during the season.

**St. Mary Islands** lie 7 miles off the mainland, and their east extreme bears S. 37° W., 10 miles from Cape Airy. There are two of those islands so close together that they may be considered as one narrow island about 3 miles long. They are of bare steep granite and bold all round.

**Cliff Islands** lie ¾ mile west of the south point of the St. Mary Islands. There is a ledge which shows to the SW. of them. The Cliff Islands are one round and steep island ½ mile in diameter, with several small islets and rocks close to the westward of it, and deep water between them all. Between these and the Boat Islands there is a safe channel ½ mile wide.

**Boat Islands**, a cluster of small islands close together, lie S. 65° W., 2½ miles from the SW. point of St. Mary Islands.

**Middle Islands** are a chain of islands, nearly joined at low water, with several small islets adjacent. The westernmost island is 2½ miles long and 150 feet high. The whole group covers a space of 3½ miles in a SW. direction, by about a mile wide. There is a good anchorage in 10 or 12 fathoms between the westernmost island, and two smaller

islands to the northward of it; but it is too small for large vessels and too intricate for description, and can only be approached from the eastward.

Middle Islands lie  $1\frac{1}{2}$  miles from the main, and there is no safe channel between, in consequence of the numerous islets and rocks. Between these islands and Boat Islands there is a safe channel, more than a mile wide. In all these channels the soundings are irregular, and the ground foul. In some places there are only 15, whilst in others there are 40 or 50 fathoms water.

**Tender Reef** is small and awash at low water. It bears N.  $50^\circ$  W. nearly a mile from the northernmost of the St. Mary Reefs, S.  $40^\circ$  W.,  $1\frac{1}{2}$  miles from the SW. extreme of the Boat Islands.

**St. Mary Reefs**, the most dangerous off the coast, are four ledges just under water, on some of which the sea always breaks. From the northern to the southern ledge the distance is a mile, and the latter bears S.  $40^\circ$  W.,  $3\frac{1}{4}$  miles from the south extreme of the Boat Islands; S.  $40^\circ$  W., 6 miles from the SW. extreme of St. Mary Islands; and S.  $72^\circ$  E.,  $3\frac{1}{2}$  miles from the westernmost of SW. Islands, which are a group of small islets, of which the westernmost is high and round. There is a patch of 12 fathoms lying 2 miles to the southward of St. Mary Reefs, and another of 8 fathoms, nearly as far to the southwestward of them.

**Channels.**—There are irregular soundings and deep water around and between all these rocks and islets, but no warning by the hand-lead. There is a clear channel between Tender Reef and SW. Islands, and also between St. Mary Reefs and Boat Islands; at least there is nothing with so little water as 3 fathoms.

**Watagheistic Island and Sound.**—Watagheistic is a large and hilly island 3 miles long by more than  $1\frac{1}{2}$  miles wide. It is much broken into coves, and lies in the mouth of a large bay of the mainland, from which it is difficult to distinguish it from a vessel out at sea. Watagheistic Sound is a secure harbor between the island and the mainland. The eastern entrance is narrow and intricate; but the western entrance is  $\frac{1}{2}$  mile wide; and although there are several rocks and ledges in it, yet it may be safely sailed through, with proper care, in the largest vessels.

**Cove Island** is  $\frac{1}{2}$  mile in diameter, and surrounded with rocks and ledges. It bears N.  $55^\circ$  W., 4 miles from the north point of St. Mary Islands, and there are thickly scattered rocks, both above and under water, all the way from it to the Netagamu Islands.

**Caution.**—The following brief directions are given, with the caution that their use must be accompanied with a good lookout from the rigging, for it is impossible to be certain that every ledge has been found in such a place, although there is every reason to suppose that none have escaped notice.

**Directions for Eastern Entrance.**—Being to the westward with a westerly wind, a vessel may either pass between Tender Reef and SW.

Islands, or she may run down outside St. Mary Reefs, and then haul in to the northward between Boat and Cliff Islands, which is the safer route, and the one for which the following directions are given. Being then in mid-channel between Boat and Cliff Islands, steer N. 22° W., which will lead close to Bold Rock, lying N. 57° E.  $\frac{1}{2}$  mile from the east point of the Middle Islands. The Center Reef, which always shows, bears N. 46° E.  $1\frac{1}{2}$  miles from Bold Rock; and there is a clear channel between them, but not between Bold Rock and Middle Islands.

Passing to the eastward of Bold Rock at the distance of  $\frac{1}{2}$  mile, alter course to N. 44° W., and when she has run  $2\frac{3}{4}$  miles farther she will be midway between Black Ledge and Bare Rocks, the latter bearing from the former N. 37° E.  $1\frac{1}{2}$  miles. Do not go near this ledge, which has not been sounded off. Alter course now to N. 5° W., passing to the westward of all the islets to the northwestward of Cove Island, and when the vessel has run  $1\frac{3}{4}$  miles, Beacon Islet will be seen (close to the SE. extreme of Watagheistic Island, and with a smaller islet  $\frac{1}{2}$  mile to the westward of it)  $\frac{1}{2}$  mile ahead. Run past this islet sufficiently far to avoid a reef and 3-fathoms patch, which together extend 800 yards off it to the northward.

When the vessel has run  $\frac{1}{2}$  mile from the time Beacon Islet was abeam a deep bay will be observed in the east side of Watagheistic Island. Steer for the narrow channel between the north point of this bay and two small islets which lie nearly 300 yards off it to the NE. As soon as she arrives at these islets another deep cove will be seen in Watagheistic Island, with an islet nearly filling up its mouth. Steer to pass close to the eastward of this islet, and then westward for the channel between Watagheistic Island and the islands to the eastward which extend across to the mainland in that direction. The channel is at first only about 170 yards wide, but it soon expands to 320 yards, with a depth of 15 fathoms in the middle over mud bottom, where the vessel may anchor in great security. After she has passed the reef off Beacon Island there is nothing in the way by this route, the islands being quite bold.

**Reef.**—If wishing to run through into the Upper Sound beware of a reef which lies across the mouth of the channel at the distance of 300 yards. As there is no safe channel to the eastward of Cove Island, a vessel can not approach this anchorage with an easterly wind without first beating up along the south side of Watagheistic Island, after she has passed between the Bare Rocks and Black Ledge, so that in that case the western entrance to Watagheistic Sound is to be preferred.

**Directions for Western Entrance.**—Being to the eastward, steer for the NE. point of St. Mary Islands, which may be passed at the distance of 400 yards, and then bringing it astern, steer from it S. 88° W., and the Center Reef, which is bold all around, may be passed on either side at the distance of 400 yards, but to the southward of it is to be preferred.

Continue this course for a mile past the reef, then haul up N. 47° W.,

and when the vessel has run 3 miles the channel to the westward between Watagheistic Island and the mainland will be open, and two small islets will be seen nearly in its center, in one, bearing S. 77° W. They are  $\frac{1}{4}$  mile from each other, and quite bold, but bear in mind that exactly in the line from the one islet to the other, and 700 yards from the easternmost of them is Kettle Rock, very small, and just covered at low water. This rock lies exactly in a line from Seal Islands to the point of a shoal cove of Watagheistic Island, which is open to the eastward. There is a rock awash 160 yards off the point of this cove to the southward. The channels on either side of Kettle Rock, which is quite bold, are each  $\frac{1}{2}$  mile wide, and have from 20 to 26 fathoms water in them. Having brought the islets in one, the vessel has only to avoid Kettle Rock, running in S. 77° W. on either side of it, and the two islets to the westward of it, and then hauling up to the northward under the west end of Watagheistic Island, where she may anchor in from 17 to 20 fathoms over mud bottom, well sheltered from all winds.

**Upper Sound.**—Wood and water may be had there in plenty, and in Hamelle Harbor, at the eastern extremity of the sound, a hunter and salmon fisher resides; and there is another in Bouissier Bay, which has been noticed as lying to the westward on the way to the western entrance into the sound.

**Anchorage.**—There is no good anchorage on the route to, or outside, either entrance to Watagheistic, the soundings being irregular, with deep water and generally foul ground. The breakers on every side, on so many rocks and ledges, make the place look, as it really is, extremely dangerous.

**Etamamu River.**—Between the Middle Islands and Wapitagan, the mainland is broken into coves, and lined with islets and rocks innumerable, among which nothing but a very small vessel, well acquainted with the coast, could find her way. There is nothing there worthy of notice, excepting Etamamu River, which enters a bay open to the SW. full of islets and rocks. The river, consisting of a succession of rapids, is generally narrow; it, however, widens in several places, forming lakes with still, deep water.

**Trading Post.**—At the mouth of this river there is a trading and salmon fishery post, at which two men reside all the year.

**South Makers Ledge** is a small rock which is never entirely covered when the sea is smooth. Its whole extent, above and under water, is 250 yards east and west by 160 yards north and south, and there is no danger near it excepting a patch of 4 fathoms, bearing from it S. 66° E., and distant 400 yards. The soundings are very irregular round this ledge. It bears from Cape Whittle S. 78° E.  $6\frac{1}{2}$  miles.

**Cormorant Rocks** lie directly between Cape Whittle and South Makers Ledge, leaving a channel between those rocks and the ledge nearly  $2\frac{3}{4}$  miles wide. There is no danger excepting the claws of Cormorant Rocks, one of which, with 4 fathoms, stretches 750 yards S. 27°

E. from the southeasternmost Cormorant Rock; another N. 34° E. from Nest Rock, and S. 78° E. from Slime Rock (the NE. Cormorant),  $\frac{3}{4}$  mile from each, with only 2 fathoms; and a 2-fathoms patch which bears N. 7° E.  $\frac{1}{4}$  mile distant from Slime Rock. There is no channel between Cormorant Rocks, or between them and Lake Island.

**Wapitagun Harbor.**—Mistassini, or the Great Stone, is a remarkable block of granite lying on the east extreme of the Outer Wapitagun Islands. It resembles a mortar, especially when seen from the SW., and has been called The Gun by the fishermen. It serves as an excellent guide to the east passage into Wapitagun Harbor, the entrance to which is  $\frac{3}{4}$  mile to the eastward of it, and N. 22° W.  $3\frac{1}{2}$  miles from South Makers Ledge. The Outer Wapitagun Islands, which are of bare granite, about 70 or 80 feet high, are so close together and so overlap that they appear like one island. They completely shelter the harbor, which is a long and narrow channel running east and west between them and Wapitagun Island, which is next to the northward of them. The west passage of the harbor is 2 miles to the westward from the Mistassini, N. 60° W. 4 miles from South Makers.

It is about 160 yards wide, and there are parts of the channel, between islets within the east passage, which are not more than 120 yards wide. The harbor is nowhere more than 280 yards wide, excepting where there are small bays; so that although the depth of water is more than sufficient for the largest vessels, yet the navigation is so intricate that this harbor is not fit for those of a greater burden than 150 or 200 tons.

**Water.**—There is water to be had on Lake and Wapitagun Islands; but for wood the boats must proceed through the islands to the mainland, distant from the harbor about 3 miles to the northward.

**Tides.**—The flood from the eastward and ebb from the westward usually run past the entrances of the harbor, at a rate varying from  $\frac{1}{2}$  to one mile; but both streams are much influenced by the winds.

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## CHAPTER VI.

### GULF AND RIVER ST. LAWRENCE, NORTH COAST—CAPE WHITTLE TO SAGUENAY RIVER.

**Aspect of Coast.**—From Cape Whittle to Natashquan Point, with the exception of the first 13 miles eastward of Natashquan Point, where the shore is of sand, this coast is of granite, which rises into steep hills and ridges, with rounded summits, having between them morasses and stagnant ponds. The mainland is seldom higher than 200 feet, even in the heads of the bays, and it diminishes in height towards the sea, as do also the innumerable small islands, islets, and rocks, which fringe the coast, and which in some parts extend fully 5 miles from the nearest point of the mainland. The islands are bare of wood, and so also is the main, excepting up the bays or where sandy tracts occur, which are always covered with a thick growth of spruce, with occasional birch and poplar.

**Soundings.**—The outer rocks, both above and under water, are so bold that there is no warning from the use of the haul lead; but there are soundings with the deep sea lead which are sufficient to warn a vessel of her approach towards danger at night or in fogs, since these depths do not amount to 50 fathoms at any less distance than 5 miles from the outer rocks.

**The Tides** are weak, irregular, and influenced, both in their strength and direction, by the winds.

**Whittle Rocks** are the outermost of the many small rocks above and under water, lying off to the southward and westward of Cape Whittle. They are two half-tide rocks, and are distant from the cape  $2\frac{3}{4}$  miles.

All these rocks are steep, with from 20 to 40 fathoms of water between them, and small fishing and eggng schooners find their way among them, being guided by the eye.

**Wolf Bay** is 6 or 7 miles deep. There is plenty of water in its intricate channels, and few dangers that do not show, but a number of rocks and ledges extend across its mouth from Cape Whittle to Wolf Island, and are so scattered about that no direction would be of the least use.

**Wolf Island** may be easily recognized, being higher and larger than the outer islands usually are off this part of the coast. It is about  $\frac{3}{4}$  mile long, and makes in two hills, which are about 150 feet high.

**Outer Islet** is small, low, and lies about a mile to the southward of

Wolf Island. As its name implies, it is the outermost of a chain of islands, which extends 4 or 5 miles from the point of the mainland dividing Wolf and Coacoacho Bays. It has on it a white conical beacon 30 feet high.

**Coacoacho Bay** is the only place affording anchorage to large vessels upon this part of the coast. It is not at all difficult of entrance, although the number of islets and rocks in every direction makes it appear so. There is an excellent harbor in the head of the bay, called the Basin, and another formed by an arm running into it, and named Tertiary Shell Bay, which is equally safe. Farther out than these harbors the bay is more than  $\frac{1}{2}$  mile wide, and quite sufficiently sheltered from the sea for the safety of any vessel with good anchors and cables.

**Beacon.**—On Outer Islet is a white conical beacon 30 feet high.

**Grange Rock** is the shallowest part of a narrow ridge of rocks about  $\frac{3}{4}$  mile long in a SW. direction, and which is shown by breakers only when there is a heavy sea running. From the least water on it, 15 feet, Outer Islet bears north nearly  $1\frac{1}{4}$  miles, and from its southwestern end, in 3 fathoms, the same islet bears N.  $7^{\circ}$  E.  $1\frac{1}{4}$  miles.

**South Breaker**, which also shows only in heavy weather, bears from Outer Islet S.  $75^{\circ}$  W. 2 miles, and from Grange Rock N.  $72^{\circ}$  W. 2 miles. It has less than 12 feet of water on it, and is near the northeastern end of a ridge of rocks, which extends from it  $\frac{3}{4}$  mile to the southward, with 16 feet water near its outer extremity.

**SW. Breaker**, with only 3 feet water on it, bears N.  $66^{\circ}$  W.  $2\frac{1}{4}$  miles from the South Breaker, and S.  $59^{\circ}$  W.  $2\frac{1}{4}$  miles from Audubon Point. There are clear channels between these ledges.

**Directions.**—Being not less than 3 miles from Outer Islet, bring it to bear between N.  $18^{\circ}$  E., and N.  $52^{\circ}$  E., and steer for it until the vessel is within Grange Rock and South Breaker, when the rocks which lie about  $\frac{1}{2}$  mile to the northward of the islet will be plainly seen. Pass to the westward of those rocks at the distance of  $\frac{1}{4}$  mile, and when abreast of them, a chain of low rocks which project to the SW. from Emery Island, will be seen right ahead. Bring the point of this chain to bear N.  $7^{\circ}$  E., when it will appear on with the extreme point of the mainland on the NW. side near the head of the bay.

Steer in upon this leading mark or bearing until the vessel is past some rocks which lie about  $\frac{1}{2}$  mile from the east side of the Audubon Islets. These rocks, which are dry at low water and can always be seen, must be left on the port hand. When up to the Emery Rocks the bay will be seen open right ahead and clear of danger, excepting Milne Reef, which is partly dry in low tides, and extends nearly  $\frac{3}{4}$  mile out from the low rocks; its outer end lying nearly in a line from Tertiary Point to Crocodile Islet on the west side of the bay. To pass to the westward of it, keep Audubon Point shut in behind Milne Point and Crocodile Islet. The best berth is on the western wide of the bay,  $\frac{1}{2}$  mile within Crocodile Islet, in 9 fathoms mud.

**Tertiary Shell Bay** has nothing in the way excepting a small rock above water  $\frac{1}{4}$  mile within the entrance, which must be left on the star-board hand. This bay is not more than 200 yards wide  $\frac{1}{2}$  mile from the entrance, but it becomes wider within, with from 5 to 11 fathoms water over mud bottom, and is there quite landlocked.

**Basin.**—In running in for the Basin keep the NW. side of the bay aboard until the vessel is within  $\frac{1}{2}$  mile of the island in the head of the bay. Then sheer over to the eastward, towards that island, to avoid a shoal of bowlderstones which extend nearly 400 yards off the west side of the bay. The channel between this shoal and the island is only 200 yards wide, but deep enough for the largest ships. Give the island a berth of 100 yards, leaving it to the eastward. As soon as she is past the inner end of the island haul to the westward into the mouth of a small bay, and the water will soon shoal to 8 fathoms, muddy bottom, where she must anchor, and will be quite sheltered from every wind.

**Coacoacho River** flows through a wide and shallow channel full of bowlders, and discharges the waters of a large lake, which boats can ascend to with the tide. Its shores are wooded with spruce trees, and water may be obtained near the western side of the entrance.

**Trading Post.**—The Hudson Bay Company have a post on the east bank just above the basin.

**Tides.**—There is very little stream of tide in Coacoacho Bay, but a weak and irregular stream of flood and ebb sets through and between the islands.

**Olomanosheebo River.**—The coast, for the first 12 miles westward of Coacoacho, is formed of innumerable islets and rocks to Olomanosheebo, or Paint River, which is called also by the Canadians "La Romaine." This is a considerable river, falling 20 feet over granite into the head of a bay 4 miles deep, but so shoal that boats can scarcely enter it at low water. There is a trading post of the Hudson Bay Company on the east side near the Falls, neither of which can be seen from the sea, being hidden by the islands; but the place may be known by the low sandy cliffs, thickly wooded with spruce trees, on either side of the entrance of the bay. The tide flows 2 miles up the river.

**Treble Islet and Loon Rocks** lie to the westward, the latter at the distance of 6 miles from the above bay. The Loon Rocks, which can always be seen, are distant 3 miles from the nearest point of the mainland, and are the outermost danger off this part of the coast.

**Washsheecootai Bay.**—Cloudberry Point is the west point of this bay, and is formed by the mainland. The east point of the bay is formed by small rocks and islets. At the distance of 3 miles within Cloudberry Point the bay contracts to a very narrow inlet, having several rocks and islets in it, and from 4 to  $2\frac{1}{2}$  fathoms water, over muddy bottom, for the first 4 miles up; after which it becomes shallow for 4 miles farther, to the falls of a considerable river, where there is a trading post and salmon fishery of the Hudson Bay Company.



This inlet affords scarcely any shelter for the first 5 miles within Cloudberry Point, and it is too intricate a place for the general purposes of navigation, or for any written directions to be of avail.

**Shoal.**—A rock has been reported lying  $1\frac{1}{2}$  miles S.  $8^{\circ}$  W. of Cloudberry Point.

**Musquarro River**, where there is a Hudson Bay Company trading and fishing post, is situated 3 miles within the west point of a bay full of small islets and rocks. This river becomes rapid a short distance within the entrance, and is useless excepting to boats or very small schooners. It will be known by the houses which are on the east side of the entrance, and also by a remarkable red and precipitous ridge of granite, about 200 feet high, and about 2 miles to the westward of the river.

**Kegashka Bay**, situated between Curlaw and Kegashka Points, is 3 miles wide and  $1\frac{1}{2}$  miles deep. It is only in the NW. corner of the bay, within Kegashka Point, that a vessel can be secure from southerly winds; there is room there for several small schooners, but for only one large vessel, and she must be moored with an open hawse to the eastward, with a third anchor on shore to the SW., so as to be able to haul in close under the point when it blows hard from the southward. The depth of water within the islets is from 4 to 6 fathoms, over fine sandy bottom.

**Kegashka Point** is formed by an island separated from a rocky peninsula by a very narrow channel, dry at low water. Both the island and peninsula are distinguished by being partly covered with spruce trees. There are also a few spruce trees on an islet,  $\frac{3}{4}$  mile to the westward of the point, and as no other islands on this part of the coast are wooded, the bay may be recognized by that circumstance. There is a fine sandy beach and low sandy cliffs in the NW. corner of the bay, and there are also similar cliffs for about a mile to the westward of the isthmus above mentioned. This sandy tract is densely wooded with dwarf spruce, another circumstance which serves to distinguish this bay and is the origin of its name, which signifies impenetrable woods. Green Island is of low granite, covered with grass, and is the outermost and largest islet sheltering the bay, being about 600 yards in diameter, and situated  $\frac{3}{4}$  mile to the eastward of Kegashka Point.

**Wood and water** may be obtained without difficulty in the western part of Kegashka Bay, where there were several Canadian families, consisting in all of 50 persons, in the year 1868. Their houses are visible from the sea. They have gardens and keep sheep and cattle, and they also prosecute the fisheries and winter hunting.

**Directions.**—The safest channel into Kegashka Bay is between the low, black islet and Kegashka Point, and is 340 yards wide; it carries 8 fathoms water, and is quite clear. When coming from the westward give the south extremity of Kegashka Point a berth of  $\frac{1}{4}$  mile, or go no nearer than the depth of 8 fathoms; then run along the east side of

the point, which is quite bold, leaving all the islets on the starboard hand. Haul around the inner end of Kegashka Point to the westward at the distance of 100 yards, and when within it not more than the same distance anchor in 5 fathoms.

When approaching Kegashka from the eastward give the low and small islets off Curlew Point a berth of  $\frac{1}{2}$  mile to avoid the ledges off them, which dry at low water; then steer N.  $70^{\circ}$  W., or so as to pass outside of Green Island, going no nearer than 200 yards. Continue on that course till the inner or NE. extremity of Kegashka Point bears N.  $31^{\circ}$  W., which will be a distance of rather more than  $3\frac{1}{2}$  miles from the ledges off Curlew Point; then haul in and pass between the point and the westernmost islet as before directed, giving the south side of that islet a berth of at least 200 yards.

**Kegashka River** affords shelter only for boats. It has falls 40 feet high, and a fishing station of the Hudson Bay Company a mile within its entrance; neither the falls nor the house can be seen from the sea.

**Natashquan Point.**—At the distance of  $2\frac{1}{2}$  miles to the westward of Kegashka River, fine sandy beaches, in front of sandy cliffs, 70 or 80 feet high, and a country thickly wooded with spruce trees, commence and continue to Natashquan Point. It is a sandy promontory, the most southern point on the north coast of the gulf to the eastward of the Seven Island.

**Natashquan Cod Banks.**—Parallel to the coast from Musquarro Point to Natashquan Point, and at distances varying from 6 to 11 miles, there are banks of sand, gravel, and broken shells, on which the depth of water is between 24 and 40 fathoms. Codfish are often caught in abundance upon these banks, principally by American schooners.

**Ruisseau Rock**, lies 8 miles S.  $72^{\circ}$  W. from Kegashka Point. It has only 2 feet water on it, and lies exactly in the line between Natashquan and Kegashka Points, and is distant  $1\frac{1}{2}$  miles S.  $10^{\circ}$  E. from the entrance of a small stream named Long River. A vessel will avoid it by not going nearer to the shore than the depth of 17 fathoms.

**Bank.**—One and a half miles to the southward of Natashquan Point lies a small cod bank, with  $4\frac{1}{2}$  fathoms at low water, over gravel bottom.

**Aspect of Coast.**—From the south extremity of Natashquan Point to Collins Shoal, the outer danger off St. Genevieve, the coast is low near the sea, rising a short distance back into mounds and ridges, but nowhere exceeding 400 feet in height. It is composed of primary rocks, with the exception of a sandy tract at Agwanus and Navesippi Rivers. The sandy tracts are always thickly wooded with spruce trees, and the country generally is here less bare than it is farther to the eastward.

The coast is broken into numerous coves and small bays, affording shelter everywhere to boats, and occasionally to very small schooners. The small and bare islets and rocks are innumerable, along it, but nowhere extend farther out from the points of the mainland than 2 miles.

When there is a heavy sea running, all these dangers show, or they can be seen from the masthead in clear weather; but under other circumstances, the depth of 20 fathoms is as near to them as a vessel ought to approach, that depth being in many places not more than a mile from the outer ledges.

**Currents and Tides.**—The current down along the coast in westerly winds has also been mentioned in pages 12 and 15; its rate seldom exceeds half a knot, and is usually much less, so that a vessel can always make way to windward in moderate weather.

In shore there are weak tidal streams too irregular to be depended upon. It is, however, important to remark that the flood draws strongly into Natashquan River, and the bay at Little Natashquan; while the ebb sets strongly off Natashquan Point to the SE., and causes a very heavy sea upon the banks off it in southerly winds.

On approaching St. Genevieve, a strong in-draft of the flood towards the channel, between that island and the main, will be experienced; and the ebb will be found setting strongly out in the contrary direction; that is, to the SE. The rate of these streams seldom exceeds a mile per hour.

**Natashquan River.**—The mouth of the river is occupied by a low sandy island, having narrow channels on either side of it. The northern channel is nearly dry at times, but the southern one has a depth of 6 feet at low water, and from 9 to 11 feet at high water, according to neap and spring tides.

**The bar** of sand, on which there is usually a heavy surf, extends out  $\frac{3}{4}$  mile and is exceedingly steep to seaward, where 20 fathoms will be found within  $\frac{1}{4}$  mile.

**Trading Post.**—The houses of the Hudson Bay Company's trading and fishing post are on the south bank,  $\frac{1}{2}$  mile within the entrance. Above it the river is full of sand banks, dry at low water.

**Little Natashquan River** admits only boats at high water.

**Little Natashquan Harbor**, formed by a number of islets and rocks, is only fit for vessels not exceeding 100 tons, although it has water enough for large vessels. The entrances, of which there are two, formed by a reef of rocks in the center, are not more than 180 yards wide between reefs, the extent of which under water can not be seen, because the water is discolored by the dark streams of the neighboring rivers.

The depth that can be carried in at low water by the west channel is 3 fathoms, and 5 fathoms by that which is between the central reef and the islets on the east side. The space within the reefs in which vessels can ride in from 3 to 5 fathoms, over sand and mud bottom, is only  $\frac{1}{4}$  mile in diameter. The anchorage is defended by the main and islets from all winds excepting the SW., in which direction there are reefs of rocks, some parts of which are always above water. In a strong SW. wind some sea comes over these reefs at high water, but never enough to

endanger a vessel during the summer months. There are several rocky patches, with from  $2\frac{1}{2}$  to 3 fathoms off the harbor's mouth; these, with the want of space to work in, and the difficulty of getting out with the prevailing southerly winds of summer, render this place of little use for the purposes of navigation; but it is a valuable harbor for the fishermen, whose schooners of from 30 to 100 tons are well suited to the size and nature of the place, which is contiguous to excellent fishing ground, and affords every facility for drying fish. The harbor should not be entered by a stranger without a pilot.

**Settlement.**—In 1868 the population, mostly French Canadians, was 200. The majority of the people live on the eastern side of Little Natashquan Stream, where there is also a Roman Catholic church. There is a Jersey establishment on the north shore of the harbor.

**Washtawooka Bay**, 5 miles northwestward of Little Natashquan, is full of small islets, rocks, and ledges, affording shelter to shallops and boats. It is an intricate and dangerous place, and may be known by Shag Islet, a large black rock lying off it, and further out than the rest, being  $1\frac{1}{2}$  miles S.  $55^{\circ}$  E. from the projecting point of the main.

**Agwanus River**, the entrance to which is narrow, has only 6 feet in it at low water. There is no bar, but many small rocks, both above and under water, lie off its mouth to the distance of  $1\frac{1}{2}$  miles, and render the approach extremely dangerous. There is a small islet,  $\frac{3}{4}$  mile from the river's mouth, above which the river expands into a basin,  $\frac{1}{2}$  mile wide, and carrying 5 fathoms close up to the foot of the rapids. There is sandy beach for  $1\frac{1}{2}$  miles to the eastward of this river, and also westward of it to Nabesippi.

**Nabesippi River** will only admit boats in fine weather. On the west bank, a short distance within the entrance, stands a house and store, being a trading post of the Hudson Bay Company, which can be readily seen from the sea.

**Pashasheeboc**, **Mushkoniatawee**, and **Washtnagunashka**, are small bays, full of small islets and rocks, which render their entrances so difficult and dangerous that no directions would be of the least avail.

**Wacheeshoo**, 18 miles west of the Nabesippi River, is a hill of granite, 127 feet high, and bare of trees. It is a peninsula, but appears like an islet, higher than the rest, when seen in a vessel from a distance. There is a fishing post of the Hudson Bay Company in a cove among the rocks, to the westward of it. **Wacheeshoo** and **Saddle Hill**, which is 374 feet high above the sea, serve to point out to a vessel her position off the coast. The latter is situated 6 miles inland from the former, in a northerly direction.

**Quetachoo-Manicouagon** and **Peashtebai** are two contiguous bays, 4 miles westward of **Wacheeshoo**. The first, which is the easternmost, is  $2\frac{1}{2}$  miles wide, and carries from 3 to 14 fathoms water, but so full of rocks and ledges as to be useless, excepting to the smallest schooners; it is open to the westward. The other is a much smaller

bay, capable of affording shelter only to boats, and open to the southward.

**Appetetat Bay** is full of rocks, of no use to vessels, because of the ledges under water off its entrance, and also within.

**The Mingan Islands** are estimated nowhere to attain an elevation exceeding 300 feet above the sea, and are in general much lower. They possess very little soil, but nevertheless are thickly wooded with spruce, birch, and poplar on the side towards the mainland; though towards the sea barren tracts often occur, composed either of bare limestone, or of banks and ridges of limestone gravel.

**The Coast** of the mainland, from St. John River to Mingan River, is of sand and clay, low and thickly wooded, and with a fine sandy beach. Farther eastward the shore is sometimes of granite, and at others of limestone, the latter rock lying immediately over the former.

There are 29 of these islands, in none of which are there any inhabitants; some of them are very small, and the largest does not exceed 11 or 12 miles in circumference. They are arranged parallel to the coast, and extend along it 45 miles from St. Genevieve Island, at the eastern end, to the Perroquets at the western end of the chain.

**Supplies** of wood and water can readily be obtained from the principal of the Mingan Islands; wild berries are abundant in their season, and so are different kinds of wild fowl. Quadrupeds are scarce, but there are plenty of seals upon the limestone reefs, and a few codfish off the coast.

**Tides**—The tides are not strong among the Mingan Islands, never exceeding a knot, excepting in very narrow channels. They are often rendered irregular by the winds, but in fine settled weather there is a constant alternation of the streams of flood and ebb between the island and the main, and also within the distance of 2 or 3 miles from the outer or southern shores of the islands.

**St. Genevieve.**—Its NE. point is a bluff headland, being the termination in that direction of the highest part of the island, which is about 200 feet above the sea, and slopes irregularly down to the southward.

Mount St. Genevieve is an isolated table hill on the mainland, 332 feet above the sea at high water, about a mile inward, and bearing N. 26° W. from the NE. point of the island. This mountain and the high NE. point of the island distinctly point out to a vessel at sea the position of the channel between the island and the main.

**The Saints** are two low and bare rocks, lying rather more than  $\frac{1}{2}$  mile to the southward of St. Genevieve. There is a channel carrying 5 fathoms of water, but with foul ground, between them and the island; and reefs under water extend off from each of them fully 600 yards.

**The NW. Bowen Rock**, with 3 feet least water, lies one mile N. 76° E. from the Eastern Saint, and with the south side of the latter on with the center of the Western Saint.

**The SE. Bowen Rock**, with 6 feet least water, lies S. 70° E.  $\frac{3}{4}$  mile

from the NW. Bowen Rock, and N. 88° E. 1½ miles from the Eastern Saint, which is just open to the northward of the Western Saint. There is very deep water between and close to them, and also for rather more than a mile to the southward of them and the Saints. The soundings are extremely irregular, and the whole of this dangerous part should be avoided by vessels.

**Hunting Island** is low, thickly wooded, broken into many coves, fringed with small islets and rocks on all sides, excepting toward the mainland. Off its SW. point, and extending to the distance of 1½ miles, lie Wood and Gun Islands, leaving no passage between, and having reefs running 600 yards to the southward. They are both low, and the latter is bare of trees, but covered with grass and peat, in which innumerable puffins burrow and rear their young.

**Garde Rock**, always above water, lies rather more than a mile to the southward, and is the termination of a long ridge of sunken rocks. The southeastern end of the island is likewise beset with several reefs, some of which extend ¾ mile to the southward.

**Collins Shoal**, a small patch of rocks, with 15 feet least water, lies 2¾ miles from the SE. point of Hunting Island, with the east point of St. Genevieve just open to the eastward of the Western Saint, bearing N. 9° E., and the north point of Wood Island in line with the south side of the Garde Rock, N. 73° W.

**Caution**.—Between Collins Shoal and the reefs off the SE. point of Hunting Island the soundings are irregular, from 4 to 17 fathoms, over rocky bottom, and vessels should not pass between them.

**St. Genevieve and Betchewun Harbors**.—The first of these harbors is situated between St. Genevieve Island and the mainland, and the second between Hunting Island and the main. Both are excellent harbors, not difficult of access or egress with the assistance of the chart and fit for the largest ships.

**Wood and water** may be obtained; the latter from small streams either on the main or on the islands.

**By East Channel**.—To enter by the East Channel bring the NE. point of St. Genevieve in line with Indian Point (a low wooded point of the main, forming the east point of Pillage Bay), bearing N. 64° W. Run in with this mark on, and it will lead ½ mile to the eastward of the Bowen Rocks.

When the SE. point of St. Genevieve and the West Saint come in line steer a little to the northward, so as not to go too near a flat shoal, which extends nearly 600 yards from the east side of St. Genevieve. Give the NE. point of St. Genevieve a berth of 200 yards. Anchor in 10 fathoms, mud bottom, halfway between it and Anchor Island, close off the NW. point of St. Genevieve.

**Caution**.—The distance across from the NE. point of St. Genevieve to the main is about a mile, but the navigable breadth of the entrance is reduced to ½ mile by the rocks and shoal water off Ledge Point.

The shoal water extends from Ledge Point, directly across Pillage Bay, to Partridge Point, and a vessel must not approach these shoals nearer than 7 fathoms.

**Betchewun Harbor.**—If wishing to proceed to Betchewun Harbor, pass to the northward of Anchor Island, which is quite bold on that side. The north point of Hunting Island is a cliffy mound, with a cove on its eastern side. It is quite bold, and a vessel must pass close to it to avoid the shoal off Partridge Point, which extends  $\frac{1}{4}$  mile to the southward, and diminishes the navigable breadth of the entrance to 700 yards. When in the entrance a low islet will be seen in the center of the harbor; steer for it and anchor with it, bearing S.  $69^{\circ}$  W., and distant  $\frac{1}{2}$  mile. The depth of water in the harbor is from 9 to 18 fathoms, over mud bottom.

**By Saints Channel.**—To enter these harbors by the Saints Channel, bring the west points of St. Genevieve and Anchor Islands in line, bearing N.  $31^{\circ}$  W., at a distance of not less than 5 miles from the former, to be sure that the vessel is outside of Collins Shoal. Run in upon this leading mark until the north sides of the two Saints come in line, bearing N.  $73^{\circ}$  E. The east sides of Mount Partridge and of Hunting Island (or rather of an island joined to it at low water) will come in one at the same time, bearing N.  $61^{\circ}$  W.; steer upon this last-named leading mark (to avoid a reef which extends 750 yards from the SW. point of St. Genevieve) until the east side of Mount St. Genevieve, seen over the sandy SE. point of Anchor Island, comes in line with NW. point of St. Genevieve Island, bearing north. Thence by steering N.  $31^{\circ}$  W. it will lead in through the center of the channel between St. Genevieve and Hunting Islands, and the vessel may either proceed to St. Genevieve or Betchewun Harbors.

**Inner Harbor.**—There is an inner harbor at Betchewun to the westward of the low islet which has been mentioned, but from thence there is no channel, excepting for boats, to pass out to the westward between Hunting Island and the main.

**Tides.**—The tides between St. Genevieve and Hunting Islands and the mainland are much influenced by the winds, but their rates seldom amount to a knot at any time, and are usually much less, excepting through the shallow and narrow channel at the west end of Betchewun Harbor, where there is at times a complete rapid.

**Charles Island** is about 200 feet high, bold, and free from shoals; but at the distance of  $\frac{3}{4}$  mile southward of its east point there is a patch of rocky ground on which no less than 5 fathoms have been found, but which had better be avoided by vessels of large draft.

**Puffin Bay.**—Between the east point of Charles Island and the west point of Gun Island is the entrance to Puffin Bay, which is open to southerly winds. Within the east point of Charles Island and half-way towards Shoal Cove there is a good anchorage in 7 fathoms, mud bottom, at the distance of 400 yards from the island; but the SE.

winds send in a considerable swell. In the NE. corner of this bay is the narrow entrance (between shoals off Ragg Point and Hunting Island) to Ragg Bay, which has tolerable anchorage in its NW. part, but has very deep water on the side towards Hunting Island, and is separated from the western part of Betchewun Harbor by a shoal channel for boats between the island and the main.

**Charles Harbor**, between Charles Island and the main, though very narrow is quite secure and deep enough for vessels of any size, but its entrances are only 160 yards wide. Within, the harbor expands to  $\frac{1}{2}$  mile wide by  $\frac{3}{4}$  mile in length, parallel to the shore. Both entrances carry a depth of 7 fathoms, but a vessel must pass over 4 fathoms if she enters from the eastward, through Puffin Bay. The depth within the harbor is from 4 to  $6\frac{1}{2}$  fathoms, with mud bottom.

**Tides**.—Strong winds occasionally cause the tides to run at the rate of 2 knots in the entrances of the harbor, but in general there is only a weak stream with either tide.

**Trilobite Bay**.—Whale Island, lying  $\frac{1}{4}$  mile from the east side of Ammonite Point, and with shoal water between them, is distant  $\frac{3}{4}$  mile to the westward of Charles Island. Both islands are bold and clifty, and Trilobite Bay is between them with excellent anchorage, well sheltered from all but southerly winds. The only danger to be avoided when working into this bay is a reef off Ammonite Point, which includes a small islet, and extends  $\frac{1}{2}$  mile off shore to the southward. The mark to clear this reef when running along the coast is to keep Gun Island open to the southward of Charles Island, and when hauling in from the westward into Trilobite Bay keep the north point of Charles well open to the southward of Whale Island.

**Directions**.—To enter Charles Harbor from Puffin Bay bring the NE. point of Charles Island, which is high and clifty, to bear N.  $76^{\circ}$  W., then steer for it and give it a berth of about 300 yards as the vessel hauls round it to the westward into the harbor.

To enter from Trilobite Bay give the NW. point of Charles Island a berth of between 120 and 280 yards as the vessel hauls round it into the harbor. All the way from the eastern narrow entrance into Charles Harbor there is a broad zone of shoal water, which curves round parallel to the mainland till it joins Whale Island, and nearly fills up all the NW. part of Trilobite Bay, rendering the entrance of the harbor too narrow for convenient or general use.

**Clearwater Point** is low, and the shoal water does not extend more than  $\frac{1}{4}$  mile off it to the southward.

**The Coast** between Clearwater and Esquimaux Points forms a large bay, along which there are high and conspicuous cliffs of sand and clay that distinguish this part of the coast to a vessel at sea. The shoal water extends a considerable distance from the shore all round this bay, and abreast Sea Cow Island the 3 fathoms line of soundings is a mile out from the sandy beach.



**Clearwater Shoals.**— $1\frac{1}{2}$  miles S.  $59^{\circ}$  W. from Clearwater Point lies a rocky 3 fathoms shoal, and there are three others with 2 fathoms lying to the northward of the first, and in a line from the point, towards Walrus Island; the outer and westernmost of them being rather more than 2 miles from the point. To pass outside these shoals, at the distance of  $\frac{1}{2}$  mile, keep the south points of Gull and Fright Islands in one, bearing N.  $83^{\circ}$  W.

**Sea Cow and Walrus Islands** lie about 4 miles west from Clearwater Point. They are steep and precipitous, excepting to the southward, in which direction the reef off Sea Cow Island extends  $\frac{3}{4}$  mile, and that of Walrus Island 400 yards.

**Sea Cow Channel.**—There is a clear channel named Walrus to the westward of Sea Cow and Walrus Island, and also between them and the Clearwater Shoals. This latter channel, named Sea Cow, is  $1\frac{1}{2}$  miles wide, and, although not as good as the Walrus, may be used in proceeding to Esquimaux harbor from the eastward by running upon the leading mark which has been given for clearing the shoals to the westward of Clearwater Point, until the east side of Esquimaux and Walrus Islands come in one. Then steer for the NE. side of Sea Cow Island, and haul round it, at the distance of not less than 400 yards to the northwestward for the east entrance of the harbor.

**Green Island** is low, covered with grass, with reefs stretching north and south nearly 600 yards, but bold to the east and west; it lies nearly a mile west of Walrus Island.

**Gull Island** is distant  $\frac{1}{2}$  mile to the southward from the SE. point of Esquimaux Island, but there is no passage for ships between them. The south point of the island is bold, and may safely be passed at the distance of 400 yards.

**Esquimaux Island** is high towards its north side, sloping to the southward. From its SW. point a shoal extends towards Fright Island, which also has a shoal stretching towards Esquimaux Island. The channel between these is nearly 800 yards wide, with deep water, but as there are no leading marks for it, and the reefs on either side are extremely dangerous, it can not be recommended.

**Fright Island** is bold on the south and SW. sides, but reefs extend off it to the eastward and northward to the distance of 600 yards.

**Quin Island** lies north from Fright Island, from which it is distant a short  $\frac{1}{2}$  mile. Its shores are bold, with the exception of a broad reef running out  $\frac{1}{2}$  mile to the westward from its north point.

**Fright Channel** is deep, but only 400 yards wide between Quin Island and the reefs off Fright Island. It can not be recommended, but might be used in case of necessity by hauling up to the east of Niapisea Island till the south end of Quin Island comes in one with the south side of the cove in Esquimaux Island, bearing N.  $82^{\circ}$  E., then steering so as to pass close round the south point of Quin Island, which is quite bold.

**Quin Channel** is the best for vessels approaching Esquimaux Har-

bor from the westward. The depth in this channel is from 5 to 7 fathoms, over rocky, gravelly, and sandy bottom. The shoal water extends only to the distance of 200 yards from the island, but off *Pointe des Morts*, and the small islets to the westward of it, the reefs extend to the distance of 400 yards to the southward.

**Esquimaux Harbor** lies between Esquimaux Island and the mainland. The Esquimaux Point, having the entrance of a small river on its west side, consists of sand, and is quite bold to the southward, although shoals extend from it across the bays on either side. The north and NE. points of Esquimaux Island are also bold, and may be passed at the distance of 140 yards by the largest ships. The depth within this secure harbor is from 5 to 15 fathoms, over a sandy bottom. The space in which vessels may anchor is nearly  $1\frac{1}{2}$  miles long, and the average breadth is 800 yards.

**Water.**—Supplies of good water may be procured from the river at Esquimaux Point, or from small streams on the island, and wood is plentiful.

**By Niapisca Channel.**—Niapisca Channel is the best with westerly winds. The dangers to be avoided, besides the reefs of *Fright* and *Quin* Islands, are the reefs of flat limestone extending  $\frac{1}{2}$  mile out from the south and SE. points of Niapisca Island. Between those points, a remarkable group of flowerpot rocks will be seen standing on the limestone just above high-water mark. From the east point of the island another reef runs out  $\frac{1}{2}$  mile to the NE., but there is ample space between these reefs and *Fright* Island, the channel being over a mile wide in the narrowest part, and carries between 30 and 40 fathoms water.

In running for this channel from the westward, the leading mark for clearing the south reef of Niapisca Island by more than 400 yards is the NW. point of *Fright* Island in line with the south end of *Quin* Island. Do not, therefore, open those islands clear of each other until *Moniac* Island (bearing N.  $25^{\circ}$  W.  $2\frac{1}{2}$  miles from the nearest point of Niapisca) is brought in sight to the eastward of Niapisca. Having done so, haul in through the channel, steering N.  $3^{\circ}$  W., and when *Moutange* Island (next westward of *Moniac*) opens to the northward of Niapisca, the vessel will be clear of the reef off the east point.

Haul up now, if necessary, to clear the reef, which projects  $\frac{1}{2}$  mile westward of the north point of *Quin* Island, until the north point of Esquimaux Island is not only open to the northward of *Quin* Island, but also the north point of *Sea Cow* Island is open to the northward of Esquimaux Island. Run in between *Quin* Island and the main, with the last-named marks just open, and they will lead past the north point of *Quin* Island, at the distance of about 400 yards.

**The Mark** for the shoals off *Pointe des Morts*, and the small islets westward of it, is the north and NE. points of Esquimaux Island in one; if a vessel opens them, before she is as far to the eastward as *Quin* Island, she will be ashore.

**Tides.**—The tides usually run at the rate of about one knot through Esquimaux Harbor, the flood coming round Clearwater Point from the eastward, and passing to the westward between Quin Island and the main. The ebb flows in the contrary direction.

The flood also draws in between Fright and Niapisca Islands, and the ebb sets out through the same channel. But these streams are much influenced, both in their rate and duration, by the winds, and the ebb is much accelerated by westerly winds in Esquimaux Harbor, running there at times fully 2 knots.

**Niapisca Island** is rather more than 2 miles long, north and south, is only partially wooded, and has three principal hills, not exceeding 200 feet high.

**Quarry Island**, about the same height as Niapisca, is separated from the latter by a channel nearly 800 yards wide, with a small islet in it, but no safe passage for shipping, because of a shoal in the bay to the southward, and of a reef which stretches beyond the small islet. Other reefs also run out  $\frac{1}{2}$  mile from the west side of Niapisca, and from the south side of Quarry Island.

**Quarry Cove**, on the north side of Quarry Island, has 22 fathoms water in the entrance, shoaling gradually to 5 fathoms with mud bottom close to its head. The island and shoals along the mainland are distant only 3 miles to the northward of this cove, which thus becomes a completely land-locked, though very small, harbor. No other directions are requisite than keeping the west side nearest on board in entering, and to anchor near the center in 9 or 10 fathoms.

**Water.**—Good water may be obtained from a small stream in the SW. corner of Quarry Cove.

**Quarry Channel.**—There is a clear channel between Quarry and Large Island, which is the next westward. The only directions necessary are to bring the channel to bear N. 8° W., and then run in, keeping in its center until  $\frac{2}{3}$  mile within the SW. point of Quarry Island, after which that island may be kept close aboard, as the remainder of the channel,  $1\frac{1}{2}$  miles, is quite bold on that side, while the shoal water extends to the distance of 300 yards from Large Island. The flood runs slowly in through this channel, and the ebb as slowly out.

**Large Island** is thickly wooded, and its highest part about 200 feet above the sea. Reefs of flat limestone extend off its south and SW points nearly  $\frac{3}{4}$  mile, and the mark for the south point of these reefs, in 2 fathoms, is the south points of Niapisca and Fright Islands in one. On its west side, a mile to the northward of its SW. point, there are many flowerpot and arched rocks, standing on the flat limestone above the present high-water mark.

**Middle Reef** lies just within the line joining the south points of Large and Mingan Islands and 2 miles westward of the former. A part of this reef is always above water, but it is not 60 yards in diameter, though the shoal around it is  $\frac{1}{2}$  mile long and  $\frac{1}{4}$  mile wide. From the

east side of this reef, in 4 fathoms, the east sides of the two Birch Islands are in one.

**Large Channel**, between Middle Reef and Large Island, should be used by a vessel proceeding to Mingan Harbor with an easterly wind, and in doing so the only thing necessary to be observed is that the reefs extend to the westward off the shore of Large Island, from 400 to 600 yards, as far in as the Flowerpot Columns, after which the island becomes bold. There is little or no warning by the lead on the Large Island side, but Middle Reef may be approached to the depth of 13 fathoms, which, on the east side, is more than  $\frac{1}{2}$  mile from it.

**Outer and Inner Birch Islands.**—The channel between the two Birch Islands is 600 yards wide, but the ground is all foul, and not more than  $3\frac{1}{2}$  fathoms could be carried through by a stranger. The Outer Birch Island is about a mile in diameter and about 300 feet in height, and it has a remarkable flower-pot rock on its S. . . point. The Inner Birch Island is rather larger; its NW. point is long and low, extending  $\frac{1}{2}$  mile to the westward from the body of the island, with a curve to the SW.; off this point there is a reef running out  $\frac{1}{2}$  mile to the westward, and having 12 fathoms within the distance of 200 yards of its edge.

**Hulk Rock.**—Half a mile SW. from the same point there is a small low islet, close to the south point of which stands a very remarkable rock, called the Hulk Rock, from its resemblance to the hulk of a wrecked vessel. The reef, of flat limestone, dry at low water, which connects this islet and rock to the low west point of the Inner Birch Island, extends 600 yards off the rock to the southward, and also 400 yards to the westward.

**Middle Reef Channel**, between Outer Birch Island and the Middle Reef, is almost a mile wide, and the shoal water extends only 300 yards from the south point of the former; but there is a dangerous reef off the west side of the Outer Birch Island, extending  $\frac{2}{3}$  mile from the shore.

**Tides.**—The flood tide sets out to the SW. between the Birch Islands, and also between them and the Middle Reef.

**Birch Channel**, between the Birch Islands and Mingan Island, is the best by which to proceed to Mingan Harbor with westerly winds. It is 3 miles wide and all deep water.

**Mingan Island**,  $3\frac{1}{4}$  miles to the westward of the Inner Birch Island, is about 100 feet in height and bare of trees. The shoal water does not extend above 600 yards off its south point; but to the SW. and west the reefs, including the islets, run out nearly 1,200 yards. The island is bold on its north and east sides.

**Mingan Patch** lies S.  $9^{\circ}$  W.  $3\frac{1}{4}$  miles from the south point of Mingan Island, and with the south point of the Outer Birch touching the north point of Large Island; it is a patch of rocky ground with 9 fathoms water on it, yet there is a heavy swell upon it at times.

**The Perroquets**, the westernmost of the Mingan Islands, are four

small islets, low and bare of trees. The northwesternmost is higher than the others, surrounded with cliffs, and has a superstratum of peat on its flat summit. The two easternmost of these islets have a reef of flat limestone extending off them  $\frac{3}{4}$  mile to the southward. There is also a shoal to the northward of them  $\frac{1}{4}$  mile, and a narrow channel between them and the other two, but of no use to vessels. The northwesternmost islet has shoal water off it to the distance of  $\frac{1}{4}$  mile, both to the eastward and westward, but a vessel may pass to the northward of it, at the distance of 400 yards, in 14 or 15 fathoms water.

**Perroquet Channel**, between the Perroquets and Mingan Islands, is  $1\frac{1}{2}$  miles wide, and with a depth varying from 30 to 40 fathoms in the center. Both the flood and ebb set out through the channel, the former to the SW. and the latter to the southward.

**Mingan Channel**.—All the islands just described, from Niapisca Island, are bold and free from danger on their north sides, so that Mingan Channel, which lies between them and the main, is safe throughout.

**Moniac Island**, on the mainland side of this channel, is less than  $\frac{1}{2}$  mile in diameter, and lies nearly abreast Niapisca Island, from which it is distant about  $2\frac{1}{2}$  miles. Montange Island,  $1\frac{1}{2}$  miles farther westward, is about  $1\frac{1}{4}$  miles in diameter, and situated off a bay full of small islets and in which there are several small rivers. It is directly abreast Quarry Island, at the distance of  $2\frac{1}{4}$  miles. These islands, Moniac and Montange, are distant  $\frac{3}{4}$  mile from the nearest point of the main, but shoals within and between them are nearly dry at low water.

**The Shoals** do not project above the distance of 600 yards off to the southward of these islands, but there is rocky ground, with irregular soundings between 4 and 10 fathoms, out to the distance of a mile to the southward of them both; so that a vessel beating in the Mingan Channel had better not stand over to the northward beyond  $1\frac{1}{4}$  miles from the northern shores of the outer islands, or into less than 10 fathoms.

**Long Point**, on which is a fishing establishment, consists of sand, and there is a fine beach from thence to the eastward, as far as Mingan Harbor inclusive. There is a sandy shoal immediately to the westward of it which extends  $\frac{3}{4}$  mile off shore and as far to the westward as the St. John River.

**Sand Lark Reef**, lying  $2\frac{1}{4}$  miles eastward of Harbor Island, and rather more than a mile from the mainland, is small and low, but always above water. There is a clear channel with deep water on all sides of it; but there is a rocky patch, with 5 fathoms water,  $1\frac{1}{2}$  miles from it, on a line towards the south side of Montange Island. This shoal water has not been particularly examined, and should therefore be avoided.

**Harbor Island** is of limestone, about 100 feet in height, bold towards Mingan Harbor, but shelving and shoal to the southward to the distance of  $\frac{1}{4}$  mile from the shore. The length of the island is 2 miles, its greatest breadth does not amount to  $\frac{1}{2}$  mile, and it is thickly wooded.

The reefs off the east and west ends of the island extend nearly  $\frac{1}{4}$  mile out from the high-water mark.

**Mingan River.**—The mainland recedes from the island in the eastern part of the harbor, which would, in consequence, be exposed to easterly winds, if it were not for a sandy shoal, dry at low water, which extends 400 yards out from the entrance of the Mingan River. This river is only capable of admitting boats at high water, and its mouth is opposite the east end of the island.

**Mingan Harbor.**—The eastern entrance between the sandy shoal and the island is 400 yards wide, the western entrance between the mainland and the island is nearly as wide, the whole breadth in both entrances being in deep water. The space within, in which vessels may anchor in safety, is about a mile long by rather more than  $\frac{1}{4}$  mile wide, with plenty of water for the largest ships, over a bottom of fine sand,

**Directions.**—In approaching Mingan Harbor from the eastward, bring the north or inner side of Harbor Island to bear N. 72° W., and the houses of the Hudson Bay Company's post ought then to appear open fully their own breadth to the northward of the island. Steer for those houses so open, leaving the east end of the island 300 yards to the southward, and taking care to keep the south side of the sandy point of the main, which forms the western entrance of the harbor, shut in behind the north side of the island, for when they are in one the vessel will be on shore on the sandy shoal off Mingan River. After the east end of the island is passed, run along its north side at the distance of 200 yards, and choose a berth anywhere near the center of the harbor, in from 9 to 13 fathoms, sand bottom.

When running for the harbor from the westward, run in towards the sandy beach of the mainland at the distance of  $\frac{3}{4}$  mile to the westward of the island until the sandy point of the mainland, which forms the west end of the harbor, comes in one with the face of the clay cliffs to the eastward of the Hudson Bay Company's houses, bearing N. 71° E., or until the depth is 11 fathoms. Run upon this mark along the beach and give the above sandy point of the mainland a berth of 100 yards as the vessel passes into the harbor, and choose a berth as before directed.

**River St. John.**—The course of the river for several miles up from the entrance is between high cliffs of stratified sand and gravel over clay, with small sandy islands occasionally. The country on either side is covered with a thick growth of small spruce trees. At the entrance, between the clay cliffs on the west and a sandy point on the east side, the river is 260 yards wide. The breadth increases to nearly  $\frac{1}{2}$  mile immediately within the entrance, and then decreases again gradually.

**Fishing Post.**—There were two log houses on the west bank,  $\frac{1}{2}$  mile within the entrance, where a party of men occasionally resided to fish for salmon; and vessels may lie close to them in 2 fathoms at low water.

**Bar.**—An extensive bar of sand,  $\frac{1}{2}$  mile out from the entrance, shifts with every gale of wind, and has seldom more than 3 or 4 feet over it at low water; at high water there are 7 or 10 feet on the bar, according as it may be neap or spring tide. Southerly and westerly winds cause so heavy a surf as to render the bar impassable.

**Anchorage.**—There is good anchorage outside the bar which may be safely approached by the lead, the soundings decreasing gradually from 20 to 3 fathoms over sand and clay bottom; the greater depth being at  $2\frac{1}{2}$  miles and the lesser at  $\frac{3}{4}$  mile from the river's mouth.

**Tides.**—It is high water, full and change, at the entrance of St. John River at 1h. 20m.; ordinary springs rise 7 feet and neaps 4 feet.

**Aspect of Coast.**—From the river St. John to the river Moisie the whole line of coast, with the exception of its two extremities, that is to say, all between Magpie and Trout Rivers, is composed of primary rock, rising immediately from the sea in steep, although often rounded hills, which are either bare or partially wooded with small trees of the pine species. The hills in front, or next to the sea, seldom exceed 200 or 300 feet in height; but others, a short distance back from the shore, form a range of greater elevation, varying from 500 to 700 feet, and nowhere exceeding 1,000 feet of height above the sea.

The appearance of this coast from a vessel is slightly undulating, bold, and unbroken, presenting features so little diversified that it is very difficult to make out one part of it from another at a distance of 6 or 8 miles; but upon a nearer approach the mouths of the rivers, taken in connection with the features of the neighboring land, will in general supply distinguishing characters by which the situation of a vessel may be ascertained.

**Local Attraction of the Shore.**—The black oxide of iron, besides being a constituent mineral in the granitic rocks of this coast, is found abundantly in nests and veins, particularly in the vicinity of the Sawbill River. Its magnetic action on the needles of compasses on shore is such as to cause the variation obtained by them to vary from 14 to 29 degrees west. At the distance of 2 or 3 miles the error from this cause never exceeded half a point, and at the distance of 5 or 6 miles it became insensible.

**Caution.**—This coast is not by any means so bold as it appears from a distance, for there are many rocks along it both above and under water, several of which are very dangerous, and nearly a mile from the shore. Strangers should not approach the shore between Magpie and Bason Rivers nearer than the depth of 20 fathoms. Still greater caution becomes necessary between the last-named river and St. Charles Point, where 40 fathoms is as near as a large ship can approach with prudence, for that depth in several places will be found within a mile of the rocks.

**Mount St. John**, an isolated saddle-backed hill, 1,416 feet above the sea, bears N.  $50^{\circ}$  E. 11 miles from the entrance of the river St. John.

**Coast.**—Between the St. John and Magpie Rivers the coast consists of white cliffs, with a superstratum of sand, which is fast consolidating into sandstone by means of the red oxide of iron furnished by numerous small streams.

**Magpie River** has several rocks above and under water off its east point of entrance and  $\frac{1}{4}$  mile offshore. At 300 yards within the narrow entrance the river falls about 30 feet over granitic rocks. There are from 7 to 9 feet at low water over the bar outside, but as this river is of no use either to vessels or boats, it is unnecessary to describe it further.

**Magpie Bay.**—Rather more than  $\frac{3}{4}$  mile to the westward of Magpie River, and nearly  $\frac{1}{4}$  mile offshore on the west side of Magpie Bay, there is a rocky shoal, on which the sea almost always breaks at low water.

**Anchorage.**—There is good anchorage, with winds off the land, in the bay; and vessels may stand in to 7 fathoms at low water in every part of it, but the southerly and westerly winds roll in a very heavy sea.

**Four-Fathom Ridge.**—Three and a half miles westward of Magpie Point is Ridge Point, from which a long and narrow ridge of rocky ground, with from 4 to 6 fathoms at low water, extends  $4\frac{1}{2}$  miles to the westward across a rocky bay, wherein there is one large and several small rocks above water. The western side of this rocky ground is nearly one mile southward of Thunder Point. There is a very heavy sea upon this ridge at times, and it then becomes dangerous to large ships.

**Sawbill River**, situated in the bay between Sheldrake and Ore Points, may be distinguished by the clay cliffs immediately within the entrance, and by the peculiar hills on either side of it, which are barren and of gray feldspar, thickly studded with small round mounds.

This river can only be entered in very fine weather, in consequence of the heavy surf. It has scarcely any bar, but the entrance, at the western extremity of a long and narrow spit of sand which extends across the river's mouth, is very narrow, with a depth of from 4 to 11 feet in it, according to low or high water, in ordinary spring tides. At high-water neaps there is seldom more than 9 feet. The same depth continues only for a very short distance within the entrance.

**Cod Bank.**—Nine miles SE. of the entrance of the Sawbill there is a bank of sand, gravel, and broken shells, on which codfish abound, and the depth is upwards of 60 fathoms between it and the shore.

**Shallop River** affords shelter only to boats, and can only be entered when there is no surf. There are several rocks, both above and under water, off this river, and also off Sandy River, a small stream about  $2\frac{1}{2}$  miles farther westward.

**Manitou River** is the largest on this coast, excepting the rivers St. John and Moisie. It may be readily distinguished from a vessel several leagues off the coast by two remarkable patches of clay cliffs, one of which is close to the eastward, the other about one mile to the westward of its entrance.



**Directions.**—To enter this river, keep close along the rocky west side of Manitou Point, leaving on the port side the sandy spit close within it, which stretches out from the sandy west point of the entrance. The channel is always in this position, but it is more or less deep and wide according to the season and the winds which may have recently prevailed. In general the channel is about 60 yards wide, with a depth of 5 feet in it at low water and 12 feet in spring tides. Strong southerly and westerly winds cause a heavy surf and render the entrance impracticable. A short distance within the entrance there are 9 feet at low water, deepening gradually to 5 fathoms at the first rapid, one mile up the river.

**Water** will be found at a small stream on the western shore a short distance within the entrance.

**Anchorage.**—There is good anchorage off Manitou River. Vessels may safely anchor in fine weather with the wind offshore, having the entrance of the river bearing N. 21° E., 1½ miles, where they will have 15 fathoms over mud bottom, and be more than one mile distant from Manitou Point, the nearest point of the shore.

Small vessels may anchor farther inshore to the westward of the bar, and in the bay between Manitou and Buchan Points; for the soundings decrease regularly in towards the shore, with sand and clay bottom, and there is no other danger but a small rocky shoal which bears S. 69° E. nearly a mile from Buchan Point, and is about ¾ mile offshore.

Buchan, Fall, and Hctteurs Rivers fall in cascades into the sea or close to it, and thus serve to point out to a vessel her position off the coast; and there is, moreover, a remarkable white patch close to the westward of Buchan River.

**Bason River** has a spit of large stones extending about 300 yards out from its east point of entrance. The entrance is very narrow, with a varying depth, which is less or more according to the prevalence or infrequency of the SW. winds; but there is in general enough water for very small coasting craft or large boats. There are rapids ¼ mile within the entrance.

**Cape Cormorant**, at 1½ miles to the westward of Bason River, is a small peninsula, on the inner side of which there are the log huts of a trading post always occupied, and which can not easily be seen from the sea.

**Blaskowitz Point** lies 5¾ miles S. 80° W. from Cape Cormorant. Between them are Cormorant Islets, joined to the shore at low water, and not readily distinguishable from the mainland.

**Cormorant Reef**, which is small and dangerous, lies off Cormorant Islets, and about a mile from the shore. It has 12 feet least water and bears S. 68° W. 3 miles from Cape Cormorant. When on the inner edge of the reef Blaskowitz and St. Charles Points are in line, bearing S. 84° W., so that vessels approaching this part of the coast should keep the latter point well open.

**The Coast** between Cape Cormorant and St. Charles Point is broken into coves, two of which are nearly a mile deep, full of rocks, and afford shelter only to boats. The shore is here fringed with rocks both above and under water, and should not therefore be made too free with.

**St. Charles Point** will readily be known by the cove on its eastern side, and by the trending of the land on the west side northward towards Trout River.

**St. Charles Reef**, lying off St. Charles Point, is extremely dangerous, being so bold that there is no warning by the hand lead, and very little with the deep-sea lead. It is composed of a great number of rocks near to each other, but having a considerable depth of water between them. Some of them always show, but the outermost patches are always covered. The last lie rather more than  $\frac{3}{4}$  mile to the southward from the southern extreme of St. Charles Point; and the reef continues to the first cove,  $1\frac{1}{2}$  miles to the north westward of the point, but does not there extend so far offshore as off the point itself.

**Caution.**—Vessels beating to the westward should take care not to be becalmed to the westward of the St. Charles Reef, lest the heavy swell from the SW., so frequent on this coast, should heave them towards the reef, for the water is too deep to anchor until close to the breakers.

**Moisic Bay** intervenes between St. Charles Point and Moisic River. Trout River, a small stream, is in the center of this bay and  $6\frac{1}{2}$  miles NW. from St. Charles Point. Here the rocky shores terminate and the bold sandy beach, which extends  $6\frac{1}{2}$  miles SW. to the river Moisic, commences.

**Seal House Cove**, on the east side of Moisic Bay and  $2\frac{1}{2}$  miles from St. Charles Point, affords shelter only to boats. There are two log houses there, which are occasionally occupied as a fishing and trading post.

The granitic hills, which leave the shore at Trout River, continue inland until they join the ridges in rear of the Bay of Seven Islands. Between the hills and the sea there is an extensive tract of low sandy country, thickly wooded.

**River Moisic** enters the sea on the east side of Moisic Point, which is the southern extremity of the sandy country just mentioned. It brings down from the interior great quantities of sand, which so obstruct its wide and shallow channel in the first  $2\frac{1}{2}$  miles from the sea that boats can not ascend at low water. The traders report that flat-bottomed boats can ascend to the first rapids, at the distance, following the stream, of 6 or 7 leagues from the sea. The bar, which is of sand, dry at half tide, runs out from the long, low, and narrow east point of entrance nearly  $\frac{1}{2}$  mile to the southwestward and nearly parallel to the east side of the west point of entrance.

**The entrance** of the river, between this bar and the west point, is from the SW., and continues for the distance of  $\frac{1}{2}$  mile with a breadth of  $\frac{1}{2}$  mile and a depth varying with the seasons and the winds which

prevail, those from the southward and eastward having a tendency to block up the channel. It is supposed that there is seldom a less depth than 9 feet at low water, the same as inside, close under the west point of entrance, which is the only place where a small vessel can find shelter, close to two log houses occasionally employed as a salmon fishery by the people of the Hudson Bay Company. The shelter here is extremely imperfect in gales of wind from the southward and eastward, which send in so heavy a sea that, after breaking completely over the bar and across the entrance, it still retains power enough to seriously affect a small vessel.

**Tides.**—At the entrance of the Moisie it is high water, full and change, at 1h. 30m., and ordinary springs rise from 5 to 8 feet.

**Moisie Shoal** extends to the westward  $3\frac{1}{2}$  miles past Moisie Point in such a manner as to form an extensive triangular sandy shoal, with from 3 to  $1\frac{1}{2}$  fathoms on it at low water.

**Moisie Rock**, near the south extremity of the Moisie Shoal, and in 3 feet least water, bears S.  $50^{\circ}$  W.  $2\frac{3}{4}$  miles from Moisie Point, and is nearly  $1\frac{3}{4}$  miles from the shore. This is an extremely dangerous shoal, being as bold as a wall.

**Mark.**—The only direction that can be given to a vessel standing towards it, is to tack when the northern side of the Manowin Island comes on with the southern point of Great Boule Island, bearing S.  $82^{\circ}$  W.; she will then be one mile from the edge of the shoal, and in upwards of 30 fathoms water.

**East Rocks**, which are low, bare of trees, and always above water, lie in Boule Bay, between Moisie Shoal and Boule Islands. Vessels ought not to stand into this embayed place, since there is generally a heavy southerly swell rolling in, which would render it difficult to beat out.

**Seven Islands** are high and steep, of primary rocks, very thinly wooded, and can be made out from a distance of about 20 miles, being unlike anything else in the Gulf. The easternmost of these islands are the Great and Little Boule, the former of which is the highest of all, its summit being 695 feet above the sea at high water. Next, westward, and parallel to these two, are Little and Great Basque Islands. Great Basque Island is 500 feet high. Manowin and Carousel lie to the SW. of Basque Islands; Manowin is 457 feet high; Carousel, the southernmost of the islands, is much lower. West Rocks lie between Manowin and the peninsula, which forms the west point of the bay of Seven Islands. They are too small and low to appear as the seventh island; but the peninsula has that appearance when seen at a distance from sea, being higher than any of the islands, and 737 feet above the sea at high water.

**Caution.**—In the narrow passes between the islands the tide sets strongly towards and through them; the flood to the west, and the ebb to the eastward, a circumstance that should be attended to when becalmed at night or when tacking in their entrances.

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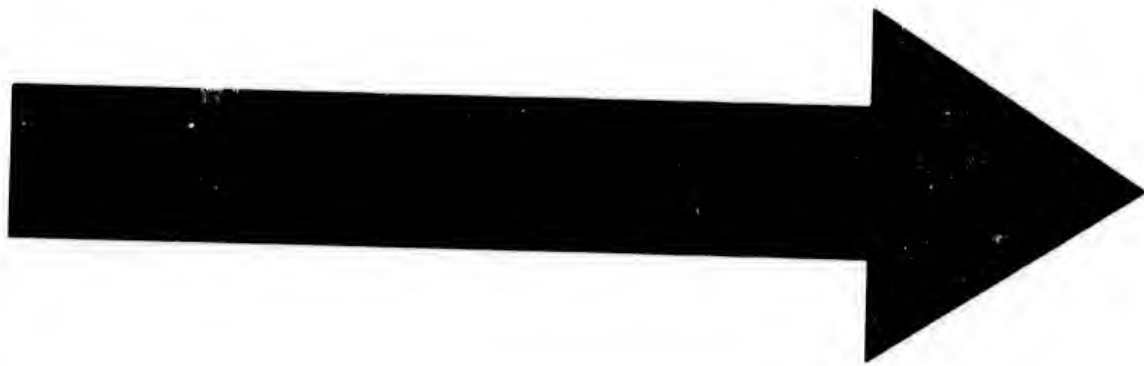
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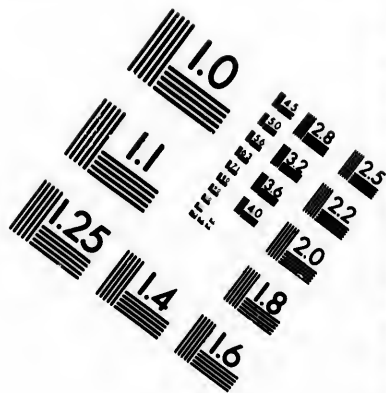
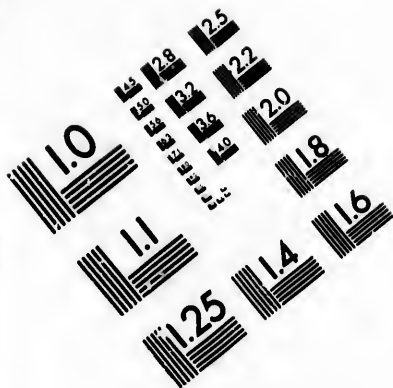
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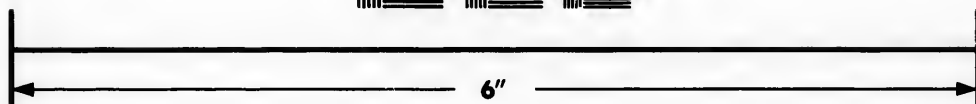
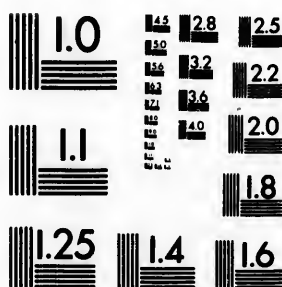
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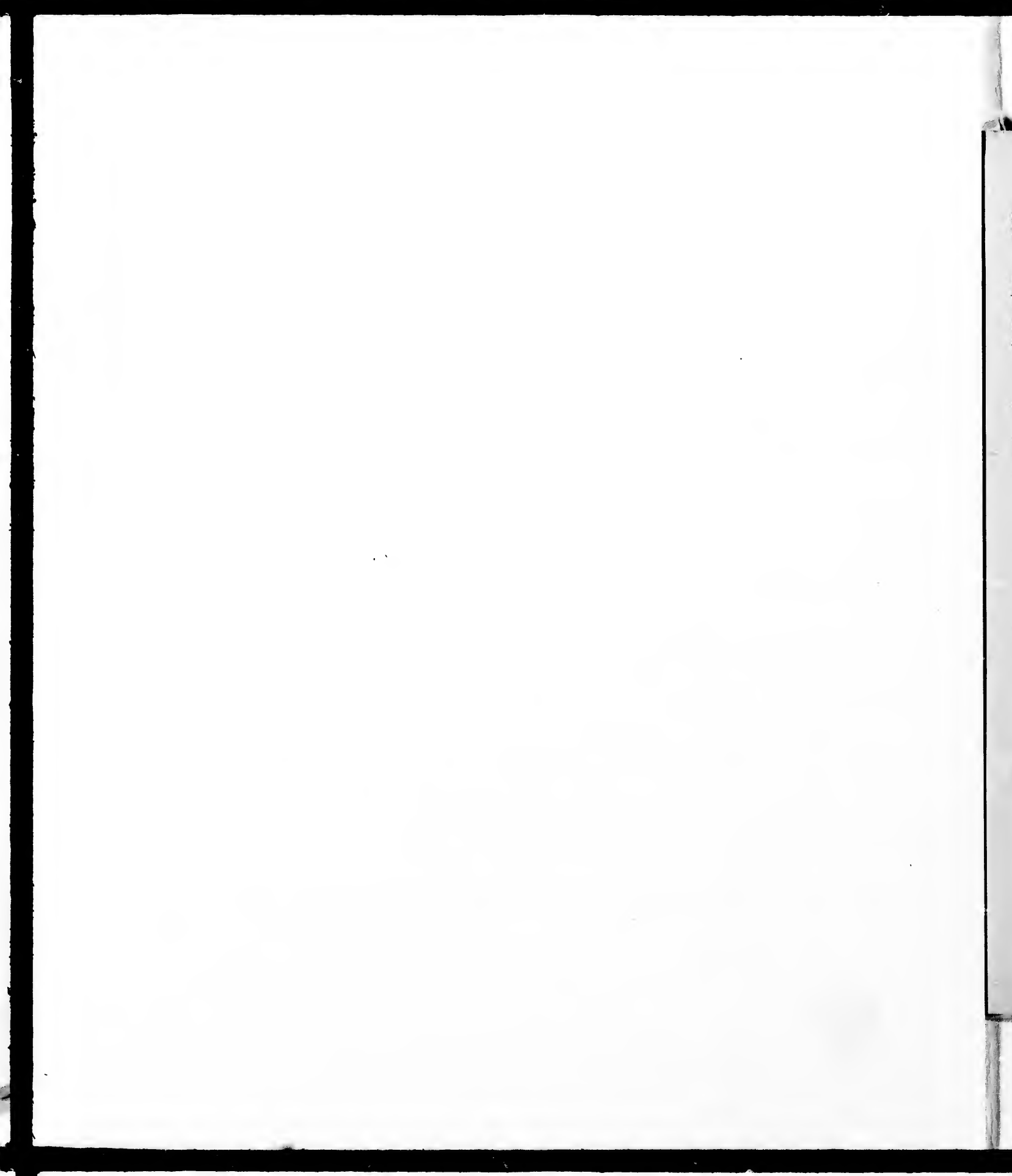
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**Seven Islands Bay.**—The Seven Islands are so placed as to completely shelter the bay within them, which is  $2\frac{3}{4}$  miles wide at the entrance, between Chassé Point, the east end of the Peninsula, and Sandy Point, which is opposite the northern end of Great Basque Island.

**Trading Post.**—A fine, broad, bold, sand beach extends for 3 miles northward from the east point of the bay to the entrance of the principal river, near which stands the Hudson Bay Company's trading post. The houses at this post can not be seen from the outer parts of the bay, but there is a wooden store on the beach off which vessels usually anchor. Water can be obtained from this river at high tide.

**Anchorage.**—The best berth for a vessel of large draft is with Sandy Point and the north side of Little Boule Island in line, and Chassé Point in line with the west side of the West Rocks. The NW. extremity of the sandy beach near the entrance of the river will then bear N.  $11^{\circ}$  W.; the vessel will be in 9 fathoms at low water, over clay bottom, nearly one mile from the sandy beach to the eastward, and nearly  $\frac{3}{4}$  mile from the 3-fathoms edge of the shoals, which occupy the northern part of the bay. Smaller vessels may lie closer to the shore, in 6 fathoms at low water, which is as near as any vessel ought to anchor.

In this anchorage there is a considerable swell, with a strong southerly wind, but never enough to endanger a vessel, although sufficient to prevent boats from landing. Those that may wish to lie quite smooth may anchor in the SW. part of the bay in 13 fathoms, soft clay bottom, where they will be quite landlocked.

**The East Channel**, between Great Basque Island and Sandy Point, may be approached from between Boule Islands and East Rocks or from between Boule and Basque Islands, both routes being entirely free from danger. It is seldom used, having a rock in its center, which is covered only in high tides. A reef, with from 6 to 9 feet of water, extends for  $\frac{1}{2}$  mile to the eastward of this rock. The passage on either side of it is wide and has from 13 to 15 fathoms. Vessels should only attempt it with a fair wind, and should keep within 200 yards of Basque Island, or as near to the sandy point of the main land; the latter is recommended as preferable.

**The Middle Channel** (which is also the principal and best) is upwards of  $1\frac{3}{4}$  miles wide, and so free from danger that a vessel of the largest draft may approach the shore within 100 yards in every part, excepting at Chassé Point, where a reef runs out 250 yards from the shore. This channel, between Basque Islands on the east and Carousel, Manowin, West Rocks, and the Peninsula on the west, is preferable in every wind, excepting the north and NW., with which, to save beating (since they blow out of the bay), it might be desirable to enter by the West Channel.

**The West Channel**, between the West Rocks and Croix Point, at the southern extremity of the peninsula, is  $\frac{3}{4}$  mile wide and quite free from danger. There are two or three rocks lying 200 yards to the north-



ward of West Rocks, but they always show, excepting in very high tides and the smoothest sea.

**Caution.**—The ebb tide is turned off by Croix Point towards West Rocks, a circumstance which must be attended to in taking this channel with a scant northerly wind.

**Anchorage.**—The water is too deep for anchoring in any of these channels and the bottom generally rocky, excepting to the eastward and northward of Boule Islands. The ground is not fit for anchoring until well into the bay. The water is extremely deep outside of these islands, and they are so bold that a vessel may stand in close to their rocky shores.

**Tides.**—The rate of the stream of the tides in the bay and in the principal channels between the Seven Islands seldom amounts to a knot; but in the narrow channel between Boule Islands, Basque Islands, and in the East and West Channels, it may amount to 2 knots in spring tides, or even more in the narrowest of these channels when accelerated by strong winds. The flood, coming along from the eastward, strikes Boule Islands and passes between them, and also between the two Basque Islands. It is turned off by Great Boule towards Carousel Island and the West Channel; but the greater part of the stream, which passes within the Boule Islands, enters the bay by the East Channel, between Great Basque Island and the mainland. There is very little flood in the Middle Channel, excepting an eddy *outward* stream close along the shores of the peninsula and the narrow stream from between Basque Islands, which sets across towards the West Channel.

The ebb sets fairly out of the bay, part of it by the East Channel and part of it by the Middle Channel, where it meets the stream through the West Channel, which turns it to the eastward, past the southern points of Basque and Boule Islands.

**Winds.**—In fine nights the winds are almost always light and baffling between Seven Islands, particularly if the wind be from the westward in the offing. At such times there is generally a northerly land wind in Seven Islands Bay, but it does not often reach far out among the islands in the early part of the night, although it often does towards the morning.

**Aspect of Coast.**—The coast between Carousel Point de Monts is less bold in appearance, being less elevated than that to the eastward of the Seven Islands. The hills are, for the most part, far back in the country, and the shores are of very moderate height above the sea. The country near the sea is formed of small and low granitic hills, partially wooded with spruce trees. Marshes and ponds are frequent between the hills; sandy beaches occur occasionally, and the sandy tracts in rear of them are always the most densely wooded parts.

**St. Margaret River**, although a large stream, affords shelter to boats only. It has a bar of sand extending  $\frac{3}{4}$  mile out from the entrance

and having several small channels through it, with only 3 feet at low water. Immediately within the entrance, which is 350 yards wide, there are 6 feet water, and only 3 feet can be carried up to the low falls, which are over granitic rocks,  $3\frac{1}{2}$  miles from the entrance. Below the falls the river flows between cliffs of sand and clay, and is full of sand-bars, dry at low water.

**St. Margaret Point** is rocky, of moderate height, and has a round hill a short distance within its extremity. There are several rocks which cover at high water, and which extend to the distance of nearly  $\frac{1}{2}$  mile off this point. They are extremely bold.

**The Coast** from St. Margaret Point to Great Cawee Island is low, and fringed with small islets and rocks close to the shore, which may be closely approached by the lead, but the depth of 20 fathoms is near enough to it for a stranger.

**Cawee Islands** are two small and hilly islands of gray granite, and nearly bare of trees. Great Cawee Island, which is the larger, the higher, and the eastern of the two, is about  $\frac{3}{4}$  mile in diameter, and about 250 feet high. Little Cawee Island, lying a mile farther to the southwestward, is composed of two islets, which occupy a length of  $\frac{1}{2}$  mile parallel to the coast. It has several rocks above water close off it to the SW., and a reef 250 yards to the northwestward of its west point.

**Water.**—There is neither wood nor water in Cawee Islands, but both may be obtained from the opposite mainland.

**Cawee Rock**, small, round, and high, and distant  $\frac{1}{2}$  mile to the southward of the south point of Great Cawee, is so bold that a large ship might lie alongside of it.

**Great Cawee Cove**, on the NE. side of great Cawee Island, is secure for boats, with plenty of water, but too small and narrow in the entrance for vessels.

**Great Cawee Shoal** lies off the mouth of Great Cawee Cove, 400 yards to the northward. The least water on it is 15 feet.

**Cawee Ledge.**—Half a mile north from this shoal is a small round ledge, awash at low water, and  $\frac{1}{2}$  mile from the mainland. From it the south side of the large rocks, between Great Cawee and the main, is in line with the point of the main to the westward.

**Large Rocks.**—Between Great Cawee and the main there are two large rocks close together; they lie 300 yards from the mainland and have a reef extending 400 yards from their SW. point. Nearly  $\frac{1}{2}$  mile N.  $30^{\circ}$  E. from these rocks, and at the same distance from the main, there is a small rock which always shows.

**Anchorage.**—There is anchorage in the mouth of the bay on the west side of Great Cawee Island, in 7 fathoms, muddy bottom, and at the distance of 200 yards from the islands; but the SW. winds blow right in and send in a very heavy sea.

**Tides.**—The tides run fair through between the islands and the main-

land, at a rate which seldom exceeds  $1\frac{1}{2}$  knots, and which is in general much less.

**Sproule Point**,  $\frac{3}{4}$  mile to the westward from Little Cawee Island, is the eastern point of Lobster Bay. A reef extends off its south side, 200 yards towards Little Cawee, but the principal reef off it runs out  $\frac{1}{2}$  mile to the southward.

**Lobster Bay** is between Sproule Point and Crooked Islands, which are a group of small islets and rocks, running out from the shore 3 miles to the westward of Sproule Point. All the northern part or head of Lobster Bay is occupied by an extensive flat of sand and boulders, dry at low water, and on which lobsters abound; but it is an excellent open roadstead with plenty of room for the largest ships.

**Anchorage.**—Vessels may anchor midway between the reef and the islands, choosing their depth from 5 to 12 fathoms, according as they may wish to lie, at the distance of  $\frac{1}{2}$  mile or of one mile from the 3-fathom edge of the flats in the head of the bay. The bottom is of fine sand over clay.

**Pentacost River** enters the sea on the SW. side of a rocky point,  $1\frac{1}{2}$  miles to the southward of Crooked Islands; the opposite point of entrance is of sand. Two miles south of the mouth of the river there is a remarkable round and wooded hill. The entrance of the river is only 30 yards wide, with a depth of 7 feet at low water, and there are 9 feet within for a short distance.

A fine bold sandy beach extends from this river to English Point, a distance of 7 miles to the southward.

**English Point**, at  $1\frac{1}{2}$  miles to the northward and eastward from the north rocks of Egg Island, has a shoal of large stones extending off it to the distance of  $\frac{1}{4}$  mile. On the SW. side, or towards Egg Island, this shoal may be approached to the depth of 6 fathoms at low water, but on the SE. and east it is very bold.

**Egg Island** is low, narrow, and of granitic rocks, without trees, and  $\frac{3}{4}$  mile long. The North Rocks, always above water, lie 800 yards distant from the island to the northward; they form a low, narrow, black reef, which is 600 yards long, in the same direction, bold towards the mainland and also towards English Point. A reef under water runs out from these rocks in the direction of their length to the southward and to the distance of  $\frac{1}{4}$  mile, leaving only a very narrow 3-fathom channel between them and the island.

**The NE. Reef** runs out more than  $\frac{1}{2}$  mile from the NE. point of Egg Island, and is the greatest danger between the Seven Islands and Point de Monts. Some of the rocks upon it show in low tides, and the sea generally breaks on them at low water. This reef prevents the swell from rolling in between the north rocks and Egg Island, and thus assists in sheltering the anchorage.

**Water.**—There is no water on Egg Island, but it may readily be obtained from small streams on either side of Roadstead Point, on the mainland opposite.

**Anchorage.**—Egg Island and its reefs form a natural breakwater, which is  $1\frac{1}{2}$  miles long and inclines slightly towards the shore at its northern end in such a manner as, with the assistance of the shoal off English Point, to shelter the anchorage from NE. winds. The best position is with the SW. end of Egg Island bearing S.  $59^{\circ}$  E. and the inner side of the North Rocks N.  $20^{\circ}$  E.; English Point will then be open half a point to the westward of the latter. It is too small to be a favorite resort for large vessels, but in time of need, or as a place of refuge in case of distress, it would be found of great value on a coast so destitute of good harbors.

**Directions** are unnecessary for running into this anchorage from the southward and westward, since the SW. end of Egg Island is quite bold. But if it be intended to run through between the island and the main, stand in to the northward to 8 or 9 fathoms, or until English Point is open half a point to the northward of the North Rocks, then steer for English Point, giving the inner side of the North Rocks a berth of 200 yards until the vessel has passed the North Rocks a full  $\frac{1}{4}$  mile. She will then be in about 7 fathoms at low water, and may haul out to sea, taking care to avoid the NE. reef.

**Tides.**—The rate of the tides between Egg Island and the main is from  $\frac{1}{2}$  to one knot, and part of the stream of ebb sets towards and out through the narrow and dangerous 3-fathom channel between the island and the North Rocks. Part of the stream of flood comes in through the same channel.

**Calumet River** is a small stream  $2\frac{1}{2}$  miles to the southward of Egg Island; along the shore for a mile to the southward of its entrance there are reefs of large stones extending out to the distance of 1,200 yards from high-water mark.

**Caribou Point**,  $8\frac{1}{2}$  miles southward from Egg Island, is a small rocky peninsula, having sandy coves on either side of its isthmus, in which pilot boats find shelter.

**Trinity Bay**, at 5 miles to the southward of Caribou Point, is 2 miles wide and nearly one mile deep, with a fine sandy beach extending from its south point to Trinity River, which is a small and rapid stream, abounding with trout and salmon, where water can be had only at high water, because of the large stones about its entrance. The south point of the bay is rocky, and off the NE. point there are two low black rocks.

**Anchorage.**—This bay affords excellent anchorage, in a moderate depth of water with good ground, and plenty of room to weigh in any wind. It is a valuable stopping place, in westerly winds, for vessels bound up the St. Lawrence, to wait their opportunity to proceed round Point de Monts, and up the estuary.

**Rocks.**—The south extremity of Point de Monts is about  $1\frac{1}{4}$  miles S. W. of the lighthouse. To the SE. of the extremity of the point and  $\frac{1}{2}$  mile off shore lie a ledge of rocks with 9 or 10 feet least water. Southward  $\frac{1}{2}$  mile from the lighthouse is another rock with 2 fathoms

on it, and there is a third with a little more water and nearly as far off from the lighthouse to the eastward.

**Aspect of Coast.**—The land, which on the eastern side of Point de Monts is rather low, begins to rise immediately from that point to the westward; and granitic hills, very sparingly wooded and in no part above 1,000 feet in height, form the north coast of the estuary as far as St. Giles Point, distant  $30\frac{1}{2}$  miles west of Point de Monts. The section of coast just indicated is as bold as any in the St. Lawrence, there being little or no warning by the lead, neither is there any good anchorage sufficiently roomy for the occasional use of shipping.

**St. Augustine Cove**,  $1\frac{1}{2}$  miles westward of Point de Monts, affords shelter only to boats, and pilots are generally found waiting here with easterly winds.

**Godbout River**,  $8\frac{1}{2}$  miles westward from Point de Monts, enters the sea at the extremity of a sandy point. There is usually at low water not more than 4 or 5 feet over the bar, on which a heavy surf very frequently breaks. There is a trading and salmon fishing post of the Hudson Bay Company at this river, and the houses can readily be seen.

**Anchorage.**—It is possible to anchor on either side of the bar of Godbout River, but the anchorages are too near to the shore to be of general use. The anchorage to the westward of the bar may occasionally be useful in easterly winds to small vessels. They should anchor about midway between the bar and the first rocky point to the westward of it.

At this anchorage, which is only safe in summer, the bottom is of coarse sand. The tides are weak and irregular, rendering it difficult to keep the anchor clear in calm weather; they also frequently set towards the shore, coming in with long rippings parallel to the coast.

**St. Nicholas Harbor** lies 3 miles to the northeastward from Cape St. Nicholas, which is a high bare point of granite, bearing S.  $79^{\circ}$  W. 17 miles from Point de Monts. This harbor is a narrow inlet between granitic hills from 500 to 700 feet in height. On the SW. side a vessel may lay alongside of the rocks as alongside a wharf.

The depth that can be carried in at high water is from 12 to 17 feet, according as it may be neap or spring tides. The bottom in the entrance is of sand, with some few large stones upon it, which can be seen and avoided if the tide be not high enough to pass over them. The entrance is situated in the center of a small bay,  $\frac{3}{4}$  mile wide and rather more than  $\frac{1}{4}$  mile deep to the rocky point on the west side of the entrance to the harbor, which will be readily seen projecting out into the bay, and is named Cross Point, from a small wooden cross upon it. An extensive shoal of sand and boulders, which dry at half tide, extends from the east point of the bay, nearly 700 yards to the SW., and continues northward at the entrance of the harbor. This shoal can always be seen, is quite bold, and completely shuts out the sea from the harbor

in southerly and easterly winds. The shoals on the west side extend across a small bay on the west side of Cross Point, and continue offshore to the distance of 200 yards.

**The Anchorage** between these shoals, in the bay off the harbor's mouth, is only 800 yards wide, and consequently too small to be considered a roadstead for large vessels, but the ground is good and the depth convenient for anchoring preparatory to warping into the harbor.

**Water.**—There are several small streams, on the eastern side of St. Nicholas Harbor, where water can be obtained; and it can also be had at high water from the two small rivers at the head of the inlet.

**Caution.**—Southeast winds blow right into St. Nicholas Harbor, and are consequently the most favorable for running in; but with a strong wind in that direction, and at high water, when the shoals are covered, there is generally some sea outside the narrow entrance. A SW. wind is the safest for running in, for the entrance and bay outside are then quite smooth; but this wind will seldom take a vessel completely in; it will usually only enable her to shoot so far within Cross Point that a line may be sent ashore, or a kedge ahead, for the purpose of warping in the remainder of the way, which may be quickly done if due preparation has been made beforehand.

The entrance should be attempted in the last quarter flood; then if the vessel touches the ground she will receive no damage, and there will be time for her to warp in before the tide begins to fall.

**Directions.**—A vessel wishing to enter St. Nicholas Harbor, and being off the mouth of the bay, should bring the end of Cross Point to bear N. 3° W., then steer so nearly for it as to leave it not more than 50 yards nor less than 30 yards distant on the port hand. If the wind will allow, continue to run in at the same distance from the shore on the west side until the water deepens.

The shoal water commences at Cross Point and continues for a distance of 400 yards, and the channel is rendered narrow by shoals off the eastern side for an equal distance farther up the harbor. In order to have as much room as possible, a vessel should anchor farther than the three large rocks, which will be seen on the eastern side of the harbor. To run out again, wait for a NW. wind, or take advantage of the land wind in the early part of the morning, which often occurs in fine weather when westerly winds prevail, or, lastly, warp out in a light breeze or calm to the entrance of the bay outside, and to a position from which sail can be made.

**St. Pancrace Cove** is only about 320 yards wide, between steep rocks, and open to the southward, with very deep water, and is of no use to vessels. The depth is 32 fathoms in its entrance, shoaling gradually to 17 fathoms within  $\frac{1}{4}$  mile of its head.

**English Bay**, between St. Pancrace Point and St. Giles Point, affords no good anchorage, in consequence of the great depth of water; a heavy sea rolls into it in easterly winds, and its shores are high and rocky.

**St. Giles Point**, the northern point of entrance to Manicouagan River is high and rocky, like the coast to the eastward; while Manicouagan Point is low and thickly wooded, with a broad sandy beach, like the rest of the coast westward to Outarde Bay. This complete change in the character of the coast points out to a vessel her approach towards the Manicouagan Shoal.

**Anchorage.**—The principal channel is on the north side of the entrance, and there is a deep place, or large hole, in it  $1\frac{1}{2}$  miles long, from  $\frac{1}{2}$  to  $\frac{1}{4}$  mile wide, and with a depth from 3 to 5 fathoms at low water, with muddy bottom. This large hole is close to St. Giles Point, and extends  $1\frac{1}{2}$  miles within it. Although this place appears completely open to easterly winds, no swell of consequence rolls into it, and we believe a vessel well moored on its north side within St. Giles Point would be in safety. But to get in there it is necessary to pass over the bar, which extends out 2 miles to the eastward from St. Giles Point; it has 7 feet over it at low and from 14 to 19 feet at high water, according as it may be neap or spring tides.

**Tides.**—The ebb runs out over the Manicouagan Bar to the eastward at the rate of about  $1\frac{1}{2}$  knots, and the flood is nearly as strong.

**Manicouagan Shoal** is of sand, with many large bowlders scattered about its eastern and southern parts, and probably deposited there by the ice. The bearing of S.  $90^{\circ}$  W. from St. Pancrace Cove passes along the eastern side of the shoal, which is so bold that there are 60 fathoms of water at the distance of little more than  $1\frac{1}{2}$  miles and 40 fathoms at half that distance from the breakers. On this side the shoal dries nearly out to its edge in low tides. The south point of the shoal extends  $2\frac{1}{2}$  miles to the southward of Manicouagan Point, and here only is there any sufficient warning by the deep-sea lead. It continues from its south point to the westward for a distance of 16 miles, the outline of its edge corresponding to the shape of the sandy shore as far as Outarde Point, off which it extends to the southward  $1\frac{1}{2}$  miles, and, filling up all the eastern part of Outarde Bay, stretches out its western point fully  $3\frac{1}{2}$  miles SW. of Outarde Point.

The tides are tolerably regular; not very strong along the shore; the rate of either tide does not exceed 2 knots at any time, and is usually much less. But great rippings are met with occasionally both near the shoals and in the offing, where they are caused, as in other parts of the estuary, by the unequal velocities, or the opposing directions of the streams, as will be readily imagined when it is remembered that the current is always down on the south side, slack in the middle, and up during the flood on the north side of the estuary. These rippings are very common off the eastern and southern parts of Manicouagan Shoal, where they were observed to move much faster than the streams of the tides. They often give to the tides the appearance of a rapidity which does not exist.

**Outarde Point** is 11 miles to the westward of the south extremity

of Manicouagan Point, and the shore between them is of low sandy cliffs, with a sandy beach.

**Outarde River.**—The entrance to Outarde River is by several intricate and narrow channels through the western part of Manicouagan Shoal, and as there are only 2 or 3 feet of water through these channels at low tide for the distance of 4 or 5 miles, the place is useless to vessels, and therefore requires no further description.

The water of this river holds a white earth suspended, and frequently covers the whole surface of Outarde Bay, floating on the heavier sea water beneath, and giving the whole bay the appearance of being shoal. A vessel sailing through this superstratum of fresh water displaces it and leaves a blue streak in her wake.

**Outarde Bay**, between Outarde and Bersimis Points, has three small rocky islands in it, which appear as two from seaward, and serve to distinguish the bay to strangers; they are far within the edge of the shoals, which extend quite around the bay, and occupy the greater part of it, being a continuation of the Manicouagan Shoal.

**Anchorage.**—Good anchorage will be found on the west side of Outarde Bay in 14 fathoms at low water, over muddy bottom, with Bersimis Point bearing S. 9° W., 3½ miles. Manicouagan Point will then be open 3 or 4 degrees to the southward of Outarde Point, the south side of which will bear N. 54° E., and the vessel will be nearly ½ mile from the 3 fathom edge of the shoal on the west side of the bay; small vessels may lie closer, in 7 fathoms.

**Directions.**—In standing in for this anchorage with a westerly wind beware of the bar of Bersimis River, which is extremely steep. If the first rocky point can be made out to the northward of the river, and which bears from its entrance north 4½ miles, take care that it does not bear to the eastward of N. 25° W., and the vessel will clear the bar. When it is passed she may haul in to the northward into soundings, going no nearer than 10 fathoms. This anchorage, which is not generally known, is excellent in westerly gales, and may occasionally be very useful to vessels bound up the St. Lawrence. The tides are not so strong as has been supposed, the ebb seldom exceeding the rate of 2 knots, and the flood being much weaker. The direction of these streams is reversed by the effect of Outarde River.

**Bersimis River** enters the sea to the eastward and 1½ miles north of the south extremity of Bersimis Point. The wide mouth of the river is closed by sands dry at low water, with the exception of a very narrow channel. The river within, for the first 3 miles, is wide and full of sand shoals.

**The Bar** is of sand, which dries in parts at low water, and shifts frequently, being completely exposed to southerly and easterly gales; it extends nearly 1½ miles to the eastward of the south point of entrance. Directions for entering the river must therefore be useless; but it may be as well to remark, that within the bar the channel is always close to



the south point of entrance, and keeps on that side through the wide part within, with a depth of 9 feet at low water. The depth that could be carried in over the bar, in the month of July, was 6 feet at low water, and from 13 to 18 feet at high water, according as it might be neap or spring tides.

**Bersimis Point** is low, of sand, wooded with spruce trees, and difficult to be seen at night. On its east side, the low south point of the river extends to the distance of 2 miles from the trees, and the bar  $1\frac{1}{2}$  miles farther; and to the southward, the sand shoal extends  $\frac{3}{4}$  mile from the sandy beach, yet it is so bold that the lead affords no warning, there being 60 fathoms muddy bottom at a distance of a mile from the edge of the shoal. On the east and west sides of the point the shoals are equally steep, so that this point is very dangerous, especially to vessels beating at night or in foggy weather.

**The Tides** are regular, but the flood is rather stronger than the ebb within 6 miles from the shore, where the rate of either seldom exceeds  $1\frac{1}{2}$  knots, and is often much less.

**Jeremy Island.**—From Bersimis Point, a low and sandy shore continues  $6\frac{1}{2}$  miles to the westward to Jeremy Island, which is very small, rocky, and close to the coast. There is a trading post of the Hudson Bay Company on the main, the buildings of which can usually be seen; but if not, its position will always be known by some patches of white sand and clay cliffs, which are close to the eastward of the island. Vessels may stand in by the lead, and anchor off this place; but it is a bad anchorage, and the shoal water extends a mile out from the shore.

**Cape Colombier.**—From Jeremy Island a rocky and broken shore extends 5 miles to Cape Colombier, which is a rocky peninsula, with a small islet on its west side.

**Gunare Shoal** is a narrow ridge of granite rock, nearly 2 miles long, parallel to the shore, and having from 2 to 3 fathoms over it at low water. The inner or north side of Laval Island nearly in line with Orient Point, the east point of Laval Bay, bearing S.  $69^{\circ}$  W. leads 400 yards to the southward of this shoal in 20 fathoms water.

**Wild Fowl Reef** is a large bed of rocks extending  $\frac{3}{4}$  mile from the shore between Plongeur Bay and Laval Bay. There are 9 fathoms water  $\frac{1}{2}$  mile outside this reef.

**Plongeur Bay**, between Wild Fowl Reef and Cape Colombier, may be known by a round and rocky peninsula on its west side. The inner part of this bay is full of rocks dry at low water, and the whole bay is shoal out to the line joining Wild Fowl Reef and Cape Colombier.

**Laval Bay**, situated 4 miles to the westward of Wild Fowl Reef, will be known by the rocky island in its mouth, and by the clay cliffs which commence  $1\frac{1}{2}$  miles to the SW. of it and continue to within the same distance of Port Neuf.

This bay within the island is all dry at low water. Vessels may safely stand in towards it, the water shoaling gradually from 10 fath-

oms, which is at the distance of  $2\frac{1}{2}$  miles from the shore. There is good anchorage in 6 or 7 fathoms, over clay bottom, off the clay cliffs above mentioned.

**Port Neuf.**—There is a fur-trading and salmon-fishing establishment belonging to the Hudson Bay Company, at this post, which stands upon a steep, sandy bank, and is 4 miles to the NE. of Mille Vaches Point; there are several buildings. These can readily be seen by a vessel off the coast.

SE. from the church, distant nearly  $\frac{3}{4}$  mile, is the south end of a low and narrow sandy peninsula, with a clump of pine or spruce trees upon it.

**Port Neuf River** is entered from the SW., but is so shallow that a boat can not enter it at low water.

**Port Neuf Sands.**—The eastern patch of these shoals, carrying  $3\frac{1}{2}$  fathoms least water, and which might be dangerous to a vessel of heavy draft in a high sea, bears N.  $56^{\circ}$  E., and is distant  $1\frac{1}{2}$  miles from the southwestern end of the sand and clay cliffs at the entrance of Port Neuf River.

**Mille Vaches Point** is low, sandy, and wooded with spruce trees. From its south extremity the NW. reef of Bicquette bears S.  $44^{\circ}$  E.  $12\frac{1}{2}$  miles, and the navigable breadth of the channel is diminished by Mille Vaches Shoals to little more than  $11\frac{1}{2}$  miles. As the dangers on either side are so bold, and as the course of a vessel running up the estuary must ever be more or less uncertain in consequence of the set of the tides and currents, this pass is justly considered dangerous to a vessel running up in dark nights or foggy weather.

**Mille Vaches Bay**, on the west side of Mille Vaches Point, is very large, with several small rivers, which descend by falls or rapids down the granitic shores. The principal of these rivers is the Sant de Mouton,  $4\frac{1}{2}$  miles west from the point, and which has a fall of 80 feet visible from a vessel when abreast of it. All the interior of this bay is occupied by shoals of sand, mud, and large bowlders, which dry at low water.

**Anchorage.**—There is anchorage in Mille Vaches Bay in 15 fathoms, sand and mud bottom, with the south extremity of Mille Vaches Point in line with the inner or north side of the pine trees on the peninsula of Port Neuf bearing N.  $28^{\circ}$  E., at the distance of 2 or 3 miles from the point and  $\frac{3}{4}$  of a mile from the shoals. The ground is good and there is not much tide.

**Escoumains Islets** are two large rocks, which have three small ones nearly a mile to the southward of them. The coast to the southwestward from these islets to Little Bergeron, a distance of 16 miles, consists of granite rock, steep and bold, and free from all danger, excepting a flat which occupies a bay on the west side of Cape Bondesir, but which does not extend above  $\frac{1}{4}$  mile outside of a line joining the points of the bay, and is consequently very little in the way of vessels.

**Tides.**—The tidal streams are regular, increasing in strength as we approach the comparatively narrow pass on either side of Red Islet. The flood is the stronger tide of the two, the ebb being deflected over towards the southern shore by the stream out of the great Saguenay River. The flood does not extend above 5 or 6 miles off the north shore below Bergeron, and the closer to that shore the stronger is the stream. Its rate at Mille Vaches Point, where it does not extend far offshore, is from  $1\frac{1}{2}$  to 2 knots, and off Bergeron from 2 to 3 knots, in spring tides.

**Great and Little Bergeron** are two coves separated by a point. They are both full of large bowlders, which dry at low water, and have small streams at their heads. Little Bergeron is of the two the most to the SW.

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## CHAPTER VII.

### RIVER ST. LAWRENCE, GREEN ISLAND TO MONTREAL—SAGUENAY RIVER.

**General Remarks.**—Chapter 7 commences at what may be considered the first difficult pass ascending the St. Lawrence, the difficulty arising not only from the dangerous reefs of Green Island, Red Islet, and Saguenay River, but also from the great velocity and transverse direction of the tidal streams.

Some remarks and directions have already been given respecting the passage on either side of Red Islet and its reef, the Green Island lighthouse and reef, and the anchorage under the latter.

**Red Islet** is small, low, and of shingle, partially covered with grass and resting on slate rock.

**Red Islet Bank.**—Red Islet is quite bold at its SW. end, but a rocky bank or reef, nearly dry in some parts at low water, extends  $2\frac{1}{2}$  miles to the northward, and is  $1\frac{1}{2}$  miles wide. There is good warning by the lead in approaching this bank from the eastward, but vessels should be cautious in approaching it from the northward, because the water is deep, and the ebb tide sets strongly upon it on that side. In fine summer weather vessels becalmed or bound up, and wishing to wait for the tide, may safely anchor to the east and SE. of this bank in 10 fathoms at low water, where they will have good ground and find the strength of the ebb much broken by the bank. In case of need, they may also anchor in the same depth at the distance of 400 yards from the south side of the islet, but the ebb tide runs there at the rate of  $6\frac{1}{2}$  knots per hour.

**Marks.**—The lighthouse and beacon on Green Island are both white, and when in line, bearing S.  $43^{\circ}$  E., lead to the eastward of Red Islet Bank. (Page 23.) A red buoy is moored at its east end in  $5\frac{1}{2}$  fathoms, from which the south side of Red Islet and the north side of Hare Island appear in line, and the lighthouse on Green Island open a little to the eastward of the beacon. The lead should never be neglected, nor the vessel taken nearer than the depth of 9 fathoms at low water in passing to the southward. There are no marks for leading to the northward of this bank, nor do the soundings there afford sufficient warning for the safety of a vessel.

**White Islet**, bearing S.  $27^{\circ}$  W., nearly 10 miles from Red Islet, is small, low, and wooded, presenting the appearance of a clump of trees on the only part of Hare Island North Reef which does not cover at

high water. This reef, which is commonly called White Island Reef, is composed of a narrow ridge of highly inclined slate rocks, and extends 3 miles to the northward of the islet. On its NE. end, which is extremely dangerous, because the flood tide sets strongly upon and over it into the North Channel, a light and bell buoy, painted red, and showing a *fixed white* gaslight, is moored in 8 fathoms. The beacon in Cacoona Parish, open to the westward of the church, leads to the eastward of the east end of the reef, which vessels should approach no nearer than the depth of 10 fathoms at low water.

**Hare Island** is  $7\frac{1}{2}$  miles long in the direction of the river, and less than a mile wide. Its height does not exceed 250 or 300 feet; and it is of greywacké and slate rocks, dipping at a high angle to the SE., and thickly wooded. It has no inhabitants.

**Brandy Pots** are three round-backed islets of steep graywacke rocks, lying off the east side of Hare Island, at the distance of  $\frac{1}{3}$  of a mile. The channel between them and Hare Island is only fit for boats. There is a good spring well on the SW. point of the Northern Islet, but it fails in very dry seasons.

**Brandy Pot Bank.**—The east point of Brandy Pots bears S.  $10^{\circ}$  E. nearly 2 miles from the NE. end of Hare Island; it is extremely bold, but a bank, with from  $1\frac{1}{2}$  to  $2\frac{3}{4}$  fathoms at low water, extends both to the northward and southward of it along the east side of Hare Island.

**Anchorage.**—Small vessels anchor on this bank  $\frac{1}{2}$  mile to the SW. of Brandy Pots in  $2\frac{1}{2}$  fathoms, hard clay and sand bottom, and well sheltered from easterly winds. Vessels of large draft anchor farther out in the stream in from 9 to 14 fathoms at low water, this being considered an excellent anchorage, although so much exposed in easterly winds. Vessels may go as near as the depth of 6 fathoms at low tide as far down as White Islet and have good ground and plenty of room to get under weigh. Brandy Pots anchorage is the usual rendezvous for vessels bound down the St. Lawrence and waiting for a wind.

**Mark.**—A good mark for clearing Brandy Pot Bank for the first  $1\frac{1}{2}$  miles to the SW. of those islets, as well as to guide vessels of large draft in anchoring with easterly winds, is, not to shut the whole of White Island in behind the SE. point of Brandy Pots. The bank, which extends to the NE. of Brandy Pots, will be cleared by keeping the whole of Pilgrim Islands open to the southward of Brandy Pots, or by going no nearer than the depth of 5 fathoms in a large vessel.

**Hare Island South Reef and Bank.**—The part of this reef which the tide does not cover lies  $2\frac{1}{2}$  miles to the of SW. Hare Island, is small and low, of shingle covered with grass and spruce bushes, and rests on slate rocks, which dry at low water for a considerable distance from it, both up and down the river. This reef is situated towards the northern side of the Hare Island Bank, which is of great extent, with not more than 9 feet at low water over the greater part of it. About  $\frac{1}{2}$  mile to the westward of the east end of the bank there is a small rocky knoll, with

2½ fathoms least water, from which White Islet is only just shut in behind the south side of Hare Island; and the SW. end of Hare Island bears N. 66° W. 1¼ miles. A red buoy is moored near it in 3 fathoms, with the south side of Hare Island and the middle of White Islet in line, and the SW. end of Hare Island bearing N. 71° W.

**Middle Ground.**—At the distance of ¾ mile from the east end of Hare Island Bank there is a small 2½ fathoms patch, bearing from Hare Island South Reef N. 52° E. and from the SW. end of Hare Island S. 87° E. 2 miles. It is marked by a buoy, painted red. There is no channel here for a ship of heavy draft at low water, for a ridge of sand and rock, called Middle Bank, with not more than from 3 to 4 fathoms in low tides, extends all the way from the Hare Island Bank to Middle Shoal and nearly to Barrett Ledge.

Between Hare Island Bank and the SW. end of Hare Island there is an unfrequented channel ½ mile wide and with from 2½ to 3 fathoms water in it. To the SW., Hare Island Bank extends 6 miles from the reef of the same name, and its SW. end will be cleared in 3½ fathoms by keeping Grand Island just open to the eastward of Kamourasca church, bearing S. 4° E. A red buoy, in 4 fathoms, is moored on its southern edge.

**Anchorage.**—There is good anchorage all along the south side of Hare Island Bank in 7 fathoms, which depth is near enough for a vessel of large draft.

**Barrett Ledges** are two small patches of rocks, ½ mile apart, and having 7 and 8 fathoms between them. The western ledge has 12 feet, and the eastern 10 feet, at low water. From the eastern ledge, Brandy Pots Lighthouse bears S. 75° W. 2½ miles; center of white Islet N. 40° W. 3½ miles. A light buoy, checkered black and white, and showing an intermittent gas light, is moored in 2½ fathoms, on the eastern end of the ledges.

The western ledge lies exactly in the line joining Loup Point with the NE. point of Hare Island, and with the SW. side of the Bay of Rocks, the two last bearing in line from the rock N. 63° W. and the south point of Brandy Pots S. 77° W. 2 miles. A black and white buoy is moored on the east side of this ledge in 6 fathoms.

**Middle Shoal** is a small patch of rocks at the NE. end of Middle Bank; it has 6 feet least water, and bears from the western Barrett Ledge S. 29° W. 1¼ miles.

**Marmen Rock.**—A black can buoy is moored northeastward of Marmen Rock, which is situated S. 74° E. a little more than 1½ miles from Brandy Pots light-house, and carries 7 feet water.

**Demers Rock.**—A red can buoy is placed southwestward of Demers Rock, which carries 11 feet of water, and lies 700 yards southwestward of Middle Shoal, and S. 57° E. 1¼ miles nearly from Brandy Pots light-house.

## SOUTH SHORE, BELOW THE TRAVERSE.

**Green Island** (see page 121) extends 5 miles SW. from the lighthouse, with bold and rocky shores. Its SW. point is low and bare, and has a dangerous reef extending from it a mile to the westward. The north side of this reef is so bold that there is no warning by the lead.

The flood tide sets strongly over the tail of this reef towards Cacouna, and the ebb the contrary. There is generally a great rippling off the end of the reef, caused by the meeting of the flood tides from either side of Green Island.

**Anchorage.**—Midway between the SW. end of Green Island Reef and Cacouna Rock there is good anchorage and shelter from easterly winds, in 6 fathoms, muddy bottom, but there might be delay and difficulty in getting out when the wind changed to the westward, on which account it is seldom used.

**Cacouna** is a remarkable rocky peninsula, about  $1\frac{1}{2}$  miles long, 300 or 400 feet high, and joined to the main by a low and marshy isthmus. A reef of slate, dry at low water, extends from it northward to the Cacouna Rock, which is small, bare, bold, and always above water.

**Percée Rocks** form a long reef which extends 2 miles parallel to the shore. They can almost always be seen, since they are only covered in high tides. There is a narrow channel, with  $3\frac{1}{2}$  fathoms water in it, between this reef and the mainland.

The west point of Cacouna peninsula just touching south side of Green Island, and bearing N.  $35^{\circ}$  E., leads along the north side of the rocks in 3 fathoms water.

**Loup River** has 3 feet at low water in its entrance. Vessels have laid aground just within the entrance, and taken in their cargoes of lumber; but they now load outside. A pier having 16 feet water at its end in the lowest tides extends in a westerly direction from Loup Point. There are rapids, mills, and a bridge, rather more than a mile up the river, where boats may be sent for water when the tide is in.

**Anchorage.**—The best berth is rather to the eastward of the line joining the point of the river and Brandy Pots, in 4 $\frac{1}{2}$  fathoms, mud-bottom, and from  $\frac{3}{4}$  to one mile off shore.

**Loup Bank** consists of slate, thinly covered with sand and mud, and extends 3 miles out from the shore to the 3-fathoms line, reaching from the river in a SW. direction as far as the Pilgrim Islands.

**Pilgrim Shoal** is a long and narrow ridge of red slate rocks, thinly covered with sand, and extending 4 miles parallel to the northern edge of the Loup Bank. The shoal is not above  $\frac{1}{4}$  mile wide, and has from 12 to 15 feet least water. The channel between it and the Loup Bank is less than 400 yards wide, and with only  $3\frac{1}{2}$  fathoms water in it. On the eastern end of this shoal, in 3 fathoms, the eastern side of Brandy Pots and the NE. end of the trees of Hare Island are in line, bearing N.  $10^{\circ}$  W; Cape Eagle and the NE. side of Hare Island reef are just open S.  $65^{\circ}$  W.

On the SW. end of the Pilgrim Shoal, Cape Salmon appears well open to the westward of the Hare Island Reef, the SW. side of the latter bearing N. 88° W. The black buoy moored on the northwestern side of Pilgrim Shoal exhibits an intermittent gas light.

**The Pilgrims.**—The two westernmost islands are nearly white, bare of trees, and so nearly joined together as to appear like one; hence they are called the Long Pilgrim, and form a narrow precipitous ridge 3 miles long, in a SW. direction. The two Middle Pilgrims and the Great Pilgrim, which is the easternmost, are connected by reefs, dry at low water; but between them and the Long Pilgrim there is a narrow channel, with not more than 2 feet water in one part.

Great Pilgrim is the highest, being about 300 feet high, partially wooded with scrubby spruce trees. Shoal water, less than 5 fathoms, extends from  $\frac{1}{2}$  to  $\frac{3}{4}$  of a mile off the northern side of the Long Pilgrim, being widest at the SW. end. There is no channel between the Pilgrims and the main, where it is so shallow that carts can cross in low tides.

**St. Andre Bank** extends from the Pilgrims to the Kamourasca Islands. Its northern edge is very steep, but there is an excellent mark for it, namely, the south side of Grande and Burnt Islands in line, bearing S. 30° W., which leads along it at the distance of 300 yards from the 3-fathoms line of soundings.

**Kamourasca Islands.**—Grande and Burnt Islands are long and narrow ridges of greywacké rock, and are extremely bold to the northward. Crow Island is distant about  $\frac{3}{4}$  mile from the shore at the church and town of Kamourasca. There is a wharf and good landing near the church, and water may be obtained at any time of tide when there is depth enough for boats over the shoals, but there is no water on the islands.

**Beacons.**—On the eastern end of Grande Island there are two beacons, the one red and the other white. When in line, and bearing S. 23° E., they form a cross mark for the red buoy on the SW. end of the Hare Island Bank, in 4 fathoms.

**Kamourasca Bay** is well sheltered, and small vessels may safely lie aground and winter there, on a mud bottom, which dries at low water. Vessels in distress, when they have lost their anchors, may be saved by running them in at high water, between the reef of Cape Diable and Crow Island, leaving the latter from  $\frac{1}{4}$  to  $\frac{1}{2}$  mile to the eastward in passing; and when within the reef, hauling into the bay to the SW. In high spring tides 13 or 14 feet of water will be found over the mud, but in neap tides there is seldom more than 9 or 10 feet.

**Anchorage.**—The best berth is with the church of Kamourasca just open to the westward of Crow Island, bearing S. 67° E., and Grande Island just open to the northward of Burnt Island, N. 34° E., in 7 fathoms, over stiff mud. Large vessels wishing for more room may anchor farther out anywhere to the westward.



**Cape Diable.**—Reefs of slate extend northward from it halfway to Crow Island, and northwestward  $\frac{3}{4}$  mile.

**St. Denis Point** is nearly 3 miles to the SW. from Cape Diable.

**Origneaux Point** (where there is a landing pier, 1,200 feet long, and with 15 feet water at its end in the lowest tides) is an extreme of the land running out to within  $\frac{3}{4}$  mile of the edge of the bank, and the land trends from it southward  $1\frac{1}{2}$  miles to Iroquois Point.

**River Ouelle** has its entrance to the westward on the south side of Ouelle Point. In high spring tides, 15 feet water can be carried about  $1\frac{1}{2}$  miles from the entrance.

**St. Roch Point** is 9 miles from Ouelle Point; and from the line between them to the shore, a distance of  $2\frac{1}{4}$  miles, the bay of St. Anne dries at low water, the bottom being mud, but with thousands of bowlders or large stones.

**Shoals of St. Anne** extend 5 miles out from the high-water mark and are very dangerous. They are of sand and mud thickly strewed with large stones, many of which show at low water. The St. Anne buoy is black and moored on the western edge of these shoals with St. Anne church bearing S.  $46^{\circ}$  E., and St. Roch church S.  $11^{\circ}$  W.

**Anchorage.**—All along the edge of the bank from Kamourasca up to St. Anne buoy there is excellent anchorage in from 7 to 10 fathoms, stiff mud bottom.

**English Bank** is a ridge of sand varying in breadth from  $\frac{1}{2}$  to  $1\frac{1}{2}$  miles, and extending NE. from the Middle Ground of the Traverse. For the first 7 or 8 miles (that is, nearly abreast the river Ouelle) it runs nearly parallel to the edge of St. Anne Shoals, at the average distance of a mile; farther eastward it trends to the northward towards Murray Bay, which it approaches to within  $2\frac{1}{4}$  miles, and its northeastern extremity in 10 fathoms is more than  $\frac{1}{2}$  mile to the westward of a line from the church at that place to the church at Kamourasca. On the western and greater part of this bank the depth is between 6 and 8 fathoms, and on the eastern part from 9 to 11 fathoms.

#### SOUTH CHANNEL, BELOW THE TRAVERSE.

**General Observations.**—The South Channel is justly preferred for the common purposes of navigation. In that part of it which is below the Traverse the tides are not so strong nor the water so inconveniently deep as they are in the corresponding part of the North Channel below Coudres Island. Moreover it possesses good anchorage almost in every part, and water enough for vessels of the largest draft at all times of the tide. It is true that several large ships have touched the ground in passing the southwest end of Hare Island, but that has arisen from their following the usual route to the northward of the Barrett Ledges and into the Brandy Pot Channel, a course which has been erroneously represented in former directions as always to be preferred by vessels of large draft. It is, on the contrary, only ships of heavy draft which

need to shun that course as entailing upon them the necessity of crossing the Middle Bank in from  $3\frac{1}{2}$  to 4 fathoms at low water, or even in a less depth if they cross it according to the old directions, with White Island open between Hare Island and the Brandy Pots.

There is deep water, from 14 to 20 fathoms, between the Middle Bank and Hare Island, but it ends in a "cul de sac;" there is no getting out of it into the main channel without crossing the Middle Bank to the southward, which should never be attempted in a vessel of deep draft before half flood. It would, however, be far better for such vessels to pass to the southward of Barrett Ledges, Middle Shoal, and Middle Bank, where the channel is direct, and for a very large ship (that is, from 5 fathoms to 5 fathoms at low water) a mile wide in the narrowest part, with from 6 to 11 fathoms water over clay and mud bottom.

The circumstance which has given a preference to Brandy Pot Channel to the northward of Barrett Ledges, and which will continue to do so for the common purposes of navigation, is the advantageous position of the anchorage at the Brandy Pots, especially in northerly winds, when it is absolutely necessary that vessels bound down the river should be to windward on account of the rapid tide setting to the southward from between White Islet Reef and Red Islet. Moreover vessels bound to sea usually rendezvous at the Brandy Pots to wait for a wind or the tide, one ebb being sufficient, with a moderately good working breeze, to take them down below Green Island, where they can always gain ground to the eastward whilst the weather remains fine. The Brandy Pots also are about the point that a fair sailing merchant vessel can reach in one flood from the anchorage under Green Island Reef, where they usually wait for the tide when beating up with westerly winds.

**Directions from Green and Red Islands to the Brandy Pots.—**

In a vessel coming up the river, and being under the north shore with a northerly wind, proceed as follows: If wishing to take the South Channel, bring Green Island lighthouse and beacon in one and run down upon this leading mark (passing to the eastward of Red Islet Bank light vessel) till White Islet is opened fully twice its own breadth to the northward of Hare Island. Then haul up, and if the tide be flood she has merely to take care not to close those marks for clearing the south side of Red Islet Bank, which, with the flood, she need not approach nearer than the depth of 10 fathoms. It is of consequence to observe (more particularly with a southerly wind than in this case) that the flood sets through between Red Islet and White Islet Reef, and strongly over the tail of the latter into the North Channel.

But with the ebb tide a vessel must luff up close under Red Islet Bank, taking care, however, to keep White Islet fully twice its own breadth open to the northward of Hare Island, and not to approach the bank nearer than 7 fathoms water, till Red Islet bears N.  $65^{\circ}$  W., when she can keep her luff as close as it may be found necessary to prevent her being set over to the lee shore by the strong ebb coming from the

North Channel between White and Red Islets, and setting over towards Green Island Reef. The same marks (White Islet open of Hare Island) may be kept on until she approaches White Islet Reef (Hare Island north reef) to 10 fathoms water, when she must edge away along the south side of that reef, where the tides set fairly up and down the river and are of moderate strength.

It is scarcely necessary to mention that in the voyage down the river, also, these tides must be attended to. For instance, with a northerly wind and ebb tide, keep well to windward under White Islet Reef, and so as not to be set down towards Green Island Reef. With a southerly wind and flood tide, on the contrary, a vessel must keep well to the southward, in order to avoid being carried by the tide into the North Channel.

**At Night**, when the lights on Green and Red Islands can be seen, their bearings and the soundings in the chart will prove sufficient guides, even although the land should not be seen. In a vessel under the north shore, coming up with a northerly wind, bring Red Islet bank light vessel in line with Green Island light bearing S. 42° E. and pass eastward of the light vessel, allowing for the tide. Whilst crossing on that bearing she will have 11 or 12 fathoms when in the stream of the bank, and be 1½ miles distant from its eastern end. Keep the lead quickly hove and do not shoal less than 10 fathoms; if the tide be flood, care must be taken that it does not set her too near the end of the bank.

Continue the course towards the Green Island light until the soundings deepen to 20 fathoms, or until the Red Islet light bears S. 48° W., then haul to the southwestward under Red Islet bank. Pass it in 20 fathoms water, which is near enough for a stranger at night, and when Green Island light bears S. 70° E. the south point of the Brandy Pots will bear S. 30° W., 13½ miles.

In a vessel coming up with an easterly wind, as directed in page 21, and having made the Green Island light, run up in 20 fathoms until she is within 3 miles of it, or till it begins to bear to the southward of S. 25° W. Then haul out into more than 30 fathoms and run up in the deep water till the light bears S. 64° E., when she will be well past the reef, and may continue to run up, coming no nearer to Green Island than 25 fathoms water, in order to avoid its western reef.

Abreast the west end of Green Island Brandy Pots light will come in sight, and, guided by the bearing of the light, a vessel may, if desired, proceed to Brandy Pots anchorage. In thick weather, haul over to the northwestward, toward White Islet, into 9 or 10 fathoms, and run up in that depth till Brandy Pots light is seen; do not come to the southward into deeper water for fear of Barrett Ledges.

A vessel bound up the river southward of Barrett Ledges should keep Green Island light only just shut in behind the west end of Green Island, bearing N. 35° E., sheering to the northward occasionally to sight it, or going no farther to the southward than 8 fathoms until sure that

Peroée Rocks are passed. Green Island light only just shut in behind, or kept only just in sight over the low west extreme of Green Island, bearing N. 37° E., will lead to the southward of Barrett Ledges, nearly in mid-channel between Middle Bank and Pilgrim Shoal. Abreast Barrett Ledges Long Pilgrim light will come in sight.

**Directions from the Brandy Pots to the Traverse.**—Having crossed the Middle Bank, and deepened the water to the southward into 8 fathoms, steer S. 35° W. If the weather be clear, Burnt Island will be distinguished from Grande Island when the vessel is abreast of Great Pilgrim. Open the north side of Burnt Island, only just in sight to the northward of Grande Island, and keep it so as a leading mark, should the buoy not be in its place, to clear the western part of Pilgrim Shoal. When past that shoal, with a leading wind and clear weather, nothing more seems requisite than to pay attention to the soundings in the charts, and regulate the course accordingly.

**In Thick Weather, or at Night,** after crossing the Middle Bank to the southward, as before directed, either one side of the channel or the other should be taken as a guide for running up by the lead, say in 7 fathoms. Either side may be taken as high up as Long Pilgrim light-house, or until Kamourasca light is in sight, after which the south side of Hare Island Bank should in thick weather be followed in the same depth; for the western part of the Long Pilgrim, the St. André Bank, and Kamourasca Islands, have deep water close to them, affording no guidance by the lead. After having passed the red buoy on the SW. end of Hare Island Bank, and proceeded 5 or 6 miles beyond it, Kamourasca Islands will have been passed, and the edge of the South Bank may be easily followed in 7 fathoms, or in 10 fathoms, if the vessel be of large draft, up to St. Anne black buoy.

With a good breeze and a fair sailing vessel, the anchorage off Kamourasca will be gained from the Brandy Pots in one tide; if not, there is good anchorage and easy tides all along the southern side of Hare Island Bank, as well as off its SW. end. A vessel with a good breeze will beat from Kamourasca to St. Anne buoy with one good tide; but not always in neap tides, when the flood is weak in that wide and clear part of the river. English Bank will be an excellent guide to a vessel beating at night, and she may anchor on any part of it in fine weather, but will find the tides becoming strong upon it in proportion as she approaches the Traverse. The anchorage all along the south shore, up to within 2 or 3 miles of the light-vessel at the Traverse, is far preferable. For directions continued through the Traverse, see page 204.

#### NORTH SHORE, BELOW COUDRES ISLAND.

**Aspect.**—The northern shore of the St. Lawrence from Saguenay River to Coudres Island is bold and mountainous. The granitic hills in most parts rise immediately from the river, forming steep or precipitous

headlands. Near the entrance of the Saguenay these hills are not above 1,000 feet high, but those of Eboulements attain an elevation of 2,547 feet.

At page 182, the coast of the estuary was described up to Little Bergeron Cove. We shall now recommence from that point, and proceed with the description to the westward.

**Vaches Point** is the east point of entrance of Saguenay River. The high clay cliffs are easily recognized, and are known by the name of Saguenay Cliffs.

**Moulin Baude Anchorage.**—From this anchorage, in 7 fathoms, mud, Saguenay Cliffs bear S. 58° W., distant 3 miles, and Red Islet and the SW. end of Green Island are in line; the vessel will here be 800 yards distant from the 3-fathom line of soundings and nearly a mile offshore.

**Vaches Patch.**—Vaches Reef dries out  $\frac{1}{2}$  mile from Vaches Point, and shallow water continues nearly to Vaches Patch, which has a depth of  $2\frac{1}{2}$  fathoms, and bears S. 77° E.  $1\frac{1}{2}$  miles from Vaches Point. A buoy colored red and black horizontal bands is moored to the southward of the patch.

**Prince Shoal** is a narrow ridge of stones and boulders with 17 feet least water. From Prince Shoal, which is marked by a red and black buoy on its southern edge, Lark Islet lighthouse bears N. 88° W., Lark Patch S. 35° W., Red Islet lighthouse S. 48° E.

**Lark Point**, the southwestern point of entrance of the Saguenay, is also of clay cliffs, but much lower than those of Vaches Point.

**Lark Islet** lies off this point and is joined to it by sand and boulders dry at low water.

**Lark Reef** is of sand and boulders, dry at low water nearly out to the edge of the shoal water, which extends nearly  $3\frac{1}{2}$  miles in a SE. direction from Lark Point. Lark Patch, near the southern end of this reef, never covers, and outside of it, in  $4\frac{1}{2}$  fathoms water, lies a black buoy. Between this extensive reef, including Bar Reef and Prince Shoal and those which extend  $1\frac{1}{2}$  miles to the SE. of Vaches Point, is the entrance of Saguenay River; but, as the navigation of that river is quite distinct from that of the St. Lawrence, we shall reserve it for the latter part of the chapter, and have here only mentioned the extensive reefs off its entrance in so far as they are dangers to be avoided by vessels bound up the North Channel of the St. Lawrence.

**The Mark** for leading clear to the SE. of all these reefs is the Brandy Pots just open east of White Islet, bearing S. 15° W. The least water found on the rocky patches was  $7\frac{1}{2}$  fathoms, but as they may be extending to the eastward, and the depth over them be decreasing (as has been recently found to be the case with the Lark and Bar Reefs and the outer patch, which is now Prince Shoal), the Brandy Pots had better be kept well open to the eastward of White Islet, by vessels desiring to pass outside of them.

**Canard River** is a small stream, celebrated for wild ducks,  $2\frac{1}{2}$  miles SW. of Lark Point, and can only be approached in a boat near high water.

**Echafaud Islet** is a small, steep, and rocky islet, lying off the mouth of a cove full of rocks 5 miles SW. of Lark Point.

**Cape Basque**, the first mountainous headland SW. of the Saguenay, is  $6\frac{1}{2}$  miles from Lark Point. It is quite bold, having 20 fathoms close to it.

**Basque Road**, between Cape Basque and Lark Reef, is a good anchorage, and well sheltered by the reef. There is plenty of room for many vessels, but the best berth is with Echafaud Islet bearing N.  $88^{\circ}$  W., and distant rather less than a mile, where the vessel will be in 10 or 11 fathoms, with clay bottom, and at the distance of nearly  $\frac{1}{2}$  mile from the 3-fathoms line. Vessels may anchor farther out in 13 fathoms; but the farther out the stronger the tide. At the anchorage recommended the tides are not strong, and the holding ground is everywhere good. There is no anchorage on the north shore to the SW. of this before we arrive at Murray Bay, a distance of 28 miles.

**Cape Dogs**,  $5\frac{1}{2}$  miles southward of Cape Basque, is quite bold, high, precipitous, and bare granite. Halfway between these capes is the Bay of Rocks, having an island and many large rocks in it, as its name implies, and affording shelter only to boats.

**Cape Salmon** is high and bold, like Cape Dogs, from which it is distant  $9\frac{1}{2}$  miles. Between these capes are Shettle Port, Black River, and Port Parsley. They are merely places for boats.

**Cape à l'Aigle** is  $5\frac{1}{2}$  miles SW. from Cape Salmon, and of the same bold, high, and precipitous character. The bay between these capes affords no anchorage for shipping, in consequence of the great depth of water. In it is Port Salmon, a small cove, which large boats can enter at high water, situated about  $1\frac{1}{2}$  miles to the westward of Cape Salmon. The settlements on the north shore spread to the eastward of this place, and they are continuous from it all along the coast to Quebec.

**Murray Bay** is all dry at low water, excepting the shallow channels leading to the river at its head. The river, flowing down a valley from two or three small lakes among the hills, is rapid and unnavigable. There is a church and village round the head of the bay, and the settlements extend some miles back from the St. Lawrence. There are grist and saw mills on the river. At the latter deals are made, and are, for the most part, shipped to Quebec in small schooners, which lie aground near or in the entrance of the river; occasionally, however, vessels anchor off, and take in cargoes of lumber. A pier has been constructed here, having 18 feet of water at its end in the lowest tides.

**Anchorage.**—The anchorage off Murray Bay is close under the high rocky shore, a little to the eastward of the bay, with Pic Point, its east point, bearing S.  $83^{\circ}$  W., distant about 800 yards. The bottom is of clay, good for holding, and the depth 10 or 12 fathoms at the distance of

about 600 yards from the shore, but not above  $\frac{1}{2}$  mile from the edge of the shoal water. Vessels here will be out of the strength of the tides, well sheltered from the prevailing winds, and in safety if well moored, although inconveniently near the shore, except in the case of a vessel taking in her cargo. It is possible to anchor a little farther out in 15 or 16 fathoms, but the tides there are very strong.

**Goose Cape** is bold and rocky, and about 11 miles south of Pic Point. At Mal Bay and in Little Mal Bay, between those two points the shoals dry out  $\frac{1}{2}$  mile from the shore, but there is no good anchorage.

**Cape Martin**, the east point of Eboulements Bay, is 3 miles SW. of Goose Cape. Nearly halfway between these, but rather nearer Goose Cape, a stream descends a ravine, and off the mouth of the latter there is a very large boulder stone called Grosse Rock. A landing pier has been constructed at Eboulements having  $9\frac{1}{2}$  feet water at its extreme end in the lowest tides.

**Anchorage.**—The anchorage between Goose Cape and Cape Martin is good and well sheltered from easterly winds. To avoid the strong tides anchor in 7 fathoms, with Grosse Rock bearing N.  $31^{\circ}$  W., and Cape Corbeau, the east point of St. Pauls Bay, only just shut in behind Cape Martin, bearing S.  $67^{\circ}$  W. Here a vessel will have good holding ground about 400 yards from the 3-fathoms edge of the shoals. Small vessels anchor farther to the eastward, close in under Goose Cape. Mount Eboulements is about 3 miles to the northward of that anchorage, and one of the highest summits on the northern shore of the St. Lawrence, being 2,547 feet high.

#### NORTH CHANNEL, BELOW COUDRES ISLAND.

**Directions.**—If with a strong NW. wind a vessel has kept the north shore aboard until she has passed Bergeron Coves, and if night be approaching, and the flood tide nearly done, endeavor to reach the anchorage 2 or 3 miles to the eastward of Vaches Point (page 192), and remain there till daylight. Having sufficient daylight to take the vessel through between Red Islet and the shoals off the Saguenay, proceed as follows:

First, with the ebb tide, keep well to windward, running along under the north land at the distance of a mile until about the half of Cacouna is open to the westward of Red Islet. Then steer so as to open out the western extreme of the Brandy Pots to the eastward of White Islet, bearing S.  $15^{\circ}$  W., and keep them so, and they will lead clear to the southward of all the shoals off the Saguenay. But that leading mark can seldom be made out; a matter of less consequence than formerly, since buoys have been placed on the shoals off the Saguenay. When the lighthouse on Red Islet and Green Island come in one the vessel will be off the SE. extreme of Lark Reef, and should not be in less than 6 fathoms at low water.

The lead should be kept going with reference to the soundings in the chart; and when the houses at Tadoussac open to the westward of Lark Islet, the vessel will be off the end of the reef, in from 15 to 20 fathoms water, and may either proceed to the anchorage in Basque Road (page 193), or may continue her course up the river, keeping well under the north shore with the ebb, and more in the middle of the channel with the flood tide, there being nothing in the way until near Condres Island.

Secondly: Coming up, and having passed Bergeron Cove with the flood tide, it is not necessary to keep the northern shore quite so close aboard. Open the half of Cacouna to the westward of Red Islet, as before directed, and then steer so as to open the Brandy Pots to the southward of White Islet, about the breadth of the latter, and bearing S. 16° W.

Having opened the Brandy Pots to the southward of White Islet, keep them so as the vessel runs towards them until Green Island light-house is well open to the southward of Red Islet, or until past the black buoy on Lark Reef, when she may steer directly up the middle of the channel between Hare Island and the north shore. In the event of the wind and tide falling, anchorage will be found on Hare Island Bank, English Bank, Murray Bay, and to the westward of Goose Cape. For directions for the North Channel from Condres to Quebec, see page 213.

**Tides.**—The principal stream of flood ascends along the northern side of the estuary. One part of this stream sets from below Bergeron Cove towards and over the tail of Red Islet Bank, which it curves round to the southward, and then passes into the North Channel between Red Islet and White Islet reef. At the same time an inferior stream of flood ascends along the south shore close outside Razades, Basque, Apple, and Green Islands; and inside of them also after the shoals are covered. When these two streams of flood meet the last of the ebb, and afterwards each other, between Green and Red Islands, they cause high breaking ripplings. Each of these two streams of flood is strongest near its own side, and there is consequently little or no flood in mid-channel, particularly in neap tides and westerly winds.

To the westward of Cacouna the flood in the south channel sets fairly up the river on either side of Barrett Ledges, Middle Shoal, and Middle Bank; but the strongest part of it passes up the deep water to the northward of these shoals, between them and Brandy Pots and Hare Island, and at the rate of 2½ or 3 knots in spring tides. On arriving at Hare Island Bank, great part of this stream passes into the North Channel between that bank and Hare Island; the rest over the tail of the bank into the South Channel. The flood sets fairly up the South Channel, and between the Pilgrims and Hare Island Bank, but becomes very weak above them, especially in neap tides, until we arrive as high as Origneaux Point, whence it gradually increases in strength, being aided by a branch of the northern stream from between English and Hare Island Banks, until it attains its full rate of 5 knots in the South Traverse.



To return again to the principal stream of flood; another part of it passes between Red Islet Bank and the shoals off the Saguenay, whilst a third part ascends that river 70 miles to the rapids. When the flood first makes, it meets the ebb down the channel to the northward of Hare Island, and causes a tremendous rippling, extending from the Lark Reef to Red Islet. Above that islet, the stream of flood, after sweeping round to the westward past Rocky Bay, pursues a tolerably fair course up the North Channel as high as Cape à l'Aigle, off which it divides; the southern part proceeding to the southward of English Bank, on its way to the South Traverse; whilst the northern part passes between English Bank and the north shore up to Goose Cape.

Off Goose Cape this northern part of the stream of the flood again divides; one, the lesser and weaker part, passing to the southward of Coudres, throws off at the first of the tide branches to the south, which pass over the western part of English Bank, on either side of the Middle ground, and between the latter and the shoals eastward of the Seal Reefs into the South Channel. This seems to arise from the flood being earlier in the North than in the South Channel, and hence the first of the flood comes from the north at the Traverse and sets for about an hour on the shoals of St. Anne and St. Roque. The other and principal part passes between Coudres Island and the north shore, where it attains the same rate of 5 knots in spring tides as in the South Traverse.

Little need be added respecting the ebb tide beyond what has already been said in the course of this chapter. We may, however, remark generally that the direction of the ebb stream is always nearly the contrary to that of the flood, excepting between Red and Green Islands, and to the eastward of the former. The principal part of the ebb down the North Channel, being turned to the SE. by Lark Reef, comes through between White Islet Reef and Red Islet, setting over towards the east end of Green Island at the rate of 5 or 6 knots in spring tides. The ebb out of the Saguenay River is equally strong, and sets over towards the east end of Red Islet bank, whence, curving to the eastward, it unites with the St. Lawrence ebb, from which it can be readily distinguished by the dark color of its water, and both together set down the estuary, as has been explained in other parts of these directions.

Although the duration both of the rise and fall of the tides will be found in the table at page 218, yet it may be useful to remark here that the flood and ebb are less unequal in duration in the North than in the South Channel; and that in both channels the streams of flood and ebb upon an average continue three-quarters and one hour, respectively, after it is high and low water by the shore.

At the Brandy Pots the flood rises 5h. 50m. and the ebb falls 6h. 34m., so that the ebb by the shore is about  $\frac{1}{2}$  hour longer than the flood. This inequality of the tide increases as we proceed up the river; thus at St. Roque Point, opposite the South Traverse, the flood is only 5h. 35m.

and the ebb 6h. 50m. The times of the high and low water by the shore do not seem to be much affected by winds; but the amount of the rise and fall of the tides and the duration of the streams are considerably affected by strong winds; nevertheless, as an approximation near enough for practical purposes, we may state that when the stream of flood makes in mid-channel the tide has risen by the shore at the Brandy Pots  $1\frac{1}{2}$  feet and at the Traverse  $2\frac{1}{2}$  feet; and also that when the stream of ebb makes, the tide has fallen about 2 feet by the shore. But as it is of importance to know the proportional amount of the rise and fall of the tides for any part of their whole duration, when a large ship is to be taken over certain shallow parts of the river above the Traverse, we shall have occasion to notice this subject again.

The vessel has now arrived at the most difficult part of the navigation of the St. Lawrence, where the river becomes divided into three channels by shoals and islands. The eastern entrances of all three of these channels are rendered more or less difficult, either by their narrowness, the want of good anchorage in them, or by the strength of the tides.

**The South Channel** lies along the southern shore, and between it and the shoals and islands occupying the central part of the river from the South Traverse to Quebec. This channel is the one generally used; it is buoyed, and is preferable to the others for the general purposes of navigation, having excellent anchorage and moderate tides in every part, excepting for a few miles in the Traverse. The channel between Beaujeu Bank and Crane Island has also been buoyed for the use of large vessels, for not more than 17 feet at low water can be carried through to the southward of that bank, where nearly all vessels used formerly to pass.

**The Middle Channel** lies between the shoals and islands which form the northern side of the South Channel and the long line of shoals and reefs which extend from Coudres Island to Reaux Island. In one part of it, near the eastern entrance of the Middle Traverse, there are not more than 3 fathoms at low water. Having passed this shallow part, there is both room and water enough for the vessels of the largest draft, until they arrive at the group of islands between Crane Island and the Isle of Orleans, where the Middle Channel communicates with the South Channel by various narrow passages between the islands. There is plenty of water in most of these passages at all times, but the tides set strongly through them and they are too intricate and difficult for general navigation. The other and better channels will always be preferred for general use; nevertheless, the Middle Channel ought to be known to the pilots in common with every other channel in the river.

**North Channel** was formerly in general use, but it is now little known to the majority of the pilots. It is broader than South Channel, but the tides are much stronger, and the narrows at its western end have a depth of only 24 feet at low water; while, with the exception of

in the contracted passage westward of Beaujeu Bank, there are not less than 28 feet in South Channel.

Starting with the beginning of a fair tide, a steam-vessel may, however, gain an hour in the passage from Green Island to Quebec by taking North rather than South Channel.

The anchorage generally in North Channel is not good, the bottom being foul from St. Paul Bay westward to Cape Maillard; also because of the strength of the tidal streams. Vessels may, however, anchor on the northern edge of the bank, southward of the channel, in a depth of about 10 fathoms.

Between Coudres Island and the northern shore of the river there is anchorage only in Prairie and St. Paul Bays, both of which afford security under all conditions of wind and weather, but with northerly winds heavy squalls sweep down from the north shore hills.

Orleans Channel has a good passage for small vessels, but is not available for those of large draft. It is marked by red buoys on the northern side, and by black buoys on the southern side.

#### SOUTH CHANNEL, THROUGH THE SOUTH TRAVERSE TO CRANE ISLAND.

**South Channel.**—The southern shore of the river St. Lawrence, from St. Roch Point to St. Thomas is low and composed of slate; inland it rises gradually in a series of ridges to a long wooded range, which is  $4\frac{1}{2}$  miles distant from the river, and attains an elevation of 1,220 feet. The houses are almost continuous on this shore, with villages near the churches. Supplies in small quantities may generally be obtained at the villages, with the exception of coal.

**Churches.**—The churches at St. Jean, St. Eugène, St. Ignace, St. Thomas, and Berthier have each one spire; those at St. Roch and L'Islet have each two spires.

**Piers.**—The pier at St. Jean has a depth of 3 feet at low water at its outer end; at L'Islet the pier is 1,200 feet long, with a depth of 7 feet at low water close to its outer end; a wooden frame beacon, painted black, stands on the extremity of this pier. A small pier has been erected at Anse à Cîles,  $3\frac{1}{2}$  miles southwestward from L'Islet, and another  $1\frac{1}{2}$  miles southwestward of Cape St. Ignace, but both dry at about half tide. There is also a wharf on the eastern side of Cape St. Ignace, but it can only be approached at or near high water.

**Lifeboats** are stationed at L'Islet and St. Ignace to rescue the crews of vessels caught in the ice during the autumn.

**Railway and Telegraph.**—St. Jean, Port Joli, L'Islet, St. Ignace, and St. Thomas are connected with Quebec and Halifax by the Intercolonial Railway, which runs along the right bank of the St. Lawrence about one mile inland from these villages. The railway stations are also connected with all parts of Canada and the United States by telegraph.

**Trois Saumons River**, nearly 4 miles southward of St. Jean, has a large saw mill near its mouth. This river, also the stream at

Port Joli, one mile northeastward, will admit small craft at about half tide.

**L'Islet.**—A conspicuous cross is erected on a cliff 59 feet high, situated one mile northeastward of L'Islet church.

The telegraph and signal station at L'Islet is distant 300 yards northeastward of the church, and close westward of the convent, which is a square stone building surmounted by a turret.

**St. Ignace.**—The church is  $6\frac{1}{2}$  miles southwestward from L'Islet, and nearly  $\frac{3}{4}$  mile southeastward of Cape St. Ignace, which is a conical rocky mound, 52 feet high, covered with small bushes.

**St. Thomas.**—Two rivers unite and discharge their waters here, Bras St. Nicholas flowing from the eastward, and Rivière du Sud from the westward. The combined streams fall in a cascade about 30 feet high to a small bight,  $\frac{1}{2}$  mile eastward of the church. A sawmill is in operation on the eastern side of the falls. St. Thomas church is situated on the left bank of Rivière du Sud,  $5\frac{1}{2}$  miles southwestward from St. Ignace.

The channel from St. Thomas to the River St. Lawrence trends northeasterly in one bend, and is generally marked by cask buoys. It nearly dries at low water.

The high-water bank near St. Thomas has receded considerably since the survey of 1827, about 600 feet apparently having been washed away, and each year more is broken away by ice and sea. The low-water line, however, is nearly the same as at that date, except that boulders are now visible, at low water, beyond the northeastern extreme of St. Thomas Bank.

**Shoals of St. Roch** are extremely dangerous, being composed of a thin covering of sand, mud, and stones over a slate rock. The depth of water in many parts of these shoals does not exceed 9 or 10 feet.

**The Narrows** are less than  $\frac{1}{2}$  mile wide, and the depth of water through is from 5 to 14 fathoms. The ebb tide runs at the springs at the rate of 7 knots, and the flood 5 or 6 knots; and, as the ground is hard, there is no anchorage in the stream. The want of good leading marks, and the prevalence of strong tides, render the lightvessels and buoys indispensable for the safety of large vessels.

**St. Roch Shoals.**—A black can-buoy lies in 28 feet water westward of a shoal with 16 feet water over it, N.  $46^{\circ}$  E.,  $2\frac{1}{4}$  miles from the Lower Traverse lightship. The first black buoy southward of the Upper Traverse lightship now lies outside a newly discovered rock with 24 feet of water over it, with St. Roch Church bearing N.  $78^{\circ}$  E., and St. Jean Church S.  $7^{\circ}$  E.

There is no mark for leading through the Narrows; and that which leads up to them from the eastward, viz, Cape Origneanx and the highland of Kamonrasca, can only be made out in clear weather. The western leading mark given in the old directions, that is, the Wood Pillar just touching the south point of Goose Island, must never be trusted.

This mark will not lead through; and, moreover, Goose Island is so distant that more or less of it becomes invisible according to the state of the weather or the atmosphere. On the weather-tide, however, the channel is pretty well marked out by the rougher or breaking sea in the deep water, as compared with the smoother surface over the shoals on either side.

The edge of the South Bank above the Narrows is not quite so steep or shoal, but it has many outlying patches of from  $2\frac{1}{2}$  to 3 fathoms off it, which render it difficult to run a vessel of large draft safely along it by the lead, excepting within 2 hours on either side of the time of high water by the shore.

**Channel Patch**, marked by a bell and light buoy checkered black and white, and showing an intermittent gas light, lies directly in the way of vessels; from the patch, Stone Pillar bears S.  $35^{\circ}$  W., distant  $2\frac{1}{2}$  miles, with its north extreme just shutting in the highest part of Goose Island Reef; and a sugarloaf-shaped beacon near St. Jean Port Joli Church is just open eastward of the church, bearing S.  $60^{\circ}$  E. This buoy alters its position about 200 yards with the tides, and is frequently adrift. The least depth that could be found on Channel Patch in 1886 was 21 feet, although three examinations were made of the locality at slack water; probably a bowlder has been carried away from the summit, as the depth recorded in 1827 was only 18 feet.

Several shoals with depths of 15 to 18 feet over them lie between Stone Pillar and Channel Patch; they may all be avoided by keeping the highest part of Goose Island Reef just open southward of Stone Pillar, bearing S.  $38^{\circ}$  W. This mark must only be kept on while a vessel is southward and westward of Channel Patch. The NE. end of Middle Ground is marked by a red buoy, from which the steeple of Notre Dame Church, bearing N.  $39^{\circ}$  W., is open to the westward of Cape Martin. On the shoals to the westward of the Middle Ground there is as little as  $1\frac{1}{2}$  fathoms water, and the slate rock dries in patches more than 3 miles out to the NE. of Seal Islands. The outline of these shoals is extremely irregular, and there are several detached shoals to the southward of them, with 2 to 3 fathoms. There are no marks for leading clear of them, and the soundings are too irregular to be a sufficient guide; hence the northern side of the Traverse is rendered dangerous, and should not be made too free with, especially in a vessel of large draft.

**Seal Islands** consist of a long reef of slate, which is covered at high water, with the exception of three islets, each of which is elevated 6 feet above high water. There are three houses on the eastern islet, with a cross and two high bushes near them; on the western islet a conspicuous spruce tree is surrounded by low bushes.

**Wood Pillar**, which is 81 feet above high-water mark, has trees upon it, and is the higher and steeper of the two; it is marked by a beacon in the form of a sugarloaf, with a cross in the center, but being partially obscured by trees, can only be seen from a short distance.

**Stone Pillar** lies  $1\frac{1}{2}$  miles to the eastward of Wood Pillar, and is quite bare of trees. Shoal water extends from it a mile to the NE. There is a half-tide rock, named Middle Rock, marked by a beacon, between the Pillars, and a passage too intricate for any but small vessels.

**Algernon or South Rock**, lying S.  $53^{\circ}$  E.,  $\frac{1}{4}$  mile from the SE. point of the Stone Pillar, is of slate rock, about 100 yards in diameter, dry soon after half-ebb, and bold all round except to the NE. The highest part of Goose Island Reef just open southward of South Rock lighthouse, bearing S.  $43^{\circ}$  W., leads southward of these shoals; and the whole of Crane Island well open southward of Goose Island Reef, bearing S.  $47^{\circ}$  W., leads southward of South Rock, and of the shoals between it and Goose Island Reef.

**Goose Island Reef**, 2 miles southwestward of Stone Pillar, consists of a ledge of rock,  $1\frac{3}{4}$  miles in length, trending with the direction of the river. Several small heads are visible at all times of tide; the highest part, a rugged conical mound, 29 feet high, is situated near the western extreme of the reef, and is occasionally surmounted by a beacon. An isolated rock, which dries 2 feet at low water, lies nearly  $\frac{1}{2}$  mile N.  $38^{\circ}$  E. from the NE. extreme of Goose Island Reef. There are five shoal spots between Stone Pillar and Goose Island Reef, with depths of 16, 11, 12, 13, and 18 feet on them, and bearing S.  $49^{\circ}$  W., distant one mile; S.  $52^{\circ}$  W.,  $1\frac{1}{2}$  miles; S.  $40^{\circ}$  W.,  $1\frac{1}{2}$  miles; S.  $38^{\circ}$  W.,  $1\frac{1}{2}$  miles; and S.  $32^{\circ}$  W. distant  $1\frac{3}{4}$  miles, respectively, from Stone Pillar lighthouse. Several small detached rocks lie off the southeastern side of Goose Island Reef, but they do not extend more than 200 yards from it; a rock with a depth of 8 feet is situated midway between the southwestern extreme of Goose Island Reef and Goose Island.

A long spit, with shoals on it varying in depth from 9 to 11 feet, extends for a distance of nearly  $1\frac{1}{2}$  miles, from the southwestern extreme of Goose Island Reef. Stone Pillar lighthouse open southward of the highest part of that reef, bearing N.  $38^{\circ}$  E., leads southward of this spit; and the deepest water in the channel will be found by passing about 800 yards southeastward of Goose Island Reef, and the above spit.

**Goose Island** is composed of wooded hilly ground, divided by a valley into north and south ranges; near the southwestern extreme are two round summits, elevated 203 feet above high water. A chain of hillocks, that from a distance appear like islands, and on which are several conspicuous houses, with barns near, extends southwestward from the northern range. From an elevation of 168 feet, the northern range falls in cliffy banks, and at its northeastern extreme is a large white barn, which is very conspicuous from all northerly directions. A large sugarloaf beacon, painted red, stands on a small detached islet close southward of the northeastern extreme of Goose Island.

The meadows of Goose Island, extending  $4\frac{1}{2}$  miles southwestward from its SW. extreme, connect it with Crane Island; the meadows are only just above high water of ordinary spring tides, and are intersected by numerous streams, that have cut deep channels in the mud, and are impassable between half flood and half ebb. After the harvest the meadows are covered with haystacks, which, from a distance, resemble small houses and are erected on frame-work to prevent the loss that would otherwise be occasioned by exceptionally high tides.

Several rocks lie off the southern shore of Goose Island, all of which cover at high water, except *Rocher aux Grélons* (formerly mis-called *Chapel Rock*), which is 4 feet above high water, and situated on the outer edge of the shore that dries at low water; and *Hospital Rock*, which is 10 feet high. *Chapel Rock* is on the meadows, and is named from a church which formerly stood there, the foundations of which are still to be seen. A wooden pyramidal beacon, painted white, and about 30 feet high, stands on the southern shore of Goose Island meadows at a little more than 2 miles westward of *Hospital Rock*.

**Dunscombe Rock** has 14 feet least water, with 5 fathoms close to. From the rock *Mount Tourmente* appears in line over summit of *Union Island*, bearing S.  $83^{\circ}$  W., and the north side of *Wood Pillar* touching the south side of *Goose Island*.

**Crane Island** rises to an elevation of 132 feet, and is generally flat in outline. The lower part of the land is cultivated, but the summit and southwestern slope are wooded. *Macpherson House* and the barns near are conspicuous objects at the northeastern extreme of the island, and numerous beacons are erected on the southern shore; on the northern side there is an almost continuous line of houses, with a church built of bricks and surmounted by a spire in the middle of them. This church can rarely be seen from *South Channel*.

**Prohibited Anchorage.**—On *Crane Island*, about  $\frac{1}{4}$  mile SW. of *Macpherson's house*, two white sugar-loaf beacons, bearing NE. and SW. of each other, and two white sugar-loaf beacons on a similar bearing, situated about  $\frac{1}{4}$  mile NE. of the same house, mark a space within which no ships are allowed to anchor, as the entrances to the channels north and south of *Beaujeu bank* are here much contracted. Between these beacons, two diamond-shaped beacons have been erected, which in line led to the white buoy previously moored at the southwestern end of the *Beaujeu Bank*.

**Beaujeu Bank** is a narrow shoal of sand and gravel over slate, and has not more than 10 feet at low water over some parts of it. Its west end approaches to within  $\frac{1}{4}$  mile of *Crane Island*.

**Light Buoys.**—The northeastern extreme of *Beaujeu Bank* is marked by a light buoy painted red and black in horizontal stripes, and showing a pink light, moored with *L'Islet Church*, bearing N.  $70^{\circ}$  E., distant 4 miles, and *St. Ignace Church* S.  $4^{\circ}$  E; and the southwestern extreme by a light-buoy painted white, and showing an intermittent gas

light, moored with Crane Island light-house, bearing S. 47° W., distant 2 miles, and St. Ignace Church S. 49° E., Ely.

**Buoys.**—A buoy painted red is moored in 24 feet on the northern side of Beaujeu Channel, nearly a mile westward of the light buoy at the northeastern extreme of Beaujeu Bank, and another buoy painted red is moored in the same depth 200 yards westward of the light buoy at the southwestern extreme of that bank, and on the western side of the narrow channel westward of Beaujeu Bank.

**Channel South of Beaujeu Bank.**—The depth in this channel is irregular, varying from 5 to 3 fathoms, and there is one rocky patch of 17 feet in the way, and difficult to avoid, so that the latter depth is all that could be carried through there without buoys at low spring tides, unless the vessel were conducted by an unusually skillful pilot, in which case 3½ fathoms might be reckoned upon. The channel is ½ to ¾ mile wide.

The marks for passing the southern edge of Beaujeu Bank, along the eastern half of its length, are Stone Pillar, its own breadth open to the southward of Goose Island Reef, and for the western part of the bank, St. Vallier Point, a quarter of a point open south of Crane Island. But these marks, from their great distance, can seldom be seen.

**Channel North of Beaujeu Bank.**—This channel, which is ½ to ¾ mile wide, has from 4½ to 9 fathoms water, the shoalest and narrowest part being near the western end of the bank. The marks for leading north are Stone Pillar lighthouse, in line with the summit of Goose Island Reef, N. 38° E., which leads 200 yards southward of Dunscombe Rock; the best water to clear the patches off the SW. end of the bank is on a line N. 4° E. and S. 4° W., passing close west of the gas buoy.

Farther westward the south side of Crane Island is so bold that it may be approached to the distance of 400 yards, but the channel between it and the western part of South Bank is narrowed to 600 yards by a patch of 2½ fathoms lying S. 7° E., 1,200 yards from Crane Island lighthouse. This patch is marked on its eastern side by a black buoy. Two white sugar-loaf beacons, situated at the west end of Crane Island, are used as cross marks to lay this buoy.

**Bank of St. Thomas** extends rather more than 2 miles offshore at the village of St. Thomas. It consists of sand, mud, and stones, and is dry at low water nearly to its northern edge, which is very steep, and the marks for leading to the northward of it are Belle Chasse Island and St. Vallier Point touching. This mark can seldom be seen, but the apparent northern extreme of the range of hills on the southern shore, just open southward of Crane Island lighthouse, bearing N. 52° E., will lead northward of St. Thomas Bank in the deepest water. A buoy painted black marks a shoal with a depth of 16 feet on the southern side of the channel abreast Crane Island lighthouse.

The northern edge of the shoal ground off St. Jean is distant only ½ mile southeastward of Channel Patch; two shoals, with depths of 19



feet, and 8 fathoms, 300 yards NW. from them, having been found in that position.

**Directions for South Traverse.**—A vessel coming up the river with a fair wind, and having arrived off St. Anne Buoy, in from 7 to 10 fathoms, should proceed as follows: Traverse lightvessel will bear S. 38° W. nearly 5 miles, but the course to be steered will vary on either side of that bearing according to the tide. The first of the flood will set to the southward towards the shoals of St. Roch, and the ebb in the contrary direction; the mariner must therefore be guided by the bearing of the lightvessel, but more especially by the soundings in the chart.

Keep the southern side of the channel aboard, but do not go into less than from 7 to 10 fathoms water, according to the time of tide, until up to Traverse lightvessel, lest the ship get into the shallow inlet in the shoals of St. Roch, which runs in to the southward of the lightvessel. In passing the lightvessel, steer S. 41° W., leaving her to the southward, at a short distance. Run past her about  $\frac{1}{2}$  mile, and then steer so as to pass about 300 yards northward of Upper Traverse lightvessel, whence the course to Stone Pillar is S. 24° W. But here, too, the course alone must not be trusted, for there is no calculating exactly the set of the tides. Generally, a vessel will have to steer a little to the southward of S. 24° W. with the flood-tide to keep along the edge of the South Bank, and with the ebb a little to the westward, but the lead, buoys, and lightvessels are the only sure guides.

Having passed Upper Traverse lightvessel, take now 6 fathoms at low water, or a depth corresponding to it at other times of the tide, as a guide along the edge of the South Bank, keeping the lightvessels in line, bearing N. 27° E. until past the black buoy on the SW. point of the shoals of St. Roch, and taking care not to cross to the northward of the line of deep water (9 to 13 fathoms), which extends southwestward from the Narrows all through the Traverse. The patches off St. Jean Church will be avoided by passing 500 yards to the northward of the black buoy on them, or by not going to the southward into less water than has been directed, if the buoy can not be seen. If the checkered black and white buoy on the Channel Patch can be seen, pass 200 yards to the southward of it; if not seen, run along the edge of the South Bank, in the depth before directed, until St. Jean Church bears S. 40° E.; then open the south side of Goose Island Reef only just sufficiently to be seen nearly in line with the south side of Stone Pillar and run upon that leading mark until St. Jean Church bears S. 56° E., when the vessel will be about 300 yards to the southward of Channel Patch, and should sheer again to the southward and follow the edge of the South Bank in the same depth as before, remembering that the mark for clearing Algernon Rock is the whole of Crane Island, well open southward of Goose Island Reef, S. 46° W. When the lighthouse on the Stone Pillar bears N. 41° W. Algernon rock will have been passed.

Vessels should not proceed northward of Channel Patch, several shoals having been found between it and Stone Pillar Lighthouse.

**To pass south of Beaujeu Bank** proceed as follows, remembering that there is not more than 17 feet at low water. As soon as the vessel is  $1\frac{1}{2}$  or 2 miles past Goose Island Reef, steer so as to bring Stone Pillar (distinguished by its lighthouse) its own breadth open to the southward of Goose Island Reef, bearing N.  $32^{\circ}$  E. Run from those marks, steering about S.  $32^{\circ}$  W., or so as to keep them open as just described, and they will lead 400 yards to the southward of the NE. (red and black horizontal stripes) buoy of Beaujeu Bank; continue the same course, and when St. Vallier Point opens to the southward of Crane Island about a quarter of a point, bearing S.  $52^{\circ}$  W., haul up for St. Vallier Point, which will lead about 800 yards to the southward of the buoy (white) of Beaujeu Bank. Then keep away to the southward, and run along the southern shore of Crane Island, so as to pass northward of the black buoy on the patch lying 1,200 yards from Crane Island Lighthouse, or in from 7 to 10 fathoms water, according to the time of tide.

**To pass Northward of Beaujeu Bank.**—When Hospital Rock bears N.  $52^{\circ}$  W., bring Stone Pillar Lighthouse just open southward of the southern extreme of the highest part of Goose Island Reef, bearing N.  $38^{\circ}$  E.; leading between the light buoy at the northeastern end of Beaujeu Bank and the red buoy off Goose Island, also close to the white light buoy marking the southwestern end of Beaujeu Bank. Leave the white light buoy on the port hand, steer through S.  $4^{\circ}$  E., between that buoy and the red buoy to the westward, which will lead in the best water 27 feet. When Channel Rock is visible the beacon should be its own height open eastward of the rock, when this leading mark is on.

**Anchorage in South Traverse.**—Vessels may anchor off the shoals of St. Anne in 6 fathoms low water up to within a mile or two of the light vessel. The ground is better, and there is less tide than on the tail of the Middle Ground; but the latter is the better position for weighing with the first of the flood in northerly winds. Vessels do occasionally anchor for a tide, in fine weather, on the edge of the bank of St. Roch, between the two lightvessels; but this can not be recommended, for the ebb tide runs there at the rate of  $6\frac{1}{2}$  knots, and the ground is not to be depended on; hence, if the anchor once started, it would be difficult to bring up again, and there would be great danger of losing the anchor. Should the wind begin to fail, or the flood be done, it would be better to run down below Traverse lightvessel, if an anchorage 2 or 3 miles above Upper Traverse lightvessel can not be gained.

Vessels often anchor off the black buoy on the SW. point of St. Roch Shoal in 6 or 7 fathoms in good ground, but the anchorage is not reckoned very good until arriving above St. Jean Church. All along the

edge of the south bank, from opposite the Pillars to Crane Island, the holding ground is a stiff clay, and so good that it is sometimes difficult to weigh an anchor. Off Crane Island, a mile above Beaujeu Bank in 6 or 7 fathoms of low water, there is excellent anchorage in westerly winds; and under the west end of the island, in 5 fathoms, there is equally good anchorage with the winds from eastward. Vessels bound down, and meeting a strong easterly wind anywhere above the light-vessel, had better run back to the anchorage.

**Tides.**—The flood begins much earlier in the North Channel than in the South, and the first of the stream therefore comes from the northward, setting at first about south upon the shoals of St. Anne and St. Roch, but inclining gradually more to the westward, until at a quarter-flood it sets fair to the SW. between the buoys of the South Traverse. After half-flood it sets SW., and towards the end of the tide still more to the westward; perhaps because, the time of high water being somewhat earlier in the North Channel, the water has begun to fall before the flood has quite ceased in the south.

The ebb stream sets nearly in the contrary direction to the flood, as just stated; the first of the ebb setting off from the shoals of St. Anne and St. Roch, through the channels to the westward of the Middle Ground and over the tail of the latter to the northward.

Above the Pillars both tides set fairly up and down the river.

In the Narrows of the South Traverse the rate of the ebb is from 6 to 7 knots, and that of the flood from 5 to 6 knots. The rates of the flood and ebb tides decrease gradually as we proceed to the westward until off the Pillars; the ebb stream, southward of the Pillars, attains a velocity of  $5\frac{1}{2}$  knots per hour at spring tides; and of  $4\frac{1}{2}$  knots past Channel Patch.

#### SOUTH CHANNEL, ABOVE CRANE ISLAND.

#### SOUTH SHORE, FROM ST. THOMAS TO LEVIS POINT.

**St. Thomas Point** is low and lies 3 miles west of the entrance of the Rivière du Sud, and the church and village of St. Thomas on its west bank.

**Wye Rock**, with a depth of one foot over it at low water, is about 400 yards long in the direction of the river, and 100 yards broad; it is separated from St. Thomas Bank by a channel nearly  $\frac{1}{2}$  mile wide, but, with depths greater than 3 fathoms, only 200 yards wide.

A buoy, painted black, is moored in  $5\frac{1}{2}$  fathoms northwestward of Wye Rock; from this buoy St. Thomas Point bears S.  $18^{\circ}$  E. distant  $\frac{1}{4}$  mile.

The mark for leading northward of St. Thomas Bank also leads in the deepest water in South Channel, northward of Wye Rock; the chapel near the summit of Cape Tourmente in line with the flagstaff on Grosse Island, bearing N.  $39^{\circ}$  W., leads eastward of Wye Rock in 15 feet water;

and the same chapel, in line with the western wharf on Grosse Isle, bearing N. 34° W., leads westward of that rock. The Seminaire is now rarely visible from South Channel, except when the sun is shining on it.

**Belle Chasse Island**, of high, steep, and bare graywacké rocks, is 600 yards long, parallel to the shore, from which it is distant more than  $\frac{1}{2}$  mile. The west point of the island bears S. 83° W. one mile from Berthier Church, and not more than  $2\frac{1}{2}$  fathoms water can be carried through between the island and the main.

Northward of the center of the island and 200 yards distant lies a small rock nearly dry at low water and with from 4 to 6 fathoms between it and the island. Within the island to the SW. is a shallow bay and the river Belle Chasse.

**Tron de Berthier.**—The church at Berthier has a single spire, and is situated about  $\frac{1}{2}$  mile southward of Tron de Berthier; which latter has a wharf at its eastern entrance point, with a depth of 14 feet close to its end at low water. The former site of the church at this place is now occupied by a large house with a flagstaff near it.

**Rocks.**—Two rocks, with depths of one foot and 6 feet over them, are situated 800 yards offshore between Berthier East point and Berthier wharf. These rocks are heads of a narrow ledge with depths of 9 to 17 feet over it, running parallel to the shore, and with its northeastern extreme bearing N. 49° E., distant  $\frac{1}{2}$  mile from the above one foot rock. Belle Chasse light, kept bearing southward of S. 55° W., leads northward of all the above shoal water.

**St. Vallier Point** is higher than any other point below it on the south shore, above the Traverse. The church and village of St. Vallier are on the shore of the shoal bay, between St. Michel and St. Vallier Points; and 2 miles SW. from the extremity of the latter. A stone mill will be seen on the ridge in rear of the church, and the small river Boyer enters the bay  $1\frac{1}{2}$  miles to the westward of St. Vallier.

**St. Michel Point** is very low. Reefs of slate, dry at low water, extend a considerable distance to the northward from this point.

**Bank of St. Vallier** fills the whole bay between St. Vallier and St. Michel Points, and extends nearly  $\frac{3}{4}$  of a mile to the NE. from St. Michel Point. The eastern leading marks for clearing this bank are, Berthier East Point, just open to the southward of Belle Chasse Island, and the lead also gives sufficient warning. The western leading marks are, Beaumont Church, just open to the northward of Durantaye Point.

The village and church of St. Michel stand on the shore of the bay nearly 2 miles SW. of the point of the same name. At Durantaye Point, a mile to the westward of the church, the shoal water extends 200 yards off shore.

**Beaumont Shoals** are rocky, and dry in part at low water; and their northern edge is steep, with deep water close to it. The warning by the lead is insufficient in a vessel going fast, and therefore these shoals should be approached with great caution. A black buoy is

moored near the NE. extremity of these shoals in 4 fathoms of water, with St. Laurent Church, bearing N. 24° W., and the church on Levis Point just open to the northward of Martinière Point.

Beaumont Church and Beaumont Mill are situated 5 miles SW. of St. Michel. The church stands on the high and steep banks of the river, which extend several miles on either side of it, and the mills low down at the foot of the bank. Roys Mill, where there is a waterfall, also stands low down, near the water's edge, and a mile to the westward of Beaumont Mill.

**Levis Point.**--St. Joseph Church, on Levis Point, bears S. 80° W., and is distant 6½ miles from Beaumont Church, and the shoal water nowhere extends above ¼ mile from the shore between Levis Point and Roys Mill.

**Levis Reef** extends 300 yards offshore to the northward, and should not be approached nearer than 10 fathoms water from between the north and west, or 7 fathoms from between the north and east. On the NW. extreme of this reef, St. Joseph Church is in line with the eastern side of a small rocky mound near the water's edge, bearing about S. 50° E., and Pavillon and St. Pierre Points, on the NW. side of Orleans Isle, are in one.

ISLANDS AND SHOALS FORMING ITS NORTHERN SIDES.

**The Islands** in order westward of Crane Island are, Haystack, Mill, Race, Margaret, Cliff, and Grosse Islands. All these islands are of greywacké rock, more or less steep, partially wooded. The highest is Grosse Isle, which is elevated 214 feet above high water.

To the westward of Grosse Isle are Reaux and Madame Islands, of slate rock, low, wooded, and connected by reefs of slate nearly dry at low water. The SW. point of Madame Island is nearly 11 miles from Crane Island, and opposite Belle Chasse Island, from which it is distant 2½ miles. Extending from almost all these islands there are reefs of slate rock, thinly covered with sand and mud, and bounding the South Channel on its northern side for nearly 14 miles to the westward of Crane Island.

**Crane Island Spit** has 5 feet water over the shallowest part, and extends S. 58° W., with less depths than 18 feet, to a distance of 1½ miles from Pointe aux Pins. The western extreme of this spit is marked by a red buoy, moored with two beacons on the southern shore of Crane Island in line, bearing N. 65° E. The eastern of these beacons, painted red, is situated 250 yards westward of Crane Island Wharf; and the western, painted white, 200 yards further westward. These beacons, in line, lead, in not less than 24 feet water, southward of Crane Island Spit, but with that depth only as far westward as the above red buoy. The southern extreme of Crow Island, in line with the northern extreme of Middle Island, bearing N. 20° E., leads north-westward of the buoy and the spit.

A bank, having several shoals with 20 to 23 feet water on them, now joins Crane Island Spit to the bank extending southwestward from Margarets Tail. The ebb tide sets strongly to the NE. through this channel and between the islands into the Middle Traverse, thus causing a powerful indraft, which should be guarded against in beating down the river, especially in light winds, and with a heavy or slow working vessel.

**Margarets Tail**, extending a mile to the SW. from Margaret and Cliff Islands, which are nearly joined at low water, is a dangerous shoal, the slate being awash in some parts of it in low tides. A lightbuoy, painted yellow, and showing a *fixed white* gaslight, is moored in  $4\frac{1}{2}$  fathoms, 400 yards southwestward of a 20-foot patch, at its southwestern extreme; from this buoy the southwestern extreme of Margaret Island bears N.  $24^{\circ}$  E., distant  $1\frac{1}{2}$  miles, and the western extreme of small islet southwestward of Grosse Isle N.  $60^{\circ}$  W. Vessels entering the quarantine ground should leave this lightbuoy on the starboard hand. If from any cause this buoy is removed it will be replaced by a red can buoy. The church on Crane Island in line with the southern extreme of Haystack Island, bearing N.  $52^{\circ}$  E., leads southward of Margarets Tail and the above buoy, but in a least depth of 22 feet only. The northwestern extreme of Two Heads Island in line with the western extreme of Cliff Island, bearing N.  $21^{\circ}$  E., leads westward of Margarets Tail, and between it and Grosse Isle Patch.

**Grosse Isle Patch** is a narrow rocky shoal, 1,200 yards long in a SW. direction, and with 7 feet least water; it lies to the west of Margarets Tail, and the channel between them is  $\frac{1}{2}$  mile wide and carries a depth of 5 fathoms. A buoy, painted black and white, in vertical stripes, marks the northeastern end of the Patch.

The rock southward of Grosse Isle, and lying NW., distant nearly 600 yards from the above buoy, is marked by a buoy, painted black and white in vertical stripes.

A **Rock** with 15 feet water over it lies westward of Grosse Isle Patch, and with the outer end of Grosse Isle West Wharf bearing N.  $15^{\circ}$  E., distant 1,200 yards. The new Episcopal church at Grosse Isle in line with the inner end of the West Wharf, bearing north, leads in  $3\frac{3}{4}$  fathoms between this rock and the western extreme of Grosse Isle Patch; and the summit of Margaret Island in line with the northern extreme of Cliff Island, bearing N.  $54^{\circ}$  E., leads northward of Grosse Isle Patch to the Quarantine Anchorage. A good cross mark for that anchorage is to have the Episcopal church just open eastward of West Wharf. The whole of Race Island a little open southward of Margaret Island, bearing N.  $52^{\circ}$  E., leads in 23 feet southward of Grosse Isle Patch.

**Quarantine Anchorage.**—Vessels generally lie between the Grosse Patch and Island, to be near the establishment; but the anchorage farther eastward in the Quarantine Passage to the northward of Margaret

Island is by far preferable. All merchant vessels, as the law now stands, are obliged to anchor off Grosse Island, from whence, after examination, they are allowed to proceed to Quebec, if not detained at the Quarantine Anchorage. These vessels in the first instance generally anchor outside Grosse Patch, and to the westward of Margarets Tail, choosing their berth in 5 fathoms, where there is one of the best roadsteads for riding out an easterly gale in the river.

**Grosse Isle** may be readily recognized by the number of buildings forming the Quarantine establishment. Two piers are built on the southern shore, one near the western extreme, the other near the middle of the island. The hospital, a conspicuous brick building, stands near the eastern extreme, and the superintendent's house is immediately behind the flagstaff. The churches visible from the South Channel are the Episcopal church, a brown wooden building, with a low tower, standing on an eminence immediately northeastward of West Wharf; and the Roman Catholic church, with a small spire, situated near the middle of the southern shore, and visible only from the eastward and westward; being hidden from the southward by a rocky mound in front of it.

**Grosse Isle Tail** is now joined by a bar, having no more than 16 feet over it at low water, to the banks of Madame Island. Two shoals with 11 feet of water on them lie on this bar about midway between Grosse Isle Tail and the Banks of Madame Island. For crossing the bar the best mark is the western fall of the hill over Cape Tourmente in line with the small rock near the eastern extreme of Reaux Island, bearing N. 26° W.

**Banks of Madame**, in their eastern part, extend  $1\frac{3}{4}$  miles to the southward of Reaux Island; and from their SE. extreme, in  $2\frac{1}{2}$  fathoms, the south side of Two Heads Island is just open to the southward of Grosse Island. The mark for clearing the southern side of these banks as well as Grosse Island Tail and Grosse Patch, is, Race Island kept open to the southward of Margaret Island. A lightbuoy painted red, moored in 6 fathoms, and showing a *fixed white* gas light, marks the southwestern edge of the banks. From this buoy Belle Chasse Lighthouse bears about N. 86° E. distant  $5\frac{1}{4}$  miles; and southwestern extreme of Madame Island N. 42° E. A beacon painted white is erected on the beach at high-water mark near St. Vallier Church, and when in line with the steeple of the said church forms a mark for the lightbuoy on the SW. end of Madame Shoal.

**Isle of Orleans** is of greywacké and slate rocks, dipping generally at a high angle to the SE. It is 18 miles long, with an extreme breadth of  $4\frac{3}{4}$  miles. The church of St. Jean stands low and close to the water, on Orleans Point, 2 miles west from the Madame Reef, and  $1\frac{1}{4}$  miles from St. Michel Point, on the opposite south shore.

At the distance of 2 and 3 miles respectively, above St. Jean, are the small rivers Lafleur and Macheux, off which there is good anchorage

in 7 or 8 fathoms; and in their mouths small schooners and boats find shelter, but lie aground at low water.

St. Laurent Church also stands low, and close to the water, near St. Laurent Point, and 6 miles SW. of St. Jean. Around both these churches there are villages; and along the shore between them, as well as on the bank above, the houses are numerous.

**Patrick Hole** is a small shallow bay  $1\frac{1}{2}$  miles to the westward of St. Laurent Church. A small brook enters the head of the bay; and off it, in from 6 to 9 fathoms, there is good anchorage, well sheltered from easterly winds. Here vessels bound down the river frequently anchor for a short time previous to their final departure for sea.

**Marand Rocks.**—The west end of Orleans Isle is quite bold. In the bay, a mile to the eastward of it, lie Marand Rocks, always covered; but they are out of the fairway, and within the 3 fathoms line, which there extends  $\frac{1}{4}$  mile from the shore at high water.

**Anchorage.**—Under the west end of Orleans, in from 8 to 15 fathoms, there is a good place for a vessel arriving with an easterly wind to anchor, which she ought to do, and wait for daylight rather than risk running among the crowd of shipping off Quebec in a dark night and rapid tide-way.

**Basin and Harbor of Quebec.**—The port of Quebec extends from Barnaby Island to the first rapid above Montreal; and a book containing the by-laws and harbor regulations of the Trinity Board is delivered to each vessel on her arrival by the harbor-master. The pilots are obliged to give all due information respecting quarantine to the commanders of vessels when they first come on board.

**Quebec Basin.**—Off the Beauport shore a bank of slate, thinly covered with mud, and great part of which is dry at low water, extends more than a mile from the shore. A can buoy, painted red, moored in 5 fathoms, indicates the southern edge of the bank. The observation bastion in line with the Martello tower in the suburb of St. John marks the southern edge of this bank from abreast the west end of Orleans to within  $\frac{1}{4}$  mile of the India wharf; but a stranger would not easily make out the bastion, which ought to be distinguished by a white mark. The breadth of the channel between this bank and the shoal off Levis Point is 1,200 yards, and the depth of water nearly 30 fathoms. The water is so deep in the basin that there is no good anchorage, excepting under Orleans and off the mouth of the river St. Charles.

**Quebec Harbor** may be considered as extending from off the river St. Charles up to the Chaudière River, a distance of 5 or 6 miles, which all through the navigable season is thickly occupied by vessels employed in the timber trade, for the most part lying alongside the numerous wharves and blocks for embarking lumber, and consequently out of the stream.

But sometimes the spring or fall fleet arrives; to the amount of several hundred sail together, and then before they have had time to take their



places for loading the river is so crowded with shipping that it is difficult to find a clear berth. A gale of wind occurring under such circumstances is sure to do damage, since the water is deep, the ground (sand and gravel) not good, the tide strong, and the vessels often carelessly anchored.

**Anchorage.**—The breadth of the St. Lawrence at Quebec is very little more than a mile, but it expands immediately above the city to  $1\frac{1}{2}$  miles. The depth is 28 fathoms at low water abreast the city, and 20 fathoms in the wide part above, the deepest water being over towards the Levi Point shore. The best anchorage is on the Quebec side, in from 11 to 17 fathoms, there being nothing in the way excepting an old wreck with 9 fathoms water over it. The position of this wreck is shown by a rippling during the ebb tide. Above the city, from off Diamond Harbor, all along the Lamouche Bank nearly to Pizeau Point, the anchorage is much better than off it, the depth of water being much less and the ground good.

**The Mark** for clearing the outer or southern side of the Lamouche Bank along its whole extent is the NW. sides of Levis and Orleans Points in line.

**Ice.**—Sometimes, although rarely, the navigation closes by the middle of November, and remains closed to the 8th or 10th of May; at others it would be possible to navigate it till near Christmas, and ships have arrived in the middle of April; but these are extraordinary seasons, and the period first named is that during which the navigation usually remains closed. The river seldom or never freezes across below Quebec, and only occasionally opposite the city; but it is full of heavy ice, moving up and down with the tides with irresistible force. There is generally, but not always, a bridge of packed ice formed 5 or 6 miles above Quebec; and higher up, as far as Lake Ontario, the St. Lawrence is everywhere frozen across, excepting in places where the current is very strong.

**The Town of Quebec** occupies the extremity of a range, the highest part of which is surmounted by the citadel, 320 feet high; the town thence extends chiefly in a northeasterly direction to the water's edge. Its population is about 85,000. Though not a manufacturing town, Quebec has distilleries, breweries, and tobacco, soap, and candle works; and numbers of fine wooden ships have been launched from its yards.

**Supplies** of all kinds may be obtained by shipping. There are several machine shops for repairs at Quebec; also, at Point Levi there are large works.

**The Louise Basin** is in course of construction on the north side of the custom-house, at the entrance to St. Charles River. From end to end the basin is 4,000 feet long, 900 feet wide, and will inclose a water area of 60 acres—40 acres of which are to be wet dock, and 20 acres tidal basin, with a minimum depth of 27 feet and 42 feet, respectively, below high water.

**Time Signal.**—A time signal is established at the citadel. The signal is made once daily, except on Sundays, and is a ball, which is hoisted close up as preparatory at 5 minutes before signal, and dropped at 1h. 0m. 0s. p. m. mean time of the 75th meridian, equivalent to 6h. 0m. 0s. p. m. Greenwich mean time.

The United States is represented by a consul and vice-consul.

**Anchorage.**—Besides the best places for riding with easterly winds, there is anchorage almost everywhere between Crane Island and Quebec. The best ground for holding is generally on the northern side of the channel; and one of the best places in strong westerly winds is under St. John Point, Orleans Isle.

**Tides.**—The tides are regular and not strong below Beaumont Reefs, seldom exceeding the rate of  $2\frac{1}{2}$  knots; but in the narrow channel and deep water (nearly 20 fathoms) between these shoals and Orleans the rate of the ebb sometimes amounts to 4 knots; above the shoals the rate of the tide is from  $2\frac{1}{2}$  to 3 knots, increasing again as we enter the basin of Quebec.

Between Quebec and Levis Point, in strong spring tides, assisted by a strong wind, the flood will run at the rate of nearly  $4\frac{1}{2}$  knots per hour; and the ebb, in the spring, just after the melting of the winter snow, 5 knots; but, under common circumstances,  $3\frac{1}{2}$  and 4 knots, respectively, are the usual rates of the tides. A good range of cable should always be ready, for it is not easy at times to bring a vessel up off Quebec, especially in the deep water and loose ground in the center of the channel.

#### NORTH CHANNEL, NORTH TRAVERSE, AND ORLEANS CHANNEL.

**North Channel.**—The northern shore of the river, westward of St. Paul Bay, falls steeply from the summits of high wooded hills that attain an elevation of 2,650 feet, close westward of Petite Rivière. At  $1\frac{1}{2}$  miles southwestward from Cape Labale, a small strip of low flat land, lying between the foot of the hills and high-water mark, commences, and extends westward to Grande Point, a distance of 5 miles. Numerous houses, forming a parish of Petite Rivière, are built on this flat; and among them is a church, with a single spire, dedicated to St. François Xavier. Several valleys indent the hills, the most marked being about 2 miles eastward of Petite Rivière Church.

The entrance to the North Channel, between the reef, which extends a mile to the northward from the NE. end of Coudres Island, and the shoals, which stretch across Eboulements Bay, is  $1\frac{1}{2}$  miles wide. The narrowest part of the channel between Coudres and the main is between Prairie Shoal, off the west point of Prairie Bay, and the opposite side, near Cape Corbeau. The leading mark for this part of the passage, as well as for clearing the shoal on the west side of Cape St. Joseph, on the mainland side, is Cape Martin and Goose Cape in line.

**St. Paul Bay** is nearly abreast the west end of Coudres, and is shoal and dry at low water, excepting a very narrow, shallow channel into the River du Goufre, the entrance of which forms a secure tide harbor for small schooners. There is a church, bridge, and village a mile up the river. Off Cape Corbeau, at half ebb, the spring tides run at the rate of 7 knots, causing a great and whirling ripple, dangerous to boats in bad weather.

**Petite Rivière.**—The church and settlement of Petite Rivière is situated on a narrow strip of low alluvial land at the foot of the granitic hills. Landing may be effected in boats after half flood, at L'Abatis, Petit Abatis, and Grande Pointe, and, generally speaking, along the coast of Petite Rivière; but care must be taken in approaching the shore to avoid the bowlders that stand above the general level of the flat ground between high and low water marks.

**Labais Bank.**—Shoals of mud and large bowlders extend  $\frac{3}{4}$  mile off Cape Labais, the eastern extreme marked by a red buoy. Their edge will be cleared by keeping the extreme western capes, Rouge and Gribanne, open to the southward of Cape Maillard. The anchorage is good along the edge of the shoals of Petite Rivière, where, in 5 fathoms, clay bottom, vessels will be out of the strength of the tides.

**La Petite Butte Ronde**, a conical wooded hill, 774 feet high, rises above Cape Maillard, and is conspicuous from the eastward or westward. Two small shingle beaches, named Petit Abatis and L'Abatis, are situated westward of Cape Maillard; and on L'Abatis, which is  $1\frac{1}{2}$  miles distant from that cape, there are several conspicuous houses. At Saut au Cochon there is another group of houses, a small church, a disused mill, and a wharf which marks the limit of the low-water line. From Cape Labais westward to Saut au Cochon, the flat, which dries at low water, extends about  $\frac{3}{4}$  mile from high-water mark, and the water deepens to 5 fathoms about 400 yards beyond the edge. Westward of Saut au Cochon the low-water line extends only a short distance from high-water mark. The first notch in the hills northward of Mount Eboulements, in line with the northern extreme of Coudres Island, bearing N. 35° E., leads in upwards of 5 fathoms, southward of the shoal water off the northern shore.

**Coudres Island**, the largest island below Quebec, excepting Orleans, is nowhere above 250 feet above the sea. It is composed of greywacké and slate rocks, is tolerably fertile, forms a parish by itself, and has a church standing low down near its SW. extreme which has two small spires at its western end. The southern side of the island is lined with rocky shoals, which extend fully a mile out from the shore, but the north side is bold for about 2 miles to the eastward of Prairie Bay.

**Prairie Bay**, on the north side of Coudres Island is  $1\frac{1}{2}$  miles wide from Cape à l'Aigle to Prairie Point, is not deep, only slightly curved, and shows a sandy beach at high water. Off Prairie Point, its west

extreme, Prairie Shoal, the greater part of which is of mud and grass resting on slate, and only covered at high-water, extends  $\frac{3}{4}$  mile to the NW. from high water mark, sheltering the bay from SW. winds. The line of Notre Dame Church, in line with the NE. end of the low clay cliff of St. Joseph Point, passes 200 yards within the 3 fathoms north extreme of this shoal; but if the church be kept on with the NW. end of the same cliff it will lead clear of the shoal in deep water. From the north point of the shoal—near which a black-buoy is placed—St. Pierre Church is in line with the east side of St. Paul Bay; the buoy lies in 3 fathoms with the church its own breadth open to the westward of the east point of the bay.

**Anchorage.**—Goose Cape shelters Prairie Bay from easterly gales, and prevents any sea of consequence from rolling in, so that this anchorage is quite safe in all winds; the ground, of clay, being good for holding, and the tides easy if the vessel be not anchored too far out. There is room for many vessels, the space to anchor in being almost a mile long, and about  $\frac{1}{2}$  mile wide, reckoning from 3 fathoms mark to 10 fathoms, beyond which the water deepens rapidly, and the tides are of great strength. The best berth is in 6 fathoms, near the center of the bay. Ships meeting with an easterly wind below the Traverse will find this a good anchorage to run for, and should proceed as follows:

**Directions.**—Being below the Middle Ground, stand over towards Eboulements, going no nearer to the reef off the NE. end of Coudres Island than the depth of 10 fathoms. Having passed the reef and opened out the channel, bear up along the shore of Coudres, passing close to Cape à l'Aigle into the anchorage. Approaching this anchorage from the westward, bring the leading marks on for clearing the reef off Prairie Point, namely, Notre Dame Church on with or open to the northward of the NW. extreme of the clay cliff off St. Joseph Point. Run upon these marks until St. Pierre Church is shut in behind the east side of St. Paul Bay, when the vessel may haul to the southward into the anchorage. The anchorage under Coudres in easterly winds is very good, the best riding being in 7 fathoms, with the south point of Coudres bearing about N. 65° E.

**Tides.**—In Prairie Bay the flood-tide by the shore is longer than the ebb, the water flowing for 6h. 20m., and ebbing only 6h. 0m., which is contrary to the observations taken in every other part of the river. The stream of flood at the anchorage in 6 fathoms is stronger than that of the ebb, and about 4 knots in spring tides. The stream of the ebb for the first 2 hours of the tide is about 2 knots. Vessels should moor at Prairie, or at least have a kedge out to insure keeping a clear anchor.

**Coudres Bank.**—The southern side of the north channel from Coudres Island to Burnt Cape Ledge is formed by Coudres Bank, the northern edge of which is of sand, and so nearly straight that it may easily be followed by the lead. The soundings approaching it are such

as to give good warning, and vessels may anchor in fine weather all along that side in 6 or 7 fathoms, clay bottom, and out of the strength of the tides.

**Neptune Rock** lies about  $\frac{1}{2}$  mile to the southward of the edge of the shoals. It has two heads, both of which are one foot above high-water spring tides.

**La Longue Pointe.**—A red can buoy is moored in 30 feet south of La Longue Point, a shoal extending out from Cape Gribanne, having depths on it from 8 to 21 feet.

From the buoy, Cape Brulé lighthouse bears S. 43° W., and the houses at L'Abatis are first open south of Saut au Cochon Wharf.

**Burnt Cape Ledge** is an extensive chain of greywacké and slate rocks, the southwestern part of which is always above water. The western extreme is an islet 12 feet above high water, and on the reef southeastward of this islet a hut has been built, the roof of which is 8 feet above high water.

**Brulé Banks** are sands which dry in part soon after half-ebb, and lie to the westward of Burnt Cape Ledge. The channel between these banks and the north shore is 1,200 yards wide, and has from 7 to 10 fathoms water in it. This is the only channel, but between the northeastern part of the Brulé Banks and Burnt Cape Ledge there is a cul de sac in the banks, which must be avoided by keeping the north shore aboard, after arriving off the eastern part of the ledge. The black buoy marking the northeastern extreme of the bank is moored in 4 fathoms, with Cape Brulé principal lighthouse bearing S. 60° W., distant  $1\frac{2}{3}$  miles.

The depth of 18 feet at the northeastern end of Brulé Bank is on the line of the western end of Two Heads Island in one with the western end of Burnt Cape Ledge, bearing S. 28° E.

**Eastern Narrows.**—The passage now is only 300 yards wide, with depths greater than 3 fathoms, and Traverse Spit is apparently extending northeastward. A black buoy marks the eastern side of the Narrows, at the southwestern extreme of Brulé Banks, in 18 feet water; and a red buoy is moored near the northeastern end of Traverse Spit and on the western side of the Narrows, to mark the same depth.

**Western Narrows** are only 300 yards wide, with depths over 18 feet, and are comprised between West Sand and Traverse Spit. West Sand has extended eastward a considerable distance, and has on its northeastern extreme a depth of 12 feet, marked by a checkered black and white buoy. The southern extremes of Orleans Island just open of each other, bearing S. 35° W., leads northward of West Sand; and the islet at the west extreme of Grosse Isle in line with the eastern extreme of Reaux Island, bearing S. 71° E., leads close eastward of that sand.

**St. François.**—The southwestern lighthouse, 30 feet high and 110 feet above high water, stands in a field,  $\frac{1}{2}$  mile southwestward of St. François Church; and the northeastern lighthouse, 28 feet high, is sit-

uated at high-water mark,  $\frac{1}{4}$  mile eastward of that church. Beacons have been erected near both these lighthouses, which in line, bearing S.  $41^{\circ}$  W., lead close southward of Traverse Spit, but over a shoal with 12 feet water on it, lying  $\frac{1}{4}$  mile northeastward of the checkered buoy on West Sand.

**Directions for North Channel.**—After passing Saut au Cochon the houses at L'Abatis must be kept well open of the wharf at Saut au Cochon, bearing N.  $24^{\circ}$  E., to clear the ledge eastward of Cape Gribanne, after which the northern shore should be kept well on board until abreast Cape Brulé. The leading lighthouses on that cape (the northern and the eastern of the three) must then be brought in line, bearing N.  $14^{\circ}$  E., and kept so through Eastern Narrows, between the buoys there, and until St. François beacons or lighthouses are in line, bearing S.  $41^{\circ}$  W. Then steer for those lighthouses, with the upper one slightly open southward of the lower one, and before the islet at the western extreme of Grosse Isle is in line with the eastern extreme of Reaux Island, bearing S.  $71^{\circ}$  E., the southern extremes of Orleans Island must be brought nearly in line, bearing S.  $35^{\circ}$  W. to pass between West Sand and Traverse Spit. When St. Vallier Church opens westward of Madame Island, or St. Joachim Church is shut in with Orleans Island, haul a little to the southward, and keep  $\frac{1}{4}$  mile distant from Orleans Island, further on.

**Tides.**—The tides set fairly through the North Traverse, seldom exceeding the rate of  $3\frac{1}{2}$  or at the utmost 4 knots at the springs. The accession of the stream from the northward of Orleans and the comparative narrowness of the channel increase the rate to from 4 to 5 knots off Cape Brulé, below which it decreases until below Cape Mailard. Below Petite Rivière, the ebb, receiving a great accession from the Middle Channel, especially during the first quarter of the tide, runs with great rapidity, the usual rate being 6 knots in the springs.

**Orleans Channel**, between the isle of Orleans and the north shore, being in several places not above 200 yards wide, is too narrow and intricate for directions to be of any use, especially as there are no leading marks. With a fair wind and the assistance of buoys 4 fathoms water could be carried through this channel, which lies between shoals of mud and slate extending to a great distance from the shore on either side, and nearly all dry at low water.

**The Seminaire** is a large building with a tinned cupola and cross, standing on a rising ground not far from the water, and 3 miles westward of Cape Tourmente. The church and village of St. Joachim, one of the leading marks for the West Sand, is  $1\frac{1}{2}$  miles to the westward of the Seminaire. The other churches and villages on the north shore, in order westward, and from 4 to 5 miles apart, are St. Anne, Chateau Richer, and Ange Gardien, the last being  $2\frac{1}{2}$  miles from the falls of Montmorency.

**Tides.**—The following table has been formed from the mean of the observations of several spring tides. The neap tides rise and fall

nearly at the same rate as in ordinary spring tides; so nearly that any difference that there may be is far exceeded by the action of strong winds. But, as in neap tides, the whole rise and fall is not so great as in the ordinary spring, shown in the following table; therefore the proportionate part of the rise and fall for every hour after low and high water will also be less, and an allowance must be made accordingly.

Table showing the height of the tide at every hour after low and high water in ordinary spring tides.

Pls.	Flood tide,		Ebb tide,		Remarks.
	Hours after low water.	height in feet and inches.	Hours after high water.	height in feet and inches.	
Quebec .....	A. m.	ft. in.	A. m.	ft. in.	The tides of Grosse Island were observed to rise and fall nearly in the same manner, excepting that the rise after low water was not quite so rapid.
	0 0	l. w. 0 0	0 0	h. w. 17 6	
	1 0	5 6	1 0	15 0	
	2 0	10 6	2 0	11 4	
	3 0	14 9	3 0	8 0	
	4 0	16 3	4 0	5 10	
4 45	h. w. 17 6	5 0	3 4		
St. Roch .....	0 0	l. w. 0 0	0 0	h. w. 17 6	
	1 0	3 3	1 0	14 9	
	2 0	5 3	2 0	12 9	
	3 0	9 0	3 0	8 0	
	4 0	13 0	4 0	6 6	
	5 0	16 3	5 0	3 0	
5 35	h. w. 17 0	6 0	1 6		
The Brandy Pots.....	0 0	l. w. 0 0	0 50	h. w. 17 0	
	1 0	1 5	1 0	15 0	
	2 0	4 7	2 0	12 0	
	3 0	9 5	3 0	8 6	
	4 0	13 3	4 0	5 6	
	5 0	16 0	5 0	3 0	
5 50	h. w. 17 0	6 0	1 0		
Tadoussac entrance of Saguenay River.	0 0	l. w. 0 0	0 34	h. w. 17 0	
	1 0	1 3	1 0	15 0	
	2 0	4 0	2 0	12 0	
	3 0	8 0	3 0	8 0	
	4 0	12 0	4 0	4 0	
	5 0	16 0	5 0	0 0	
6 8	h. w. 17 0	6 16	l. w. 1 0		

#### THE RIVER SAGUENAY.

For the first 50 miles up from its confluence with the St. Lawrence the Saguenay is from  $\frac{3}{4}$  mile to 2 miles wide, filling up a deep transverse valley through mountains of syenitic granite and gneiss. These mountains rise everywhere more or less abruptly from the water, forming, in some parts, precipitous headlands more than 1,000 feet in height. The granitic hills are in general quite barren, but the valleys through which the rapid tributary streams descend are filled with a deep deposit of sand and clay, and are thickly wooded. At Abah Bay and at Chicoutimi there are considerable tracts of good land, as there are also around Lake St. John; so that it seems probable that this country will be settled at no very distant day, especially as the lumberers have turned their attention in that direction.

Within the same part of the Saguenay the water is almost as deep as

the mountains are high. Between the shoals at the entrance of the river there is a bar across, on which, however, there are from 18 to 20 fathoms water, but immediately within that the depth increases to upward of 100 fathoms; and farther up, for a distance of many miles, it is fully 145 fathoms deep in the center of the channel, decreasing to 100 fathoms on either side, often within less than as many feet of the precipitous shores.

It is navigable for the largest ships to Roches Point, 57 miles from the St. Lawrence; and schooners, with the assistance of the flood tide, can ascend Chicoutimi, 8 miles farther. Just above Roches Point the river becomes suddenly very shoal, there being only  $1\frac{1}{2}$  fathoms water in its narrow and intricate channels, and among its shoals, composed of large boulders. Above this shallowest part, where at low water there is a complete rapid, the depth varies from 2 to 8 fathoms, but between shoals of large stones, and the river contracts to little more than  $\frac{1}{2}$  mile, retaining that breadth nearly to the rapids, 6 miles above Chicoutimi, where the tide ends.

**Tides and Currents.**—It is high water, full and change, at Tadoussac, at the entrance of the Saguenay, at 2h. 45m., and the rise in ordinary springs is 17 feet, and in neaps 10 feet. At Chicoutimi it is high water at 4h. 11m., and the rise in ordinary spring and neap tides is 12 and 8 feet.

The flood tide is extremely weak and of short duration; above St. Marguerite River it is almost imperceptible, excepting a weak stream which may be found running up close to the shores. The water, however, has often been observed to be flowing up at the depth of several fathoms, whilst it was stationary or descending on the surface. The tide flows to the foot of the Terres Rompues Rapid, about 6 miles above Chicoutimi, and about 71 miles from the St. Lawrence. The stream of the ebb tide is very strong, varying from 3 to 5 knots, according to the breadth of the river. It is strongest in the mouth of the river, where it sometimes runs at the rate of 7 knots, and sets strongly over Lark Islet Spit and the SW. extremity of Vaches Point.

The meeting of the spring ebb tides down the Saguenay and the St. Lawrence causes breaking and whirling eddies and rippings, so strong as to interfere with the steering of a vessel unless she has a commanding breeze. These streams, opposed to a heavy easterly gale, cause an exceedingly high, cross, and breaking sea. On the flood tide at such times there is not more sea there than in other parts of the river.

Capt. O. Trambly, in a report to the Government of the Dominion of Canada, 1875, made the following remarks on the currents in Saguenay River:

From the entrance of Chicoutimi River to Roches Point the current is steady and even, in some parts setting on the shoals, but without any undercurrent.

From Roches Point to St. Jean Bay, situated 36 miles to the eastward,



the surface current is not strong at any time. In many parts there is a strong and variable undercurrent, especially during springs, strong with the flood, but scarcely perceptible during the ebb. This undercurrent, acting on vessels drawing from 19 to 25 feet, sometimes renders them unmanageable even when assisted by a steam tug.

At spring tides a large body of water passes over the Obicoutini Shoals (at a very rapid rate during ebb tides), and falling suddenly into deep water, seems to strike downward at once, leaving but a slight current on the surface.

The strong flood tides over the bar at the entrance of Saguenay River falling suddenly into deep water may also contribute to a certain extent to check the strength of the surface current of the river.

**Entrance of the Saguenay.**—The river Saguenay enters the St. Lawrence opposite Red and Green Islands, as see page 192, wherein has been described its points of entrance. It will be seen that the entrance channel between Princes Shoal, Bar Reef, and Lark Islet Spit on the one side, and Vaches Patch and Reef on the other, is  $\frac{3}{4}$  mile wide, with deep water and very irregular soundings. The shallowest part is between Bar Reef and Vaches Patch, where there is as little as 11 fathoms. Immediately within it the depth increases, and off Tadoussac exceeds 80 fathoms. And it is  $\frac{1}{2}$  mile wide from Ilot Point, the NW. point of Tadoussac Harbor, across to Noire Point.

**St. Catherine Bay.**—Between Lark Islet and Noire Point is St. Catherine Bay, in which vessels may anchor in 20 or 30 fathoms water out of the strength of the tides, but exposed to a considerable swell in easterly winds. On the NW. side of this bay there are several large iron rings in the steep granitic shore, which were probably used for mooring or heaving down vessels.

**Tadoussac Harbor** is a bay between Rouge and Ilot Points, with a sandy beach at its head, and rather more than  $\frac{1}{2}$  mile wide and  $\frac{1}{4}$  mile deep. The anchorage is in from 7 to 18 fathoms, clay bottom. Vessels ought always to moor, and have a heavy anchor close in shore, for the gusts from the NW. are at times exceedingly powerful, and should the anchor start there would be little chance of bringing up again before the vessel had dragged her anchor down hill into deep water. Besides, eddies often set into the bay, so that it would be almost impossible to keep a clear anchor.

The shelter is rendered complete in every direction by either land or reefs, excepting SE., and there Red Islet, with the south coast beyond it at no great distance, prevents any sea, of consequence even to a boat, from ever entering the harbor.

**Trading Post.**—The Hudson Bay Company's trading post, consisting of a good dwelling house, stores, and a small chapel for the Indians, is situated at the head of the bay, and backed by steep, high, and rugged hills of granite. It is the principal of those posts for trading with the Indians which are known by the name of the "Kings Posts," and were, in 1829, leased to the Hudson Bay Company.

**Directions.**—The buoys placed at the entrance of the Saguenay will be found of great assistance to a vessel beating into the river, there being no clearing mark for the reefs on the SW. side of the entrance; and if buoys were added to Bar Reef and the Lark Islet Spit, vessels might beat in and out at all times with safety. On the NE. or Vaches Point side observe, that Ilot and Laboule Points in line, bearing N. 81° W., pass over the SW. side of Vaches Point Reef, and must be kept open to clear it; Ilot Point being the low NW. point of the harbor of Tadoussac and Laboule a high and round-backed hill, forming a steep headland, 4 miles above Tadoussac.

Winds from SW., round south, to NE. will enable a vessel to enter the Saguenay on the flood-tide. The first, which is the prevailing summer wind, will not carry her far up, since she will be becalmed under the mountainous shores; but the NE. wind, or wind up the St. Lawrence, draws also up the Saguenay, and is the only wind which can be depended on for running a vessel up to the anchorages above Tadoussac. The NW. wind often blows down the river in furious squalls, especially in the fall of the year.

**Caution.**—The ebb sets rapidly over Lark Island Spit and Vaches Point Reef, and it is dangerous to be becalmed just within either of them, because the water is so deep that it is difficult to anchor. If night be coming on, or the tide or the wind be unfavorable, anchor off Moulin Baude or in Barque Road, according to circumstances, and wait for an opportunity for running in, unless a vessel has a pilot sufficiently skillful to beat her in with safety.

#### ANCHORAGES IN THE SAGUENAY.

**Barque Cove**, rather more than a mile above Tadoussac, and on the same side of the river, is 400 yards deep. A vessel or two might be moored in it.

**St. Etienne Bay and River** are 10½ miles up the Saguenay, and on its SW. shore. The bay is a mile wide, and forms a harbor where a number of vessels may ride in from 10 to 30 fathoms clay bottom, along the edge of the bank which dries out ½ mile from the shore.

**St. Louis Isle**, 17 miles up the river, forms an excellent anchorage, either under its east end or between it and the south shore; the depth of water being from 10 to 30 fathoms, sand and mud bottom.

**St. Barthelemi Isle**, a mile higher up, and on the opposite side of the river, lies close to the mouth of the river Cacard. A vessel or two might be secured there; the place being small, and the depth of water from 6 to 20 fathoms.

**St. Jean**, on the southern shore, and 24 miles up the Saguenay, is a large bay with a small islet off its NW. point. It is 1½ miles wide and 1½ miles deep. The river St. Jean and several small streams enter at its head. Off these streams, and along the edge of the bank which dries out ½ mile from the shore, there is good anchorage for many vessels, in from 8 to 40 fathoms mud bottom.

**Eternité**, on the same side as St. Jean, and 6 miles higher up the river, is a large cove,  $\frac{1}{2}$  mile wide and  $1\frac{1}{2}$  miles deep, with a river of the same name at its head. At the head of this cove vessels may lie securely, in from 8 to 30 fathoms, mud bottom, and securely land-locked.

**Descente des Femmes** is a cove 700 yards long, with a depth of 30 fathoms at its entrance, decreasing to 5 fathoms near its head. Several vessels might lie moored in it in great security. It is 42 miles up the river, and on its northern shore.

**Ahah Bay** is 6 miles deep and from  $1\frac{1}{4}$  to  $2\frac{3}{4}$  miles wide, the widest part being at its head where four considerable streams flow into it. The best anchorage is on either side of a small islet joined to the shore at low water in the SW. corner of the bay, and from 7 out to 30 fathoms, clay bottom.

**Petites Iles**, on the northern shore of the river, 52 miles from its entrance and  $4\frac{1}{2}$  above Cape East, are three small rocky islets joined to the shore at low water. The bay on the east side of them forms a small but secure anchorage. The depth of water is from 6 to 17 fathoms, mud bottom. The Saguenay, which is here nearly 2 miles wide and with a depth of 65 fathoms, is contracted to  $\frac{1}{2}$  mile by a high rocky point projecting from its northern shore. On the north side of the river, from the high point to within a mile of Itoches Point, there is good anchorage in any depth out to 20 fathoms.

**Roches Point** is 57 miles from the entrance of the river, and here the navigation ends for shipping, but continues for schooners to Chicoutimi, 8 miles farther. The river is still  $1\frac{1}{2}$  miles wide at Roches Point, but contracts rapidly above it, assuming at the same time the usual character of a river, such as mud banks on either side dry at low water, shoals of large boulder stones, drift trees, &c. The water also becomes fresh when the tide is out.

**Chicoutimi River and Trading Post** are on the south side of the Saguenay, and 65 miles from its entrance. This river is the largest tributary to the Saguenay. It flows 40 or 50 feet, through a narrow, rocky, and rugged channel, only a short distance within its entrance.

The trading post of Chicoutimi is one of the Kings Posts, and leased to the Hudson Bay Company. It stands on the west side of the River Chicoutimi at its confluence with the Saguenay, and consists of a good dwelling-house, store, barn, and inferior buildings. Potatoes and garden vegetables are raised for the use of the people of the establishment.

**Directions.**—No directions are necessary for ascending the Saguenay to the anchorages just mentioned, since there is not a single rock or shoal in the way from Tadoussac to the anchorage below Roches Point.

#### RIVER ST. LAWRENCE. QUEBEC TO MONTREAL.

**Saut Pass.**—Just above the entrance of the Chaudière River the St. Lawrence is rather less than 800 yards wide, between steep, high, and partially-wooded banks, composed of greywacké and slate rocks.

The channel of the river is still farther reduced at low water by rocky shoals, which dry out from the shore on either side. The breadth of the stream is then only 550 yards, but the depth is nearly 30 fathoms, and the rate of the stream at ebb about 6 knots. This narrow pass is called the Sault.

**Anchorage.**—At Carouge Point, on the northern shore, and about 8 miles above Quebec, there is an excellent anchorage; and the river here begins to expand into a magnificent reach, from 2 to 2½ miles wide, which extends to the westward as far as the eye can reach.

**Tremble Shoals.**—The navigation of the river is devoid of all difficulty as far as the dangerous shoals of Pointe aux Trembles, on the northern shore, and 18 or 19 miles above Quebec. These shoals extend westward for many miles up the river, leaving a channel between them and the southern shore, in some places only 800 yards wide. Still there are no difficulties in the navigation that may not be easily overcome, even in the largest ships, as high as Port Neuf, which is on the northern shore, and 32 miles above Quebec.

**Richlieu Rapid.**—The first great difficulty in the navigation is Richlieu Rapid, which commences just above Port Neuf, and extends nearly to Grondine, 41 miles above Quebec. In the narrowest part of the Richlieu the channel at low water is between extensive shoals of immense boulder stones, and only 460 yards wide. There is water enough for any vessel, but there is only about an hour of very weak stream of flood, while the ebb runs in spring tides at the rate of fully 7 knots. The steamers regulate the time of their departure from Quebec so as to arrive at the foot of the Richlieu with the flood tide.

**Tides.**—At Port Neuf the spring tides rise 14 feet, while at Grondine they only rise 9 feet; there is, therefore, a great difference in the rise of the tides at the foot and head of the Richlieu, namely, 5 feet in 9 miles, so that it seems that the descent in the bed of the St. Lawrence is there very considerable.

The villages of Champlain and Gentilly are opposite to each other, and 58 miles from Quebec, the former being on the northern and the latter on the southern shore. They may be said to mark the extent of the stream of flood tide, which was not observed above the Shoals of Gentilly, where the ordinary springs, unless assisted by an easterly gale, do not rise above 2 or 3 feet. Here also a considerable change takes place in the character of the country, for the high banks, which had continued to form the southern shore of the river all the way from opposite Quebec, turn back into the country, and the shores on both sides become low and of an alluvial appearance.

At the town of Three Rivers, 68 miles above Quebec, the ordinary spring tides rise one foot, and it is high water, full and change, at 11½ hours. In the spring and fall easterly gales often occur with the spring tides, and cause them to rise, it is said, a foot or two higher.

At Point du Lac, at the lower entrance of Lake St. Peter, and 75

miles from Quebec, the neap tides are almost imperceptible, and the spring tides, unless assisted by an easterly gale, do not rise above 3 or 4 inches. The effect of the tides may be said to be lost in Lake St. Peter, since no alternate rise and fall of the water, that could be attributed to their influence, was observed among the islands at its head.

**Lake St. Peter.**—The distance up this lake from Point du Lac to the islands is about 18 miles, of which about 4 miles are over a flat of sand and clay through which a ship channel 300 feet wide and with 27½ feet water in it has been completed.

The channel above Lake St. Peter is often narrow and difficult for sailing vessels, and the current, the average rate of which does not exceed 2 or 3 knots, is in some narrow places of considerably greater strength. At the rapid of St. Mary, just below the city of Montreal, the rate of the current amounts to 7 knots, and used formerly to detain vessels many days waiting for a fair and strong wind to ascend; but the whole river, as well as Lake St. Peter, is now so well buoyed and lighted that sailing vessels are towed night and day, without stopping, except in fogs, through the narrowest parts of the channel, and the whole distance from Quebec to Montreal is often accomplished in 24 hours, by leaving Quebec so as to arrive at Richlieu Rapid with the flood tide.

**Montreal Harbor.**—The dredges, which have so greatly improved the navigation of the river, have also been successfully employed during many years, as the necessity demanded, in deepening the harbor of Montreal. The depth is now sufficient for vessels as large as can pass through Lake St. Peter. Immediately above Montreal the navigation for shipping is closed by the commencement of the rapid of Lachine or St. Louis.

**Directions.**—In the channel between Quebec and Montreal improvements have recently been made by which the channel has been dredged to a depth of 27 feet. These improvements will necessitate numerous alterations in the system of lights, which will be altered to show the newly dredged channel. In the long line of river navigation which has been briefly described, written directions would be, in most parts, totally unavailing; and, in all cases, could only give, very imperfectly, the same information which is given on the charts. These plans will be of great use in pointing out possible improvements in the navigation, in the selection of the best route to be pursued by vessels, and in buoying and lighting the channels to the best advantage.

Some of the lighthouses are small and portable, so that they may be removed on the approach of winter, and thus escape being carried away by the ice; for in spring those low islets are overflowed, and the ice, moreover, in moving down the river, often packs, forming a "digue" or dam, behind which the waters rise many feet, until their pressure overcomes and bursts through the impediment with such force that

not only buildings would give way before it, but even many trees are often prostrated in the low grounds, and great banks of rolled stones are forced up by the ice on the upper ends of islands which are exposed to the current.

Besides the lights the navigation is assisted by rough buoys, formed of logs and attached spruce bushes, placed in the most difficult parts of the channel. The numerous leading marks used by the pilots are seldom permanent, or of a nature to admit of such a description as would enable a stranger to distinguish them from many other similar objects in their vicinity.

**Time Signal.**—From the tower of the harbor commissioners' building a time ball is dropped daily at noon, Montreal mean time, corresponding to 5h. Greenwich mean time. The ball is dropped by electricity from the Montreal Observatory. The signal is made during the season of navigation, but not on Sundays.

**City of Montreal.**—The position of Montreal at the head of the ship navigation of the St. Lawrence, and near the confluence of that river with the Ottawa, as well as its situation with respect to the United States, make it the most important manufacturing city in the Dominion, and there is, consequently, much activity observable in trade. In addition to its numerous and handsome public buildings are cast-iron foundries, distilleries, soap, candle, and tobacco manufactories, several ship-building establishments, and machinery for steam engines. Supplies of all kinds may be procured by shipping.

In the year 1886 the population was estimated to be 180,000, of whom the greater number are of French descent.

Along the bank of the river is an extensive line of quays and warehouses. For vessels of 24 feet draft there is a length of  $1\frac{1}{2}$  miles of wharfage; for 20 feet draft, 2 miles; and for 10 to 20 feet draft, one mile. And, in addition, the basins of Lachine Canal in the city afford to vessels of 18 feet draft of water a wharfage of  $\frac{3}{4}$  mile, and for vessels of 12 feet draft,  $2\frac{3}{4}$  miles. All the wharves in the harbor are in the form of shore wharves and piers which are entirely submerged in the winter. The wharfage in the Lachine Canal is afforded by basins or inclosed docks to which access is supplied by locks of 270 feet long, 45 feet wide, and 18 feet deep.

**Railways.**—The Grand Trunk and Canadian Pacific Railways have their headquarters in this city. The Central Vermont and Southeastern Railways connect these two systems with the railways of the United States. Besides these there are several minor roads centering here.

The United States is represented by a consul-general and vice-consul-general.

ADDENDA.  
List of lights included in limits of this work.  
CAPE BRETON ISLAND.

Name.	Location.	No. of lights.	Character of light.	Character of lighthouse or vessel.	Height of light above sea level.	Distance visible in natural miles.	Remarks.
Saintpierre Island.....	E. end of island.....	1	Rev. every 30 seconds.	Square; wood; white; two red bands; dwelling attached.	74	14	
Gules (Guyon) Island.....	On island, about 600 feet from the west end.....	1	Rev. red every 30 seconds.	Square; white; dwelling attached.	74	12	
Gabarra.....	On Harbor Point.....	1	F. red.....	Tower white, lantern red.....	47	8	
Louisbourg.....	N. side of entrance to harbor, 200 feet inshore of point.....	1	F.....	White, with a black vertical stripe; on dwelling.	85	16	
Messou (Main-à-Dieu).....	On S. side of W. point of Scott Island.....	1	F. red.....	Square; wood; white.....	90	9	
Sestari.....	N.E. point on Trap Rock.....	1	Rev. every 14 minutes; eclipse 30 seconds.	Octagonal; white.....	90	15	Never brought to bear to northward of N. 30 W. or to eastward of S. 30 E. nor approached nearer than 14 miles. A signal gun; also a boat to render assistance. Fog signal: a siren which sounds every minute, with 3 blasts of 8 seconds, separated by an interval of 10 seconds.
Moron or Cow Bay.....	Outer end of break water.....	1	F. red.....	Lantern on frame.....	32	7	
Flint Island.....	On island.....	1	Rev. every 15 seconds.	Octagonal; white.....	65	12	
Lingan Head.....	N. side entrance to Bridgeport Harbor.....	1	F. red.....	Square; wood; white.....	50	10	
Low Point.....	Flat Point, E. side of Spanish Bay.....	1	F.....	Octagonal; red and white vertical stripes.	70	14	Signal and telegraph station.
Sydney Bay.....	W. end of S.E. bar.....	1	F. red.....	Square; wood; white.....	30	10	Fog horn on Cashberry Head in a black shell, 100 ft. diameter every 50 seconds.

Flint Island	On island	1	F. red	Square; wood; white	50	10	Signal and telegraph station.
Lingan Head	N. side entrance to Bridgeport Harbor.	1	F.	Octagonal; red and white vertical stripes.	70	14	
Low Point.	Flat Point, E. side of Spanish Bay.	1	F. red	Square; wood; white	30	10	Fog horn on Cranberry Head and blasts of 10 seconds duration every 50 seconds.
Sydney Bar	W. end of S.E. bar	1	F. red	Square; wood; white			
Acorn Point	High Cape, N. side of entrance to Little Bras d'Or.	1	F. red	do	91	11	
	Beaver Island, S.E. point	1	F. red	Mast; white shed at base		5	
St. Peters Inlet	Gooseberry Island or Marjorie's Isld. W. from Sandy's Point.	1	F. red	do		5	
	Froestome or Gregory Island.	1	F. red	do		5	
Whycoomagh	Cape George	1	F.	Square; wood; white	50	10	
	Fraser Point, N. side St. Patrick's Channel.	1	F. red	Mast; white shed at base	31	7	
Little Narrows	Eastern entrance	1	F.	Square; wood; white	40	10	
McKinnon Harbor	Clarke Cove, N. shore	1	F. red	Mast	95	6	
	Eastern side of Campbell Island at eastern side of entrance to McKinnon's Harbor.	1	F.	Mast; wooden shed at base, painted white; keeper's cabin near by.	30	10	
Piper Cove	Grand Narrows; western bend of Derby Point.	1	F. red	Square; wood; white	77	11	
Grand Narrows	Unisacke Point, Barra Straits.	1	F.	do	29	10	
Kildon Island	N.E. point at entrance to Baddeck Harbor.	1	F. red	do	31	7	
McKenzie Point	N. side Bras d'Or Lake, about 2 miles SW. of Fort Bevin.	1	F.	do	95	11	
McNeill Beach	N. side Boullarderie Island.	1	F. red	Mast; white shed at base	33	8	
Cavey Point	N. side of entrance to Great Bras d'Or.	1	F. red	do	33	5	
Black Rock Point	S. side of entrance to Great Bras d'Or.	1	F.	Square; wood; white cross on red ground.	45	10	
St. Anne	On Beach Point	1	F.	White	25	8	
Bird Island	Ciboux Island, $\frac{1}{2}$ of a mile from N. end.	1	Rev. red, every minute.	Octagonal; white.	77	14	
Ingonish Harbor	On the eastern end of the beach; southern side of entrance to harbor.	1	F. red	Square; wood; white	45	8	



List of lights included in limits of this work—Continued.  
 CAPE BRETON ISLAND—Continued.

Name.	Location.	No. of lights.	Character of light.	Character of lighthouse or vessel.	Height of light above sea level.	Distance visible in nautical miles.	Remarks.
Ingenish Island.....	On island.....	1	F.....	Square; white.....	237	20	Signal and telegraph station at Meat Cove.
Cape North.....	½ mile SE. from Money Point.....	1	Rev. red and white alternately, every 45 seconds.	Square; wood; white.....	74	15	
Cape St. Lawrence.....	Near extremity of the cape.....	2	F.; vertical; 42 feet apart.	Square wooden tower; keeper's dwelling attached; white; lantern red.	137 98	17; 15;	Upper light visible between N. 50° E. and S. 60° W. Lower light visible between N. 60° E. and S. 65° W.
Cheticamp Island.....	SW. end of island.....	1	Rev. every 45 seconds.	Square; wood; white, with black ball on seaward side.	149	20	
Eastern Harbor.....	E. side.....	2	F. red.....	Masts.....	45 90	10	In line S. 60° E. lead through dredged channel.
Margaree Harbor.....	On outer end of breakwater pier.	1	F. with red sector.....	Square; wood; white.....	21	4	The red sector is visible between N. 25° E. and N. 40° W. White, having compass light in center of red sector. In entering the harbor the red sector light should be kept close aboard in passing.
Sea Wolf or Margaree Island.....	Summit or middle of island.....	1	F.....	Square; white.....	298	21	
Mabou.....	End of breakwater SW. side of channel, and on McFarlane Wharf.	2	F. and F. red.....	Masts; white sheds at base.	W. 25 E. 30	9; 7;	In line lead into harbor through dredged channel, past the breakwater.
Fort Hood.....	SE. side of entrance to harbor.	1	F., with red sector.....	Square; white.....	55	10	Red on N. side; white on S. side.

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Light Name	Location	Number	Color	Structure	Height	Range	Notes
Mabou	End of breakwater SW. side of channel, and on McFadden Wharf.	2	F. and F. red.	Masts, white sheds at bases.	W. 25 E. 30	7	In line lead into harbor through dredged channel, past the breakwater.
Port Hood	SE. side of entrance to harbor.	1	F., with red sector.	Square; white.	55	10	Red on N. side; white on S. side.
NEW BRUNSWICK							
Acumino Point	On point	1	F.	Wood; white.	70	14	Fog signal; a horn, blasts of 9 seconds duration every 25 seconds.
Freston Beach		2	F.	White.	55 66	10	Range lights.
Bay du Vin Island (Vin I.)	West end	2	F.	Hoisted on masts, with sheds painted red at their bases.	30 42	10 11	Lights in line enable vessels seeking shelter to clear the point of the shoal lying off the island.
Fox Island	NW. point	3	F.	On masts; shed at base of each; white.	46 46 36	8	The 1st and 2d lights in line N. 75° W. lead into Horseshoe Channel. The 1st shed in line N. 21° E. lead through Portage Channel. The 2d shed in line lead to the upper buoy of Horseshoe Shoal.
Portage Island	1 1/2 miles from S. point.	2	F.	Wood; white.	47 72	12 14	In line S. 81° W. lead through Swashway Channel.
Portage Beach	South point of island.	1	F.	Square; wood; white; dwelling near.	46	12	Proposed.
Horseshoe Bar	Flat vessel, on bar, between Fox and Portage Islands.	1	F. red.	Two masts.	35	8	
Middle Island	North side	1	F.	White.	45	7	Range light.
Newcastle	On Lime-tin Bank, N. side of river, below the town.	1	F. red	Square; wood; white; red roof.	87	9	
Granite Beach (Bartibouque)		2	F.	On masts; white shed at base; all on trestlework.	129 149	10	In one lead to Napan black buoy.
Sheldrake Island	South side	2	F.	On masts; white shed at base; all on trestlework.	48	6	Range lights.
Oak Point	On point	2	F.	On masts; white shed at base; all on trestlework.	43 48	16	In one S. 33° W. lead to red buoy in river above.
Hay Island	Near E. end of island.	2	F.	Mast; red shed at base. Square wood; white.	22 39	10 11	
Negase Gully	NE. side.	1	F.	Square; wood; white.	33	11	

*List of lights included in limits of this work—Continued.*  
NEW BRUNSWICK—Continued.

Name.	Location.	No. of lights.	Character of light.	Character of light-house or vessel.	Height of light above sea-level.	Distance visible in nautical miles.	Remarks.
Tahusitao Gully.....	On Crab Island. Southern front light, N. side of entrance, S. Tracadie Gully	1	F. red.....	Square; wood; white.....	32	7	
Tracadie Gully.....	North side of gully.....	2	F. and F. red.....	Square; white; open frame. Square; wood; red.....	20 26	8	Range lights for crossing the bar.
		2	F.....	Square; wood; white.....	32 17	12	Range lights.
Pakomonche (Pocomonche).....	On beach, N. side of gully, Gloucester County, 375 feet S. to 20' E. from preceding.	1	F. green.....	Square; wood; white; keeper's dwelling attached.	35	8	Range to guide to car-buoy at passage over bar.
Big Shippegan Gully.....	On Indian Point, south side of gully.	1	F. red.....	On a pole mounted on transway.	23	5	
Harpor's Point.....	NE. side of entrance to gully. On point, W. entrance to Miscon Harbor.	1	F. red and F.....	Mast, with small shed at base.	28 39	4	In line N. 65° W. indicates the deepest water over the bar.
		1	F.....	Square; wood; white.....	33	11	
Shippegan Harbor.....	On point, W. entrance to Miscon Harbor.	2	F.....	Mast; white shed at base; the whole on a low crib-work pier.	38	6	
		1	Rev. every minute.....	Square; wood; white; keeper's dwelling attached.	40	10	
Miscon Island.....	Goose Lake, on W. side of Miscon Island. Birch Point.....	1	F. red.....	Octagonal; wood; white.....	70	13	Fog signal: a whistle, blast of 5 seconds every half minute.
Miscon Gully.....	N. side of entrance to Little Shippegan Gully.	1	F.....	Mast; white shed at base; the whole on a low crib-work pier.	45	7	Marks the entrance through the gully to Little Shippegan; Miscon Harbor from the Gulf of St. Lawrence.
Pakomonche (Pocomonche) Island.....	NE. point of island.....	1	F.....	Square; wood; white.....	41	11	
Carquette Island.....	W. end of island, S. side of bay.	1	F.....	Square; white; on dwelling.	52	14	
Clifton.....	Grindstone Point Bank, above end of breakwater.	1	F. red.....	Square; wood; white.....	88	15	

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Pokessadie (Pequesenedie) Is- and.	NE. point of island.	1 F.	Square; wood; white.	30	10	Between the bearings N. 67° E. and S. 67° W.
Caraquetto Island.	W. end of island, S. side of bay.	1 F.	Square; white; on dwelling.	52	14	
Clifton	Grindstone Point Bank, above end of breaker.	1 F. red.	Square; wood; white.	88	15	
Bellini's (Salmon) Point.	E. side of entrance to Bathurst Harbor.	1 F.	Square; wood; white.	20		
Bathurst Harbor.	Carron Point.	2 F. red.	{ Wood, white. Square; wood; red and white stripes.	W. N. 43	10 14	Range lights: outer white; inner red.
Petit Kocher.	Elm Tree Point.	1 F.	Square tower; wood; white.	26	12	
Little Belladune Point.	On point.	1 F.	Mast; white ahead at base.	38	11	
Heron Island.	E. side.	1 F.	Square; wood; white.	66	15	
Campbelltown.	Railway Pier and Moffatt's Wharf.	2 F.	Towers, square; wood; white.	24	9	
Bonami Point.	S. side of entrance to Dal- housie Harbor.	1 F.	Square; white.	49	13	
Dalhousie.	Public wharf at railway ter- minus, 25 feet from outer end.	1 F.	Square; lantern projecting through top of E. E. tower; wood; white.	30	9	In one bearing S. 45° E. lead to the railway wharf.
Douglas Island or Dalhousie Island.	On summit of Montgomery Island, 200 feet S.E. from point light.	1 F.	White; square; wood.	34	9	
Carleton Point (Tracadignah Point).	On island opposite Dalhousie, east end.	1 F.	Square; wood; white.	30	6	
Faspohias Point.	On point.	1 F.	Square; wood; white.		12	
Macquarrie Point.	Near extremity of point.	1 F. with red sector.	Square; wood; white; sector & dwelling at- tached.	60	12	Red over the anchorage be- tween the bearings E. and S. 45° E.
Grand River.	On point.	1 Alt. every minute.	Square; white.	56	12	
Cape d'Espoir (Despair).	At entrance.	1 F. red.	Hexagonal; wood; white; lantern red.	52	8	
Pere.	On cape.	1 Rev. every 4 minute.	Square; wood; white and red.	60	15	
	On White Head.	1 F.	Square; wood; white.	128	13	

List of lights included in limits of this work—Continued.

## NEFOUNDLAND.

Name.	Locality.	No. of lights.	Character of light.	Character of light-house or vessel.	Height of light above sea-level.	Distance visible in miles.	Remarks.
Cape Race	On cape.	1	Rev. every 1 minute.	Circular; SE. face of light-house striped red and white, vertical.	108	19	Visible between N. 70° E. and S. 70° W. Light-house a whistle sounded for 18 seconds every 50 seconds. Irregular.
Cape Pine	On cape.	1	F.	Circular; red and white bands.	314	24	Visible between S. 45° W. and S. 75° E.
St. Marys Bay	La Hays Point.	1	F.	Circular; iron; store-house attached; the whole painted in red and white horizontal bands.	63	9	
Cape St. Mary	On cape.	1	Rev., red and white every minute.	Circular; brick; red.	300	26	
Placencia Harbor	Point Verde.	1	F.	Tower; wood; white; keeper's dwelling attached.	38	11	
Burin Island	Dodding Head.	1	Rev. every minute.	Circular; on keeper's dwelling.	450	27	
Lamalin Harbor	Southeast point of Allan Island.	1	F.	Octagonal; wood; red and white.	64	8	
St. Pierre Island	Galantry Head.	1	F.	Nearly square; white.	210	18	Fog-signal; a steam whistle, sounded 6 seconds every minute.
	Cannon Point, St. Pierre Harbor.	1	F.	Square; white.	28	6	Illuminates an arc of 279°.
	N. 75° W. 1/2 mile from Cannon Point Light.	1	F. red.	Square; red.	61	3	
	One and a half miles SW. point of St. Pierre Island.	1	F. red with white sector.	Iron; red.	62	7	White, between N. 60° W. and N. 24° W. Red, between N. 24° W. and S. 75° E.

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St. Pierre Island	N. 75° W. 1/2 mile from Cañon Point Light.	1	F. red.	Square; red	61	3	White, between N. 40° W. and N. 24° W. Red, between N. 24° W. and S. 75° E.
Piolo Point	SW. point of Little Miquelon Island.	1	Fl. with red sector every 5 seconds.	Iron; black and white horizontal stripes.	154	{154} {206}	Red ray over Seal Rocks. A drive, 1/2 second; second each every minute.
Cape Biaso	On headland over cape, N.W. point of Great Miquelon Island.	1	Ins. with red sector every minute.	Lower part white; upper black; lantern white.	103	{155} {167}	Red ray over Seal Rocks.
Fortune Bay	Rennet Island, Mercer Head, S.W. part of island.	1	Fl. every 10 seconds.	Center of a square house; white; roof red.	408	25	Obscured between N. 85° E. and S. 25° E.
Harbor Breton	Garnish, S. side of Fortune Bay.	1	F. red.	Octagonal; white and red.	25	3	Guide to fishing vessel.
Hermitego Bay	Grand Bank; on breakwater 200 feet S. 85° W. from the end.	1	F.	Wedge beam; red and white horizontal stripes.	24	5	Visible between the bearings S. 65° E. and S. 61° W.
Boar Island	At Balloran, on the point of head.	1	F.	Wood; white.	35	7	Illuminates an arc of 270°.
Boar Island	Rocky Point	1	F.	Circular; iron; red and white horizontal bands.	45	12	Obscured over Harbor Beck, 220 yards from light-house.
Boar Island	W. side of entrance to Gaultois Harbor.	2	F. F. red; vertical; 14 feet apart.	Wood; white; keeper's house attached.	{281} {287}	19	Red light visible between N. 70° E. and N. 65° W.
Boar Island	Burgoe Islands	1	F. red.	Iron column	287	17	Illuminates an arc of 270°.
Boar Island	Entrance to La Folle Bay	1	Fl. every 12 seconds.	Wood, attached to keeper's dwelling.	71	9	
Boar Island	On eastern head	1	F.	Circular; iron; red and white horizontal bands; keeper's dwelling close to tower.	85	12	Visible between N. 65° E. and S. 75° W.
Boar Island	Channel Head	1	F. red.	Wood	98	12	
Boar Island	W. side of cape	1	Rev. every 20 seconds.	Octagonal; wood; white; lantern brown.	130	17	Fog signal: blasts for 10 seconds each minute.
Boar Island	On point N. side of St. George Harbor.	1	F.	Cylindrical; iron; alter into horizontal bands of white and black with flat roof on S. side; white.	35	7	

List of lights included in limits of this work—Continued.  
GULF AND RIVER ST. LAWRENCE.

Name	Location	No. of lights	Character of light	Character of light house or vessel	Height of light above sea level	Distance visible in nautical miles	Remarks
St. Paul Island	On rock, 26 feet from island, N.E. point	1	F	Octagonal; wood; white	140	20	Obscured between N. 11° W. and N. 40° E. Lighted from April 1 to December 31, and whenever navigation is practicable.
Entry Island	SW. point	1	Rev. every minute	Octagonal; wood; white	140	20	Obscured between S. 51° E. and S. 60° W. Fog signal on the S. side of island and SW. side of Atlantic Cove; sound every second, first sound by whistle, second by bell, from April 1 to December 31, and whenever navigation is practicable.
Amherst Island	South Cape	1	F	Square; wood; white; attached to keeper's dwelling	80	13	Obscured between N. 87° E. and N. 50° W.
Grindstone Island	W. side, near Klug du Nord	1	Alt. every 1 minute	Hexagonal; wood; white	200	20	Signal and telegraph station
Bird Rocks	Near the middle of Great Bird	1	Rev. every 1 minute	Square; wood; white	133	20	Signal and telegraph station on Greeno Inl.
Cape Bozier (Bozier)	On cape	1	F	Hexagonal; wooden; white	138	17	Fog signal; a gun fired every half hour.
		1	F	Chimney; clapboarded; white	138	16	Fog signal; a whistle sounding 10 seconds every minute; signal and telegraph station.
Gaspé Bay	On Cape Gaspé	1	F. red	Square; wood; dwelling attached	360	12	Provisional. Fog signal; a gun fired every 1 hour.
	Pointe or Flat Rock, Pointe Peter	1	Rev. red, every 1 min. etc.	Square tower; white; dwelling attached	77	10	
	O'Hara Point, wharf basin	1	F. red		58	7	

## LIST OF LIGHTS.

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Gaspi Bay.....	On Cape Gaspi.....	1 F. red.....	Square; wood; dwelling attached.	350	12	Provisional. Fog signal: a gun fired every 1 hour.
	Finniss or Fat Rock, Point Peter.	1 Rev. red, every 1/2 minute.	Square tower; white; dwelling attached.	77	10	
	O'Hare Point, wharf basin.....	1 F. red.....		30	7	
Anticosti Island.....	Light-vessel off Sandy Beach Point.	2 F. red.....	Red; "Light-vessel" on sides.	{ 37 } { 38 }	7	White light on mainmast; red light on foremast.
	North Point, E. end of island	1 F.....	Circular; wood, on top of a black horizontal band with one red horizontal band.	110	15	Visible between S. 27° W. and N. 82° E. Fog signal: a gun fired every 1 hour.
	Bagot Bluff, 1/2 mile W. of South Point	1 Fl. every 20 seconds..	Hexagonal; wood; white, with one red vertical stripe.	75	14	During foggy weather a steam fog whistle will be sounded for 10 seconds in every minute.
	SW. point.....	1 Rev. every minute.....	Circular; white, with two red horizontal bands.	100	15	Visible between N. 45° W. and S. 85° E. Signal and telegraph station.
	Extreme W. point.....	1 F.....	Circular; clapboarded; white, with two red vertical stripes.	112	15	Fog signal: a gun fired every 1 hour. Signal and telegraph station.
Porroquet Island.....	On north-westernmost of group.	1 Rev. every 1/2 minute..	Square; wood; white; dwelling attached.	87	15	Obscured between the bearings S. 69° W. and N. 69° W.
Cape Magdalen.....	On cape.....	1 Alk. every 2 minutes..	Hexagonal; wood; white, with one black vertical stripe.	147	{ R. 15 } { W. 35 }	Signal and telegraph station.
Pamo Point.....	South shore of Gulf of St. Lawrence.	1 F. and Fl. red every 20 seconds.	Square wooden tower; white, with one black horizontal band; dwelling attached; painted white.	260	20	Do.
Martin River.....	South shore, St. Lawrence River.	1 F.....	Square; wood; white, with two black horizontal bands; keeper's dwelling attached.	125	17	Do.
Carrousel Island.....	One of the Seven Islands. North shore of Gulf of St. Lawrence.	1 F.....	Square; wood; white; with one red horizontal band; attached to keeper's dwelling.	200	20	
Egg Island.....	600 feet from S. end of island.	1 Rev. every 1/2 minute..	Octagonal; white, with one red vertical stripe; on keeper's dwelling.	70	15	
Cape Chatte.....	NE. extremity of cape.....	1 Rev. every 1 minute..	Square; wood; white, with two black vertical stripes.	120	18	Signal and telegraph station. Fog signal: an explosive bomb every 20 minutes.



List of lights included in limits of this work—Continued.  
GULF AND RIVER ST. LAWRENCE—Continued.

Name.	Location.	No. of lights.	Character of light.	Character of light house or vessel.	Height of light above sea level.	Distance visible in clear weather, miles.	Remarks.
Mataas	South shore	1	F	Square; wood; white; black cross; keeper's dwelling attached.	76	34	Signal and telegraph station.
Point de Monte	End of pier, western side; entrance to Mataas River. About 1½ miles N.E. of point.	1	F	Mast white; white shed at base.	36	7	Fog signal: gun fired every 15 min. Signal and telegraph station.
Manicouagan	Light-vessel, in 25 fathoms, 4 miles from land; 1½ miles to southward of abed.	1	F	Circular; clapboarded, and white, with two red horizontal bands.	100	15	Leaves station November 10 each year. Fog signal: a blast of 8 seconds, an interval of 8 seconds, then another blast of 8 seconds, 2 or 3 times, as directed. If out of position, an alarm light only is shown at night, and a bell by day. Signal and telegraph station at Manicouagan.
Little Metis Point	On point	2	F	Red; MARCOUAGAN LIGHT-ship on each side.	{ 24 } { 27 }	13	Signal and telegraph station.
Berminis River	North side of river entrance	1	Alt. every minute.	Square; white; red roof; attached to keeper's dwelling.	56	15	Is line N. 60° W. lead in boat water over the bar.
Father Point, Rimouski	On point	3	F	Masts diamond-shaped; bottom white.	{ 38 } { 40 }	5	Pilot, signal, and telegraph station. Fog signal: gun fired every 15 min. This gun will also be fired in answer to steamers' signals for pilot.
		1	Rev. every 20 seconds.	Square; white, with one black horizontal band.	43	10	

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Feather Point, Rimouski	On point	1	Rev. every 20 seconds.	Square; white, with one black horizontal band.	43	10	Fog signal and telegraph station. Fog signal: a gun fired every 20 seconds. This gun will also be fired in answer to steamers' signals for pilots.
Bouquette Island	Near center	1	Rev. every 2 minutes	Circular; clapboarded, and white.	112	17	Fog signal: a horn; blasts of 10 seconds duration every 20 seconds. This horn will also answer to signals for pilot.
Port Neuf	On point of peninsula E. above of river.	1	F	Square; wood; white, with two red vertical stripes.	46	15	Signal and telegraph station.
Red Island Bank	Light-vessel in 10 fathoms; 1/2 mile N. 40° E. from Red buoy.	2	F	Red. "RED ISLAND LIGHT-VESSEL" on her sides.	{34} {25}	12	Leaves station November 15. Fog signal: sounded 10 seconds every minute.
Lark Islet	Entrance to Saguenay	1	F	Square; wood; white.	35	16	Fog signal: a trumpet blast of 20 seconds every minute.
Red Islet	Center of inlet	1	Fl. 3 flashes every 50 seconds.	Circular; gray stone	75	12	
Green Island	On N. point	1	F	Octagonal; clapboarded, and white.	66	13	Fog signal: a gun fired every half hour.
Rivière du Loup	On government wharf.	1	F	Square; wood; white.	28	11	Signal and telegraph station.
Brandy Point	84 yards from SE. end of islet.	1	F	Brick; drab color.	78	10	
Long Pilgrims	40 yards W. of center of islands.	1	F	do	180	12	Gas-buoy on W. end of Pilgrim Shoal shows intermittent light.
Grand Isle, Kamouraska	240 yards from NE. end of island.	1	Rev. every minute.	Wood	166	13	
Point aux Origineux	St. Denis wharf	1	F	Square; wood; white	34	8	
Goose Cape	On cape	1	F	Wood; white; dwelling attached.	46	12	
St. Paul Bay	On pier	1	F	Square; wood; white dwelling attached.	36	10	
		2	F	Red; two masts "Upper Traverse" in white, letters on each side, red ball on mainmast.	{41} {36}	6	Fog signal: A bell tolled. If light-vessel be out of position, the light on the forecast only will be exhibited, and the bell taken down.
South Traverse	Light vessel in 24 fathoms, N.E. part of St. Roch shoals.	3	F, F, red, one white light from each mast and red light on star between.	Red; two masts; Lower Traverse in white letters on each side; red ball on mainmast.	{21} {25} K. 49	9	If light vessel be out of position, one light only will be shown, and the ball taken down. Fog-signal: steam whistles, green blasts of 15 seconds duration, with intervals of 40 seconds.

List of lights included in limits of this work—Continued.  
GULF AND RIVER ST. LAWRENCE—Continued.

Name.	Location.	No. of lights.	Character of light.	Character of light-house or cressel.	Height of light above sea level.	Distance visible in nautical miles.	Remarks.
Stone Pillar.....	100 yards from south point of islet.	1	Rev. Every 1½ min-utes.	Circular; stone; G.T.F.; white buildings, with red roof, attached.	83	13	
Algernon Rock.....	South from the Stone Pillar islet.	1	F.....	Square; wood, white.....	36	6	
Crane Island.....	1½ miles from W. point of is-land.	1	Int. Bright, 28 sec.; eclipses, 4 sec.	Wood.....	48	12	Gas-buoy moored on a 28-foot patch 1½ miles S. 31° W. from southwest ex-tremity of Margaret Is-land. Light buoy at each extremity of Beaujeu Bank; west light inter-mittent, 6 sec.; east light, fixed pink.
St. Thomas de Montserrat (Sud River).	At outer end of Government wharf.	1	F. white and green.....	Mast; brown shed at base.....	39	6	White in line of channel.
	On slope of cape above Cape Bouge.	1	F.....	White; square; wood; dwelling next by.....	175	15	
Cape Brulé.....	Front light 20 yards N. 35° W. from main light.	1	F.....	Open framed tower.....	168	15	
	Back light.....	1	F.....	Open framed tower.....	185	15	
St. Francis.....	Near east end of island of Ori-cans.	2	F.....	White; square; wood.....	119 } 30 }	11	Range lights S. 14° W. and N. 14° E. Lead between Traverse Spit and Brulé Bank.
Belle Chasse.....	East end of island.....	1	F.....	White; square; wood.....	70	13	Leading lights for North Channel.
St. Jean.....	On a wharf, island of Oricans.	1	F.....	White; square; wood.....	27	15	
Point St. Laurent.....	Island of Oricans.....	1	F.....	White; square; wood.....	38	8	
	Front light on beach near Stone mill, south side of channel.	1	F.....	Mast; white shed at base.....	50	12	Leading lights.
St. Famille.....	Back light on top of hill, about 1,500 feet S. 23° W. from church.	1	F.....	Square; wood; white; roof red.	110	16	

## LIST OF LIGHTS.

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Belle Chasse.....	1 F.....	White; square; wood.....	70	9
St. Jean.....	1 F.....	White; square; wood.....	27	12
Point St. Laurent.....	1 F.....	White; wood.....	38	8
	1 F.....	Mast; white shed at base..	50	12
Sto. Famille.....	1 F.....	Square; wood; white; roof red.	110	16
St. Pierre.....	2 F.....	{ Square; wood; white; roof red. Mast; white shed at base... }	20 50	9 12
Ango Gardien.....	2 F.....	Wood; square; white; roof red.	20 33	9 12
St. Anne de Beaupré.....	1 F. red.....	Mast, with small shed at base; white; red roof.	25	5

In case S. 40° W. lead clear of  
all obstructions from mid-  
channel opposite Ste. Fa-  
mille wharf to intersection  
with Ste. Famille range.

East end of island.....  
On a wharf, island of Orleans.  
Island of Orleans.....  
Front light on beach near  
Stone mill, south side of  
channel.  
Back light on top of hill,  
about 1,500 feet S. 20° W.  
from church.

Front light on beach, south  
side of channel, on point at  
narrowest part.

Front light on beach on Point  
Belle Chasse, between  
and Ango Gardien village.

On outer end of the long  
wharf, in the channel north  
of the island of Orleans.

## COALING AND REPAIRING FACILITIES.

Name of port.	Date.	Kind of coal.	Cost per ton.	Manner of coaling.	Next nearest coaling port.	Number and size of dry docks.	Machine shops at which steamers can repair.
Portland, Me.	Sept., 1894	Anthracite, Pa. Cumberland, Md. Clasada, Pa. Kanawha, W. Va. Nova Scotia.	\$1.75 to \$4.75.		St. John, New Brunswick, Fortmouth, N. E.	Two: 425 by 47 by 23 wood; 175 by 46 by 16, wood.	One, where engines are built.
St. Stephen, Nova Brunswick.	Aug., 1893	Anthracite	\$4, delivered	By lighters; slow; ice in winter.	Calais, Me.; St. John, N. B.	None for large vessels.	None.
St. John, New Brunswick.	Sept., 1893	Bitauminous Anthracite	\$3.00 Stowing, \$1 per ton.	By lighters; slow; no interruption.	Eastport, Me.	None	One.
Windsor, Nova Scotia	Aug., 1894	Bitauminous Anthracite	\$4.00 to \$4.50.	By lighters at wharf, by tubs. By lighters 8 miles below, at all times.	Parabero	None	One at Windsor, one at Hantsport, 7 miles below.
Port Joggins, Nova Scotia.	Aug., 1894	Joggins	\$2.50	100 tons per day. No interruption.	Dorchester, New Brunswick.	None	Yes.
Parabero, Nova Scotia.	Aug., 1894	Parabero	\$2.25 Delivered at wharf.	By lighters at West Bay. Liable to interruption in January, February, and March by ice.	Pictou	None	None.
Annapolis, Nova Scotia	Aug., 1894	Anthracite Bitauminous.	\$2.75 to \$4.50. Delivery and stowing, 50 cents per ton.	Lighters and carts; 100 tons per day. Most liable to possible interruption in January.	St. John	None	Yes.
Digby, Nova Scotia.	Aug., 1894	None	\$4.50	20 feet draft at pier, from one-half tide to high water.	Joggins.	None	None at present.
Yarmouth, Nova Scotia.	Aug., 1894	Soft anthracite	\$4.50	At wharf. Safe from storms.	Halifax, St. John	None	Nearly any kind of repairs done well.
Halifax, Nova Scotia	Aug., 1897	Nova Scotia American anthracite. Patent fuel.	\$4.00 to \$7.00.	By lighters; slow; no interruption.	Pictou	1 marine railway 3,000 tons. One granite dry dock 601 by 86½ by 30.	Several. Naval station.

COALING AND REPAIRING FACILITIES.

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Location	Date	Notes	Cost	Facilities	Remarks	Capacity	Location	Notes	Remarks
Cape Canso, Nova Scotia.	Nov., 1883	Pictou	\$3 to \$4.				Louisburg, Halifax.	None	
Arichak, Madama Island.	Nov., 1883	None					Louisburg	None	
Fort Mulgrave, Nova Scotia.	Nov., 1883	Bituminous.					Pictou	None	
Port Hawkesbury, Cape Breton Island.	Nov., 1883	None					do	Marine railway, 1,000 tons.	
North Sydney, Cape Breton.	Aug., 1883	Sydney	\$2.25 Free on board. Stowing, 6 to 10 cents per ton.				Sydney proper, 5 miles.	None. Marine railway, 1,000 tons register capacity.	At Sydney mines, small one in town.
Sydney, Cape Breton.	July, 1884	do	\$2 Free on board.				North Sydney	None	None.
Cow Bay, Cape Breton.	June, 1883	Bituminous.	\$1.75 Free on board. At wharf, 15 cents per ton.				Sydney, Louisburg	None	At mines.
Louisburg, Cape Breton.		do	\$3.45 Sawed.				Sydney in summer. Halifax in winter.	None	No regular facilities.
Pictou, Nova Scotia.	Nov., 1883	do	\$2.50 best screened, on wharf.				Sydney	None	Iron foundry and machine shops. A steam forge, engine and boiler works, 7000 lbs. capacity. Connected by Intercolonial Railroad and by water.
Charlottetown, Prince Edward Island.	July, 1884	Pictou Cape Breton. Anthracite.					Pictou	None	Yes.
Summerside, Prince Edward Island.	Aug., 1883	Pictou Sydney	\$3 3.50 Stowing, \$1 per ton.				Pictou, Nova Scotia.	None	None on island.

Several Naval stations.  
1 marine railway 3,000 tons. One granite dry dock 601 by 84 by 30.

By lighters; slow; no interruption.

\$4.00 to \$7.00.

Nova Scotia. A American anthracite. Patent fuel.

Aug., 1887.  
Halifax, Nova Scotia.

## COALING AND REPAIRING FACILITIES—Continued.

Name of port.	Date.	Kind of coal.	Cost per ton.	Manner of coaling.	Next nearest coal- ing port.	Number and size of dry docks.	Machine shops which steamers can repair.
St. Johns Newfoundland.	Aug., 1883	Nova Scotia Cardiff. Anthracite (American).	\$4.50 to \$5.00, delivered.	By lighters or from loaded ves- sels alongside; seldom inter- rupted; ice in February and March.	Harbor Grace	One sectional capac- ity 500 ton; one dry dock 40 by 84 by 25.	Two working. In a large way. Large works building, with dry dock.
St. Pierre, Miquelon Islands.	.....	Anthracite Sydney.	\$5 to \$8	By lighters in summer; no sup- ply on hand in winter.	Cape Breton	None	None.
Anshert, Magdalen Island.	July, 1884	Bituminous	.....	.....	Pictou, Nova Sco- tia.	None	None.
Newcastle (Miramichi River), New Brun- swick.	.....	Bituminous	\$4 to \$5. De- livery and stowing, 40c. per ton.	By lighters from sheds; slow; not liable to interruption.	.....	None	None.
Gaspé Basin, Quebec	July, 1884	Pictou (bitumin- ous).	Moderate	.....	.....	.....	.....
Quebec, Quebec	Sept., 1883	Pictou Sydney English. Welsh. Scotch. Welsh American (an- thracite).	\$3.25 to \$4. Stowing, 50c. per ton.	By lighters, 400 to 500 daily; liable to interruption for short time late in fall.	Pictou, Nova Sco- tia.	One stone dry dock 500 by 65; 7 float- ing docks 140 to 240 feet long. The vessels 25 per ct. longer.	Several in city; very large works; Point à la Pêche, opposite Que- bec.
Montreal, Quebec	Mar., 1888	English Scotch. Welsh Nova Scotia. American (an- thracite, bitu- minous.)	Soft, \$3.20 to \$4.10; hard, \$6; delivery and stowing, 75c.	Depends on size of vessels; facil- ities excellent; no interrup- tion during the season of nav- igation.	Quebec (for large quantities).	Two dry docks; the largest and only one really avail- able for sea-going vessels is 300 by 45 by 10.	Two connected with dry docks, and nu- merous smaller ones along river front.

ALBERTA  
MOUNTAIN  
MOUNTAIN



AVERAGE TIME OF OPENING AND

Place.	Harbor frozen over.	Disappearance of harbor ice.	Arrival of field ice.	Disappearance of field ice.	Departure of last v fore ice season
Port Hawkesbury, Cape Breton	Feb. 3, 1886	Apr. 23, 1886	Feb. 3, 1886	Feb. 23, 1886	Dec. 22, 1885
Louisburg Harbor (N.E. arm), Cape Breton	Jan. 15	Breaks up with southerly wind	About Mar. 17	About Apr. 30	Feb. 20
Cow Bay, Cape Breton	Rarely freezes; three times in last 20 years.	None, except in docks	Feb. 15 to 28	Varies; about May 1	About Feb. 1
Sydney, Cape Breton	Jan. 14, 1886	Apr. 26, 1886	Generally in Jan.	With westerly winds	Jan. 5, 1886
Port Hood, Cape Breton	Jan. 15 to Feb. 1	Apr. 15 to May 1	Jan. 15 to Feb. 1	Apr. 15 to May 1	Jan. 1
Baddeck, Cape Breton	Jan. 25	Apr. 13	None	None	Jan. 6
Georgetown, Prince Edward Island	Dec. 26	Apr. 21	Jan.	End of Apr.	Dec. 20
Charlotte Town, Prince Edward Island	Dec. 21	Apr. 10	None	None	Dec. 20
Summerside, Prince Edward Island	Dec. 11	Apr. 10	do	do	Dec. 11
Cascoqueague, Prince Edward Island	Jan. 3, 1887	Apr. 6, 1886	Jan. 4, 1887	May 10	Dec. 29 to 28
Richmond Bay, Prince Edward Island	About Dec. 15	About Apr. 1; bay ice often thick and hard on May 1.	Apr. 1; drives back harbor ice.	Apr. 1 to May 1	End of Dec.
Malpeque, Prince Edward Island	Not until closed by field ice	May 1	Jan. 15	May 15	Middle of Dec.; sea ice to prevent vessels from entering until Jan.
Souris, Prince Edward Island	Jan. 4 to 10	Apr. 1 to 10	About Feb. 1	Apr. 1 to May 1	Jan. 7
Pictou, Nova Scotia	Dec. 26	Apr. 15	But little field ice	Apr. 1 to May 1	Dec. 21
Shediac, New Brunswick	Dec. 8	Apr. 26	None	None	Dec. 8
Miramichi Bay, New Brunswick	Dec. 5	Apr. 21	do	do	Nov. 29
Shippagan, New Brunswick	Dec. 8	May 4	None since spring of 1876, then May 14.	June 4, 1876	Nov. 18
Carleton Place, New Brunswick	Dec. 11	May 9	None	None	Nov. 25
Dalhousie, New Brunswick	Dec. 5	Apr. 15	do	do	Nov. 18
Gaspé, New Brunswick	Dec. 19	May 19	do	do	Dec. 4 to 9
Cape Magdalen, Quebec	Dec. 15 to Jan. 1	Apr. 15 to 25	do	do	Nov. 25 to Dec. 5
Father Point, Quebec	River rarely freezes; only moving ice.		Dec. 9, mean of 4 years	Apr. 2, mean of 4 years	Nov. 26, mean of 4 years
St. Pierre	Once in 40 years	Feb. to Mar., floating ice from adjacent coasts.	Feb. 15; depends upon wind.	Rarely remains any length of time.	Open at all seasons
St. Pauls Island			Jan. 12	May 21	Dec. 13
Ambrose B. Magdalen Island	Jan. 1	May 10	Jan. 15	May 15	Dec. 17
Anticosti, Southwest Point	Dec. 25	Mar. 21	Jan. 1 to 15	Mar. 31 to Apr. 20	Dec. 5
Cape Norman, Newfoundland	Dec. 25 to Jan. 10	May 28, 1886	Dec. 24, 1887	June 11, 1888	Nov. 16
Canada Bay, Newfoundland			May 10 to June 25	May 10 to June 15	Nov. 26
White Bay (western arm), Newfoundland	Dec. 25	May 10	Dec. 25 to Jan. 10	May 10 to June 15	Nov. 26
Twillingate Harbor, Newfoundland	Jan. 25	May 9	Feb. 10 to 20	Apr. 24	Dec. 7
Little Bay (Bots Cove), Newfoundland	Jan. 1 to 20	May 1 to 10	Jan. 10	May 1 to 10	Jan. 1 to 10
Exploits Burnt Island, Newfoundland	Jan. 1	do	Jan. 15 to 20	May 1 to 20	About Jan. 1
Toalingue, Newfoundland	Jan. 1 to Feb. 20, averaging about Jan. 25.	Apr. 25 to June 4, averaging about May 10.	Jan. 18	May 25	
Fogo Harbor, Newfoundland	Jan. 5 to 15	Apr. 23	Jan. 14	May 1 to June 1	Jan. 10
Gender Bay, Newfoundland	Jan. 1	Apr. 20	Mar. 11	May 11	Jan. 7
Greenland, Newfoundland	Jan. 15	Mar. 9	Mar. 11	May 11	Jan. 7
Beauvois Harbor, Newfoundland	Jan. 20	Mar. 20	Feb. 15	May 20	Dec. 26
Trinity Harbor, Newfoundland	Jan. 31	Mar. 25	Apr. 10	Apr. 20	Jan. 28
Hants Harbor, Newfoundland	Rarely freezes		Apr. 1	Uncertain	Dec. 23
Hunts Cove, Newfoundland	Jan. 5 to Feb. 20, averaging about Feb. 1.	Mar. 6 to May 23, averaging Apr. 15.	Apr. 15	May 15	
Harbor Grace, Newfoundland	Jan. 15 to Feb. 20	Mar. 1 to Apr. 1	Jan. 20 to Feb. 20	May 1 to 20	Vessels come and go round (sometimes by field ice.)
St. Johns Harbor, Newfoundland	Rarely freezes	Mar. 20	Jan. to Feb. 15	Apr. or May	do
Ferryland, Newfoundland			Feb. 10 to Apr. 10, mean of 25 years.	Feb. 25 to Apr. 20, mean of 25 years.	
Cape Race, Newfoundland			Jan. 20 to Mar. 17, mean of 25 years.	Mar. 15 to June 7, mean of 25 years.	
Tropsey Harbor, Newfoundland	Occasionally blocked by field ice.				
Piacentia, Newfoundland	About Feb. 1	Apr. 1	Rarely any, only with southerly wind after ice has rounded Cape Race.		
Lamelia Harbor, Newfoundland	Occasionally blocked by field ice 10 days at a time, and frozen over at intervals varying from 5 to 10 years.				
Grand Bank, Newfoundland	Never		About Mar. 1	About Apr. 1	Dec. 24
Harbor Breton, Newfoundland	Outer anchorage seldom frozen for more than 2 or 3 days. Inner anchorage from Jan. 1 to Apr. 15.		Feb. 26	Mar. 25	Dec. 16
La Hase Bay, Newfoundland	About Dec. 1, but easily broken up.	Vessels can nearly always enter by April. Moves off with northerly wind, and disappears in April.	Feb. (rare occurrence)	Apr. 1	Open at all seasons
Burgoyne, Newfoundland	Never frozen; occasionally blocked by drift ice from adjacent coasts.				Arrive and depart season.
La Pêche Harbor, Newfoundland	Feb. 10	Mar. 20	Rarely comes.		Navigation nearly open in bay. Generally open all round.
Channel, Newfoundland	Rarely frozen		For a few days in Feb. and Mar.		
Bay of Islands (Humber River), Newfoundland	Dec. 26	Apr. 24	Jan. 1	Apr. 15	Jan. 1
Beane Bay, Newfoundland	Jan. 15	Apr. 15	Jan. 15	Apr. 15	Jan. 1
Rish Point, Newfoundland	Dec. 15	May 20	Jan. 15	May 15	Nov. 16
Greenly Island	Dec. 15 to Jan. 21	Mar. 1 to 10	Jan. 1 to 10	June 10 to 20	Nov. 8 to 11
Belle Isle			Jan. 5 to Feb. 13	June 14	
Battle Harbor, Labrador	Dec. 12. Navigation closes 4 weeks earlier or later, according to season.	May 11	Jan. to Apr. 15	May 15	

TIME OF OPENING AND CLOSING OF PORTS.

Thickness of field ice.	Departure of last vessel before ice season.	Arrival of first vessel after ice season.	Completely or partially closed.	Interval if completely closed.	Thickness of ice.	Remarks, and records of previous years.
.....	Dec. 22, 1885 Feb. 20	Apr. 5, 1886 Mar. 15	At intervals At intervals by field ice	Jan. 1 to Apr. 25 Southwest arm open all winter	About 2 feet Northeast arm 6 to 12 inches	.....
.....	About Feb. 1	Generally in Mar	At intervals by field ice, never by harbor ice.	.....	Harbor ice about 4 inches	Record 23 years, open generally all the year round.
.....	Apr. 5, 1886	Apr. 24, 1886	Average 3 months each year closed.	Jan. to Apr	6 to 10 inches	.....
.....	Jan. 1 Jan. 6	May 1 Apr. 24	Completely at times Some years at intervals, other years completely.	Jan. 15 to Apr. 15 Jan. 20 to Apr. 15	18 inches do	Mean of 30 years.
.....	Dec. 20	Apr. 20	do	Jan. to Apr Dec. 10 to Apr	do 12 to 18 inches	Mean of 12 years' closing; remainder mean of 23 years.
.....	Dec. 11 Dec. 20 to 23 End of Dec	Apr. 24 Apr. 28 May 1 to 10	do do do	Dec. 10 to Apr. 10 Jan. 1 to Apr. 10 Dec. 16 to May 1; shipping place open later in fall.	13 inches 6 to 12 inches About 2 feet	Mean of 6 years. Mean of 13 years.
.....	Middle of Dec.; seldom any ice to prevent vessels leaving until Jan.	May 15	At intervals until Feb. 1	Completely from Feb. 1 to May 1.	.....	.....
.....	Jan. 2 Dec. 21	Apr. 26 Apr. 29	Completely do	Jan. 14 to Apr. 5 Jan. 6 to Apr. 3	1 to 2 feet 10 to 20 inches	Mean of 16 years. Mean of 5 years; ferry-boat ran in track except from Feb. 6 to 16.
.....	Dec. 8 Nov. 25 Nov. 15	Apr. 30 May 6 May 21	do do do	Dec. 8 to Apr. 30 Early in Dec. to Apr. 16 Early in Dec. to May 10	20 to 25 inches 4 to 5 feet 20 to 30 inches	Mean of 5 years. Mean of 54 years.
.....	Nov. 25 Nov. 18 Dec. 4 to 8 Nov. 25 to Dec. 5	May 12 June 5 May 11 Apr. 20 to May 1	do do do Generally in motion all winter.	Dec. 10 to May 9 Dec. 15 to May 8 Dec. 25 to May 10 Jan. 1 to Apr. 25	2 to 3 feet 4 feet 3 feet 10 to 20 inches	Mean of 6 years. Mean of 12 years.
.....	Nov. 23, mean of 9 years	Apr. 21, mean of 7 years	Completely at intervals	Navigation closed between Dec. 18 and Apr. 10; paths are open about half of the time.	Ordinary field ice	There is rarely any heavy ice until end of Dec. There is always a channel of open water on north or south side of the river, depending upon wind. Wind velocity of 7 miles per hour sufficient to drive ice to mid-channel. Sometimes open water lasts a month at a time.
.....	Open at all seasons	.....	Occasionally obstructed by field ice.	.....	.....	.....
.....	Dec. 13	Apr. 19	.....	.....	.....	Mean of 9 years; heavy ice from about Feb. 15 to Apr. 20.
.....	Dec. 17 Dec. 5 Nov. 18	May 10 Apr. 15 to May 8 June 6	Dec. 17 to May 10 Completely do	Jan. 1 to Apr. 1 Dec. to May	1 to 6 feet 18 inches	Mean of 26 years Mean of 23 years.
.....	Nov. 25 June 25 June 16	May 1 May 1	Completely do	Dec. to May do	2 to 3 feet do	Field ice has remained until July 1 and has disappeared by Apr. 16.
.....	Dec. 7 Jan. 1 to 10	May 25 May 1 to 10	do do	Jan. 22 to Apr. 20 Jan. 5 to May 10	do 2 feet	Mean of 16 years; sailing steamers enter all months; other steamers can occasionally enter.
.....	About Jan. 1	May 1 to 10	do	Feb. 1 to Apr. 1	do	Open at intervals between Apr. 1 and May 20.
.....	Jan. 19 Jan. 7	Apr. 7 Apr. 29	Completely Completely	Jan. 19 to Apr. 27 Completely from Feb. 8 to Mar. 9, at intervals from Jan. 15 to Feb. 5.	2 feet .....	Occasionally open. Mean of 11 years.
.....	Dec. 26 Jan. 29	May 1 (at intervals all winter) Mar. 5	At intervals from Jan. 20 to May 15. At intervals; after twenty-four hours of southwest wind vessels can enter harbor.	.....	1 foot 18 inches	.....
.....	Dec. 28	Apr. 15	At intervals	.....	.....	Dates variable Mean of 19 years.
.....	Vessels come and go all year round; sometimes delayed by field ice.	.....	At intervals from Jan. 20 to Mar. 20.	.....	6 to 15 inches	Mean of 16 years; never closed for more than 6 weeks at a time.
.....	do	.....	At intervals by field ice	.....	6 to 15 inches	.....
.....	Apr. 20, mean of June 7, mean of	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....
.....	Dec. 24 Dec. 15	Mar. 9 Apr. 20	Completely closed twice in 30 years. At intervals by field ice	Feb. 20 to Mar. 25	Harbor ice 1 or 2 inches	Mail steamer unable to enter only 3 times in 30 years.
.....	Open at all seasons	.....	Only at intervals	.....	.....	.....
.....	Arrive and depart at all seasons.	.....	.....	.....	.....	.....
.....	Navigation nearly always open in bay. Generally open all the year round.	.....	At intervals from Mar. 1 to 25. At intervals by field ice	.....	6 inches 4 inches	Navigation closed only 5 or 6 times in 50 years.
.....	Jan. 1 Jan. 1 Nov. 10 Nov. 8 to 11	May 12 May 1 May 15 June 10 to 20	Completely do do At intervals	Dec. 25 to Apr. 30 Jan. to Apr Dec. 15 to May 20 Completely at times by field ice.	18 inches 2 feet 3 feet 3 to 5 feet	Never frozen until arrival of field ice.



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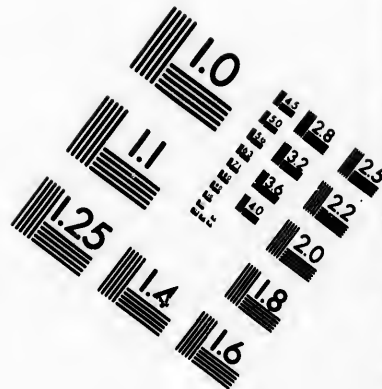
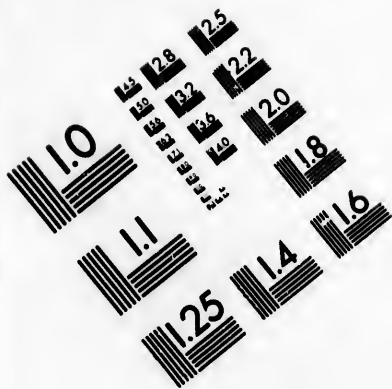
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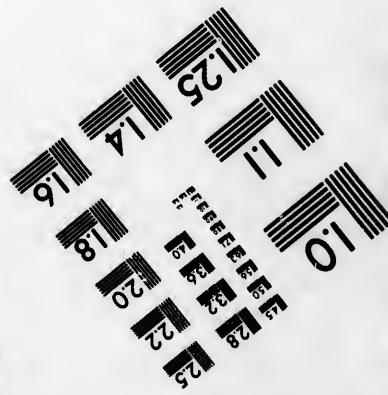
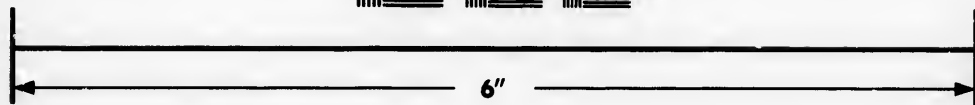
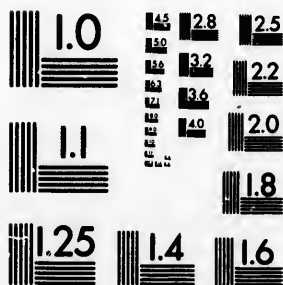
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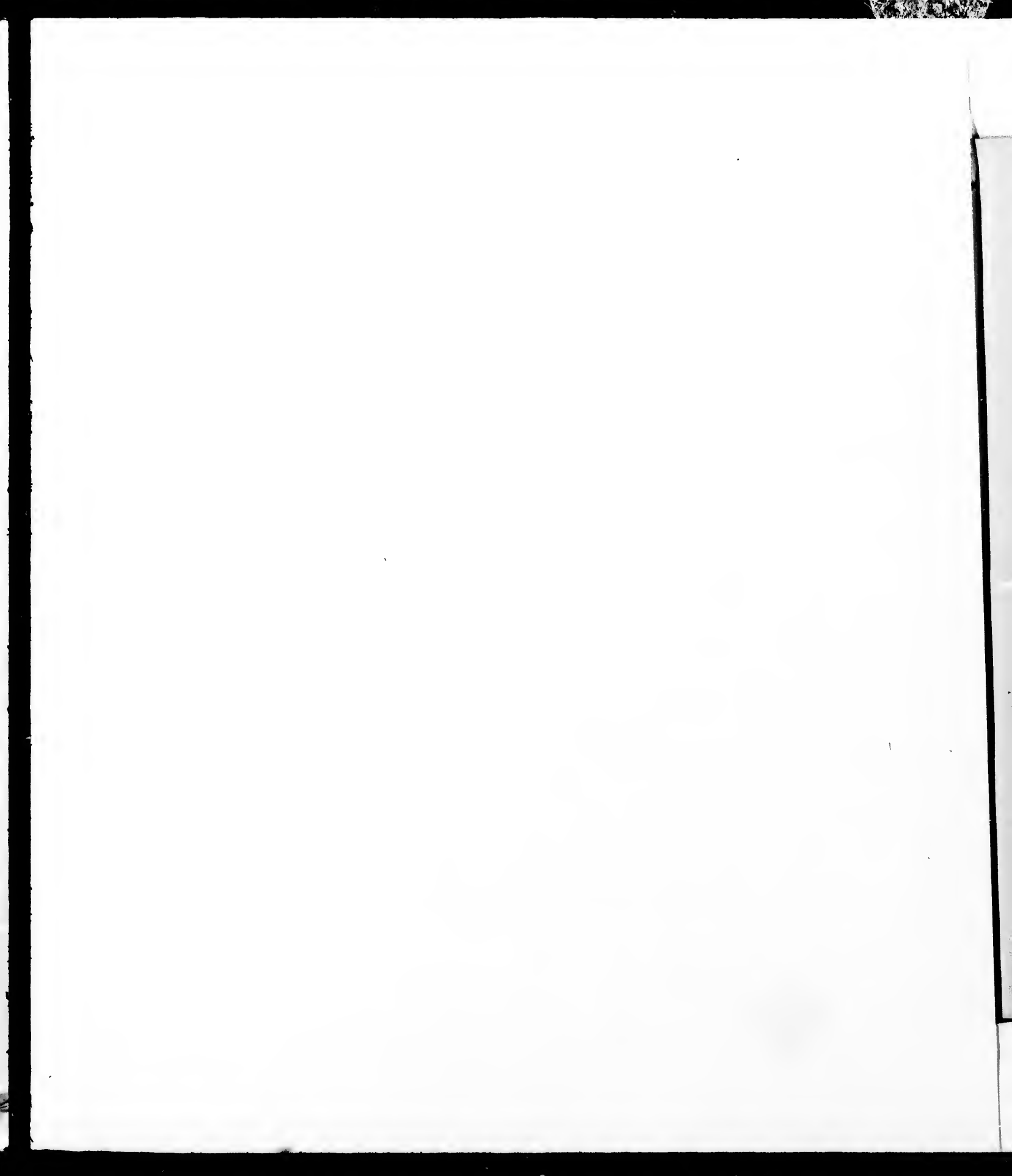
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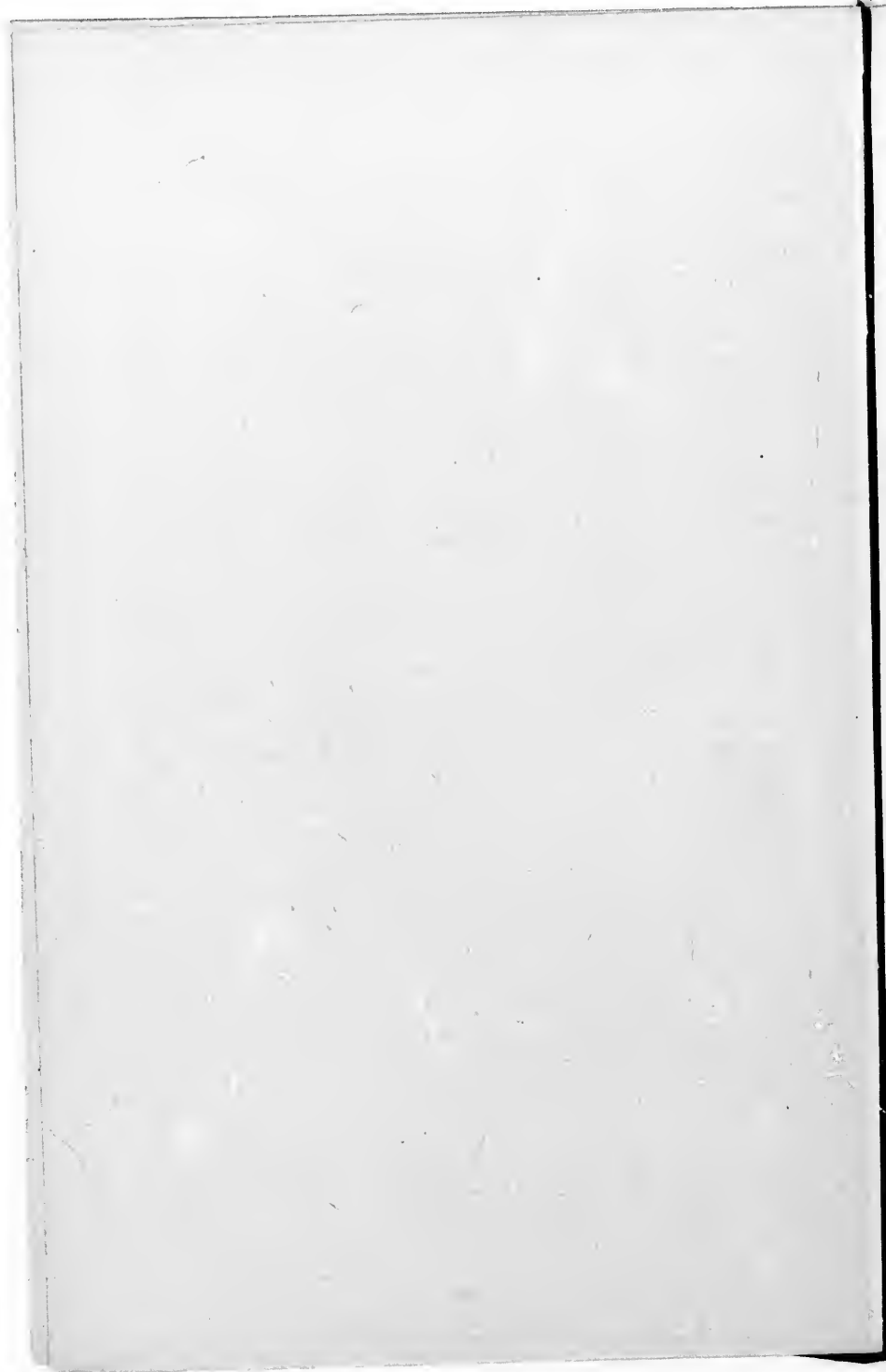
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